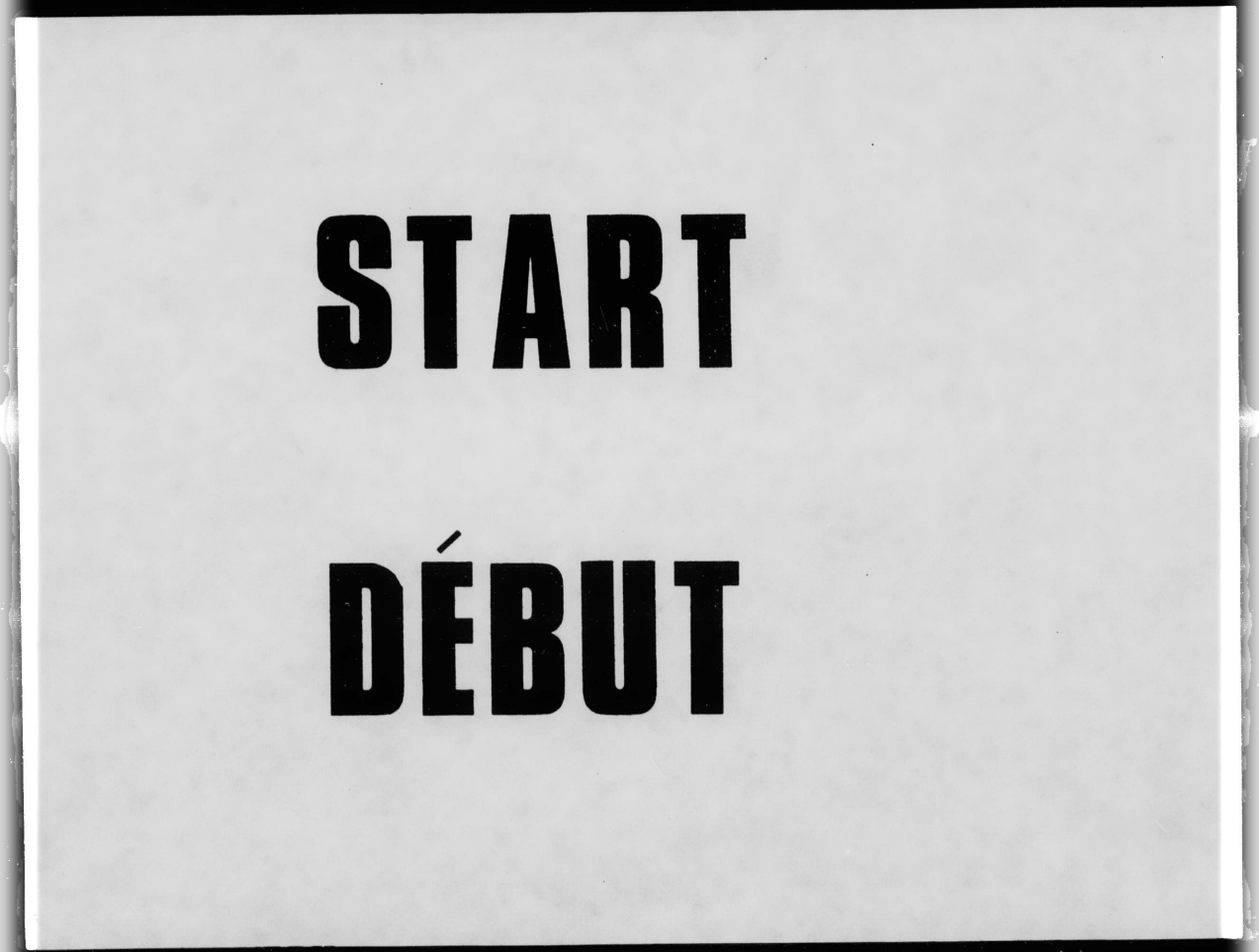
START
DÉBUT

ROLL
NO. 24-C
ROULEAU

National Archives of Canada

Archives nationales du Canada

Ottawa, Canada
K1A 0N3

Date 12-06-92

Camera - Caméra C.9

Operator - Opérateur Céline Rondeau

Reduction - Réduction 26X

Data - Données R684 A-2-a

Canada

ARC 0178 (88/04)

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Canada

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AVIS

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Parks Canada

Central Registry Series

RG 84, Series A-2-a

Headquarters, 1897-1969, volumes 1-126, 128-229, 477-534, 537-539, 574-576, 583-588, 645-2292, 2315-2330

With the establishment of a Dominion Parks Branch in 1911, a new file classification system was adopted, separate from the one generally used in the Department of the Interior and outlined above (see series A-1-a). This classification system was maintained through successive administrative changes in the parks' organization, as it operated as the Dominion Parks Branch of the Department of the Interior (1911-1930), the National Parks Branch of the same Department (1930-1936), the National Parks Bureau of the Lands, Parks and Forests Branch of the Department of Mines and Resources (1936-1947), the National Parks Division of the Lands and Development Services Branch of the same Department (1947-1950), the National Parks and Historic Sites of the Development Services of the Department of Resources and Development (1950), the National Parks Branch of the same Department (1950-1953), and of the Department of Northern Affairs and National Resources (1953-1965), and the National and Historic Resources Branch (1965-1966) and the National and Historic Parks Branch of the Department of Indian Affairs and Northern Development (1966-1968).

Parcs Canada

Dossiers du service central

RG 84, Série A-2-a

Administration centrale, 1897-1969, volumes 1-126, 128-229, 477-534, 537-539, 574-576, 583-588, 645-2292, 2315-2330

Au moment de l'établissement de la Direction des parcs fédéraux, en 1911, un nouveau système de classement fut adopté, distinct de celui employé dans l'ensemble du ministère de l'Intérieur et décrit ci-dessus (voir A-1-a). Ce système fut conservé en dépit de diverses modifications de la structure administrative, la fonction des parcs étant confiée successivement aux services suivants: Direction des parcs fédéraux du ministère de l'Intérieur (1911-1930), Direction des parcs nationaux du même ministère (1930-1936), Service des parcs nationaux de la Division des terres, parcs et forêts du ministère des Mines et des Ressources (1936-1947), le Service des parcs nationaux de la Division des terres et des services de développement du même ministère (1947-1950), les parcs nationaux et lieux historiques des Services de mise en valeur du ministère des Ressources et du Développement économique (1950), la Division des parcs nationaux du même ministère (1950-1953) et du ministère du Nord canadien et des Ressources nationales (1953-1965), la Direction des ressources naturelles et historiques (1953-1965), et la Direction des parcs nationaux et des lieux historiques du ministère des Affaires indiennes et du Nord (1966-1968).

This extensive series of central registry files relates to all the activities of national and historic parks administrations from 1911 to the mid-1960s. Some material on file precedes the years in which the registry system was in operation. For national parks, the files cover the establishment of parks, park townsite development, land leases, wildlife, conservation, sports, tourism, campgrounds, forestry, roads, water power, wartime work camps, surveys, commercial development, forest fire prevention, lectures by park officials, interpretation services, public relations and other topics relating to the general park administration. The national historic parks records deal mainly with research and interpretation of specific historic parks and sites and their operation. They concentrate on the activities of the Historic Sites and Monuments Board, park boundaries, the establishment and operation of park museums, equipment, publicity, visits by distinguished individuals, curators, displays, restoration and other related activities. There are also some Engineering and Construction Branch files concerning national park matters and the Trans-Canada Highway.

Les volumineux dossiers du service central de classification portent sur toutes les activités des administrations des parcs nationaux et historiques entre 1911 et le milieu des années 60. Certains documents remontent à une époque antérieure à l'application du système de classification. Pour les parcs nationaux, les dossiers touchent la création des parcs, le développement des lotissements urbains dans les parcs, la location de lots, la faune, la conservation, les sports, le tourisme, les terrains de camping, l'exploitation forestière, les routes, l'énergie hydraulique, les camps de travail du temps de guerre, l'arpentage, le développement des commerces, la prévention des incendies de forêts, les causeries des responsables des parcs, les services d'interprétation, les relations publiques et d'autres questions se rapportant à l'administration générale des parcs. Les documents des parcs historiques traitent essentiellement des recherches ainsi que de l'interprétation et de l'exploitation de certains parcs et lieux historiques. Ils font une place particulièrement importante aux questions suivantes : activités de la Commission des lieux et monuments historiques, délimitation des parcs, établissement et exploitation des musées des parcs, matériel, publicité, visites de personnalités, conservateurs, expositions, restauration et autres activités. Il y a également certains dossiers du Service du génie et de la construction portant sur les parcs nationaux et sur la route transcanadienne.

The vast majority of the records are arranged by subject and park. Thus, files B301, G301 and RM301 are the files on birds (301 file block) for, respectively, Banff, Glacier and Riding Mountain National Parks. Similarly, files BA318, FA318 and FC318 deal with the museum (318 file block) at Batoche National Historic Site, Fort Anne and Fort Chambly. A list of the prefixes used for each national or historic park appears in the Appendix of this inventory. The prefix "U" is for those universal files applying to all national and historic parks. File U301, for example, concerns bird regulations, policy, research and related activities common to all national parks. The prefix "HS" deals with the particular activities of the Historic Sites and Monuments Board of Canada and the establishment of historic sites. They cover minutes of meetings, publicity, membership on the Board, specific historic sites and other related subjects. The prefix "ENG" or "EC" identifies files created by the Engineering and Construction function of the Branch, while the prefix "TC" is reserved for the Trans-Canada Highway in national parks.

La très grande majorité des documents sont classés par sujet et par parc. Par exemple, les dossiers B 301, G 301 et RM 301 sont consacrés aux oiseaux (dossiers 301) des parcs nationaux Glacier, Banff et Riding Mountain. De la même façon, les dossier BA 318, FA 318 et FC 318 portent sur les musées (dossiers 318) des lieux historiques de Batoche, Fort Anne et Fort Chambly. A l'annexe du présent inventaire, on trouvera une liste des préfixes employés pour chaque parc. Le préfixe "U" (universel) désigne les dossiers généraux se rapportant à tous les parcs; le dossier U 301 concerne donc la réglementation relative aux oiseaux, la politique, la recherche, etc., communes à tous les parcs nationaux. Le préfixe "HS" porte sur les activités propres à la Commission des lieux et monuments historiques du Canada et l'établissement des lieux historiques : procès-verbaux, publicité, membres de la commission, lieux historiques particuliers et autres questions connexes. Le préfixe "ENG" ou "EC" désigne les dossiers créés par la fonction du génie et de la construction tandis que le préfixe "TC" est réservé pour la route transcanadienne dans les parcs nationaux.

The finding aid for this series is a list of file numbers, titles and dates. For volumes 1 to 226, a computer-printout keyword subject index has been prepared. When using this index, however, the researcher must convert the RG 84 volume number given to the new volume number before ordering the material. The conversion list is the file list referred to above, on which the old volume number appears on the far right side of each entry and the new volume number on the far left side of the page. The card index that was used to prepare the keyword subject index is also available. It is organized according to the alphabetical codes used by park officials (B, J, RM, U, ENG, HS, etc). Two contemporary series of registers are also available for this series (see series A-2-b and A-2-c). Steps needed to use these indexes are outlined there.

Consult finding aid 84-2.

L'instrument de recherche est une liste des numéros, titres et dates de dossiers. Pour les volumes 1 à 226, il existe un index-matières par mots-clés informatisé. Pour se servir de cet index, le chercheur doit toutefois substituer au numéro de volume du RG 84 le nouveau numéro de volume avant de commander la documentation. La liste de conversion est la liste des dossiers mentionnée plus haut; l'ancien numéro de volume figure à l'extrême droite de chaque inscription et le nouveau à l'extrême gauche. On peut également consulter l'index sur fiches qui a servi à établir l'index-matières par mots-clés. L'organisation est faite selon les codes alphabétiques qu'emploient les responsables des parcs (B, J, RM, U, ENG, HS, etc.). Il y a également pour ces dossiers deux séries de registres de l'époque (voir A-2-b ci-dessus et A-2-c ci-dessous), où sont d'ailleurs exposées les modalités d'utilisation.

Consulter l'instrument de recherche 84-2.

NOTICE

PARKS CANADA
CENTRAL REGISTRY SERIES

RG 84, Series A-2-a, 1897-1969, volumes 1-126, 128-229, 477-534, 537-539, 574-576, 583-588, 645-2292, 2315-2330.

The Government Archives Division microfilms archival records both to protect often fragile originals from damage through handling and to make this material more widely available through the interlibrary loan system.

Most of the volumes are in good condition. However, some coloured paper stock and inks may not photograph well. Running inks, faded text and torn pages may impede legibility in some instances. Finally, because of their size, many of the maps and plans had to be copied in several sections. The NA has attempted to reproduce what information is still legible and provide at least a reference for what is not.

AVIS

PARCS CANADA
DOSSIERS DU SERVICE CENTRAL

RG 84, Série A-2-a, 1897-1969, volumes 1-126, 128-229, 477-534, 537-539, 574-576, 583-588, 645-2292, 2315-2330.

La Division des archives gouvernementales microfilme les documents d'archives pour empêcher que les originaux, souvent fragiles, ne finissent par s'abîmer à l'usage et pour accroître la disponibilité de ces documents par l'entremise du prêt en bibliothèque.

La plupart de ces volumes sont en bonne condition. Toutefois certains papiers de couleurs et certaines encres se prêtent mal à la photographie. Les encres coulées, les textes pâles et les pages déchirées peuvent nuire à la lisibilité de certains volumes. A noter enfin que bon nombre de cartes et plans ont dû être microfilmés en plusieurs parties étant donné leur format. Les AN ont fait de leur mieux pour reproduire l'information encore lisible et pour au moins faire mention des passages qui ne le sont pas.

FILE BEGAN ON PREVIOUS REEL

LE DOSSIER A DÉBUTÉ SUR LA
BOBINE PRÉCÉDENTE

PARKS CANADA

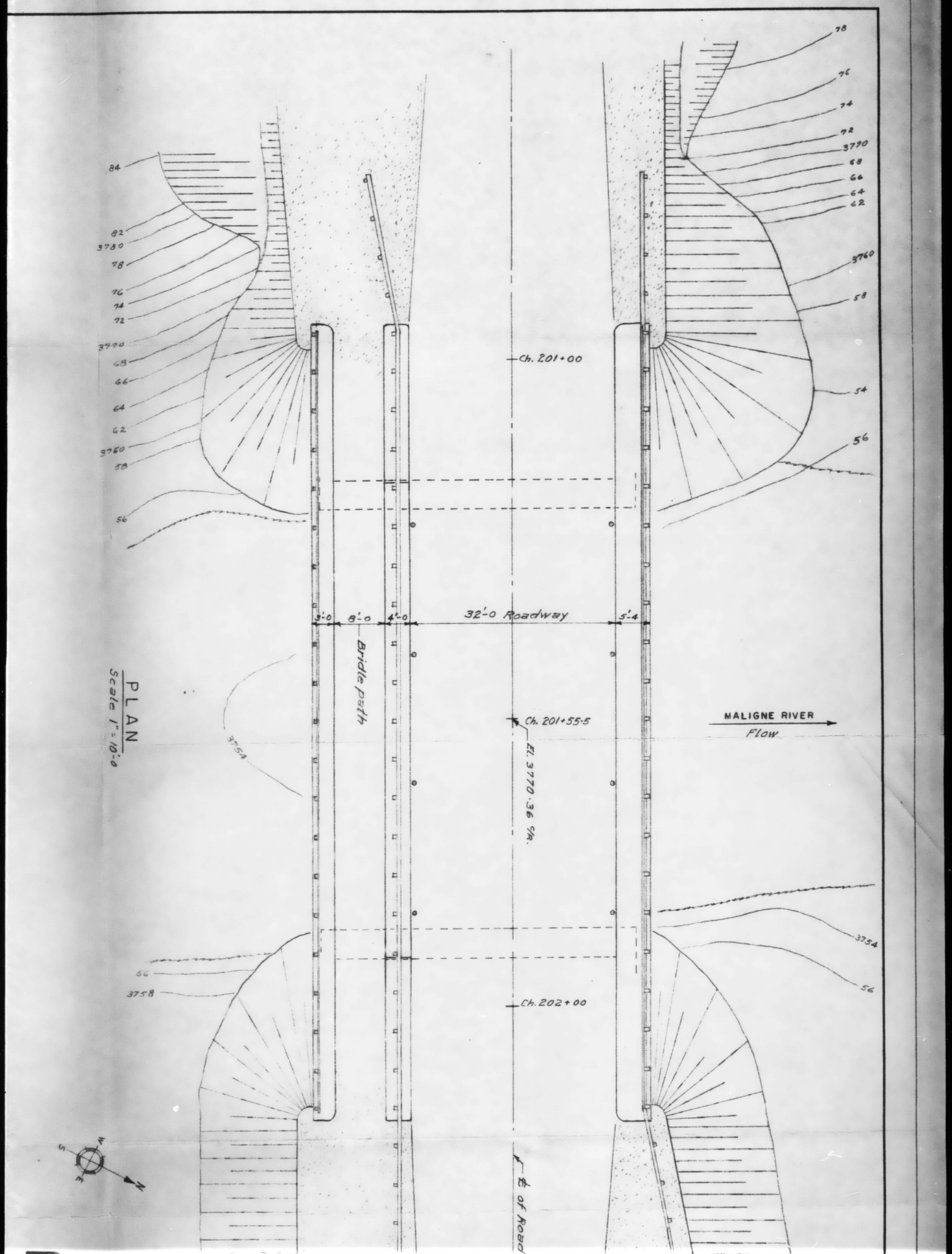
CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE CENTRAL,
ADMINISTRATION CENTRALE, 1897-1969

RG 84, A-2-a, Volume 1613

FILE/DOSSIER	TITLE/TITRE	DATES
J56-20	Jasper National Park - Swimming Pool - Miette Hot Springs pt 11	1968
J56-24	Jasper National Park - Swimming Pool - Miette Hot Springs pt 3	1968
J56-28	Jasper National Park - Eastern Entrance - Gateway Building pt 5	1968
J56-32	Jasper National Park - Industrial Site Buildings pt 3	1968
J56-46	Jasper National Park - Staff Quarters pt 8	1968
J56-46/68-134	Jasper National Park - Buildings pt 2	1968
J56-46/68-134	Jasper National Park - Plans - Buildings - Enclosures for File	1968
J56-46/68-145	Jasper National Park - Columbia Icefields Interpretive Centre pt 1	1968
J60	Jasper National Park - Roads - General pt 6	1962-1963
J60-2	Jasper National Park - Maligne Medicine Lake Road pt 4	1956-1957
J60-2	Jasper National Park - Maligne Road pt 7	1965-1968



PLAN
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Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

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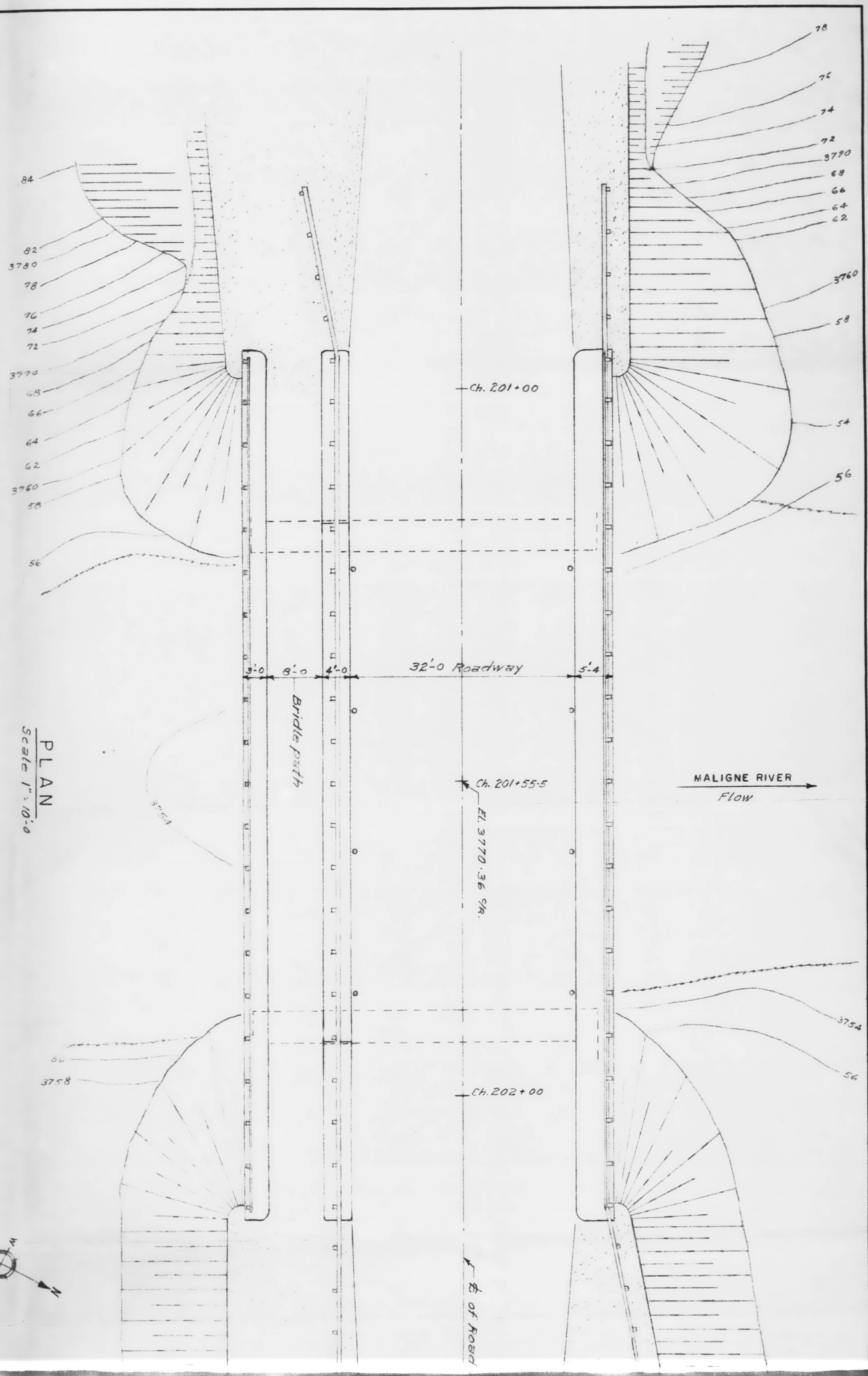

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Parcs Canada

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File/dossier J60-2
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Archives nationales du Canada

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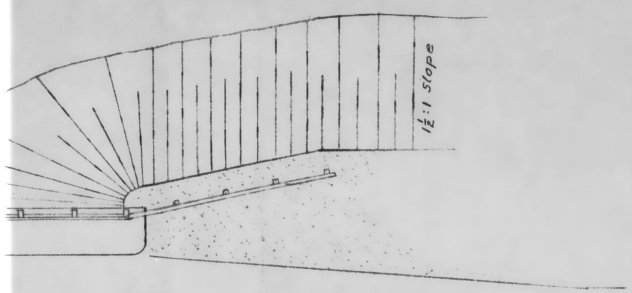
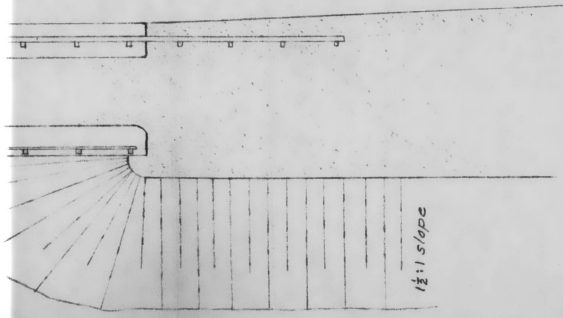
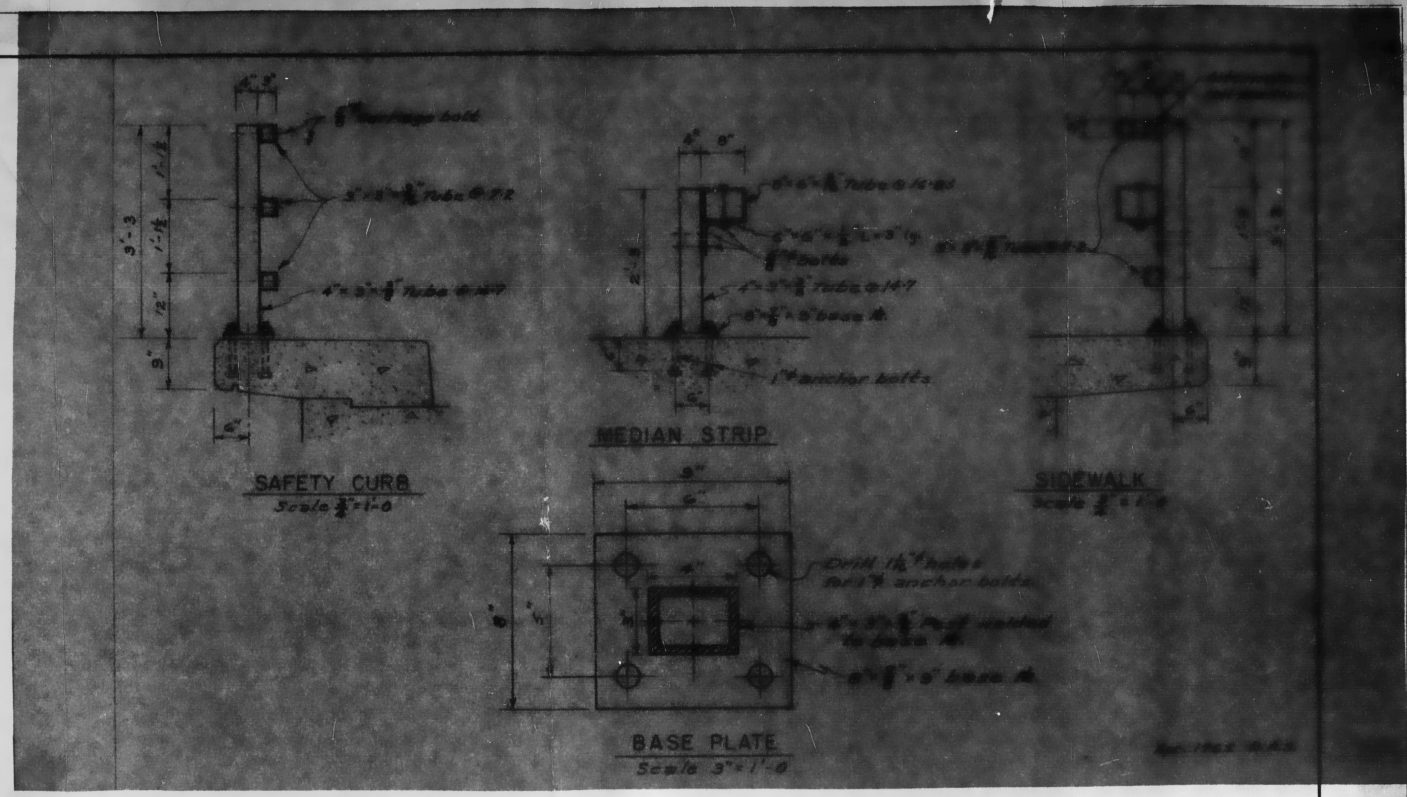
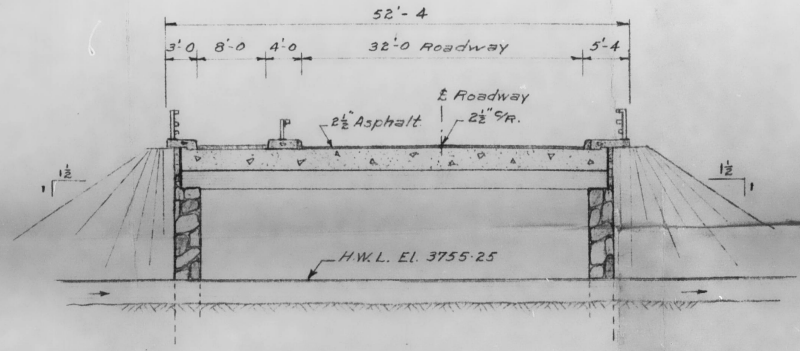


℄ of Roadway

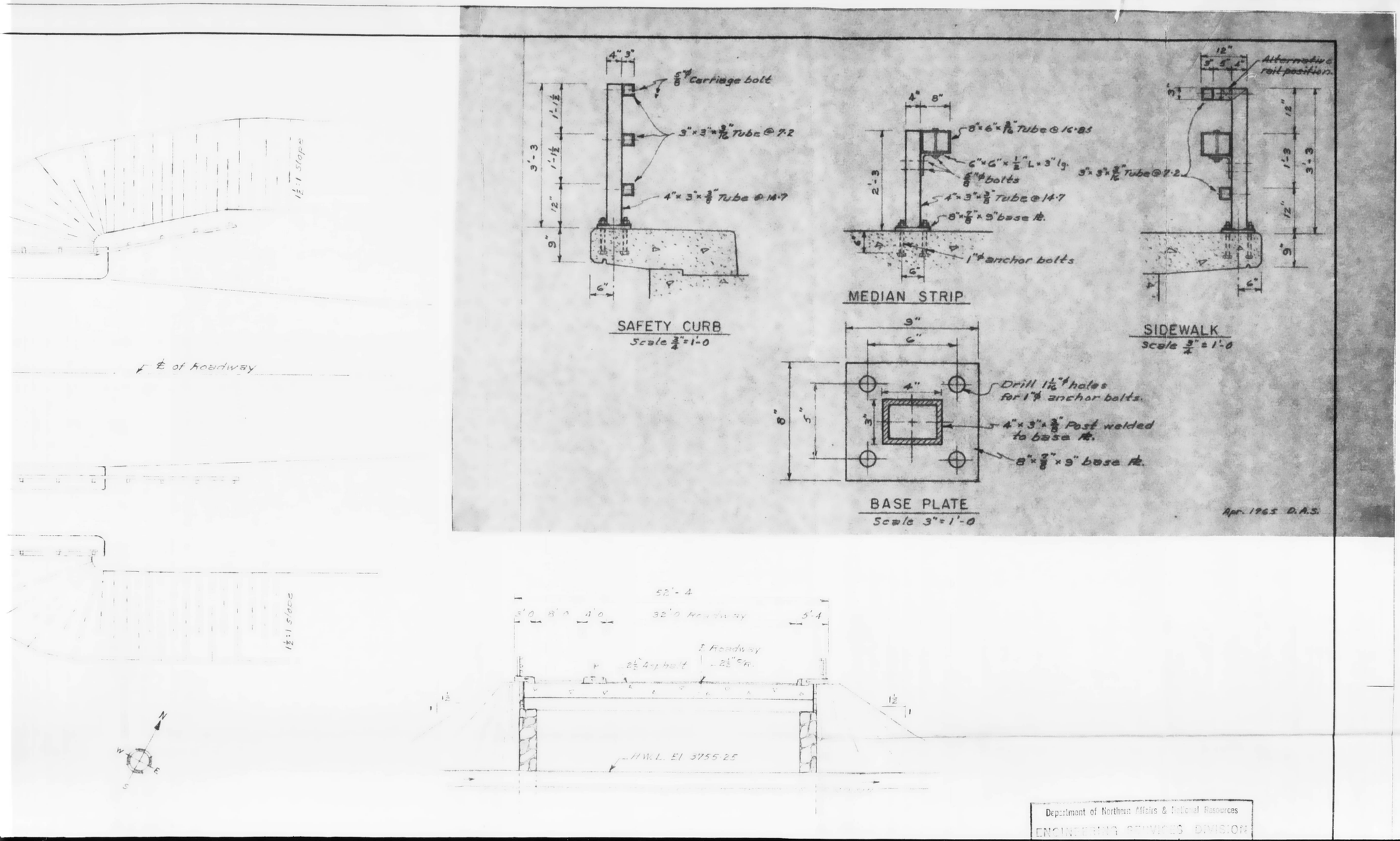




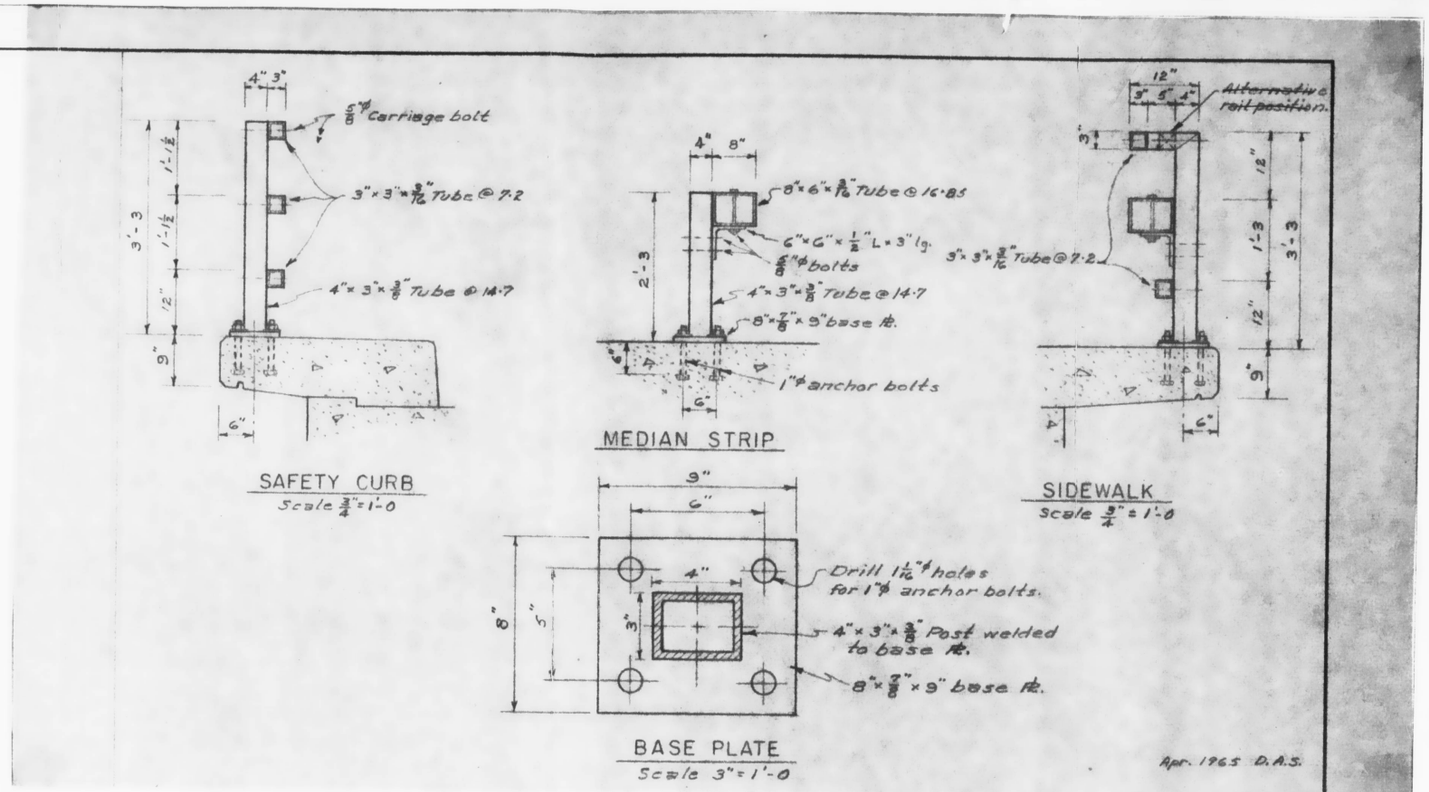




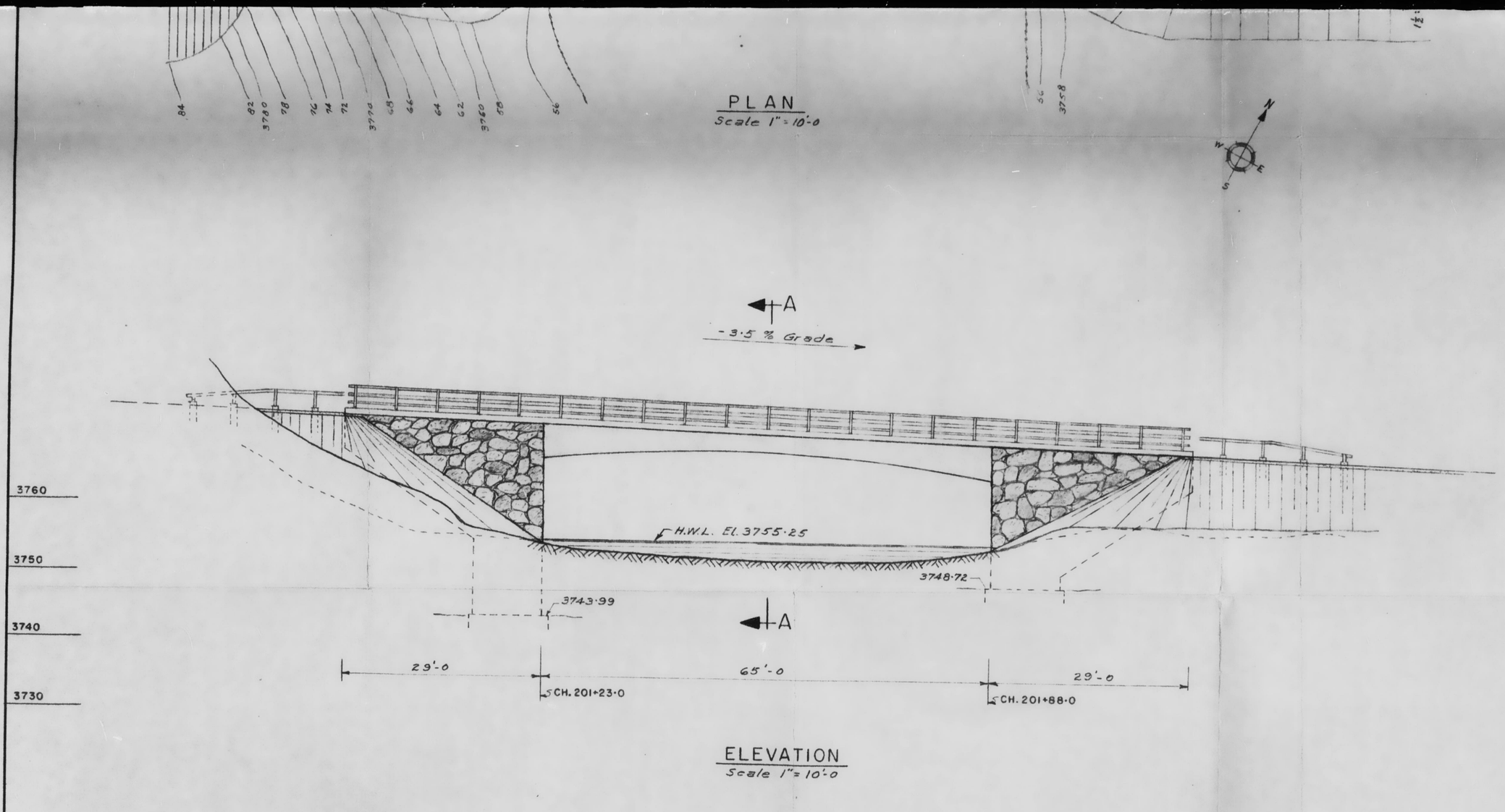
Department of Northern Affairs & National Resources
ENGINEERING SERVICES DIVISION



Department of Northern Affairs & National Resources
ENGINEERING SERVICES DIVISION



Department of Northern Affairs & National Resources



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ELEVATION
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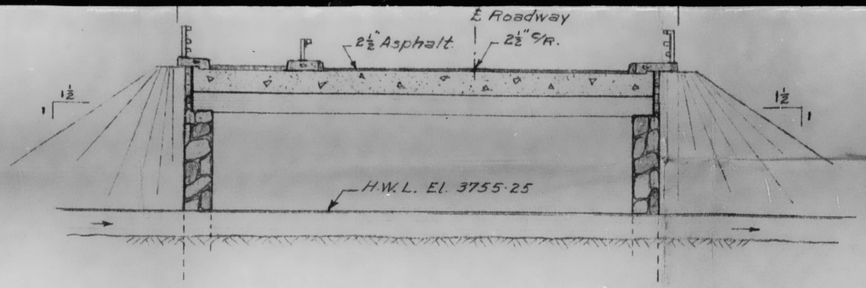

SECTION A-A
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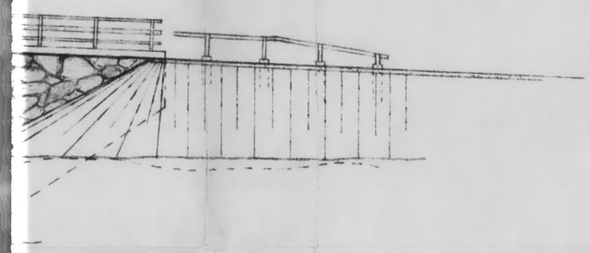

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Department of Northern Affairs & National Resources
ENGINEERING SERVICES DIVISION
PLAN APPROVED
☐ WITHOUT ALTERATIONS
☑ with ELEVATIONS AS INDICATED
27/4/65 DATE
CHIEF ENGINEER
Plan Checked and Recommended
ALTERATIONS MADE:
AS PER ENCLOSED SKETCH

PRELIMINARY

NO.	REVISIONS	NAME	DATE

DEPARTMENT OF PUBLIC WORKS
CANADA
DEVELOPMENT ENGINEERING BRANCH
STRUCTURES DIVISION

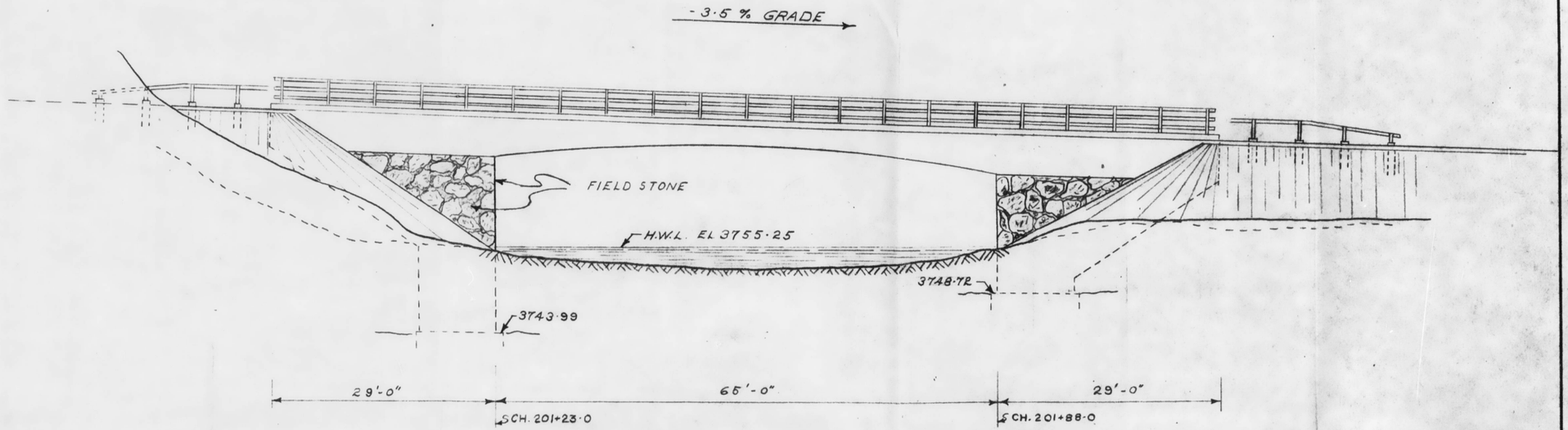
MALIGNE RIVER BRIDGE
MEDICINE LAKE ROAD — MILE 3·8
JASPER NATIONAL PARK

GENERAL LAYOUT

JOB SUPERVISOR H. HEWITT	DESIGN		CHECK	
APPROVED DATE	DRAWN	D.A.S.	CHECK	
	TRACED		CHECK	
	PROJECT NO.	SD-220		
CHIEF-STRUCTURES DIVISION				
APPROVED DATE	SHEET		OF	
CHIEF ENGINEER				

APR. 7 1965

FILE COPY



ELEVATION
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REVISIONS	
DATE	DESCRIPTION

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

MALIGNE RIVER BRIDGE
MEDICINE LAKE ROAD — MILE 3.8
JASPER NATIONAL PARK

SCALE: | DATE: APRIL 27/65

DESIGNED
DRAWN T.G.
CHECKED
FILE No.

APPROVED
CHIEF ENGINEER

INDEX No. | SHEET No.

JOB No.

FILE COPY

0000008A
RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7
Parks Canada
Parcs Canada
National Archives of Canada
Archives nationales du Canada

Mr. Plowman/mp

J.60-2

NP CGY

NP OTT

APRIL 26/65 11:45 AM

B I M STRONG

REGIONAL DIRECTOR

WESTERN REGION

REURTEL GRADING MEDICINE-MALIGNE ROAD JASPER WE FEEL STILL ADVISABLE TO PROCEED WITH TENDER CALL THIS YEAR AND THAT YOU IMPLEMENT SOME MEANS TO CONTROL ACCESS TO GRADING AREA

DIRECTOR

NATURAL AND HISTORIC RESOURCES BRANCH

NP OTT

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

CANADA

Department of Northern Affairs
and National Resources

TELEX MESSAGE FORM

Ministère du Nord canadien et
des Ressources nationales

FORMULE DE MESSAGE TELEX

TO: À Regional Director,
Western Region,
Calgary, Alberta.

FROM: DE R.K. Plowman

Not to be included in Message:
A ne pas comprendre dans le message:

File No.
Dossier n°

Telex Phone No. (if available)
Numéro de téléphone telex (si on le sait)

Date: Apr. 26,1965

Immediately / Immédiatement [ ]

Daily / Ce jour [X]

Other / Autrement [ ]

PLEASE PRINT PLAINLY OR TYPE MESSAGE BELOW
PRIÈRE D'ÉCRIRE EN MOULÉ OU DE DACTYLOGRAPHIER LE MESSAGE DANS L'ESPACE CI-APRÈS

REURTEL GRADING MEDICINE-MALIGNE ROAD JASPER. WE FEEL STILL ADVISABLE TO PROCEED WITH TENDER CALL THIS YEAR AND THAT YOU IMPLEMENT SOME MEANS TO CONTROL ACCESS TO GRADING AREA.

J.R.B. Coleman,
Director.

Sent 11 45 / Am / mp.

If further space is required please use a second page – Si cet espace est insuffisant, prière d'utiliser une deuxième feuille.

The following information must be supplied but will not be sent with the above message.
Prière de fournir les renseignements suivants qui, toutefois, ne feront pas partie du message ci-dessus.

Message Prepared by– / Rédigé par– R.K. Plowman

Telephone No.: / Numéro de téléphone: 2-2829

Signature of Person Authorizing Message:
Signature de la personne autorisant l'envoi du message:

R.K. Plowman

NANR 10-84 (10-64)

A
0000010
RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7
Parks Canada
Parcs Canada
National Archives of Canada
Archives nationales du Canada

REGIONAL DIRECTOR
WESTERN REGION

Ottawa (4), April 26, 1965.

J60-2

Preliminary Plans, Grading, Culverts,
Base & Structures
Sta. 6+03.5 - 207+55.9

We are forwarding under separate cover, two sets of preliminary plans for the above project. We would appreciate your comments or concurrence.

ORIGINAL SIGNED BY
R. K. PLOWMAN

J.R.B. Coleman,
Director.

Fraser/ob
c.c. Supt., Jasper National Park

0 0 0 1 1 A

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

Parks Canada
Parcs Canada

National Archives of Canada
Archives nationales du Canada

CANADA

Department of Northern Affairs and National Resources

TELEX MESSAGE FORM

Ministère du Nord canadien et des Ressources nationales

FORMULE DE MESSAGE TELEX

TO: À Regional Director, Western Region, Calgary, Alberta.

FROM: DE R.K. Plowman

Not to be included in Message: A ne pas comprendre dans le message:

File No. Dossier n°

Telex Phone No. (if available) Numéro de téléphone telex (si on le sait)

Date: Apr. 26,1965

Immediately Immédiatement [ ]

Daily Ce jour [X]

Other Autrement [ ]

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PRIÈRE D'ÉCRIRE EN MOULÉ OU DE DACTYLOGRAPHIER LE MESSAGE DANS L'ESPACE CI-APRÈS

REURTEL GRADING MEDICINE-MALIGNE ROAD JASPER. WE FEEL STILL ADVISABLE TO PROCEED WITH TENDER CALL THIS YEAR AND THAT YOU IMPLEMENT SOME MEANS TO CONTROL ACCESS TO GRADING AREA.

J.R.B. Coleman,
Director.

Sent 11 45 AM / mp.

If further space is required please use a second page – Si cet espace est insuffisant, prière d'utiliser une deuxième feuille.

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Message Prepared by– Rédigé par– R.K. Plowman

Telephone No.: Numéro de téléphone: 2-2829

Signature of Person Authorizing Message: Signature de la personne autorisant l'envoi du message: R.K. Plowman

NANR 10-64 (10-64)

0000010

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

Parks Canada
Parcs Canada

National Archives of Canada
Archives nationales du Canada

REGIONAL DIRECTOR
WESTERN REGION

Ottawa (4), April 26, 1965.

J60-2

Preliminary Plans, Grading, Culverts,
Base & Structures
Sta. 6+03.5 - 207+55.9

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ORIGINAL SIGNED BY
R. K. PLOWMAN

J.R.B. Coleman,
Director.

Fraser/ob
c.c. Supt., Jasper National Park

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

J 60-2

REGIONAL DIRECTOR,
WESTERN REGION

Ottawa (4), April 22, 1965.

Proposed Borrow Pits, Maligne Lake Road,
Jasper National Park

Your letter of April 14, 1965, is acknowledged along with three copies of plan showing the location of the proposed borrow areas. We accept the Superintendent's assurances that these areas will be concealed from view and therefore are returning two approved copies of the plan.

J.R.B. Coleman,
Director.

Baker/eb
c.c. Supt., Jasper Park.

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

NP OTT

APRIL 23/65 10:45 AM FILE J60

Plan/ds

J60-2

1.45 23 apr

DIRECTOR

ATTENTION CHIEF ENGINEER

REFERENCE GRADING MEDICINE-MALIGNE ROAD JASPER PARK. MINUTES OF MEETING WITH D.P.W. IN OTTAWA JANUARY 20TH CONCERNING ROAD CONSTRUCTION PROGRAM CONTAINED SUGGESTION THAT CONTRACTING GRADING 10.5 TO 13.5 MILE SECTION OF THIS ROAD BE DELAYED. SUBSEQUENTLY WE DISCUSSED THIS HERE AND WDVISED YOU FEBRUARY 12TH WE FAVOURED DELAY. HOWEVER LOCAL D.P.W. OFFICE NOW ADVISES TENDERS ARE TO BE CALLED. WE REALIZED THIS MAY BE TWO-YEAR CONTRACT WITH NO GRADING THIS SEASON BUT ARE STILL CONCERNED OVER POSSIBILITY CALL MAY BE PREMATURE. LACK OF FINAL PLAN FOR THE AREA MAKES UNLIKELY ANY DEVELOPMENT AT MALIGNE LAKE WILL BE POSSIBLE THIS SEASON PERIOD UNDER CIRCUMSTANCES PROBABLE THIS CANNOT BE SUFFICIENTLY ADVANCED EVEN BY END NEXT SEASON TO MAKE IT WISE HAVE ROAD GRADED TO CLOSE PROXIMITY. PLEASE CLARIFY INTENTLONS THIS REGARD

STRONG

CC SUPT JASPER

CORRECTION PERIOD AFTER SEASON FIFTH LAST LINE. NEW SENTENCE STARTS UNDER CIRCUMSTANCES ETC

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File/dossier J60-2
pt 7

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TEMPORARY FILE

TEMP. FILE NO.

60-2

MAIN FILE IS CHARGED TO

Glouman 13-3-65

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
Delcorde	59880	20-4-65	[illegible]	—	—	[illegible]	
Mr. Savage				PA. 22/4/65		[illegible]	

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File/dossier J60-2
pt 7

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CANADA

Department of Northern Affairs and National Resources National Parks Branch

Ministère du Nord canadien et des Ressources nationales Direction des parcs nationaux

Calgary, April 14, 1965.

Director

Attention: Chief Engineer

our file / notre dossier J.60-2

your file / votre dossier

APR 28 10 53 AM '65
CODE
NATIONAL PARKS BRANCH ASSIGNED TO
0598800

Proposed Borrow Pits,
Maligne Lake Road,
Jasper National Park.

Attached are two prints showing the locations of borrow areas the Department of Public Works proposes to use in the construction of the Maligne Lake Road, Mile 9.5 to Mile 13.9. The Superintendent advises that these areas would be concealed and we recommend approval be granted for their use.

B. I. M. Strong,
Regional Director.

Attachments
c.c. Superintendent - Jasper National Park

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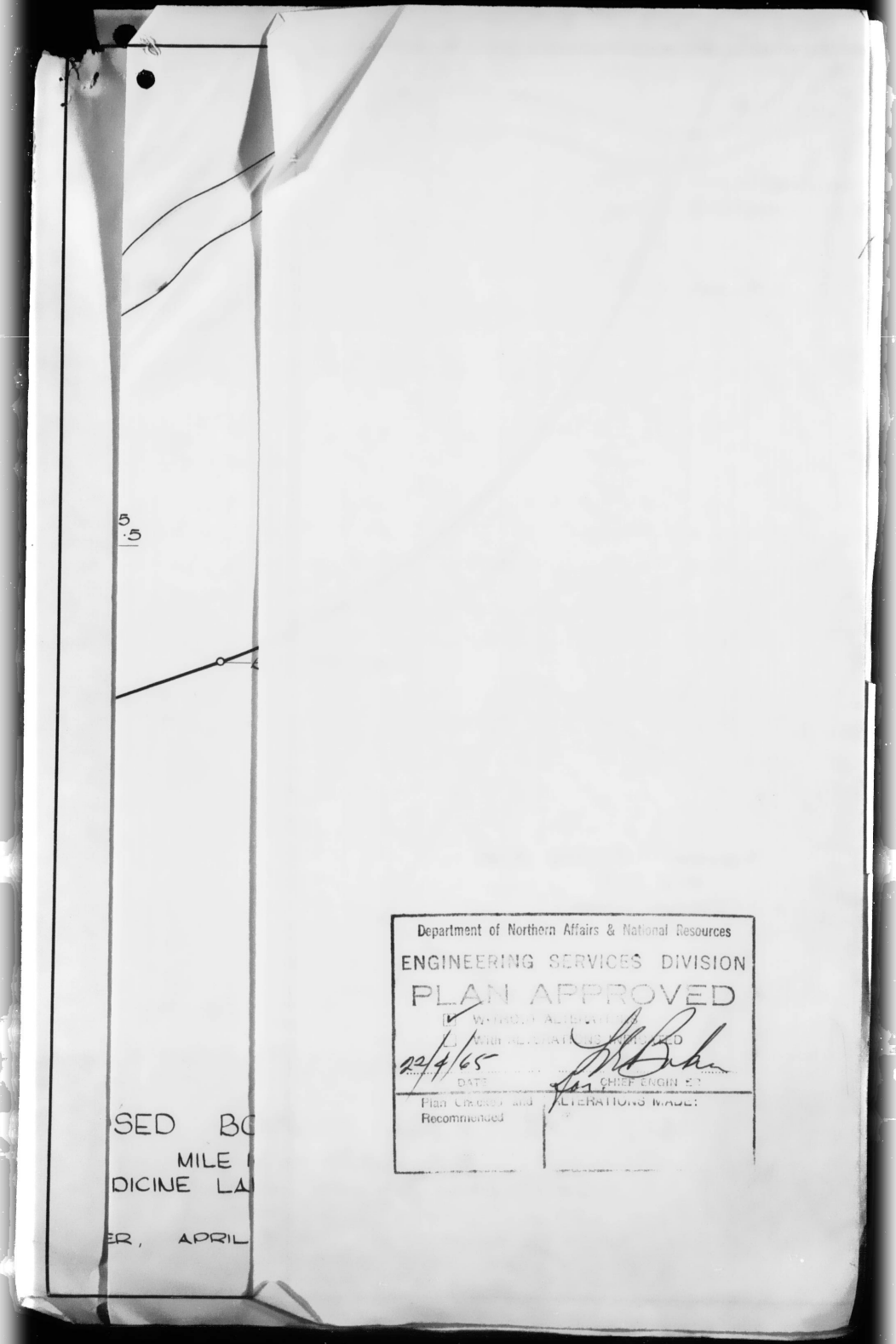

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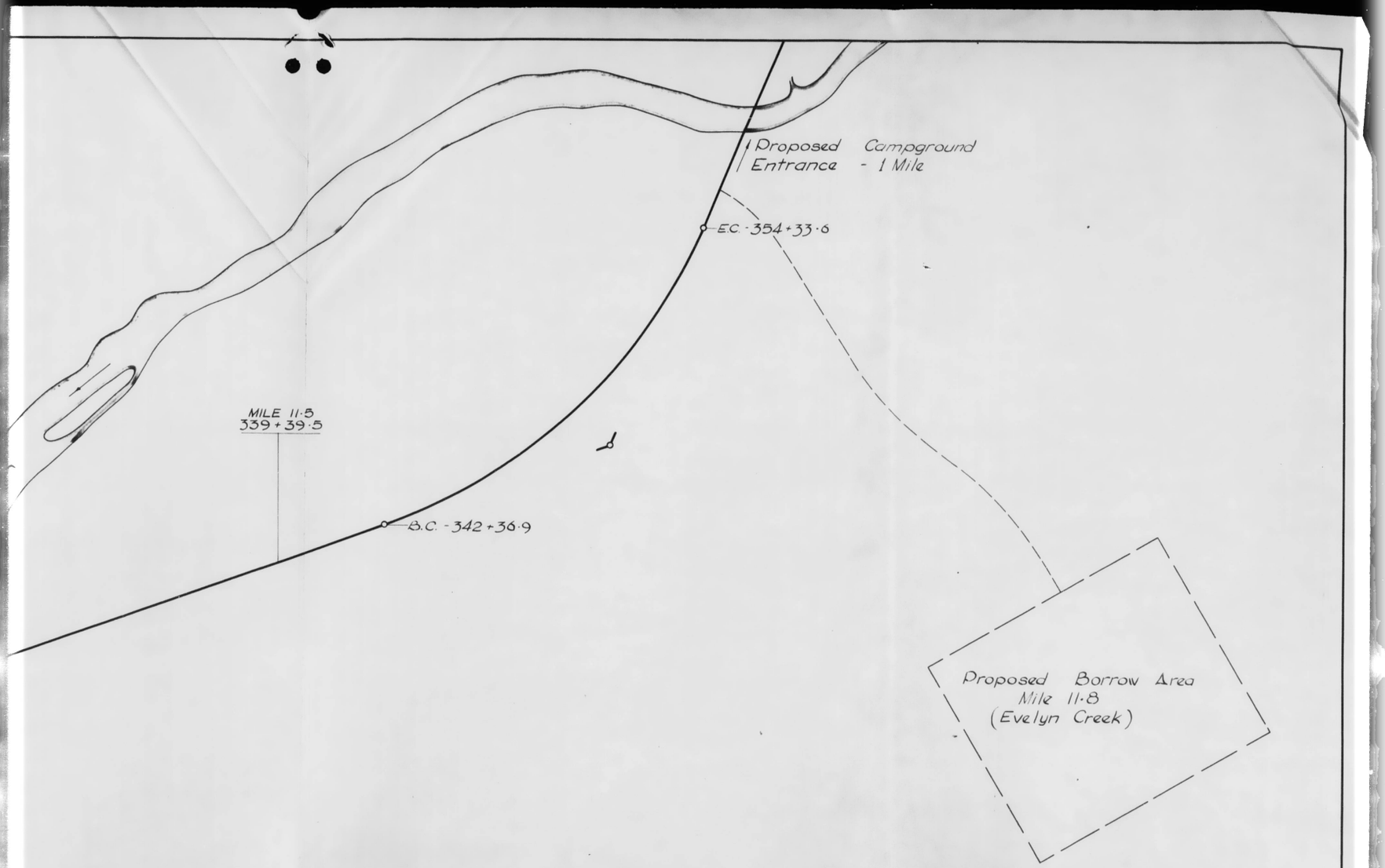

PROPOSED BORROW AREA LOCATIONS

MILE 10·7 & MILE 11·8
MEDICINE LAKE - MALIGNE LAKE ROAD

JASPER, APRIL 5, 1965. SCALE - 1" = 200'

TEMPORARY FILE

FILE NO. J 60-2

TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO Plowman 13-4-65

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
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pt 7

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CANADA

Department of Public Works **Ministère des Travaux publics**

Development Engineering Branch

J. 60-2.

your file / votre dossier

our file / notre dossier 90-3-24

Ottawa, April 14, 1965

Mr. J.R.B. Coleman,
Director,
National Parks Branch,
Department of Northern Affairs and
National Resources,
Norlite Building,
Ottawa, Ontario

CODE APR 28 10 54 AM '65

NATIONAL PARKS BRANCH
ASSIGNED TO

U 59888

Dear Mr. Coleman:

Re: Maligne River Bridge Mile 3.8
Jasper National Park

We are enclosing three preliminary prints of the General Layout of this bridge including railing details. We would appreciate your comments on the following points at your earliest convenience:

(a) Following recent discussions with members of your staff, details of the handrail and the layout of the median strip and handrails are as shown on the plan. You will also note the alternative location of the top rail on the sidewalk side of the handrail. Would you please advise if the proposed design is satisfactory to you.

(b) We have requested our Banff office to provide us with information with regard to providing satisfactory surfacing on the bridle path on the bridge, after discussing the matter with the Parks Superintendent.

(c) You will note that we have indicated the local broken field stone facing on the abutments as requested.

Please include any other suggestion you may have with regard to the bridge.

Yours sincerely,

G.T. Clarke

G.T. Clarke
Chief Engineer

encls.

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pt 7

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CANADA

Department of Public Works **Ministère des Travaux publics**

Development Engineering Branch

APR 13 10 01 AM '65

CODE J60-2

your file / votre dossier J.60-2
our file / notre dossier 90-3-21

Ottawa, April 12, 1965

Mr. J.R.B. Coleman,
Director,
National Parks Branch,
Department of Northern Affairs
and National Resources,
Ottawa, Ontario

Dear Mr. Coleman:

Re: Maligne River Bridge, Mile 14.8, Medicine Lake
Maligne Lake Pond, Jasper National Park

I wish to refer to your letter dated April 5, 1965.

I am informed that, at a meeting attended by Messrs. Savage and Heyboer of your department, and Messrs. Foures and Stamer of this department, the points raised in your letter were resolved.

I refer particularly to items 2 and 4. Item 2 refers to the number of pylons, it has been decided to use 4 pylons. Item 4, the 32 ft. roadway is specified for bridges on this highway. An 8 ft. bridle path and two 4 ft. sidewalks were also specified for this particular site.

Detailed drawings will be sent to you when they have been completed.

Yours sincerely,

G.T. Clarke

G.T. Clarke
Chief Engineer

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Parcs Canada

Mr. G.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ontario.

Ottawa (4), April 7, 1965.

J.60-2

Attention: Mr. Foures

Dear Sir:

Maligne River Bridge
Mile 3.8 Medicine Lake Road

— Attached is a copy of a memorandum and photographs received from the Superintendent, Jasper National Park.

We trust you will include these comments with those submitted earlier on the same subject and act accordingly.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

Plowman/ob
c.c. Regional Director, Western Region
Superintendent, Jasper National Park

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Mr. G.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ont.

Ottawa 4, April 5, 1965.

J.60-2
90-3-21

J 64

Dear Sir:

Maligne River Bridge, Mile 14.8, Medicine Lake
Maligne Lake Road, Jasper National Park

In reply to your letter of March 24, 1965 the following comments are drawn to your attention.

1. It is difficult to give approval of the design on the basis of plans and sketches received to date. The details of the construction will be required to properly examine the structure.

2. We are interested in your reasoning behind the selection of eight pilons rather than the customary four.

3. It is difficult to understand, on the basis of these plans, the reasons for the triangular supporting legs.

4. We note that the roadway is not the same width as in other structures. We would be interested in knowing the reason for this difference.

Upon receipt of more detailed plans and some explanation of the points raised above, we will be in a better position to approve the design of this structure.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

Plowman/sw

RKP

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pt 7

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~~DRAFT~~

Ottawa (4), April 2, 1965.

Our File J60-2

MR. J.E. SAVAGE

Maligne River Bridge Mile 14.8
Medicine Lake Maligne Lake Pond Jasper National Park

No plan with grading of walks at the end of the bridge is available. The model shows walks for horses and pedestrians on both sides of the bridge, so room for horse traffic should be provided on this bridge.

If the preparation of plans for Mile 14.8 is going to delay the tender call, it is suggested to have the construction of the bridges at Mile 10.6 and 11.8 on a single contract as soon as they are ready. The construction of the bridge at mile 14.8 to be on a later date, if necessary.

Railings have to be changed as instructed in our latest letter to DPW.

The general layout indicated 8 pylons which are to many. 4 pylons is more than enough.

The triangular legs on the piers seems to be flush with the outside of the bridge according to the elevation and perspective. The plan does not indicate these triangular legs at all and the model has a wider over hang. I agree with Robbie (see his letter dated Oct. 2, 1964), in which he asks for more pier detail and he referred to the report on the Maligne Lake Development, which we have not received yet. Either a more professional type perspective or better a detailed drawings showing these legs are required before approval is recommended.

I talked to Peter Coe about this bridge and he felt that 1:3 slopes would do better than the 2:3 slopes as shown. This would mean about 20 feet extra wing walls for the abutments. The pylons could be moved more away from the bridge as shown on enclosed sketch. I agree with his view.

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pt 7

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I noticed a roadway width of 28' compared with a 32' road way on the other bridges. I do not know the reason for this, perhaps less traffic.

Enclosed is a list of available drawings for the Athabasca river section to Maligne lake. I phoned Mr. G. Brittain of DPW and he told me that the rest of the drawings will be available some time this year.

Heyboer/ob

P.J. Heyboer.

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pt 7

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AVAILABLE DRAWINGS

Drawing	Date	Description	prepared by	Remarks
	21/2/64	Proposed location Mile 1 - 3.9 Maligne Canyon	V. Zay Smith Associates Ltd., Calgary prepare for Public Works Development Engineering Banff, Alta.	plan only
131-129	5/3/64	Medicine Lake - Maligne Lake road Mile 10.5 - 12.2 Whisky Creek revision	Dept. of Public Works Development Engineering Branch	Plan and profile
131-108	24/6/63	Athabaska river section Maligne Lake road	same	profile only
	25/2/64	Profile Athabasca River bridge - Maligne Canyon Mile 0.0 - 3.9 Medicine Lake road	same	profile only
131-90	11/2/64	Contract drawings Mile 5.5 to Mile 9.5 Medicine-Maligne Lake road.	same	plans & profiles
131-107	24/6/63	Athabaska river section Maligne Lake road (from bridge over Athabaska river to Mile 0 + 00		plans only scale 1" = 200' 1" = 50' and unfinished drawings
		Maligne Canyon Tea House and viewpoint		plan scale 1"= 50'

P.J. Heyboer

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NORTHERN ADMINISTRATION BRANCH

TEMPORARY FILE

FILE NO. J 60-2.

TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO

Heyboer. 30-3-65

REFERENCE				DISPOSAL			
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Savage	56456	5-4-65	[illegible]			RKP.	[illegible]

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pt 7

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CANADA

Department of Northern Affairs and National Resources National Parks Branch

Ministère du Nord canadien et des Ressources nationales Direction des parcs nationaux

Savage

REGIONAL DIRECTOR,
WESTERN REGION.

Jasper, Alta. March 31, 1965

our file / notre dossier J.60-2
your file / votre dossier

APR 5 11 11 PM '65
CODE J 60-2

NATIONAL PARKS BRANCH
ASSIGNED TO

056456

Maligne River Bridge -
Mile 3.8, Medicine Lake Road

Please refer to your letter of March 11th concerning the above bridge. No comment was made in reply, as this office was in agreement with the decision made.

In a recent conversation with Mr. Arnison, it was indicated that the Head Office of the Department of Public Works is of the opinion that the treatment referred to in your letter, i.e. treatment "B" Sheet 1, would provide for a rock facing similar to the Astoria River bridge on the Banff-Jasper highway. The facing on this bridge is of a pink rock from the Jonas Creek area and is square cut. I am sure that this was not the intent of your telex to the Director, nor the Director's letter to Mr. Clarke, the Chief Engineer of the Department of Public Works, dated March 15th.

Your letter to Mr. Arnison of March 15th indicates that a split field stone, which this office also favours, would be used. It would seem that the type of rock was not actually stated to Mr. Clarke - hence the confusion. I enclose pictures of the stone work that exists at Maligne Canyon Teahouse and also the Astoria River bridge, to indicate the type of rock work which is in each.

Pearce/ak

K. B. Pearce
for K. B. Mitchell,
Supt., Jasper National Park.

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pt 7

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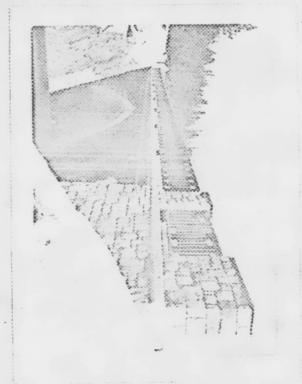



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File/dossier J60-2
pt 7

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Mr. G.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ontario.

Ottawa 4, March 29, 1965.

J.60-2

Dear Mr. Clarke:

Railings for Maligne River Bridges
Between Athabasca River and Maligne Lake

Further to the telephone conversation of March 26th between Mr. Foures and Mr. Heyboer, we would like to have the new beam type railing as shown on -- enclosed sketch No.2.

Where pedestrian traffic is anticipated, such as at Maligne Canyon and Maligne Lake, we would like the beam type railing with the extra rail as shown on -- enclosed sketch No.1.

If horse traffic ways have to be provided for these last two bridges, then sidewalks on both sides are required and the inner railing along the bridlepath could be as shown on sketch No.2.

If no horse traffic is anticipated on the Canyon bridge, a sidewalk on the downstream side is required and none on the upper. The railings to be extended over a distance of approximately 25' on each side of the bridges and pylons to be provided for in all cases.

For further details, reference is made to the enclosed N.C.C. drawings. This type of railing should meet the loadings as mentioned in the latest A.A.S.H.O. specifications.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

Heyboer/sw

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File/dossier J60-2
pt 7

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Mr Baker
Mr Plowman
Mr Savage (file)
Mr Hussey

File please

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J 60-2
K 80
W 80

Notes on Telephone Conversation with
Mr. T.C. Fenton, 11:00 A.M. March 26th

Regarding the design of bridge railings between Athabasca River and Maligne Lake, Mr. Fenton advised that pedestrian type railings would be required on the bridge at Maligne Canyon and the one at Maligne Lake. On the canyon bridge he felt that a sidewalk on the lower side, that is the downstream side might be sufficient. However, if there is a requirement for horse traffic as well, then sidewalks may be necessary on both sides. He was under the impression that both sidewalks and horse traffic ways would have to be provided on the Maligne Lake structure.

On the matter of railings he had no objections to using the beam type railing with provision of an extra rail where there is pedestrian traffic anticipated i.e. Maligne Canyon and Maligne Lake structures. He was in favour of pylons since his personal opinion favoured them from the aesthetic viewpoint. I indicated that we would ask D.P.W. therefore on these structures to design the new beam type railing with an extra rail for pedestrians on the Maligne Canyon and the Maligne Lake bridge and provide pylons in all cases.

Regarding the Radium water supply Mr. Fenton had received a telex from Head Office saying that Radium Junction should be advised that 27 million gallons would be made available to them and during the period of the next five years they would be expected to investigate sources for a permanent and adequate water supply for the Junction. In other words, we are rejecting their proposal that we provide 50 million gallons. However, the wire did indicate that this water would be supplied via existing lines along the highway. Mr. Fenton pointed out that this three inch galvanized line had in actual fact not been used for a number of years, that it was subject to a number of breaks and in actual fact we were supplying via the campground. I advised him to continue with design on the basis that any and all water to Radium Junction would be supplied via our campground system.

Installation of utilities at Waterton - Mr. Fenton was requested by telex to send a reply to our letter that was in the mail regarding the water system at Waterton. He advised that he had not received the letter. I therefore indicated that we would not look for a reply from him until Monday. He is suggesting that tender call be delayed a little beyond our early April date so the contractors would have a better opportunity of looking at the system and carrying out the work in more favourable weather conditions. He is to give us a positive recommendation in this regard.

On the matter of the pump we had already indicated in the telex that if the total rentals were to approach the cost of purchasing a pump, then he should consider the possibility of buying a pump for general regional use. He will advise us in this regard.

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pt 7
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NORTHERN ADMINISTRATION BRANCH

TEMPORARY FILE

FILE NO. D

TEMP. FILE NO.

SUBJECT J 60-2

MAIN FILE IS CHARGED TO

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REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
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Development Engineering
Branch

REFER TO FILE NUMBER
90-3-21

CANADA
NATIONAL PARKS BRANCH
DEPARTMENT OF PUBLIC WORKS

ASSIGNED TO
Savage

March 24, 1965.

MAR 26 1 56 PM '65

CODE J60-2

Mr. J. R. B. Coleman,
Director,
National Parks Branch,
Department of Northern Affairs and
National Resources,
Ottawa, Canada.

Dear Mr. Coleman:

Re: Maligne River Bridge, Mile 14.8, Medicine Lake,
Maligne Lake Pond, Jasper National Park

Under letter dated September 18, 1964, I sent you three prints of a preliminary general layout for the above crossing, and in your acknowledgment of October 2, 1964, you indicated that you wished to review the report on the Maligne Lake development now being prepared by this branch, before commenting on the structure; you also indicated that you would like to have a perspective view of the bridge.

I must admit that we have been very slow in completing this report, due to shortage of staff; however, the report is now in final draft form, and we expect to forward it to you by mid-April.

It is my understanding that you have provided funds for the construction of the bridges at Miles 10.6, 11.8 and 14.8 in your 1965-66 estimates and that you wish to have the work put under way as a single contract as soon as possible. In view of the urgency for this project, enclosed is a copy of one of the plates which will accompany the report, showing a perspective of the bridge at Mile 14.8, and on the basis of this perspective and the general layout plan, which you now have, you may wish to approve the design.

page 2.....

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Our Structures Division are now preparing the contract documents for the bridge at Miles 10.6 and 11.8; however, due to shortage of staff, the preparation of plans for the bridge at Mile 14.8 is going to delay the tender call. As we have all site information, test piles reports, soils information and preliminary design completed for the bridge at Mile 14.8, to meet your schedule I propose to employ a consultant to finish the design and prepare plans. The calling of tenders and supervision of construction will be carried out by our own staff. It is proposed to employ the consultant on a per diem basis, with a maximum payment of 3.85 per cent of the estimated cost of $225,000., which is the rate for design only.

Yours very truly,

G. T. Clarke

G. T. Clarke,
Chief Engineer.

Enclosure

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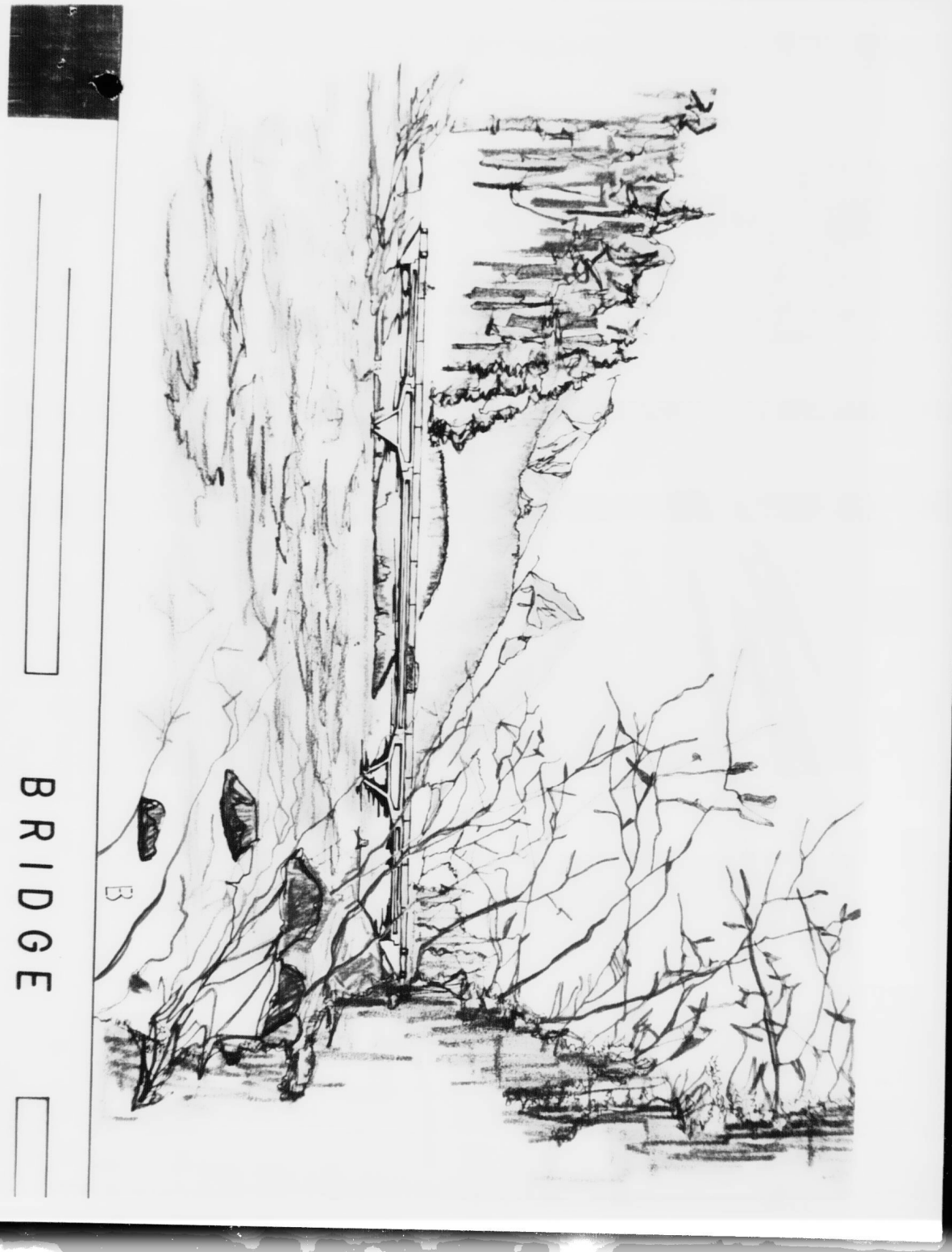

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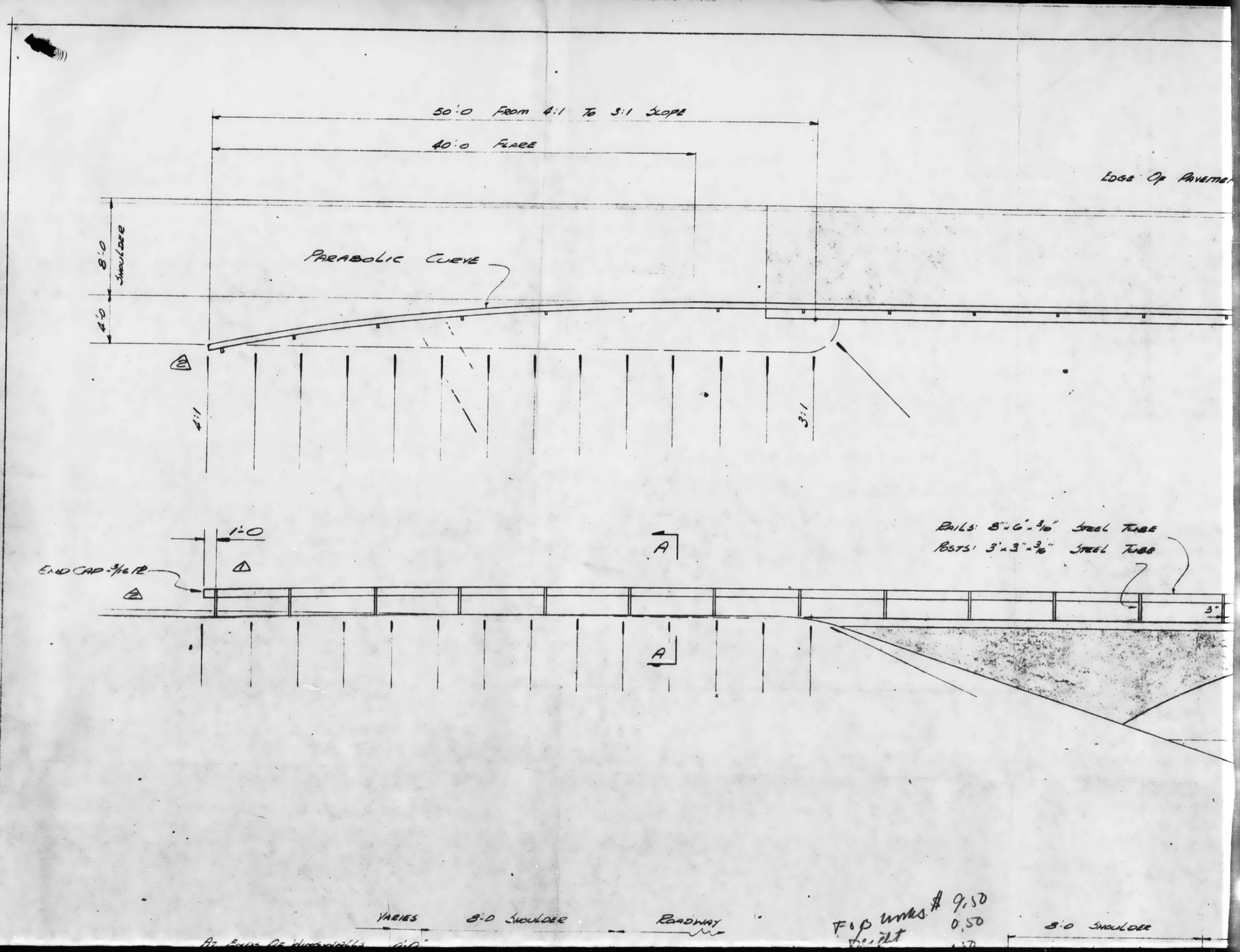

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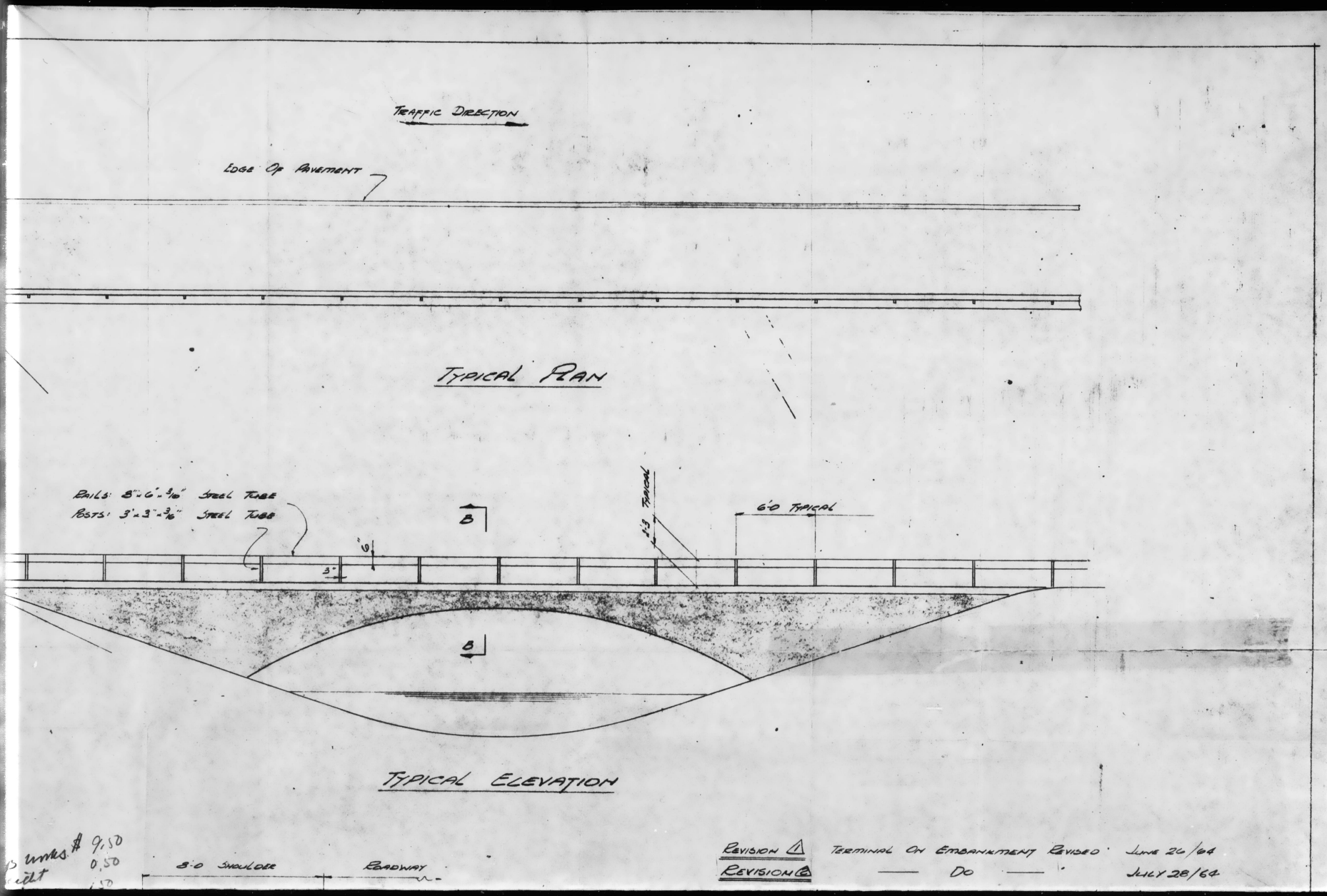
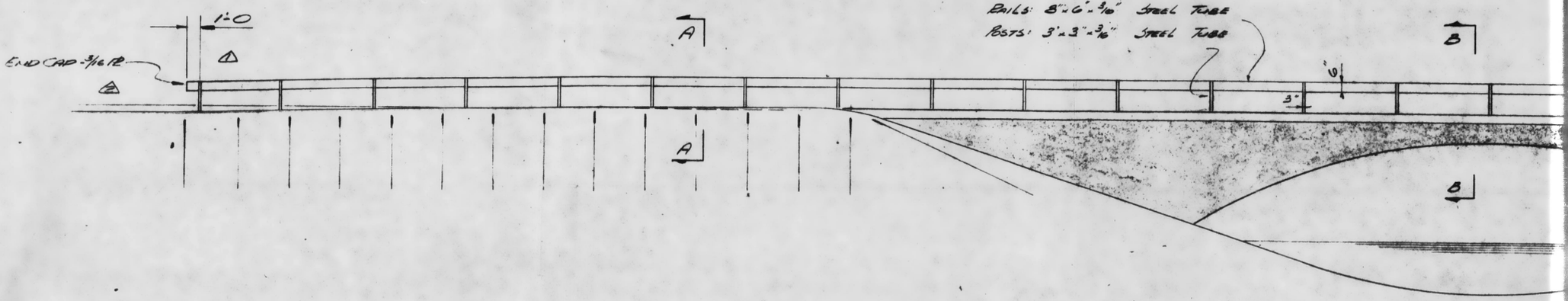
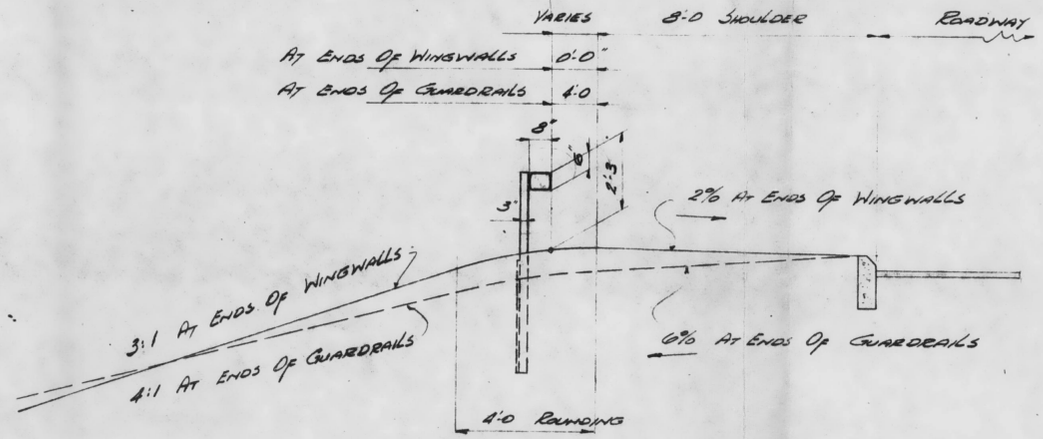

TRAFFIC DIRECTION
EDGE OF PAVEMENT
TYPICAL PLAN
RAILS: 8"x6"x3/16" STEEL TUBE
POSTS: 3"x3"x3/16" STEEL TUBE
B
6"
3"
2'-3" TYPICAL
6'-0 TYPICAL
B
TYPICAL ELEVATION
8'-0 SHOULDER
ROADWAY
REVISION 1 TERMINAL ON EMBANKMENT REVISED JUNE 26/64
REVISION 2 —— DO —— JULY 28/64

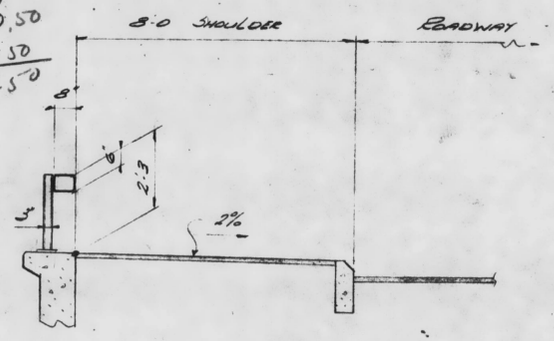


TYPICAL ELEVA



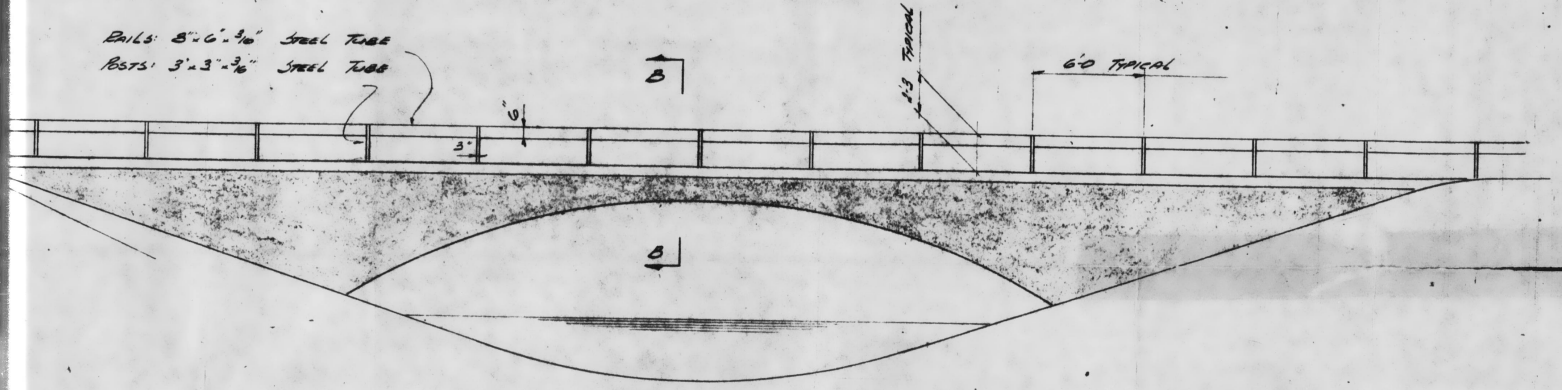
SECTION 'A-A'

F.O.B. works $ 9.50
freight 0.50
install 1.50
$ 11.50



SECTION 'B-B'

3 OF/DE



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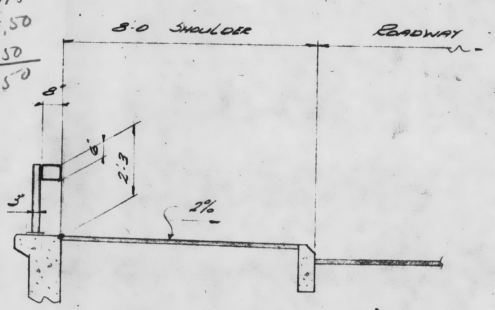

SECTION 'B-B'

REVISION 1	TERMINAL ON EMBANKMENT REVISED	JUNE 26/64
REVISION 2	—— DO ——	JULY 28/64

PROPOSED N.C.C. GUIDERAIL

TYPICAL INSTALLATION

DELEUW CATHER & COMPANY OF CANADA LTD.

JUNE 2, 1964

DWG No C194-2B

1 of 2

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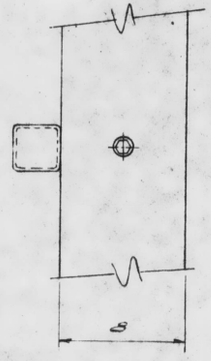


RAILS 8 - G. - 3/16 TUBE @ 16.85'

POSTS 3 - 3 - 3/16 TUBE @ 6.86'

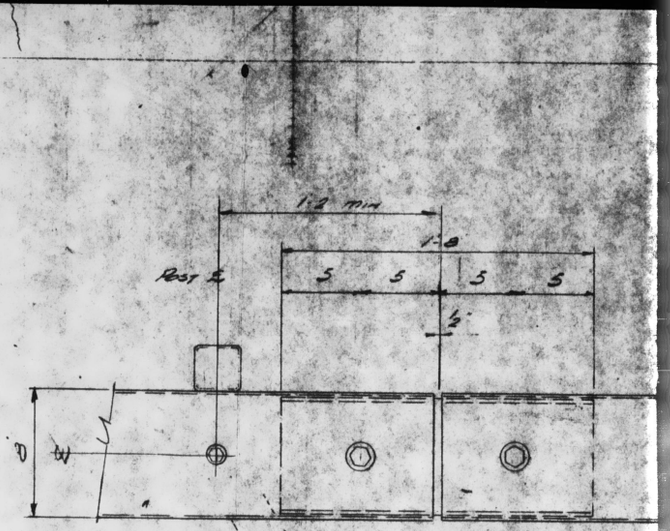
3/16 THK CAP

5/16" Ø REG HEX HEAD BOLT

2 - 3/8 Ø REG HEX HEAD BOLTS (3/8 Ø HOLES IN POST)

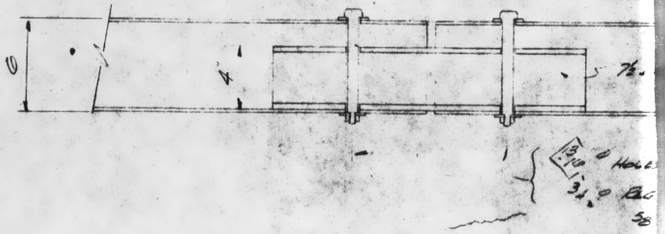
BRACKET 3/16 PLATE WELDED

POST CONNECTION DETAIL



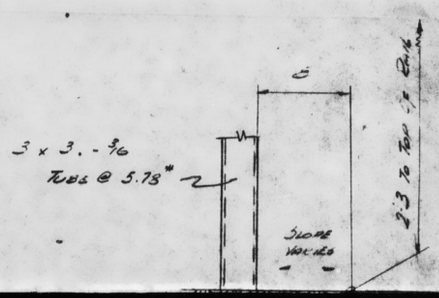
8 - G. - 3/16 TUBE = 16.85

PLAN



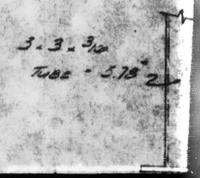
SECTION ALONG E

TYPICAL RAIL SPLICE DETAIL



3 x 3. - 3/16 TUBE @ 5.73"

SLOPE VARIES



3 - 3 - 3/16 TUBE - 5.73"

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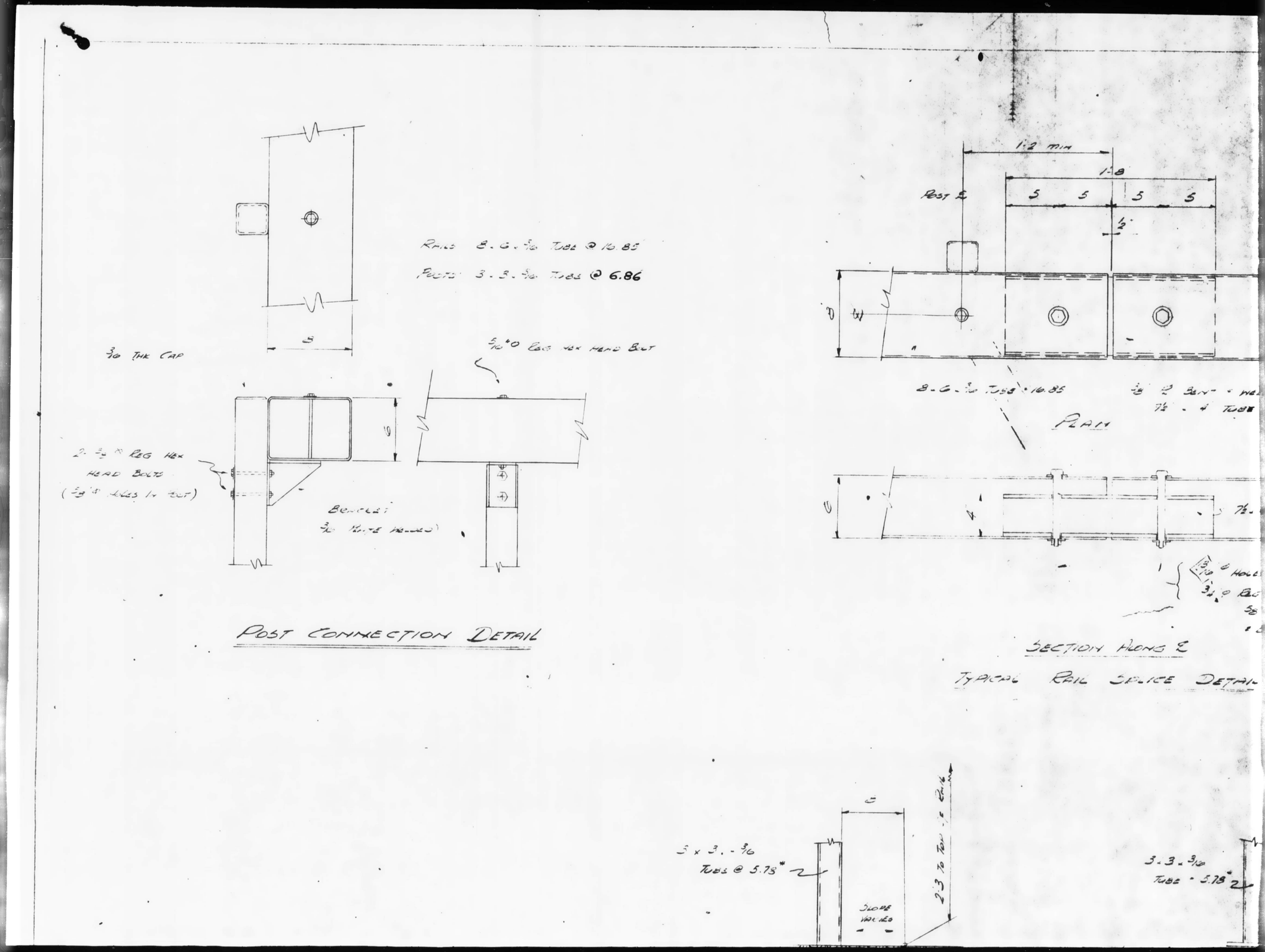

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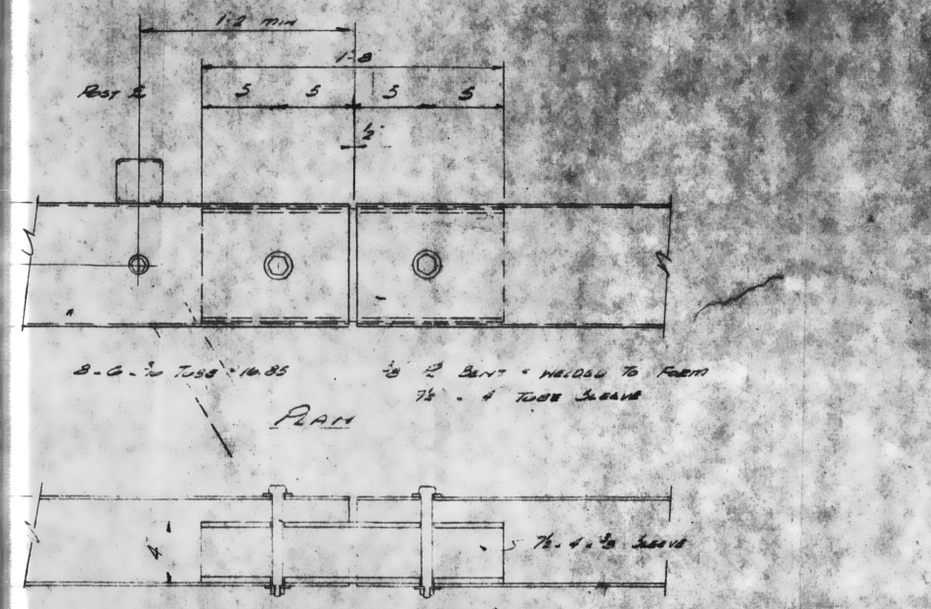
Archives nationales du Canada



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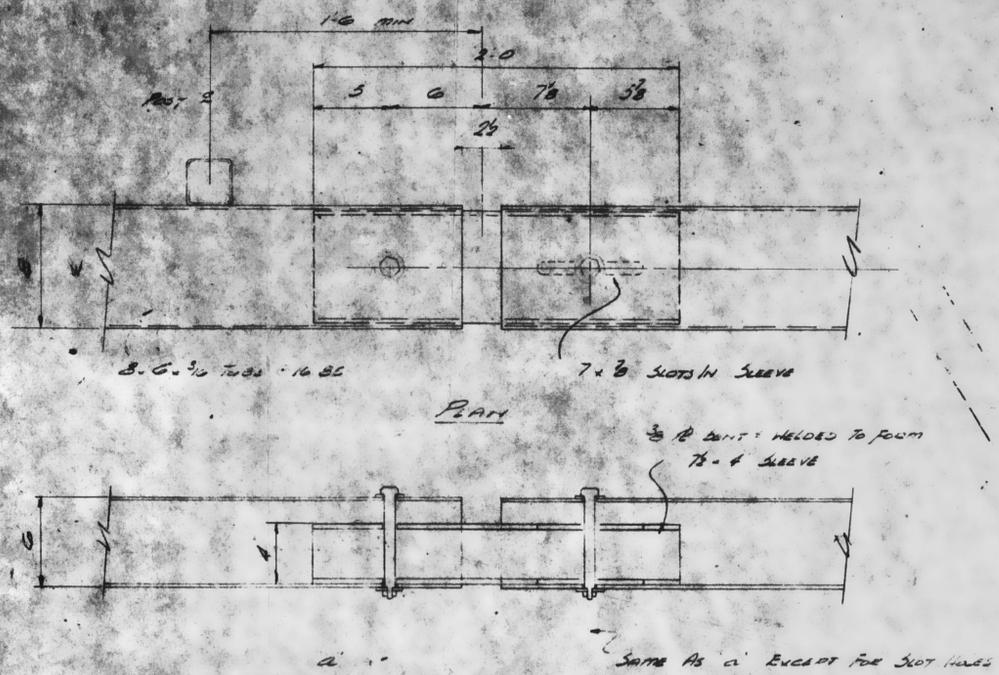

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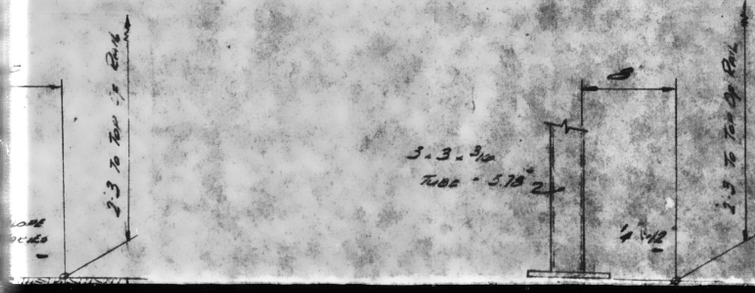
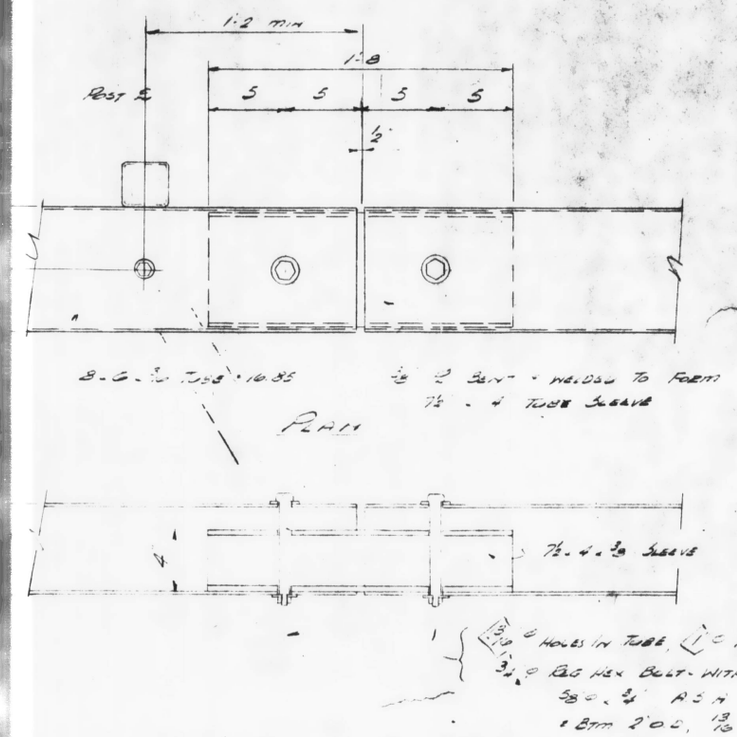


NOTES:

① RAIL SPLICES TO OCCUR @ 22'-½ CRES OR AS REQUIRED BY TUBE STOCK LENGTHS

② EXPANSION JOINTS TO OCCUR AT STRUCTURES HAVING EXPANSION DEVICES.

③ MATERIAL: C.S.A. SPECIFICATION G40.4 OR A.S.T.M. SPECIFICATION A7



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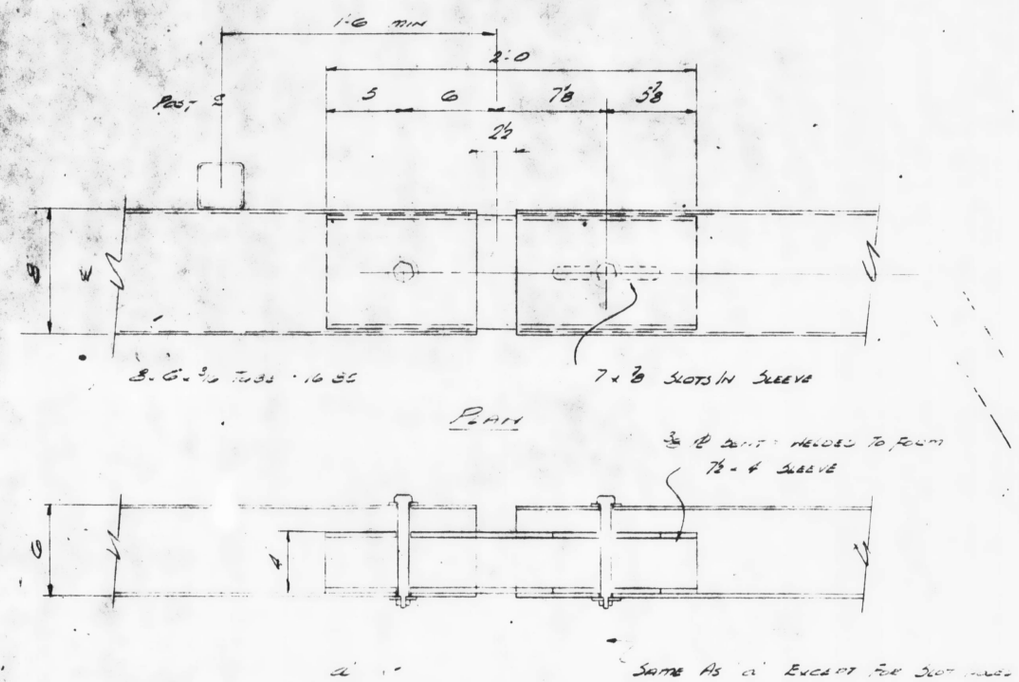

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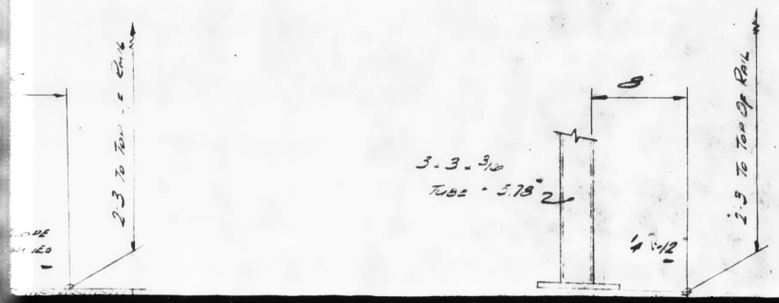
TYPICAL EXPANSION JOINT DETAIL



NOTES:

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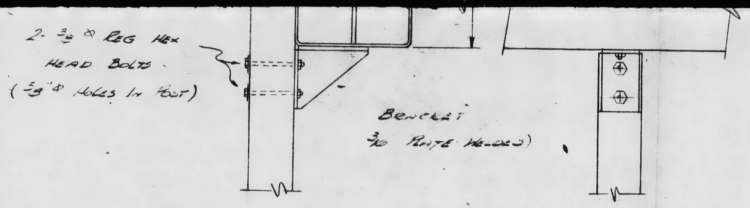
② EXPANSION JOINTS TO OCCUR AT STRUCTURES HAVING EXPANSION DEVICES.

③ MATERIAL: C.S.A. SPECIFICATION G40.4 OR A.S.T.M. SPECIFICATION A7



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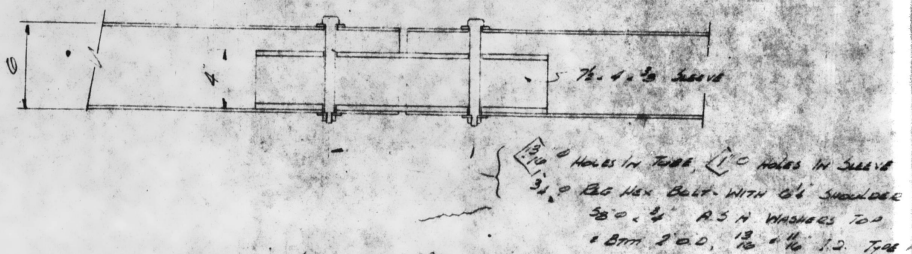

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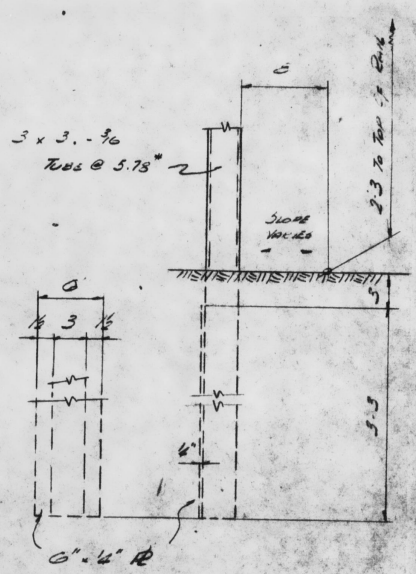

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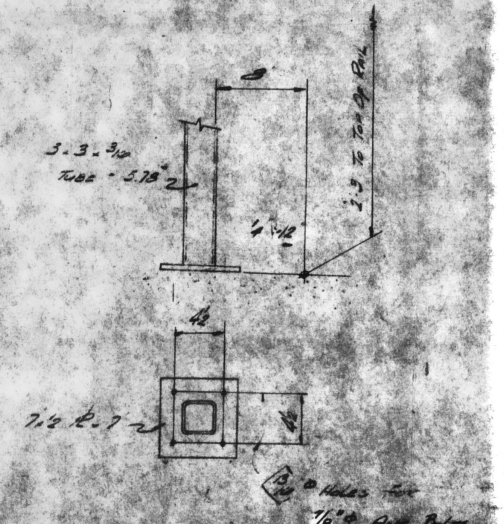
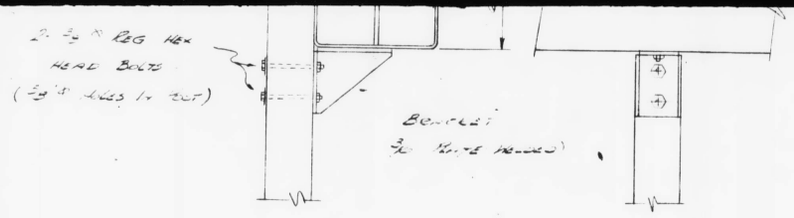


ON STRUCTURES

ANCHORAGE DETAILS



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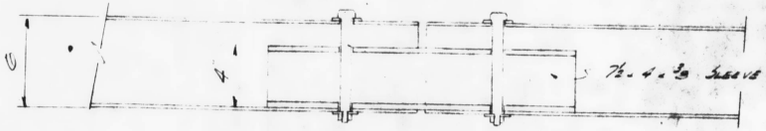

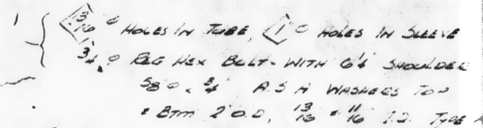

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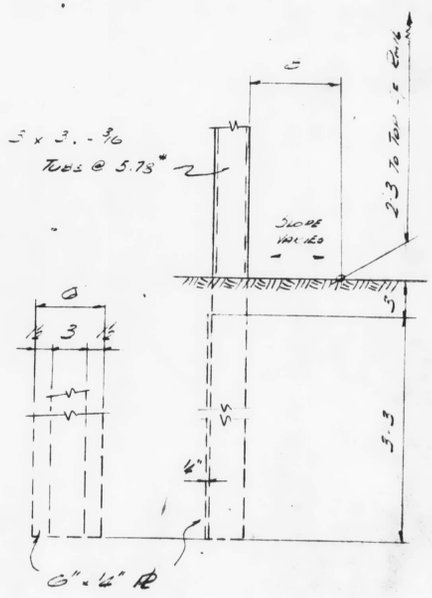

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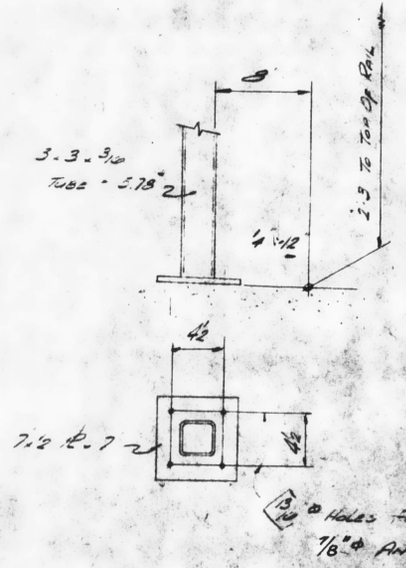
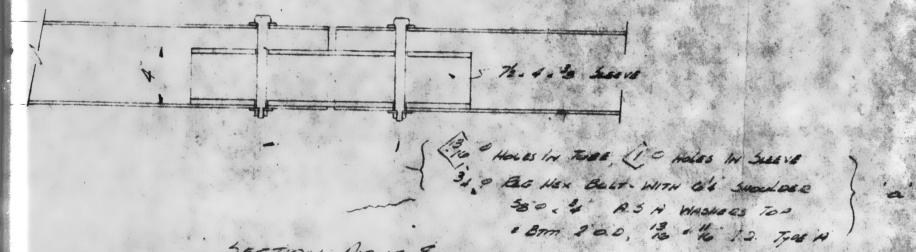


ON STRUCTURES

ANCHORAGE DETAILS

3 OF/DE

REPEAT
REPETITION



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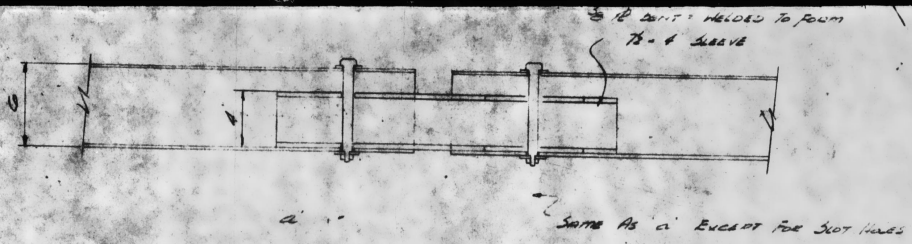

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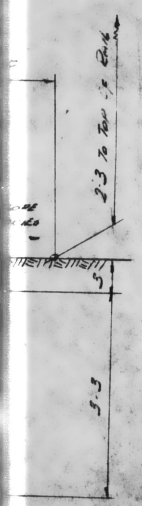

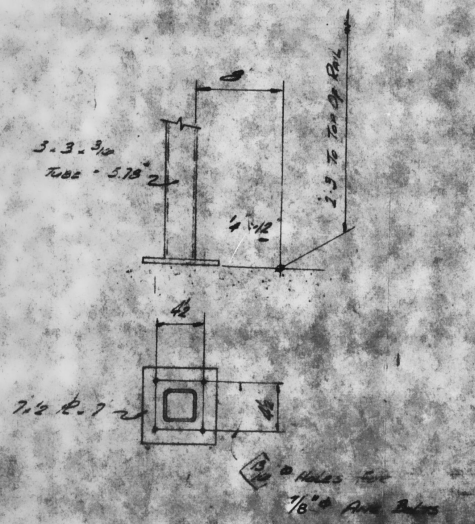

ON STRUCTURES

NOTES:

① RAIL SPLICES TO OCCUR @ 42" CTRS OR AS REQUIRED BY TUBE STOCK LENGTHS.

② EXPANSION JOINTS TO OCCUR AT STRUCTURES HAVING EXPANSION DEVICES.

③ MATERIAL: C.S.A. SPECIFICATION G40.4 OR A.S.T.M. SPECIFICATION A7

④ PAINT ONE SHOP COAT & 2 FIELD COATS - COLOUR TO BE AS SPECIFIED BY N.C.C.

REVISION △ TERMINAL ON EMBANKMENT REVISED - JUNE 26/64

REVISION ▲ END POST & ANCHOR BLOCK DELETED JULY 28/64

PROPOSED N.C.C. GUIDERAIL

TYPICAL DETAILS

DELEUW CATHER & COMPANY OF CANADA LTD

JUNE 9, 1964 DWG. No C194-2D

2 of 2

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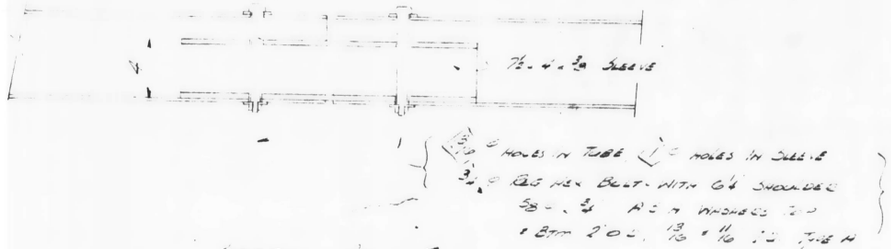

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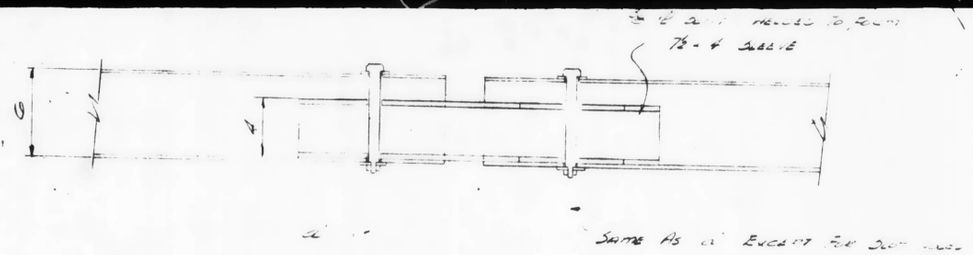

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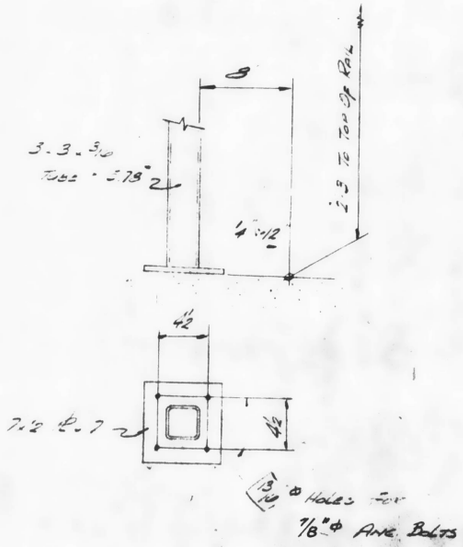

ON STRUCTURES

DETAILS

NOTES:

① RAIL SPLICES TO OCCUR @ 42" CTRS OR AS REQUIRED BY TUBE STOCK LENGTHS

② EXPANSION JOINTS TO OCCUR AT STRUCTURES HAVING EXPANSION DEVICES.

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④ PAINT ONE SHOP COAT & 2 FIELD COATS - COLOUR TO BE AS SPECIFIED BY N.C.C.

REVISION △1 TERMINAL ON EMBANKMENT REVISED - JUNE 26/64

REVISION △2 END POST & ANCHOR BLOCK DELETED JULY 28/64

PROPOSED N.C.C. GUIDERAIL

TYPICAL DETAILS

DELEUW CATHER & COMPANY OF CANADA LTD

JUNE 9, 1964 DWG. No C194-2D

2 of 2

FILE COPY

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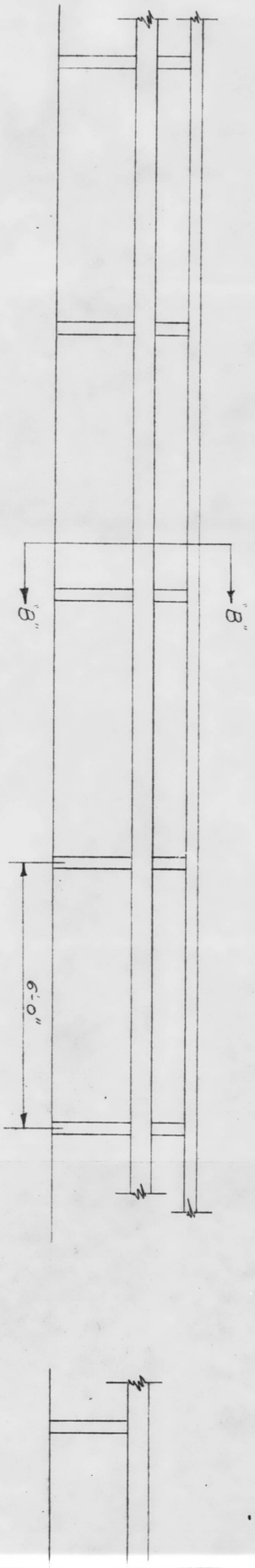
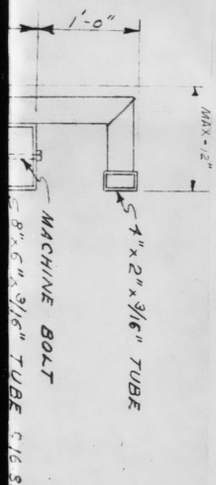


ELEVATION OF GUARDRAIL

SCALE: 1/2"=1'-0"



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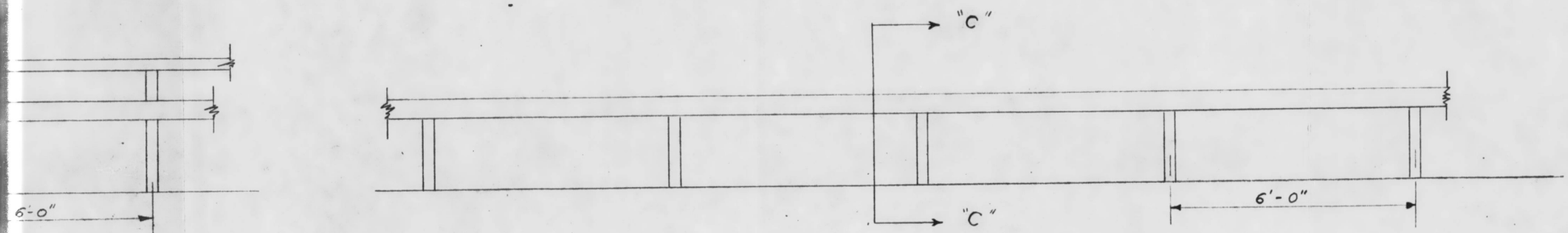
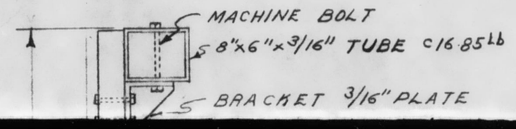


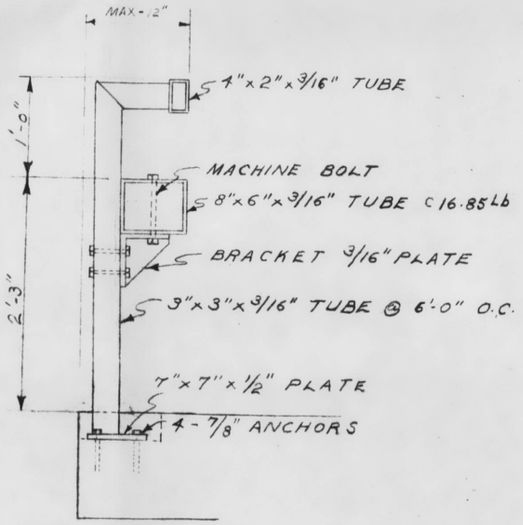
ELEVATION OF GUARDRAIL
SCALE: 1/2"=1'-0"



"8"

6'-0"

ELEVATION OF GUARDRAIL
SCALE: 1/2"=1'-0"



SECTION "B-B"
SCALE: 1"=1'-0"

SKETCH No. 1

ELEV

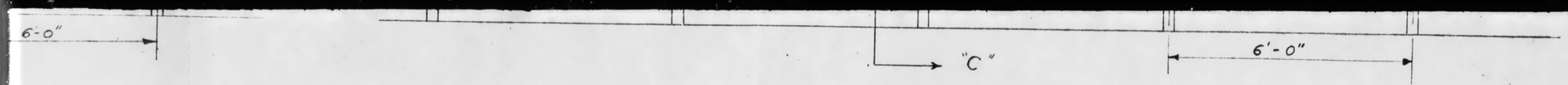
2'-3"

SECTI

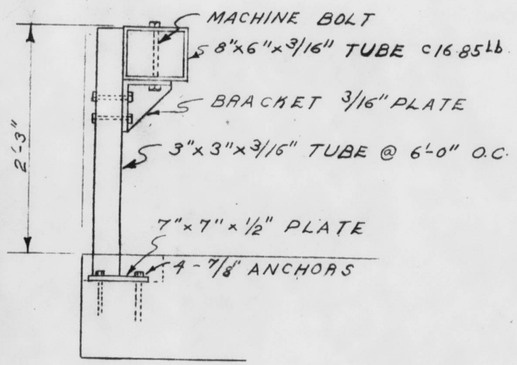
SCALE

SKET

3 OF/DE



ELEVATION OF GUARDRAIL
SCALE: 1/2"=1'-0"



SECTION "C-C"

SCALE: 1"=1'-0"

SKETCH No. 2

REVISIONS	
DATE	DESCRIPTION

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

GUARDRAIL DETAILS

SCALE: AS SHOWN DATE:

DESIGNED
DRAWN T.A.G.
CHECKED
FILE No.

APPROVED
CHIEF ENGINEER

INDEX No.

SHEET No. 1

JOB No.

FILE COPY

NORTHERN ADMINISTRATION BRANCH

TEMPORARY FILE

FILE NO. J 60-2 TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO Heyland. 10-3-65

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
Savage	31979	17-3-65	DH				
Galvin		10/5/65	[illegible]	T		[illegible]	

NA -CR-10

Parks Canada
Parcs Canada

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File/dossier J60-2
pt 7

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REFER TO FILE NUMBER

NATIONAL PARKS BRANCH
ASSIGNED TO
DEPARTMENT OF PUBLIC WORKS
Development Engineering Branch.

MAR 17 2 22 PM '65

CODE J60-2

Received
may 10/65

Ottawa, March 16, 1965.

Mr. J.E.Savage,
Chief Engineering Division,
National Parks Branch,
Northern Affairs and National Resources,
Norlite Building,
Ottawa, Ontario.

Dear Mr. Savage:

Re: Road Development Program - Athabasca River to Maligne Lake

I refer to our telephone conversation of Friday, March 12, and enclose as requested a Line Diagram which relates mileages used for contract purposes on the above program to accumulated mileages from Jasper. It is conceivable that you might wish to adopt a third alternative, namely to measure mileages with the Jasper Edmonton Highway. Will you please let me know your wishes.

There have also been a number of conversations with Mr. Binks, myself, and others concerning a revised program for this project, based on making use of a further $225,000, for a total of $1 million (the original program was as indicated in the memorandum on a meeting held January 13, copies of which were forwarded to you).

This is attached. You will notice that it totals an estimated $1,400,000, but that we suggest withholding tender action on the contract from Mile 9.5 to 14.8 until it is established whether or not funds can be made available. You will also note that provision is now made to put all four bridges to tender.

this may be changed.

Yours very truly,

H.M.Millar,
Chief,
Technical Co-ordination and
Administration Division.

Parks Canada
Parcs Canada

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pt 7

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ANNEX B.

CONSTRUCTION PROGRAM FOR ATHABASCA RIVER TO MALIGNE LAKE
AMENDED TO MARCH 12,1965.

Carry-over Projects	1965-66	Remarks
(i) Grading Mile 0-5.5 Paving Mile 0.9-5	10,000	To complete placing of plant mix and minor clean-up delayed by rain.
New Work		
(ii) Grading Athabasca River to Maligne Canyon including bridge over Maligne River 4 miles		
(a) Grading Mile 0.1 to 4.1	250,000	One contract. Tender due June 22.
(b) Bridge Mile 3.8	100,000	
(iii) Medicine-Maligne Lake Road Mile 9.5-14.8		
(a) Grading	375,000	Tentative only if funds are available, otherwise postponed.
(b) Bridges Mile 10.7, 11.8 and 14.8	525,000	July 15 tender due date for bridges only.
(iv) Seeding, Mile 0 to 9.5	40,000	To be included in contract with seeding on JE Highway
(v) Engineering	100,000	
Total -	1,400,000	
In N.A. & N.R. Estimates -	775,000.	

NOTE: All mileages refer to contract mileages on Sketch Annex A.

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J60-2

G.T.Clarke, Esq.,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Building,
Ottawa.

Ottawa (4), March 15, 1965.

Dear Mr. Clarke:

Maligne River Bridge Mile 3.8
Medicine Lake Road - Jasper National Park

This will acknowledge receipt of sheets 1 and 2, indicating preliminary schemes of treatment of the above noted structure, under covering memorandum dated March 5th.

Our initial comments are as follows:

1. We prefer treatment "B" sheet 1 but with the railing pylons masonry faced to match the abutments.

2. We would like an inner railing along the bridle path similar to the one shown in treatment "D" sheet 2.

3. We would suggest that masonry for other structures to be built in the area such as parapets and walls be designed to match the bridge abutments.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

Plowman/eb
c.c. Supt. Jasper National Park.

R.M.P

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

J60-2

Ottawa 4, March 12, 1965.

Mr. G.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ont.

Attention: Mr. Binks

Dear Sir:

Re: Pipeline Crossing for Natural Gas Pipeline
Northland Utilities Ltd., Medicine Maligne Lake Road Contract

Attached is a copy of a letter from the Superintendent of Jasper National Park dated March 2, 1965 which is self explanatory. I am writing this letter to inform your Department that we are incorporating the following section into our Licence of Occupation with Northland Utilities Ltd.

> "That the Minister may upon notice to the Company utilize the right-of-way for any public purpose, but that in so doing he shall not unreasonably interfere with the exercise and enjoyment of the rights given to the Company under this easement, provided that where it is in the interests of the Park to provide roads capable of carrying heavy vehicular traffic or sewer or water mains which will cross the right-of-way in addition to those existing on the date this easement is granted, the Company will bear the expense of furnishing whatever protection is required for the pipeline at the location of the first five of such crossings."

I hope the above information is sufficient so that you may incorporate the necessary clauses into the road contract. Do not hesitate to contact us for further information.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

/hussey/ob
c.c. Superintendent, Jasper National Park

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

CANADA

Department of Northern Affairs and National Resources — National Parks Branch

Ministère du Nord canadien et des Ressources nationales — Direction des parcs nationaux

FILE

THE SUPERINTENDENT
JASPER NATIONAL PARK

OTTAWA 4, March 11, 1965.

our file / notre dossier J.29-5
your file / votre dossier J.60-2

RIGHT-OF-WAY FOR NATURAL GAS PIPE LINE
EAST GATE TO JASPER TOWNSITE
NORTHLAND UTILITIES LTD.

Thank you for your memorandum of March 2nd concerning the crossing of the above pipe line by the road from the Athabasca River to Maligne Canyon.

The draft of the licence of occupation for the right-of-way of the natural gas pipe line is being amended to include the clause suggested by you. This will be a clause similar to Clause 3 (j) of the Trans Mountain Oil Pipe Line easement.

The Engineering Division has been requested to communicate with the Department of Public Works as to what protection to the pipe line will be required and, no doubt, D.P.W. will issue appropriate instructions to their field staff.

have done R.K.P.

KELLY/FP

J.R.B. Coleman,
Director.

c.c. The Regional Director,
Western Region.

c.c. Mr. Savage

Mr Savage has seen the memo
R.K.P.

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

THE SUPERINTENDENT
JASPER NATIONAL PARK

OTTAWA 4, March 11, 1965.

J.29-5
J.60-2

RIGHT-OF-WAY FOR NATURAL GAS PIPE LINE
EAST GATE TO JASPER TOWNSITE
NORTHLAND UTILITIES LTD.

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KELLY/VP

J.R.B. Coleman,
Director.

c.c. The Regional Director,
Western Region.

c.c. Mr. Savage

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

Paul.

~~Robert~~

Savage

8 15 AM

March 12

Mr Pl[illegible]man

RK

Prepare letter to DPW.

JS

NP OTT

NP CGY

MARCH 11/65 3:10 PM FILE J.64

our file J60.2

DIRECTOR

ATTENTION CHIEF ENGINEER

REFERENCE YOUR MEMO MARCH 10 MALIGNE RIVER BRIDGE MILE 3.8 MEDICINE LAKE ROAD. WE PREFER TREATMENT 'B' SHEET 1, BUT WITH RAILING PYLONS ALSO MASONRY FACED. INNER RAILING ALONG BRIDLE PATH SHOULD BE PROVIDED. MASONRY FOR OTHER STRUCTURES SUCH AS PARAPETS AND WALLS TO BE BUILT IN AREA SHOULD BE DESIGNED TO MATCH.

(1)

(2) Transmitted to D.P.W in memo March 15/65 RK[illegible]

STRONG

CC SUPT JASPER NATL PARK

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

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Parcs Canada

National Archives of Canada
Archives nationales du Canada

THE REGIONAL DIRECTOR,
WESTERN REGION

OTTAWA 4, March 11, 1965.

~~J 60-2~~
J 60

ACCESS ROAD - ATHABASCA RIVER

This will acknowledge your memorandum of February 25th concerning funds that will be required during the balance of the current fiscal year and in the next fiscal year for work that is to be carried out on the above project by the Superintendent of Jasper National Park.

As you know by now, $9,000 has been made available for the work that will be done up until the end of March 31st. An additional $21,000 will be provided by a special financial encumbrance in the new year. This amount will be taken off the total allotment before funds are made available to the Department of Public Works. The Branch should be advised as soon as possible in the new fiscal year should there be any surplus remaining from the amount provided when the clearing of the right-of-way has been completed.

NIGRA/KB

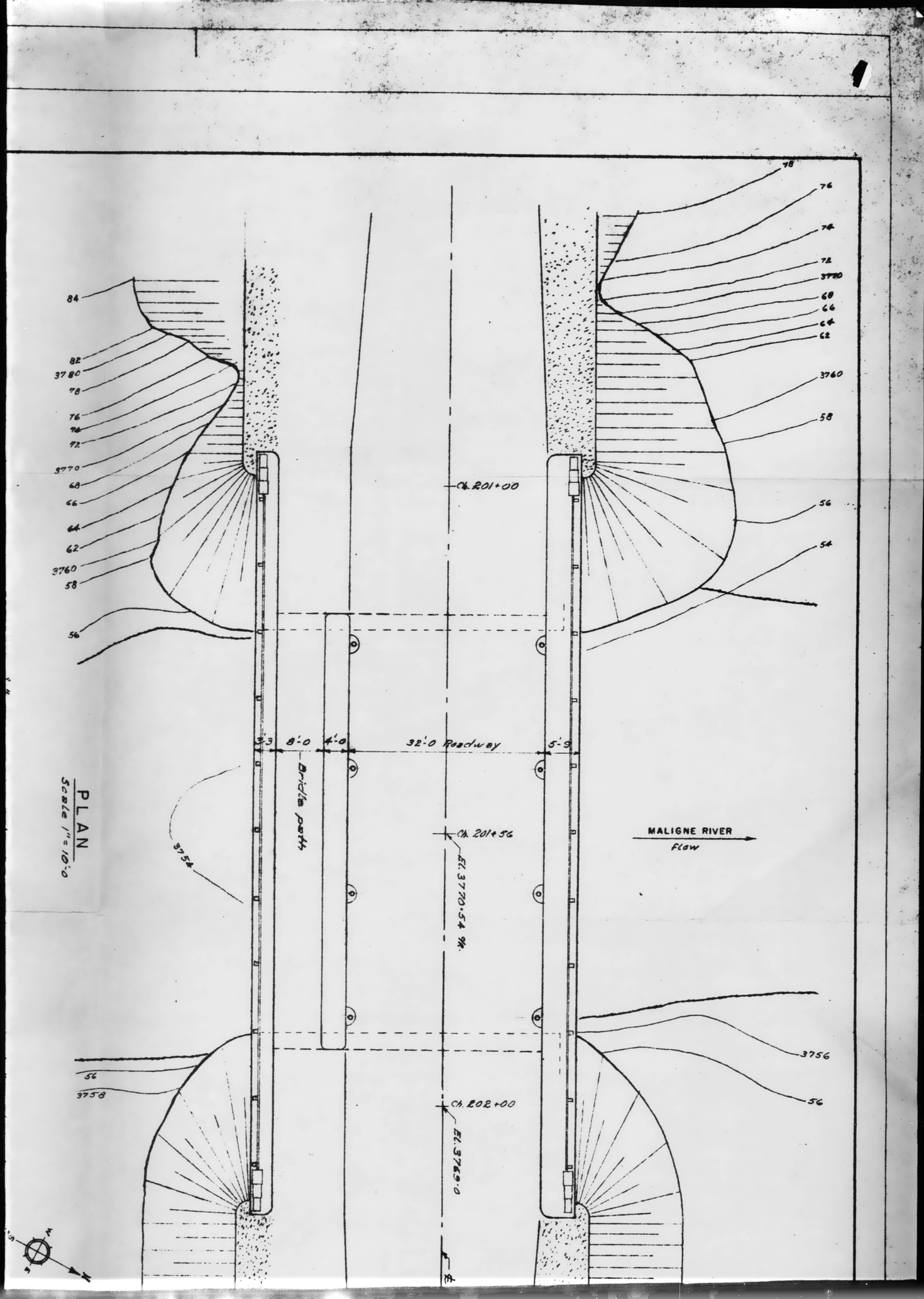
J.R.B. Coleman,
Director.

c.c. Superintendent,
Jasper National Park.

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada



Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

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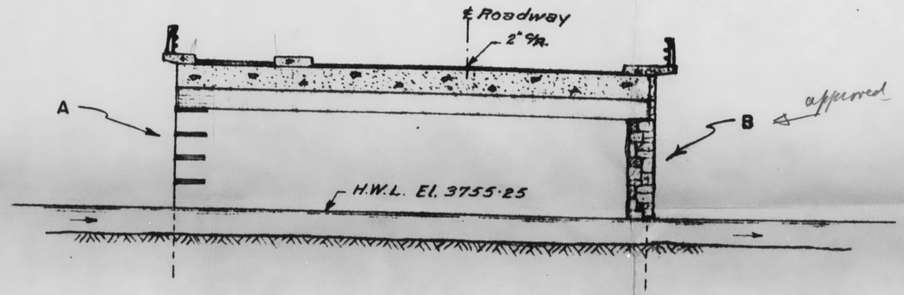
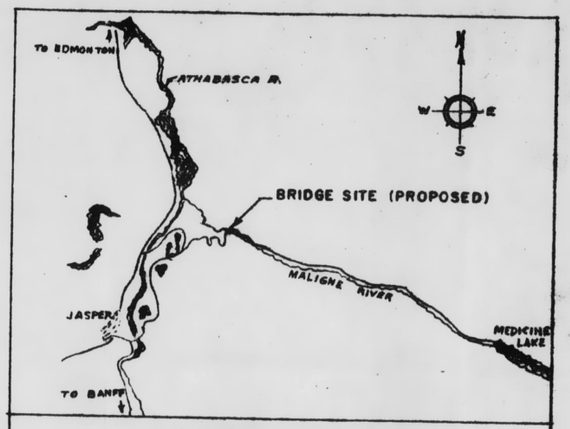
3769·0 — ℄ of Roadway

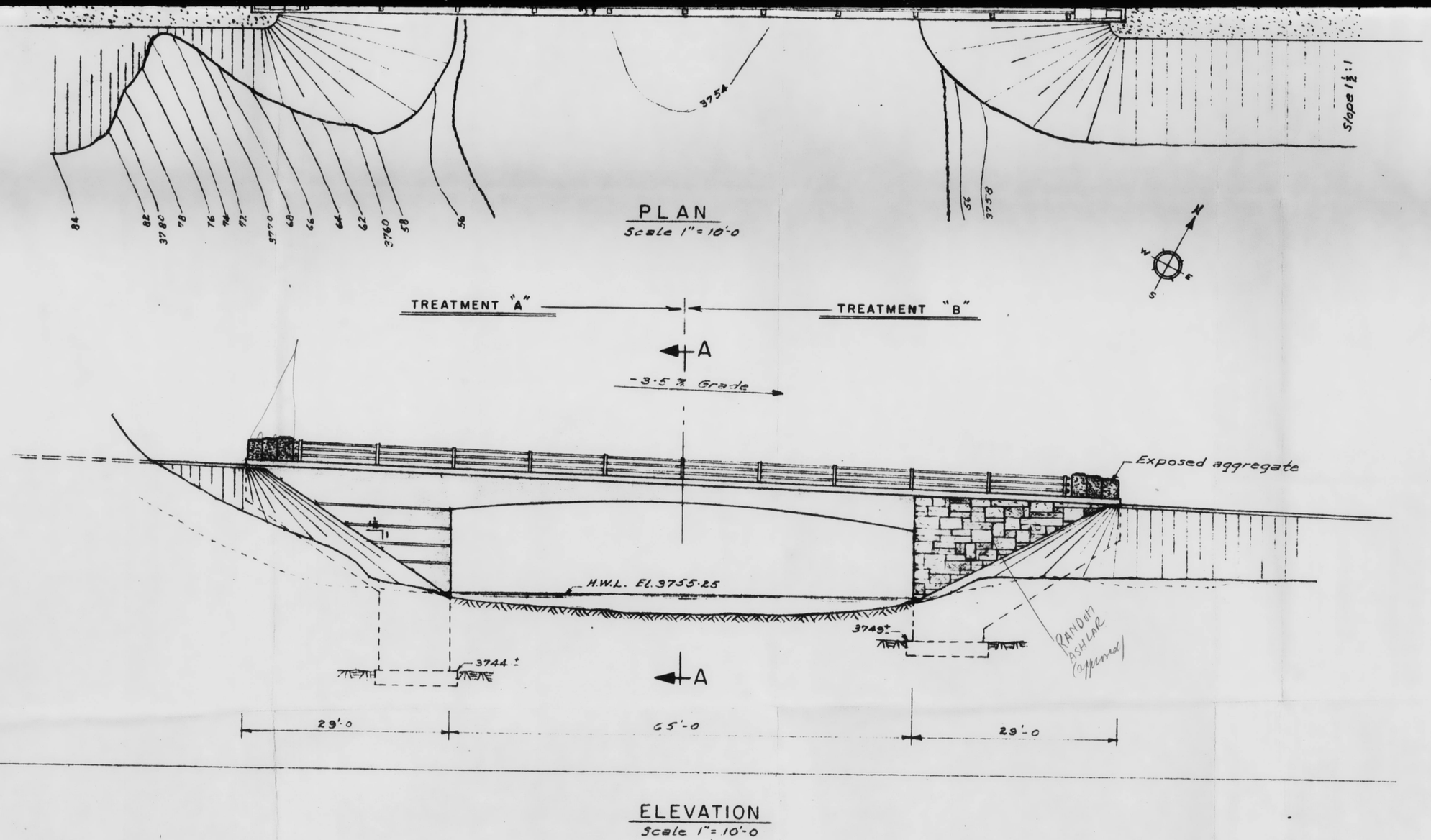








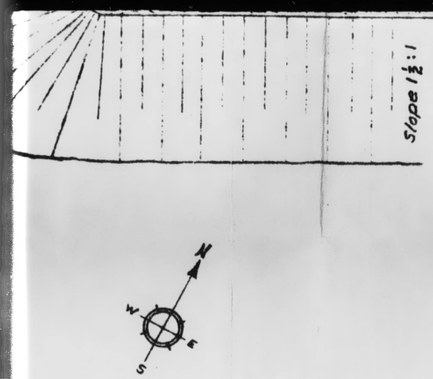
LOCATION PLAN
SCALE 1" = 3 MILES

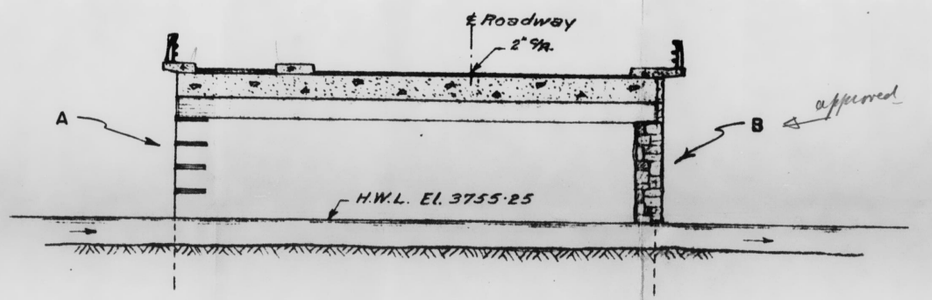


PLAN
Scale 1" = 10'-0

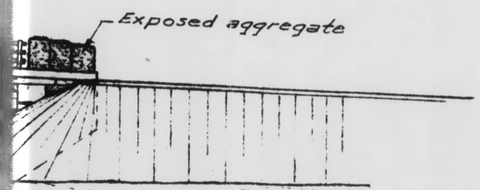
ELEVATION
Scale 1" = 10'-0

3 OF/DE





SECTION A-A
Scale 1"=10'-0



RANDM
ASHLAR
(Approved)

PRELIMINARY

NO.	REVISIONS	NAME	DATE

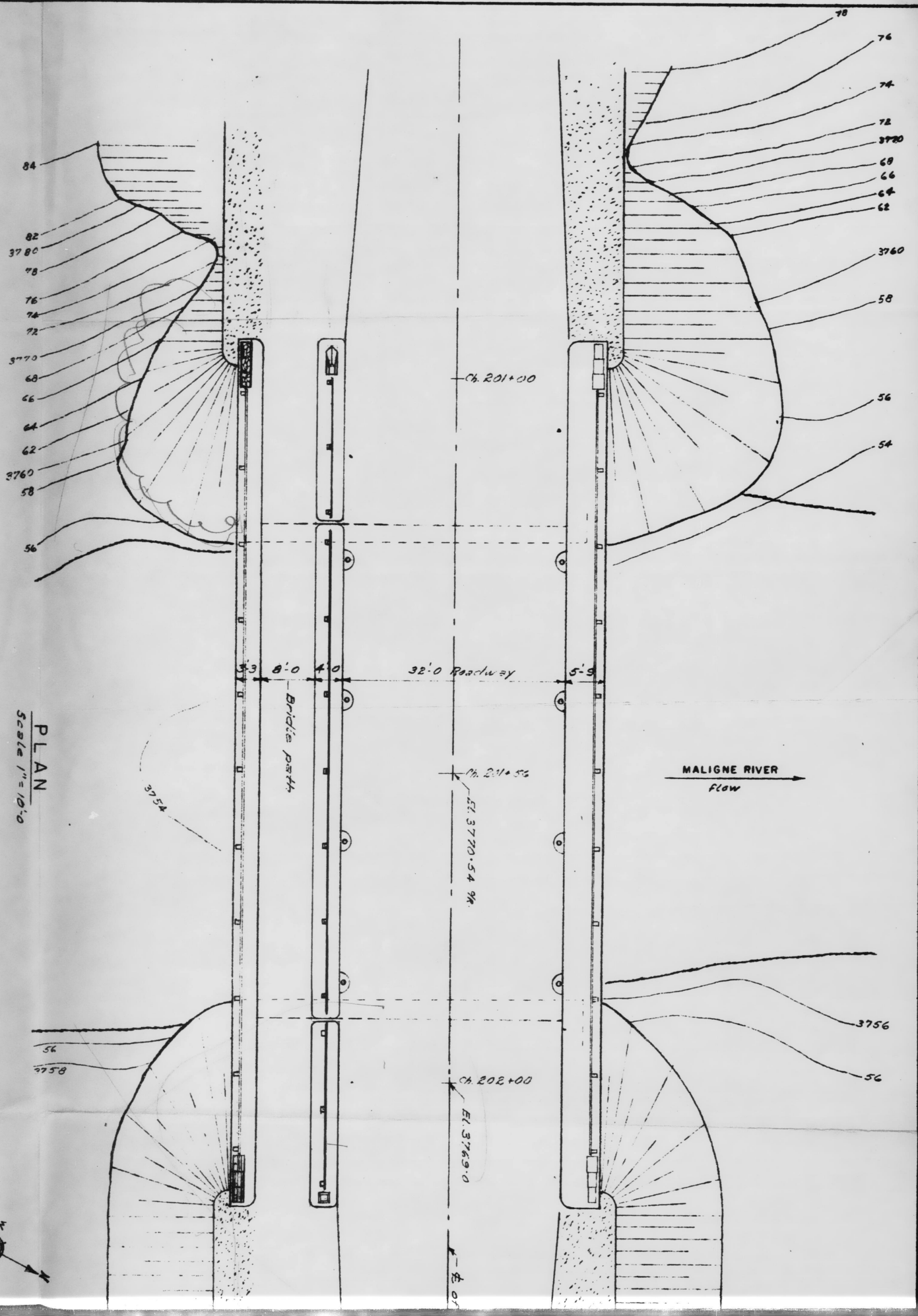
DEPARTMENT OF PUBLIC WORKS
CANADA
DEVELOPMENT ENGINEERING BRANCH
STRUCTURES DIVISION

MALIGNE RIVER BRIDGE
MEDICINE LAKE ROAD — MILE 3·8
JASPER NATIONAL PARK

GENERAL LAYOUT

JOB SUPERVISOR H. HEWITT	DESIGN		CHECK	
APPROVED DATE	DRAWN	D.A.S.	CHECK	
	TRACED		CHECK	
CHIEF-STRUCTURES DIVISION	PROJECT NO. SD-220			
APPROVED DATE	SHEET 1 OF			
CHIEF ENGINEER				

FEB. 24 1965



Parks Canada
Parcs Canada

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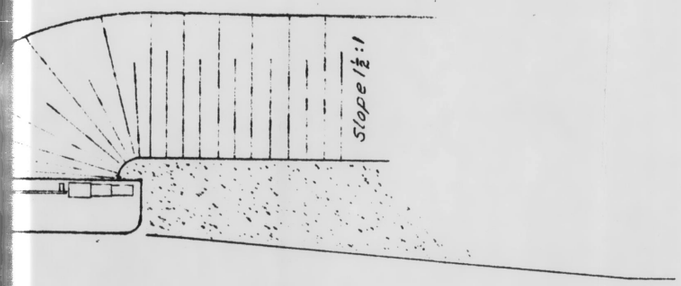
File/dossier J60-2
pt 7

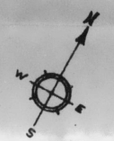
National Archives of Canada
Archives nationales du Canada

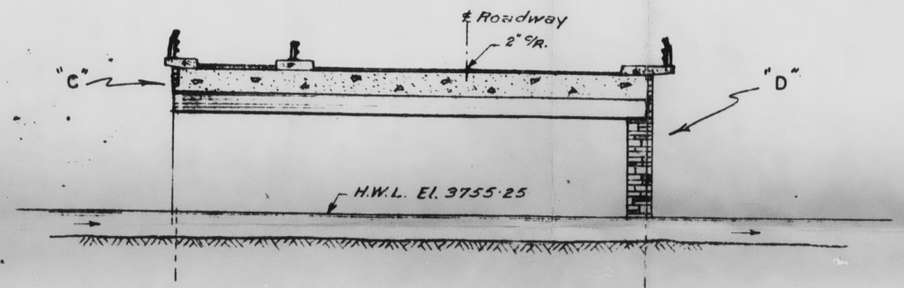
000068

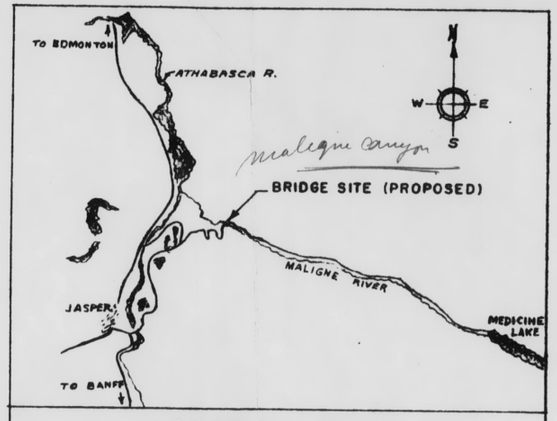


El. 3769·0 — ℄ of Roadway

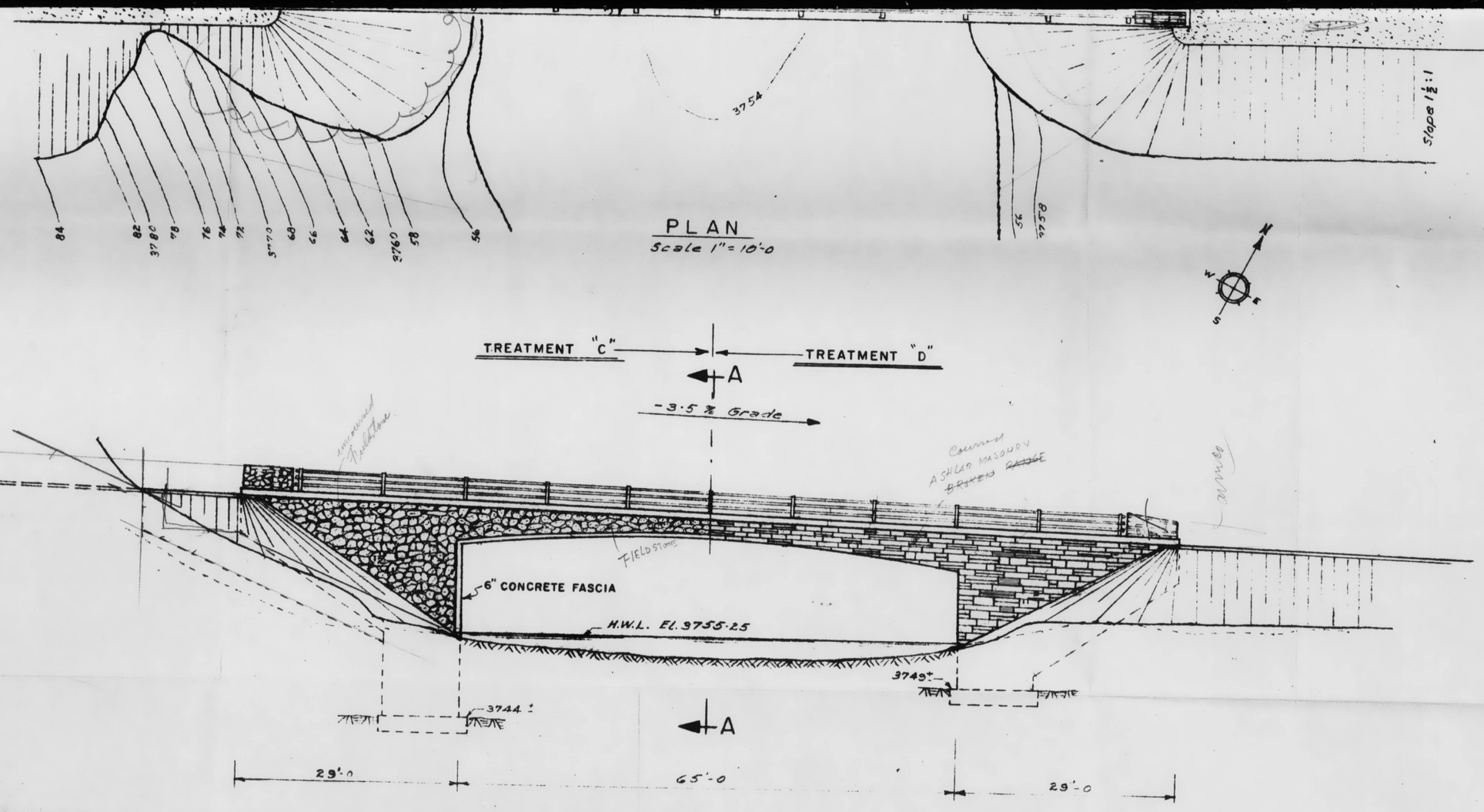








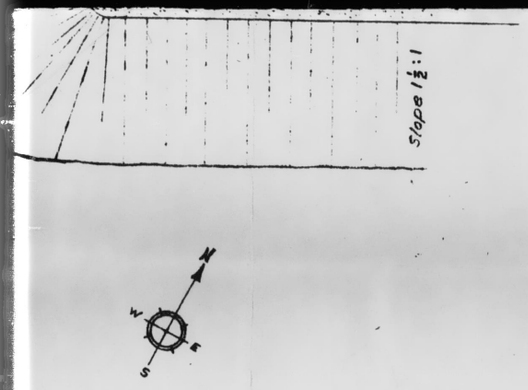
LOCATION PLAN
SCALE 1" = 3 MILES

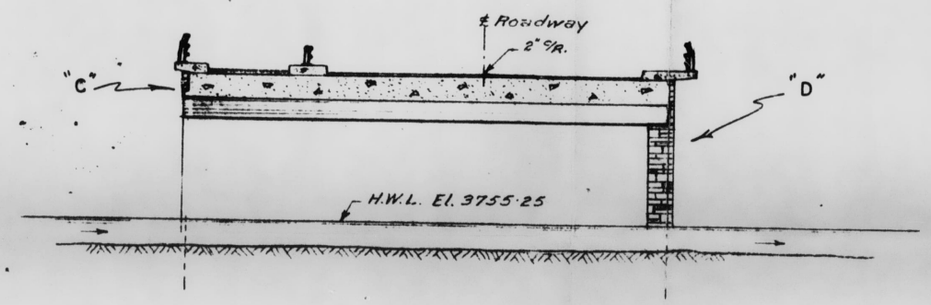


PLAN
Scale 1"=10'-0

ELEVATION
Scale 1"=10'-0

3 OF/DE





SECTION A-A
Scale 1"=10'-0



PRELIMINARY

NO.	REVISIONS	NAME	DATE

DEPARTMENT OF PUBLIC WORKS
CANADA
DEVELOPMENT ENGINEERING BRANCH
STRUCTURES DIVISION

MALIGNE RIVER BRIDGE
MEDICINE LAKE ROAD — MILE 3·8
JASPER NATIONAL PARK

Maligne Canyon

GENERAL LAYOUT

JOB SUPERVISOR H. HEWITT	DESIGN		CHECK	
APPROVED DATE	DRAWN	D.A.S.	CHECK	
	TRACED		CHECK	
CHIEF-STRUCTURES DIVISION	PROJECT NO. SD-220			
APPROVED DATE	SHEET 2 OF			
CHIEF ENGINEER				

FEB. 24 1965

Plowman

REGIONAL DIRECTOR,
WESTERN REGION

Ottawa (4), March 10, 1965.

J.60-2

Maligne River Bridge - Mile 3.8
Medicine Lake Road, Jasper National Park

-- Attached are two copies of plans prepared by the Department of Public Works showing the general layout of the above-noted bridge.

If you have any comments, please submit them as quickly as possible. If you have negative comments advise by telex so there will be no delay in the design of this structure.

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

Plowman/eb
c.c. Supt., Jasper Park.

RLP

0 0 0 0 7 1 2

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

NORTHERN ADMINISTRATION BRANCH

TEMPORARY FILE

FILE NO. J 60-2

TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO Savage March 2

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
Savage	29076	9-3-65	DU			[illegible]	
Mr Hayboer	for your review & comments.		RKP	25/3/65		[illegible]	[illegible]

NA -CR-10

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File/dossier J60-2
pt 7

Parks Canada
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National Archives of Canada
Archives nationales du Canada

OFFICE OF
CHIEF ENGINEER
(Development)

CANADA

Savage

REFER TO FILE NUMBER
90-3-24

DEPARTMENT OF PUBLIC WORKS

J 60-2

OTTAWA, March 5, 1965.

NATIONAL PARKS BRANCH
ASSIGNED TO
MAR 8 10 39 AM '65
CODE
029076

Mr. J. R. B. Coleman,
Director,
National Parks Branch,
Department of Northern Affairs and
National Resources,
Norlite Building,
Ottawa, Ontario.

Dear Mr. Coleman:

Re: Maligne River Bridge, Mile 3.8, MALIGNE CANYON
Medicine Lake Road - Jasper National Park

We are enclosing three prints each of sheets 1 and 2 indicating four preliminary schemes of treatment of the elevations for a rigid frame structure at this location with the following comments:

(a) The rigid frame presents a pleasing curved soffit and arch effect which our Banff office feels is desirable at this location.

(b) The approximate cost of the bridge only with minimum treatment "A" is $90,000.00. FIELDSTONE

(c) The approximate additional cost of the various stone treatments for the random, random Ashlar and Coursed Ashlar treatments varies to a maximum of about $8,000.00 for the latter.

(d) The exposed aggregate treatment as shown on the pylons of sheet 1 is relatively inexpensive.

(e) We have indicated small concrete pylons at the ends of the 4 ft. raised median strip on sheet 2 which could be provided for any alternative.

..... 2

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pt 7

Parks Canada
Parcs Canada

National Archives of Canada
Archives nationales du Canada

(f) The 6-inch facia shown in treatment "C" could be used with any stone facing.

May we have your comments at your earliest convenience and, in particular, on:

(a) Type of treatment desired.

(b) Should the length of the median strip be as shown on sheet 1 or 2 or longer?

As soon as you approve the general layout of the structure, we will arrange to procure additional borings to rock.

Yours very truly,

G. T. Clarke

G. T. Clarke,
Chief Engineer.

Encls.

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

3-5

J 2 9 1 7 8

Department of Northern Affairs and National Resources
CANADA
National Parks Branch

Ministère du Nord canadien et des Ressources nationales
Direction des parcs nationaux

NATIONAL PARKS BRANCH
ASSIGNED TO
file
MAR 8 10 51 AM '65

DIRECTOR

CODE

Jasper, Alta. March 2, 1965

our file / notre dossier J.29-5
your file / votre dossier J.60-2

Right-of-Way for Natural Gas Pipe Line -
East Gate to Jasper Townsite -
Northland Utilities Ltd.

Your memorandum of February 26th has been received concerning the issue of Licence of Occupation for the right-of-way of the natural gas pipe line. It is understood that the drafting of the Licence of Occupation is now being carried out.

In connection with this licence, there should be a clause concerning the protection of the pipe line when being crossed by other utilities, roadways, etc., by our Department. It is the feeling of this office that any expense incurred for such construction should be borne by the company. In this connection, one roadway crossing will take place next summer, with the construction of the road from the Athabasca River to Maligne Canyon. The crossing of the pipe line will take place at approximately the same location as the present fish hatchery road but, because of the skew angle, the protection to the pipe will have to be lengthened on each side. I am enclosing a plan which shows the location of the new road at this point, and which indicates the problem.

The Department of Public Works require to write into their contract documents a clause concerning the crossing of this pipe line, and will have to have some guidance on this. Would you please advise what the D.P.W. should be told for this crossing so that the appropriate clauses can be inserted in their contracts.

K. B. Mitchell,
Supt., Jasper National Park.

Pearce/ak

c.c. WESTERN REGIONAL DIRECTOR.

Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7
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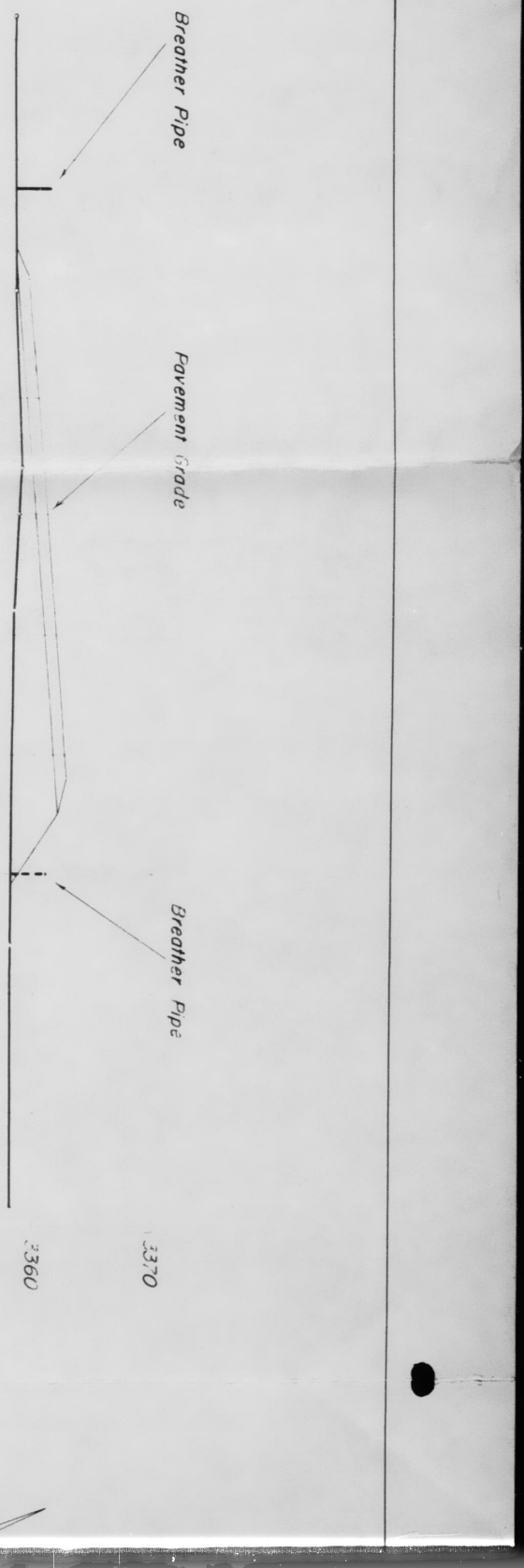
EDMONTON

THABASCA RIVER



Cross Section At Sta. 12+00 Scale 1" = 10'

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Parcs Canada

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File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

000077

3370

3360

50

3350

CURVE DATA
Δ 72°59'
D 12°30' Lt.
T 339.8
Lc 583.9

E.C. 1+434

Northland Utilities R.of W. 4" Natural Gas Pipe Line

Toe of fill

Toe of fill

Fish Hatchery
Maligne Canyon
Medicine Lake
Maligne Lake

Sta. 12+00

N.U.L. 222

N.U.L. 223

N.U.L. 224

Breather Pipe

Top of cut

B.C. 7+595

H.I. 10+993

W.10 H

P

P

B.C. 7+595

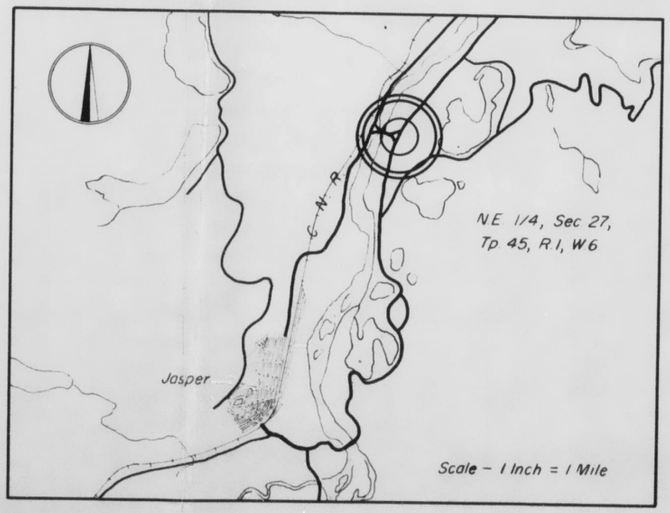
RIVER

ATHABASCA

P

CURVE

Δ 81°18'
D 12°00'
T 410.7
Lc 677.5



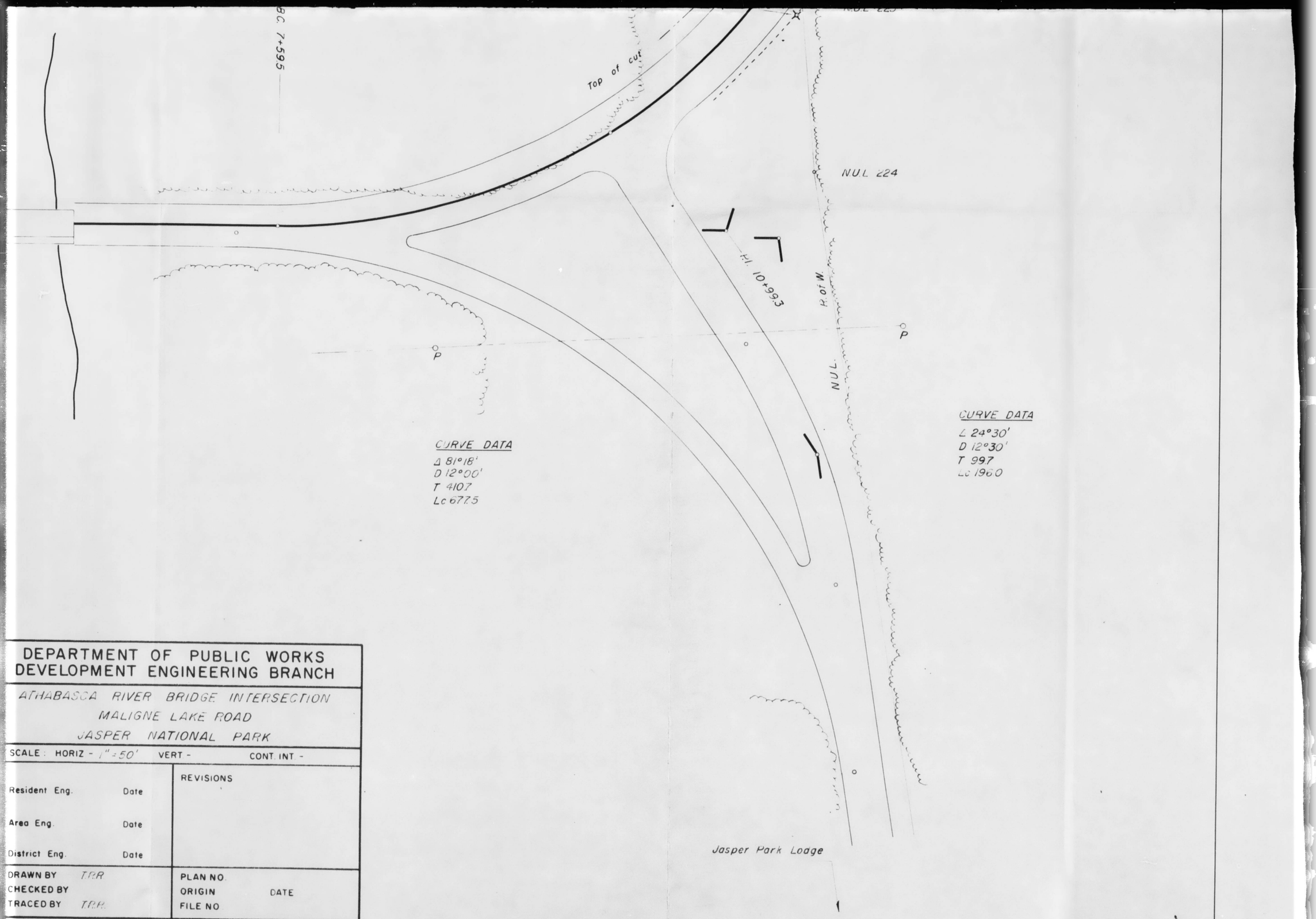
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

ATHABASCA RIVER BRIDGE INTERSECTION
MALIGNE LAKE ROAD
JASPER NATIONAL PARK

SCALE: HORIZ - 1"=50' VERT - CONT. INT -

Resident Eng. Date	REVISIONS
Area Eng. Date	
District Eng. Date	
DRAWN BY T.R.R.	PLAN NO.
CHECKED BY	ORIGIN DATE
TRACED BY T.R.H.	FILE NO

3 OF/DE



DEPARTMENT OF PUBLIC WORKS DEVELOPMENT ENGINEERING BRANCH	
ATHABASCA RIVER BRIDGE INTERSECTION MALIGNE LAKE ROAD JASPER NATIONAL PARK	
SCALE: HORIZ - 1"=50' VERT -	CONT. INT. -
Resident Eng. Date Area Eng. Date District Eng. Date	REVISIONS
DRAWN BY T.R.R. CHECKED BY TRACED BY T.R.R.	PLAN NO. ORIGIN DATE FILE NO.

NORTHERN ADMINISTRATION BRANCH

TEMPORARY FILE

FILE NO. J. 60-2

TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO

March 2 Savage

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
Savage	28151 March 2	March 3	[illegible]			[illegible]	
Mr. Heyboer	call N.C.C. and see what practices they employ in guard rails.			26/3/68		[illegible]	[illegible]

NA -CR-10

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

Parks Canada
Parcs Canada

National Archives of Canada
Archives nationales du Canada

028151

CANADA

Department of Public Works **Ministère des Travaux publics**

NATIONAL PARKS BRANCH
ASSIGNED TO
Development Engineering Branch

Savage

MAR 3 10 13 AM '65

CODE

your file / votre dossier
our file / notre dossier

J 60-2
March 2 Savage

Ottawa, March 2, 1965

Mr. J.R.B. Coleman,
Director,
National Parks Branch,
Department of Northern Affairs
and National Resources,
Ottawa, Ontario

22.9 24.0

Dear Mr. Coleman:

Re: Maligne River Bridges, Miles 10.7 and 11.8
Medicine Lake, Maligne Lake Road

I am sending you herewith for your comments and approval, three (3) copies of the preliminary General Layout for the above bridges.

Our estimate for these structures is approximately $290,000.

$ 29/15'

Yours sincerely,

G.T. Clarke

G.T. Clarke
Chief Engineer

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

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Parcs Canada

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Archives nationales du Canada

U 27458

Department of Northern Affairs and National Resources National Parks Branch

Ministère du Nord canadien et des Ressources nationales Direction des parcs nationaux

NATIONAL PARKS BRANCH
ASSIGNED TO

MAR 1 10 25 AM '65

CODE J 60-2

Calgary, Alberta,
February 25, 1965.

Director

our file / notre dossier J.60
your file / votre dossier

Access Road From Athabasca River
Bridge to Medicine Lake.

With reference to your telex message of February 24, 1965 which authorized the clearing of right-of-way from the Athabasca River to Maligne Canyon. I attach a C.T. 45 requesting the transfer of $9,000.00 from the free balance in the Trunk Highways Allotment to Jasper National Park, to cover local purchases and labour for the portion of work which could be completed by March 31, 1965. It is estimated that the total cost of clearing the right-of-way from the Athabasca River Bridge to Maligne Canyon will be $30,000.00. However, this clearing will take approximately three months. Additional funds in the amount of $21,000.00 will be required to complete the clearing during the 1965-66 fiscal year.

The Superintendent, Jasper National Park would like to complete this clearing during the months of April and May. Would you please inform us if funds will be provided for this work.

Att.

for B.I.M. Strong,
Regional Director.

C.C. Supt.,
Jasper National Park.

Okay

C.T.45 processed

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

Parks Canada
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National Archives of Canada
Archives nationales du Canada

U 27 4 5 8

Department of Northern Affairs and National Resources National Parks Branch

Ministère du Nord canadien et des Ressources nationales Direction des parcs nationaux

CANADA

NATIONAL PARKS BRANCH
ASSIGNED TO

MAR 1 10 25 AM '65

Calgary, Alberta,
February 25, 1965.

Director

our file/notre dossier J.60
your file/votre dossier

Access Road From Athabasca River
Bridge to Medicine Lake.

With reference to your telex message of February 24, 1965 which authorized the clearing of right-of-way from the Athabasca River to Maligne Canyon. I attach a C.T. 45 requesting the transfer of $9,000.00 from the free balance in the Trunk Highways Allotment to Jasper National Park, to cover local purchases and labour for the portion of work which could be completed by March 31, 1965. It is estimated that the total cost of clearing the right-of-way from the Athabasca River Bridge to Maligne Canyon will be $30,000.00. However, this clearing will take approximately three months. Additional funds in the amount of $21,000.00 will be required to complete the clearing during the 1965-66 fiscal year.

The Superintendent, Jasper National Park would like to complete this clearing during the months of April and May. Would you please inform us if funds will be provided for this work.

Att.

for B.I.M. Strong,
Regional Director.

C.C. Supt.,
Jasper National Park.

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File/dossier J60-2
pt 7
Parks Canada
Parcs Canada
National Archives of Canada
Archives nationales du Canada

Mr. Fetch/mp

NP OTT

FEBRUARY 24/65 11:45 AM

J 60-2

B I M STRONG

REGIONAL DIRECTOR

WESTERN REGION

OK

RE YOUR TELEX FEBRUARY 19TH MEDICINE LAKE ROAD JASPER SECTION ATHABASCA RIVER TO MALIGNE CANYON THIS SECTION TO BE RECONSTRUCTED NEXT YEAR CLEARING OF RIGHT OF WAY MAY PROCEED AT YOUR DISCRETION

DIRECTOR

NTL PARKS BRANCH

NP OTT

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

Department of Northern Affairs and National Resources

TELEX MESSAGE FORM

Not to be included in Message
File No.:
Date: February 24, 1965
Priority: Immediate ☐ Daily ☒

TO: B.I.M. Strong, Esq.,
Regional Director,
Calgary, Alberta.

FROM: J.D. Fitch, Engineering

Telex Phone No. (if available):

PLEASE PRINT PLAINLY OR TYPE MESSAGE BELOW

RE YOUR TELEX FEBRUARY NINETEENTH MEDICINE LAKE ROAD JASPER SECTION ATHABASCA RIVER TO MALIGNE CANYON THIS SECTION TO BE RECONSTRUCTED NEXT YEAR CLEARING OF RIGHT OF WAY MAY PROCEED AT YOUR DISCRETION.

J.R.B. Coleman,
Director.

Sent 11:45 AM mp.

If further space is required please use a second page

The following information must be supplied but will not be sent with the above message.

Message Prepared by: J.D. Fitch

Local of Person Preparing Message: 2-3679

Signature of Person Authorizing Message if other than above:

NANR 10-84(2-64)

Parks Canada
Parcs Canada

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pt 7

National Archives of Canada
Archives nationales du Canada

J60-2

MR. COLEMAN

Ottawa (4), February 22, 1965.

Athabasca River - Maligne Lake Road

In my memorandum of February 19th, concerning discussions with D.P.W. on the 1965-66 National Parks Construction Program, I requested your approval in principle for work on the Athabasca River-Maligne Lake Road.

We have now received the following request from the Western Region:

> "Reference road to Maligne Lake, Jasper Park. Please confirm section this road Athabasca River to Maligne Canyon to be reconstructed next year. If so we will arrange start clearing right-of-way immediately. We agree this work can well be done next year and suggest bridge over Maligne at upper end also be built."

I would appreciate an early reply to my memorandum of February 19th in order that we may advise the Western Region on the course of action to be taken.

J.E. Savage,
Chief Engineer,
Engineering Division.

Fitch/eb

Parks Canada
Parcs Canada

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pt 7

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CANADA

Department of Northern Affairs and National Resources National Parks Branch

Ministère du Nord canadien et des Ressources nationales Direction des parcs nationaux

MR. COLEMAN

Ottawa (4), February 22, 1965.

our file / notre dossier

your file / votre dossier

J 60-2

Athabasca River - Maligne Lake Road

In my memorandum of February 19th, concerning discussions with D.P.W. on the 1965-66 National Parks Construction Program, I requested your approval in principle for work on the Athabasca River-Maligne Lake Road.

We have now received the following request from the Western Region:

OK

"Reference road to Maligne Lake, Jasper Park. Please confirm section this road Athabasca River to Maligne Canyon to be reconstructed next year. If so we will arrange start clearing right-of-way immediately. We agree this work can well be done next year and suggest bridge over Maligne at upper end also be built."

22-2-65

I would appreciate an early reply to my memorandum of February 19th in order that we may advise the Western Region on the course of action to be taken.

J.L. Savage,
Chief Engineer,
Engineering Division.

Fitch/eb

Parks Canada
Parcs Canada

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File/dossier J60-2
pt 7

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CANADA

Department
of Northern Affairs
and National Resources National Parks Branch

Ministère
du Nord canadien et
des Ressources nationales Direction des parcs nationaux

U28
K60-6
J60-2

MR. COLEMAN

Ottawa (4), February 19, 1965.

our file / notre dossier
your file / votre dossier

National Parks Construction Program
1965-66, Discussions with D.P.W.

A meeting with officials of D.P.W. was held on January 20th, to discuss the proposed program for 1965-66.

The following items are submitted for your consideration and approval in principle:

(1) Banff-Windermere Highway

An amount of $290,000 is included in estimates for the carry-over of paving from Mile 52 to Mile 63.4 Banff-Windermere Highway. This sum does not include provision for a climbing lane which is estimated to cost an additional $150,000. D.P.W. are informally negotiating with the contractor to see if he would undertake this additional work and to determine the basis of payment.

It is our opinion and that of the Western Region that this climbing lane is essential and should be provided. It is also our thinking that the construction would best be carried out before any final paving in this section.

(2) Athabaska River - Maligne Lake Road

D.P.W. have suggested that we delay for one year a tender call on the Medicine to Maligne Lake Road from Mile 10.5 to Mile 13.5 and eventually call the entire four mile section as a single contract. The thinking here is that

Clear to use Bull $200,000 but no objection to all grading etc in 66.

2.....

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delaying the tender call might have the effect of keeping visitors away from the area until there is better development of facilities.

We concur with this suggestion, however, we feel that the two bridges on this section and the bridge at Maligne Lake should be constructed in 1965-66.

O.K. re bridge

ORIGINAL SIGNED BY
J. E. SAVAGE

J.E. Savage,
Chief Engineer,
Engineering Division.

Fitch/eb

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pt 7

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+

NP OTT

+

NP OTT

NP CGY

FEB 19/65 4:10 PM FILE J 60 8·15 22 Feb/65

DIRECTOR

REFERENCE ROAD TO MEDICINE LAKE-JASPER PARK. PLEASE CONFIRM SECTION THIS ROAD ATHABASCA RIVER TO MALIGNE CANYON TO BE RECONSTRUCTED NEXT YEAR. IF SO, WE WILL ARRANGE START CLEARING RIGHT OF WAY IMMEDIATELY WE AGREE THIS WORK CAN WELL BE DONE NEXT YEAR AND SUGGEST BRIDGE OVER MALIGNE AT UPPER END ALSO BE BUILT.

STRONG

CC SUPT JASPER PARK+

NP OTT

Parks Canada
Parcs Canada

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File/dossier J60-2
pt 7

National Archives of Canada
Archives nationales du Canada

Mr. C.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ontario.

Ottawa 4, January 20, 1965.

J.60-2
70-3-17(28303)

Dear Mr. Clarke:

Maligne Canyon Viewpoint
and Tea-House Area Development

The comments on our plan "Proposed Maligne Canyon Viewpoint and Tea-House Development, Jasper National Park" given in your letter of January 7, 1965 are good.

Our plan was sent to you for (a) fitting the scheme to the ground in the most efficient manner and (b) review and re-design where necessary by your traffic engineers.

The addition of passing lanes seems necessary. The removal of one roadway to the parking lot is accepted, provided easy traffic circulation is achieved in the design. This remark also applies to your suggested addition and deletion of roadways. You have given no reason why buses should park closer to the viewing area than shown on the plan. If there is a good reason we would be pleased to consider.

I would like you to re-design the parking areas and roadways along the lines of our discussions to date. A plan of the new design showing roadways and parking areas is required. This plan should also show traffic flow routes and capacities. An indication of the standard of construction should be given together with a cost estimate. I suspect there is more than one design, particularly in construction detail, that would satisfy our requirement. Your efforts in exploring and costing various designs would assist us in choosing one fitted to our requirements and our budget.

Your letter does not say that your field staff have discussed the project with the Parks staff at Jasper and our Regional Office in Calgary. I suggest this be done.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE
J.E.B. Colonel,
Director.

Robinson/sw

cc: Regional Director, Western Region
cc: Superintendent, Jasper National Park

Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7
National Archives of Canada
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Mr. C.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ontario.

Ottawa 4, January 20, 1965.

J.60-2
70-3-17(2838)

Dear Mr. Clarke:

Maligne Canyon Viewpoint
and Tea-House Area Development

The comments on our plan "Proposed Maligne Canyon Viewpoint and Tea-House Development, Jasper National Park" given in your letter of January 7, 1965 are good.

Our plan was sent to you for (a) fitting the scheme to the ground in the most efficient manner and (b) review and re-design where necessary by your traffic engineers.

The addition of passing lanes seems necessary. The removal of one roadway to the parking lot is accepted, provided easy traffic circulation is achieved in the design. This remark also applies to your suggested addition and deletion of roadways. You have given no reason why buses should park closer to the viewing area than shown on the plan. If there is a good reason we would be pleased to consider.

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Your letter does not say that your field staff have discussed the project with the Parks staff at Jasper and our Regional Office in Calgary. I suggest this be done.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE
J.E.B. Savage,
Director.

Robinson/ar

cc: Regional Director, Western Region
cc: Superintendent, Jasper National Park

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File/dossier J60-2
pt 7

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NORTHERN ADMINISTRATION BRANCH

TEMPORARY FILE

FILE NO. J60-2

TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
Savage	17611 - Jan 7	14-1-65	B	20/1			[illegible]

HA -CR-10

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

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OFFICE OF CHIEF ENGINEER
(DEVELOPMENT)

U 1 7 6 1

CANADA

REFER TO FILE NUMBER
90-3-17 (28383)

NATIONAL PARKS BRANCH
ASSIGNED TO
DEPARTMENT OF PUBLIC WORKS

Savage

JAN 13 9 25 AM '65

CODE J60-2

OTTAWA, January 7, 1965.

Mr. J. R. B. Coleman,
Director,
National Parks Branch,
Department of Northern Affairs and
National Resources,
Norlite Building,
Ottawa, Ontario.

Dear Mr. Coleman:

Re: Maligne Canyon Viewpoint and
Tea-House Area Development

The plan entitled "Proposed Maligne Canyon Viewpoint and Tea-House Development, Jasper National Park", forwarded with your letter of October 22, 1964, has been reviewed by our field staff.

In general, their views were that buses should be permitted to approach nearer to the main viewpoint and that the lots be so arranged that buses do not pass through car lots and vice versa.

It is also suggested that one of the roadways to the viewpoint be eliminated and that a passing lane be added to the main road at the Tea-House Road intersection.

On a copy of your plan, attached, we have shown, in red, the proposed roadway extensions and, in yellow, the proposed roadway deletions. May we have your comments and/or approval of these proposed changes.

Yours very truly,

G. T. Clarke

G. T. Clarke,
Chief Engineer.

Attach.

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

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GOVERNMENT OF CANADA

ACTION REQUEST

CGSB 6-GP-12
P.P.&S. Cat. 3433

TO Director

LOCATION Ottawa

NATIONAL PARKS BRANCH
ASSIGNED TO

FOR:

FILE NO.

JAN 12 3 53 PM '65

CODE J 60-2

- [ ] ACTION
- [ ] APPROVAL
- [ ] COMMENTS
- [ ] DRAFT REPLY
- [ ] INFORMATION
- [ ] INVESTIGATION
- [ ] MORE DETAILS
- [ ] NOTE & FILE
- [ ] NOTE & FORWARD
- [ ] NOTE & RETURN
- [ ] REPLY, PLEASE
- [ ] SEE ME, PLEASE
- [ ] SIGNATURE
- [ ] TRANSLATION
- [ ] YOUR REQUEST

PREPARE MEMO TO:

REPLY FOR SIGNATURES OF:

REMARKS:

(received in Jasper in error & reforwarded.)

FROM	PHONE	LOCATION	DATE

RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

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Parcs Canada

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Archives nationales du Canada

COPY FOR: DIRECTOR, OTTAWA

Savage

27

Dept. of Northern Affairs & National Resources
JAN 7 1965
WESTERN REGIONAL OFFICE
NAT. PARKS BRANCH

National Parks of Canada
JAN 11 1965
JASPER, ALBERTA

Name	Note	Action
Stron	✓	
Fenton	✓	
Kun NAH/gw	✓	
Mathie		
Hills		
Bottom ev		
[illegible] 930,		
[illegible], Alberta,		
6 January, 1965		

Development Engineering Branch

Mr. W. R. Binks,
Chief,
Engineering and Construction Division,
Department of Public Works,
Sir Charles Tupper Building,
Riverside Drive,
Ottawa, Ontario.

Re: Proposed Location Athabasca River to Maligne Canyon Section of Medicine-Maligne Road

Pending further advice concerning next year's program for Jasper Park, we are assuming that reconstruction of the above-mentioned four miles of road may be let to contract within the 1965 season.

It is understood that the Parks Branch have funds available, and are anxious to clear the right-of-way for this road during this winter. On review of our files, it would appear that all concerned are satisfied with the location of this route as shown on our plans submitted to your office, with the exception of some minor points (in as far as clearing of the right-of-way is concerned) in the vicinity of the viewpoint and teahouse parking areas. Our comments on proposed treatments for these areas were forwarded to you on 16 November.

May we please be advised, at your earliest convenience, if any further information is required to expedite the approval of the location of this section of road.

N. A. Huculak,
Acting District Engineer.

c.c. to: Mr. B. I. M. Strong ✓
Mr. R. Arnison

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RG 84, A-2-a, vol. 1613
File/dossier J60-2
pt 7

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COPY FOR: DIRECTOR, OTTAWA

Savage

Dept. of Northern Affairs
& National Resources
JAN 7 1965
WESTERN REGIONAL OFFICE
NAT. PARKS BRANCH

National Parks of Canada
JAN 11 1965
JASPER, ALBERTA

Name	Note	Action
Stron		
Fenton		
Kun NAH/gw		
Mathie		
Hints		
Bottomley		
Hunter		

Development Engineering Branch

P. O. Box 930,
Jasper, Alberta,
6 January, 1965

Mr. W. R. Binks,
Chief,
Engineering and Construction Division,
Department of Public Works,
Sir Charles Tupper Building,
Riverside Drive,
Ottawa, Ontario.

Re: Proposed Location Athabasca River to Maligne Canyon Section of Medicine-Maligne Road

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N. A. Huculak,
Acting District Engineer.

c.c. to: Mr. B. I. M. Strong
Mr. R. Arnison

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File/dossier J60-2
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PARKS CANADA

CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

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RG 84, A-2-a, vol. 1614
File/dossier J60-2
pt 8

National Archives of Canada
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SUBJECT – SUJET:

MALIGNE ROAD

FROM – DE: ~~JUNE 66~~ Apr 68

FILE NO. / DOSSIER Nº: J60-2

RELATED FILES are listed inside file cover – DOSSIERS CONNEXES énumérés à l'intérieur

TO – À: Jul 68

VOL. NO. / VOL. Nº: ~~5~~ 8

DEPARTMENT OF NORTHERN AFFA
MINISTÈRE DU NORD CANADIEN ET

J60-2

For Instructions Re Use of File Cover See Back Cover
Voir au verso comment utiliser la chemise

Reference – Renvoi				Action Taken – Mesures prises			
Referred To – Destinataire	Purpose – Objet	Date	Initiale – Initiales	P.A. Date or T. – Date de rangement ou de transmission	B.F. Date – Date de rappel	Initiale – Initiales	Registry Inspection – Examen du service des Archives
Main	374896 Sept 29	30/9	R	T			
Pettis	374896	4/10		P.A.			
Savage	398847	June 13	R	13/1/67			
Smith	"	13/1/67		P.A.			
Savage		15 Feb 65		P.A.			
Mr Savage	99854	3/7/68		P.A.			
Dearmouth	99654	3/7/68		P.A.			
Mr Gibbons		1/7/68		2/7/68			
Mr Sowers		11/6/68		P.A. July 27/67			
Bolliger		25/11		26/11/70			

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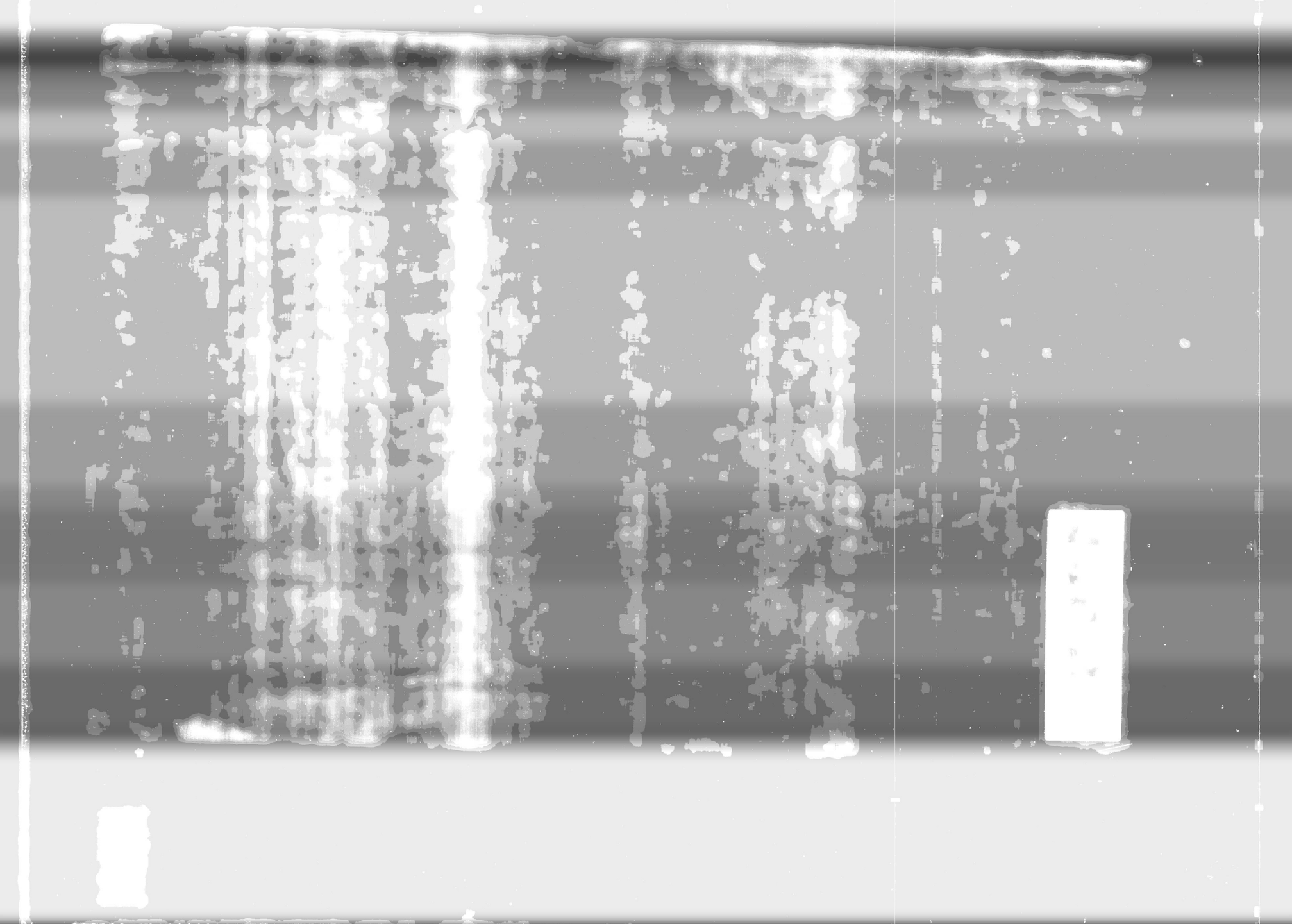

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-2
pt 8

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FILE No. J60-2 VOL 7

YEAR 1966 MONTH	DAY	CHARGED TO	IN	YEAR MONTH	DAY	CHARGED TO	IN
Sept	30	Mair					
June	13	Savage					
April	11	Mair					
3/7/68		Savage	NB				
1/5/69		Arbour					
17/6	69	TS					
19/11/70		Bollisor	[illegible]				

NANR 10-3

Parks Canada
Parcs Canada

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pt 8

National Archives of Canada
Archives nationales du Canada

FILE No. [illegible] S-006

YEAR ..... MONTH	DAY	CHARGED TO	IN	YEAR ..... MONTH	DAY	CHARGED TO	IN

J60-2

(Mailed Aug.15/68)

Arthur G. Adams, Jr., Esq.,
116 Deerfield Terrace,
Mahwah, Ramsey R.D.,
New Jersey, U.S.A. 07446.

Ottawa 4, July 17, 1968.

Dear Mr. Adams:

I appreciate the point of view expressed in your letter of June 27th regarding the construction of an access road into Maligne Lake, Jasper National Park.

It has always been a difficult task in the management of Canada's National Parks to balance public use with the preservation of the natural landscape. We have devised land use zoning plans which we hope will ensure the proper balance of these two trusts.

In our preliminary master plan for Jasper, four areas have been zoned as service centres. Service facilities at Maligne Lake are necessary to cope with the increased use being made of the Park reflected in the yearly increase in the visitor use statistics. This increase is around ten per cent per year. To safely move the number of Park visitors anticipated into Maligne Lake, we require a well designed highway.

The Maligne Lake development will be balanced by establishing within Jasper various zones strictly as nature preserves and designating wilderness areas to which access will only be allowed by hiking or riding trails. A system of scenic roads is also planned. This will be in keeping with the concept expressed in your letter, that of a narrow gauge road with turn-outs with traffic limited to bus or low volume vehicle traffic. Your idea of a narrow gauge railway has not as yet been attempted in Canada's National Parks but it is a worth-while concept and one which may be necessary for us to utilize in the future.

...2

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Parcs Canada
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pt. 8
National Archives of Canada
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I trust the above will explain why development is necessary at Maligne Lake but I want to assure you that within Jasper National Park areas are also being designated for wilderness use and as nature preserves under a zoning plan.

Yours sincerely,

ORIGINAL SIGNED BY
D. J. LEARMONTH

John I. Nicol,
Acting Director.

DUNSFORD*LEARMONTH*KB

P.S. The delay in mailing this letter is due to a recent strike of postal employees.

ORIGINAL SIGNED BY
D. J. LEARMONTH

D.J.L.

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Parks Canada
Parcs Canada

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File/dossier J60-2
pt 8

National Archives of Canada
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Maligne Tours & Lodge

P.O. BOX 280
JASPER, ALBERTA, CANADA

CANADIAN WILDLIFE SERVICE
JUL 2 1968
REF

099854
NATIONAL & HISTORI
JUL 2 1968
CODE

Mr. Allage
J60-2

Please address reply to:
116 Deerfield Terrace
Mahwah, Ramsey P.O.,
New Jersey, U.S.A. 07446
June 27, 1968 - Maligne Lake

NATIONAL AND HISTORIC
PARKS BRANCH
JUL 3 1968
ENGINEERING AND
ARCHITECTURAL DIVISION

Commissioner of Conservation
Ottawa
Canada

Dear Sir:

I am writing this at the Maligne Boat House after coming up from Jasper Lodge. I am revolted, nauseated, horrified and disgusted by the brutal, ugly and needless desecration of a beautiful natural area by the construction of an overdesigned super-highway to this once beautiful spot. Unfortunately we are used to this type of thing in the U.S., but don't expect it in Canada - we thought you knew better! Couldn't you have put in a nice narrow graded gravel road with turnouts and limit it to bus traffic - or if you want to make the area accessible to larger numbers ~~to~~ put in a ~~rar~~ narrow guage railroad as used in Switzerland and Germany?

It is ironic that you must go back to "the old world" of Europe to find beautiful scenery that is both accessible and unspoiled by our destructive highway engineers. The rather high Pullman fares out here aren't much less than S.S. or air fares to Europe.

I am shocked at what I see here.

It seems that years ago the CPR people knew better at the time they were constructing their resort hotels. If untrammeld free enterprise makes a mess, socialized highways, with unlimited funds, seem even worse. I am afraid that we'll have to write off Canada - to Europe next year.

Very truly yours,

Arthur G. Adam Jr.

000105

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Parcs Canada

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Jasper
Park
Lodge

Jasper National Park, Alberta

Commissioner of Conservation for
Northern Affairs
Ottawa
Canada

JASPER PARK LODGE
5 PM
28 VI
1968
ALBERTA

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-2
pt 8

National Archives of Canada
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Canadian National Hotels,

Canadian National Hotels, Letters mailed in hotel envelopes if not delivered, are sent to dead letter office, unless a return address is given. If not delivered in 30 days return to:

A.G. ADAMS, 116 DEERFIELD TERR., MAHWAH, RAMSEY R.D., N.J., USA 07446

Parks Canada
Parcs Canada

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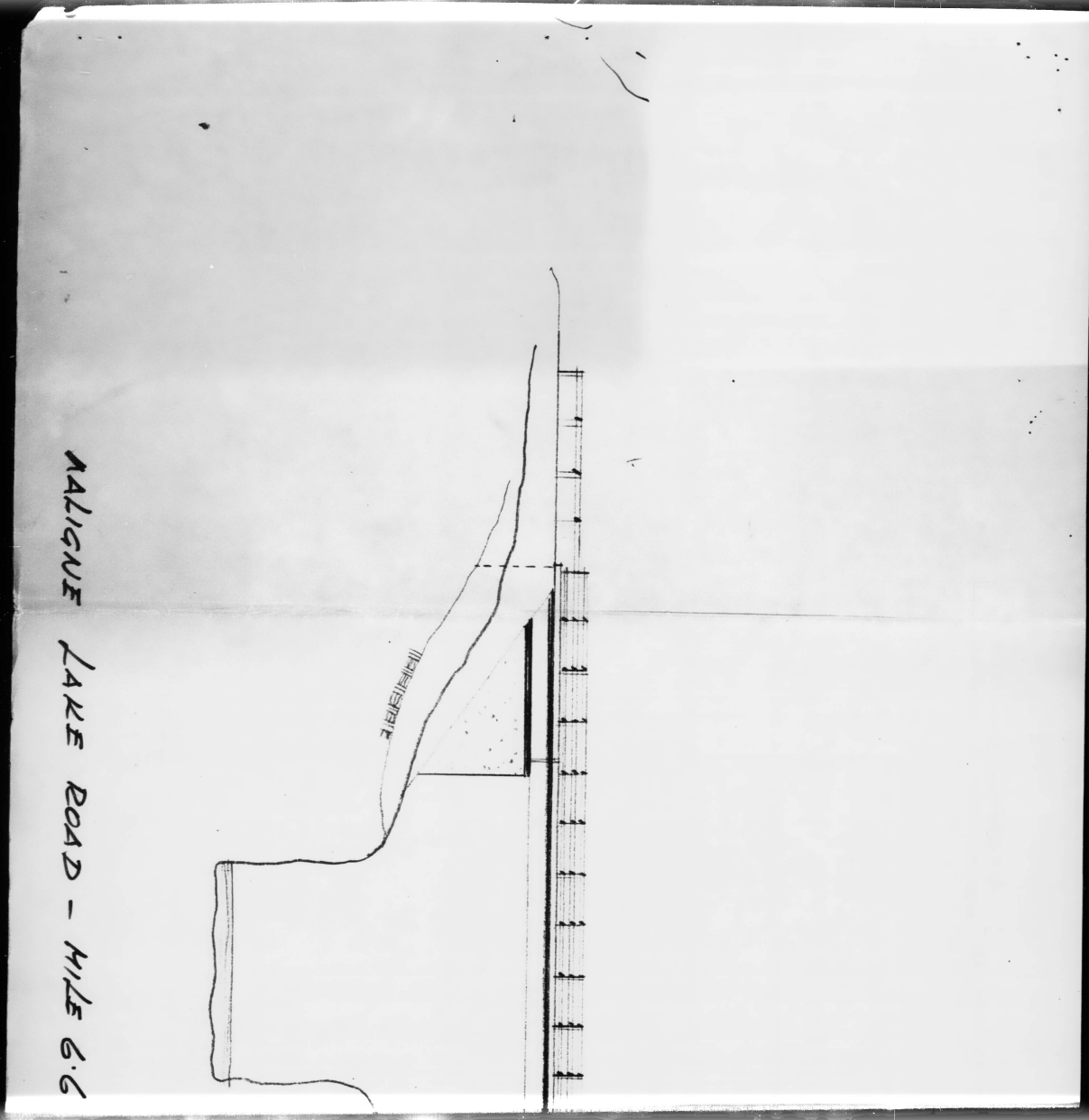

ALIGNE LAKE ROAD - MILE 6.6

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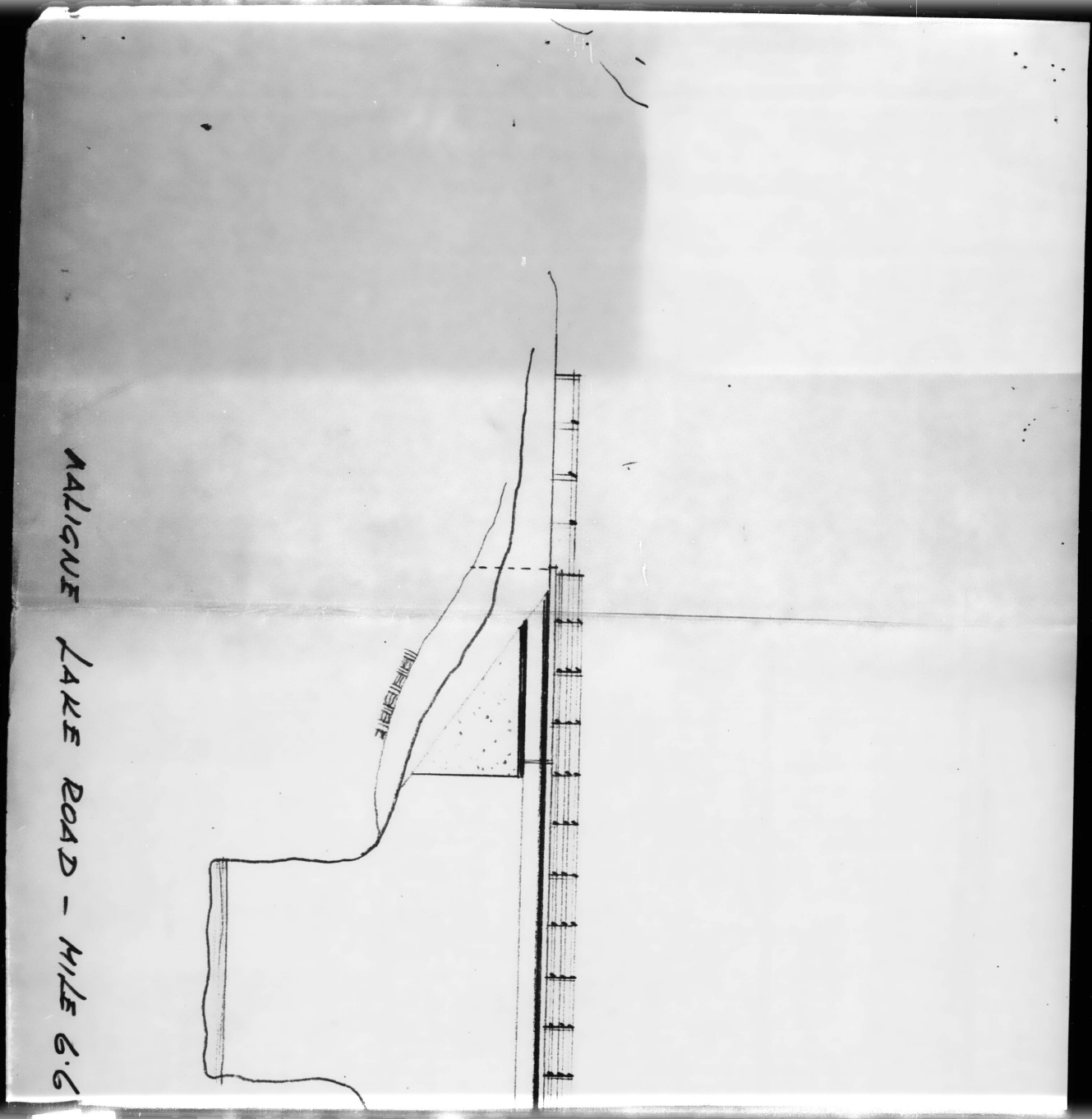

MALIGNE LAKE ROAD - MILE 6.6

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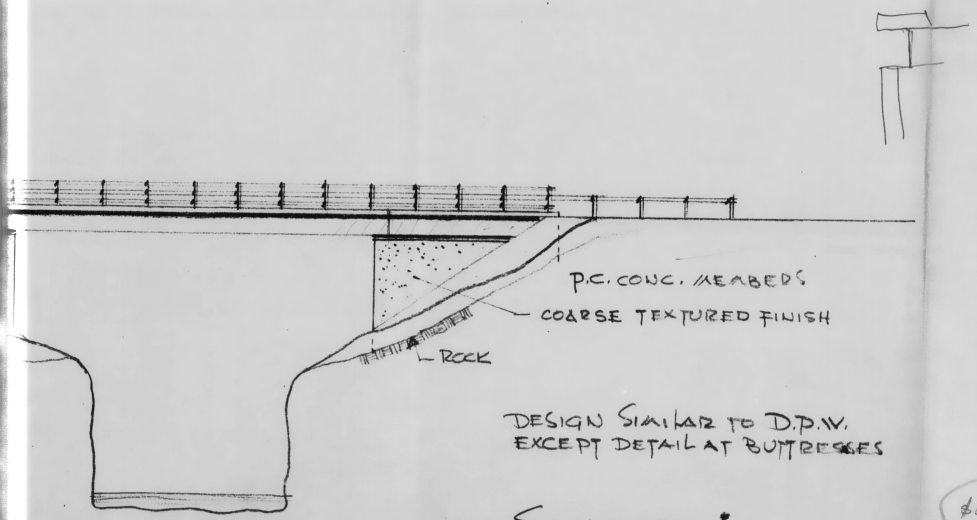


DESIGN SIMILAR TO D.P.W.
EXCEPT DETAIL AT BUTTRESSES

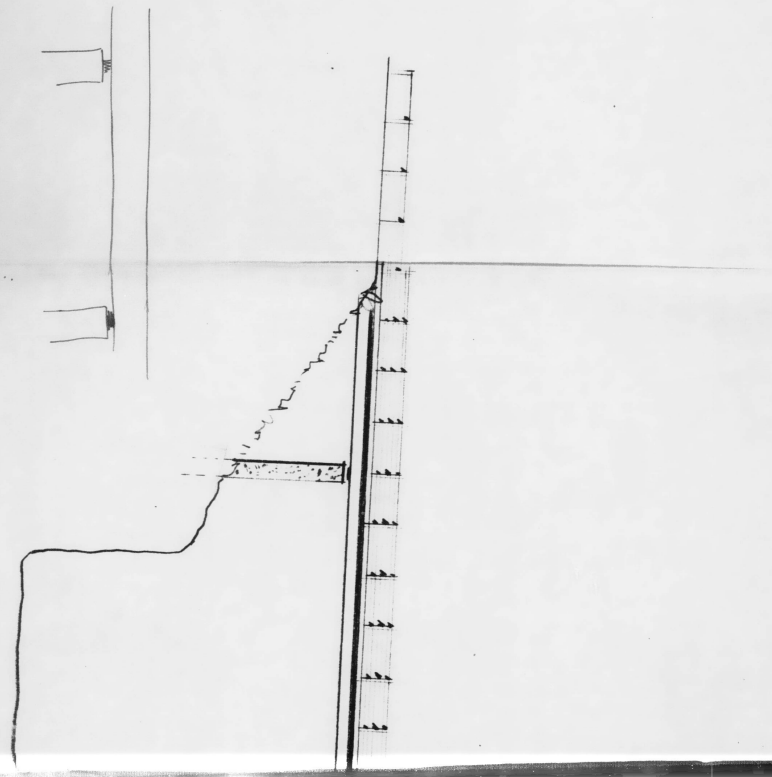
$65000-

SCHEME I

1" - 10'-0"

1/5/67

ROAD - MILE 6.6



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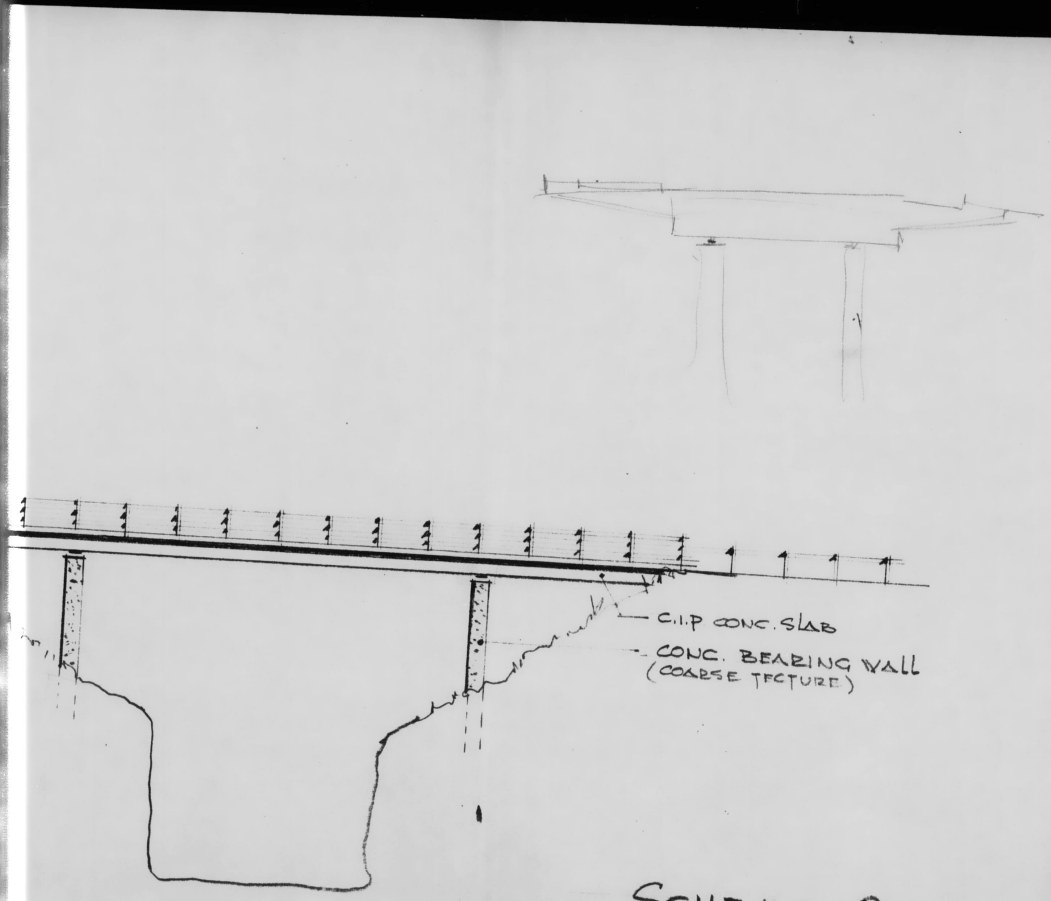

SCHEME 2

1/5/67

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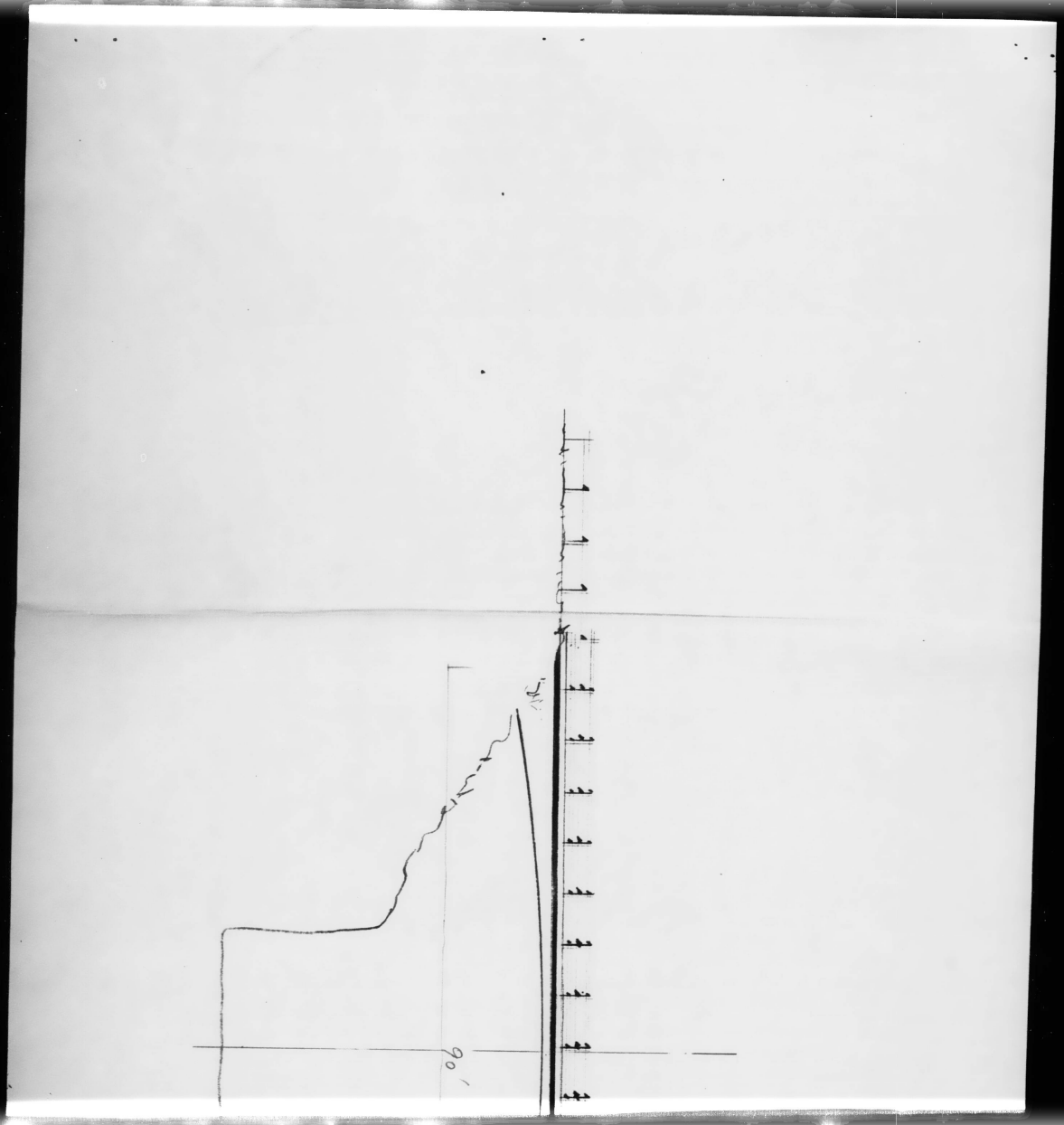

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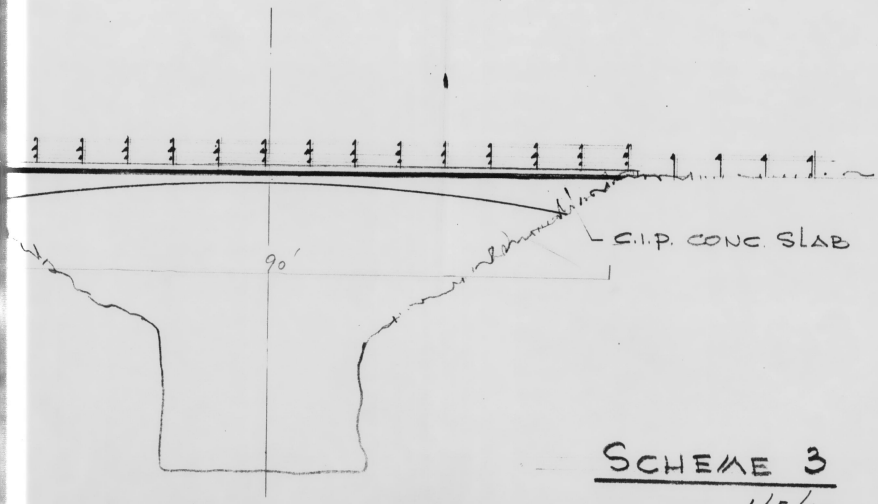

SCHEME 3

1/5/67

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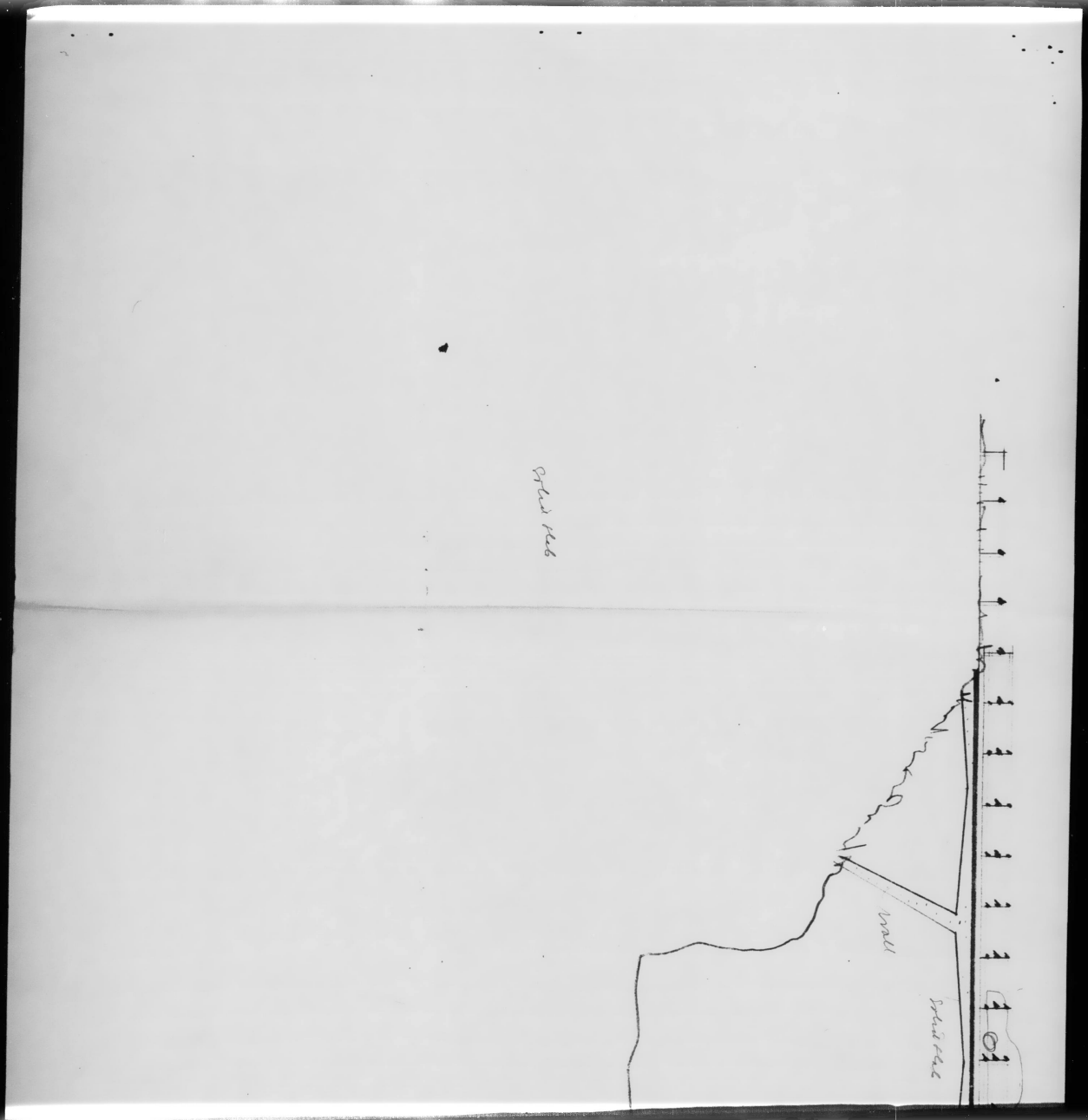

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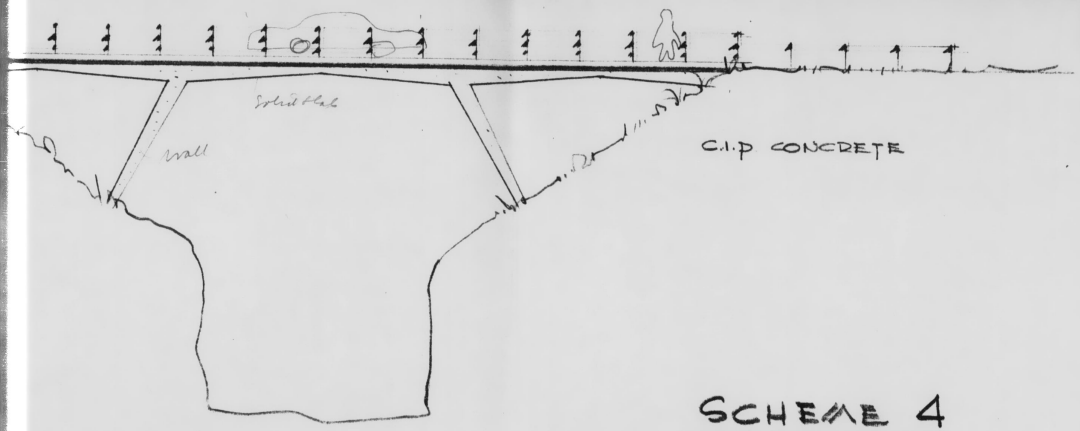

SCHEME 4

1/5/67

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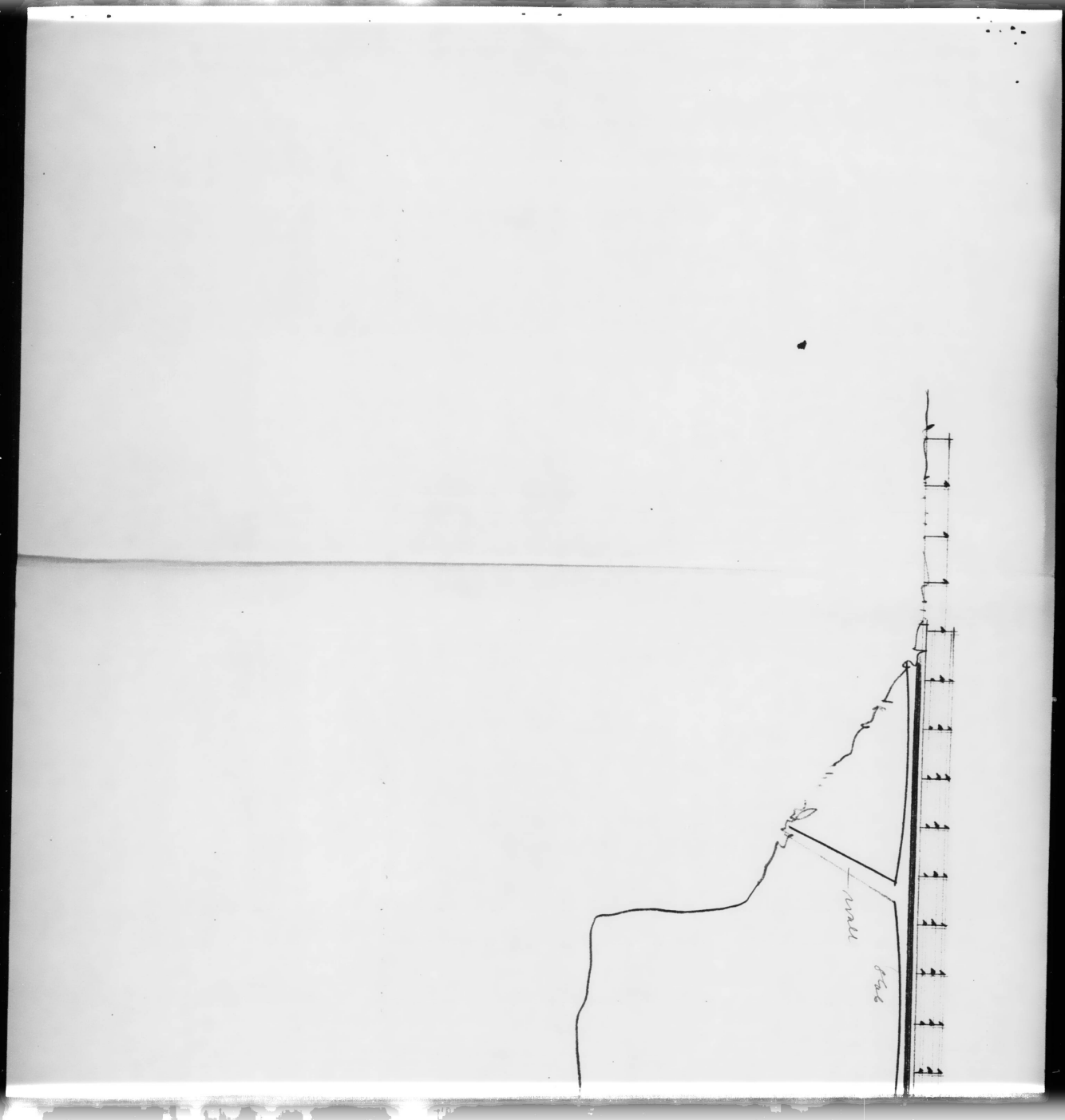

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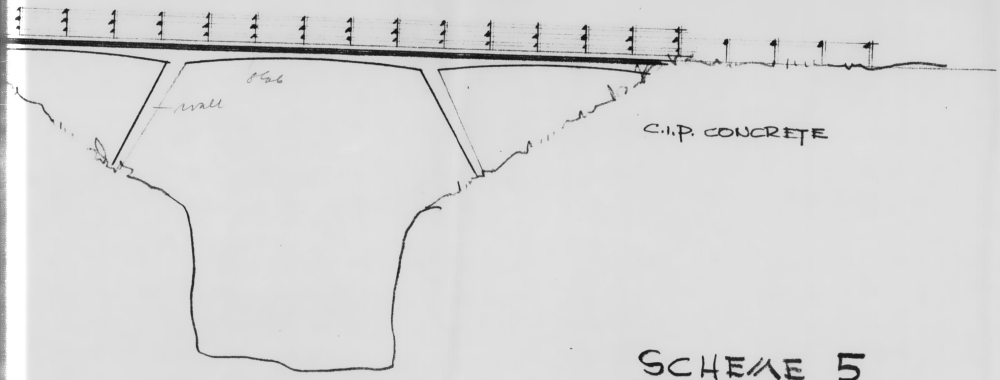
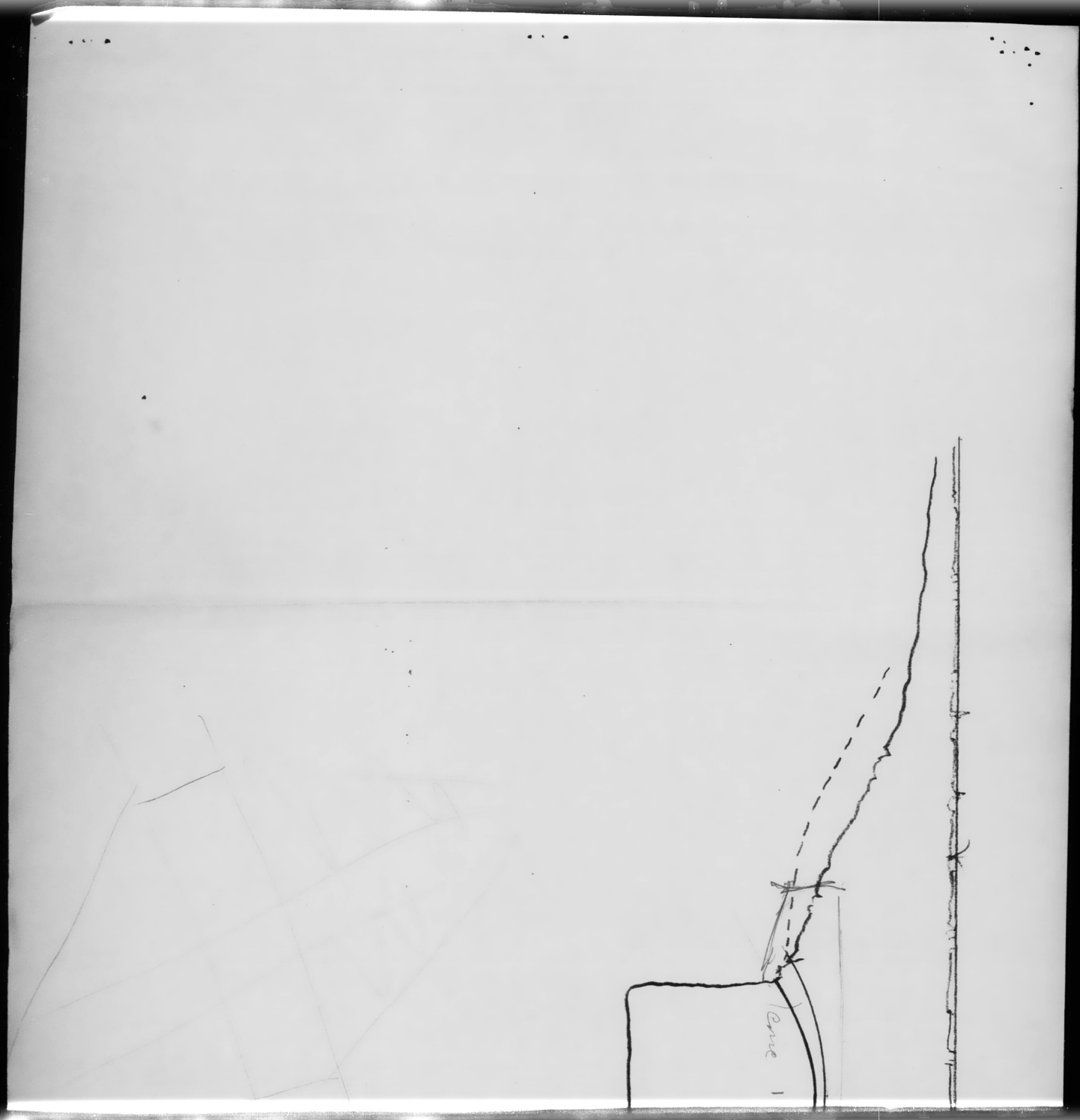


SCHEME 5

1/5/67



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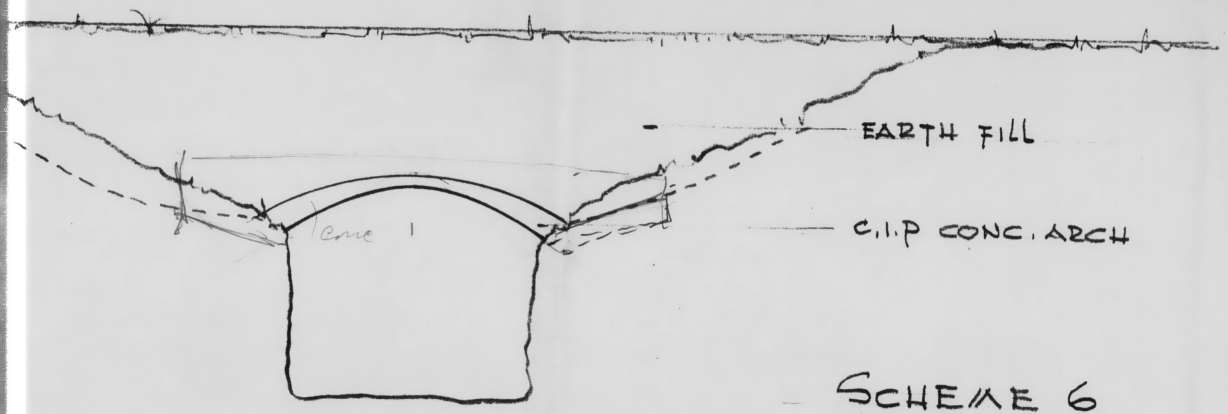

SCHEME 6

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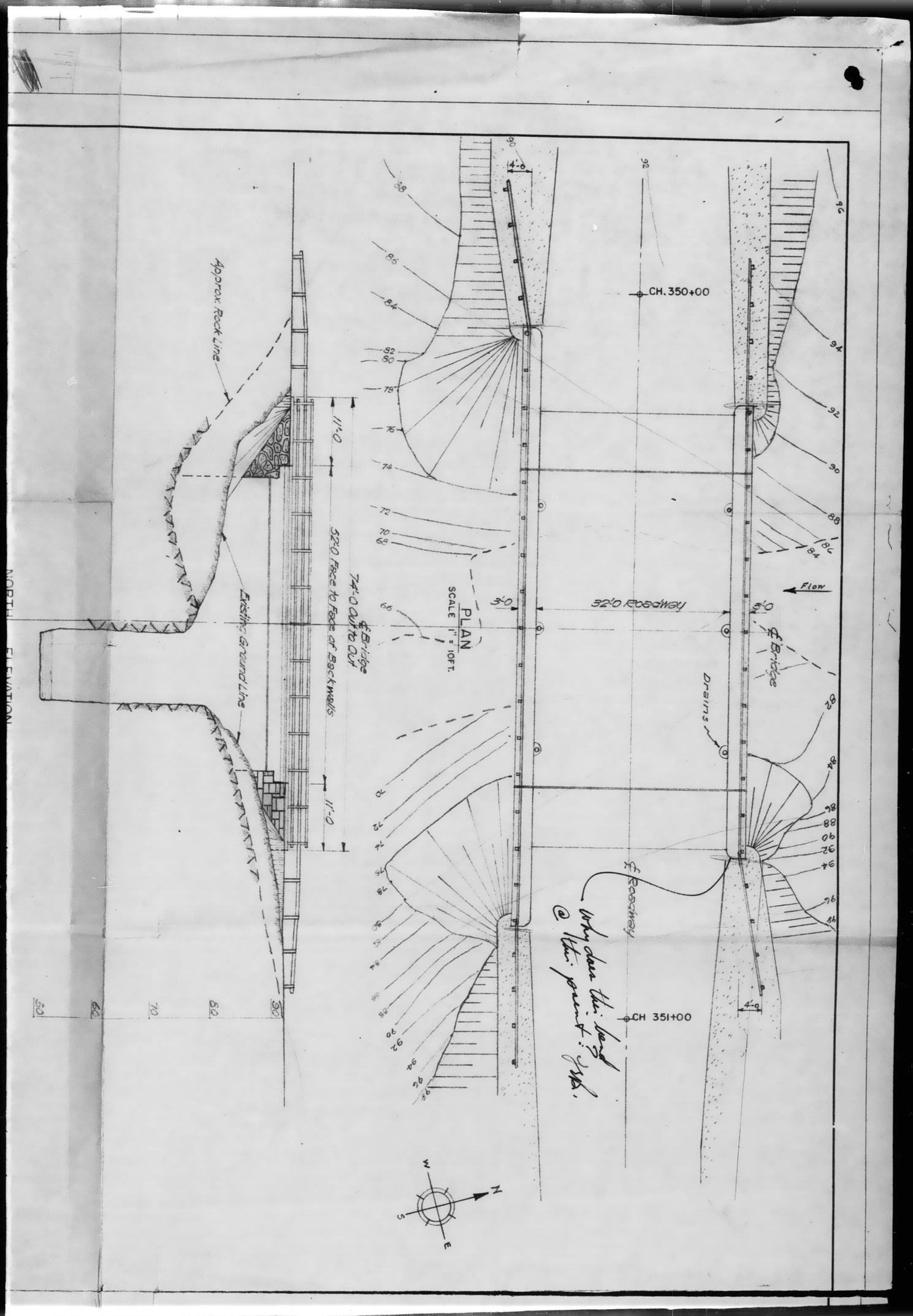

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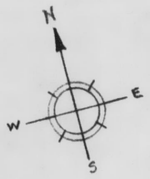
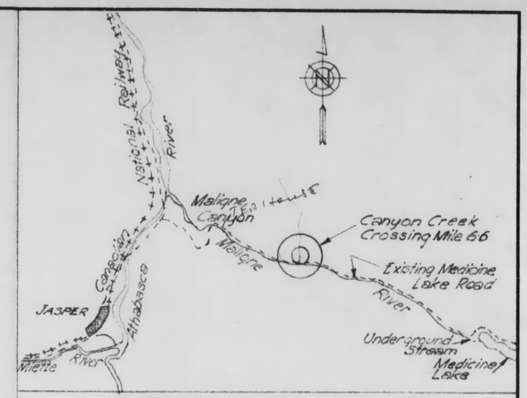
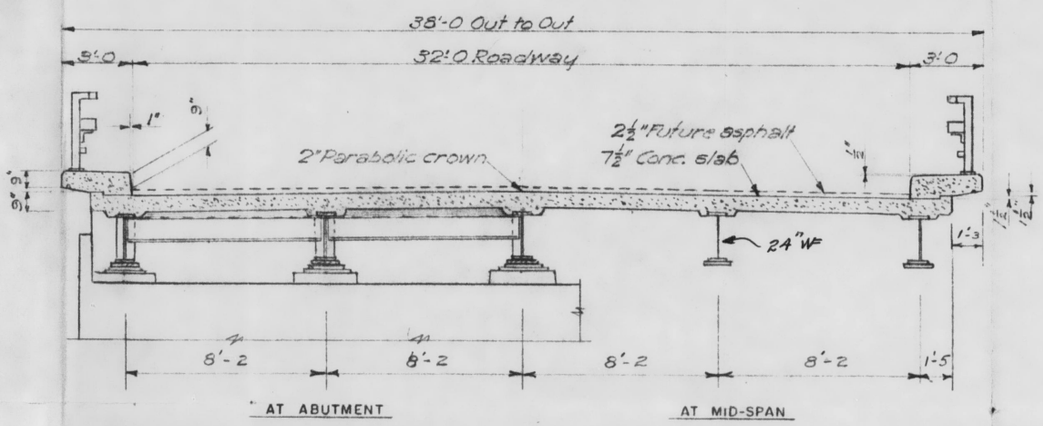




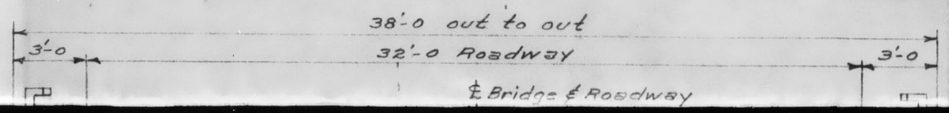


LOCATION PLAN SCALE 1" = 3 MILES

GENERAL NOTES



SECTION
COMPOSITE DESIGN



Approx. Rock Line

80
70
60
50

NORTH ELEVATION
SCALE 1" = 10FT.

-0.3% Grade

℄ Bridge
98'-0 Out to Out
32'-0 Face to Face of Backwalls

23'-0 | 23'-0

90
80
70
60
50

Treatment #3

Treatment #4

Existing Ground Line

Approx. Rock Line

SOUTH ELEVATION
SCALE 1" = 10FT.

8'-2

AT ABUT

3'-0

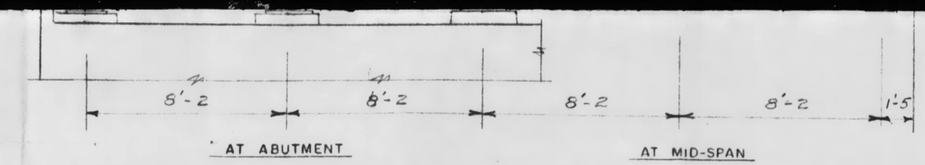
11½"

2½" asph

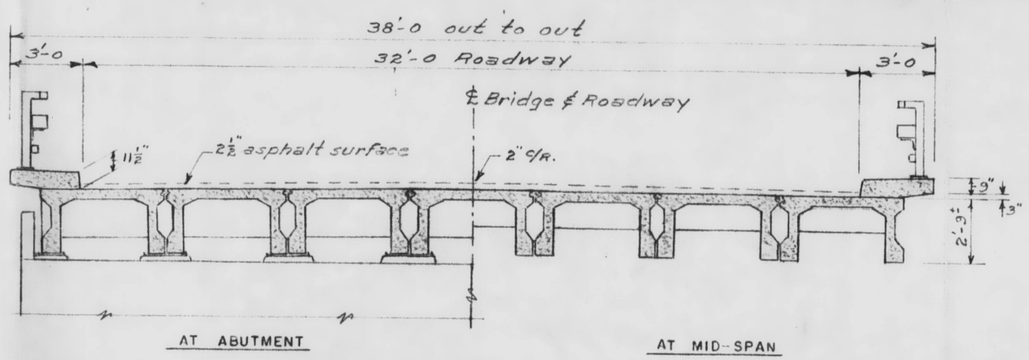
AT ABUTMEN

A

3 OF/DE



SECTION
COMPOSITE DESIGN



SECTION
ALTERNATIVE PRESTRESSED DESIGN
Scale ¼" = 1'-0

PRELIMINARY

NO.	REVISION	NAME	DATE

DEPARTMENT OF PUBLIC WORKS
CANADA
DEVELOPMENT ENGINEERING BRANCH
STRUCTURES DIVISION

CANYON CREEK BRIDGE

MALIGNE-MEDICINE LAKE ROAD-MILE 6·6

GENERAL LAYOUT

JOB SUPERVISOR H. HEWITT
APPROVED DATE
CHIEF STRUCTURES DIVISION
APPROVED DATE
CHIEF ENGINEER

	BY	DATE
DESIGN CHECKED		
DRAWN CHECKED	H.V.E.	

PROJECT NO. 253

SHEET OF

Jan. 6/67

NATIONAL AND HISTORIC
PARKS BRANCH

JAN 13 1967

ENGINEERING AND
ARCHITECTURAL DIVISION

Parks Canada
Parcs Canada

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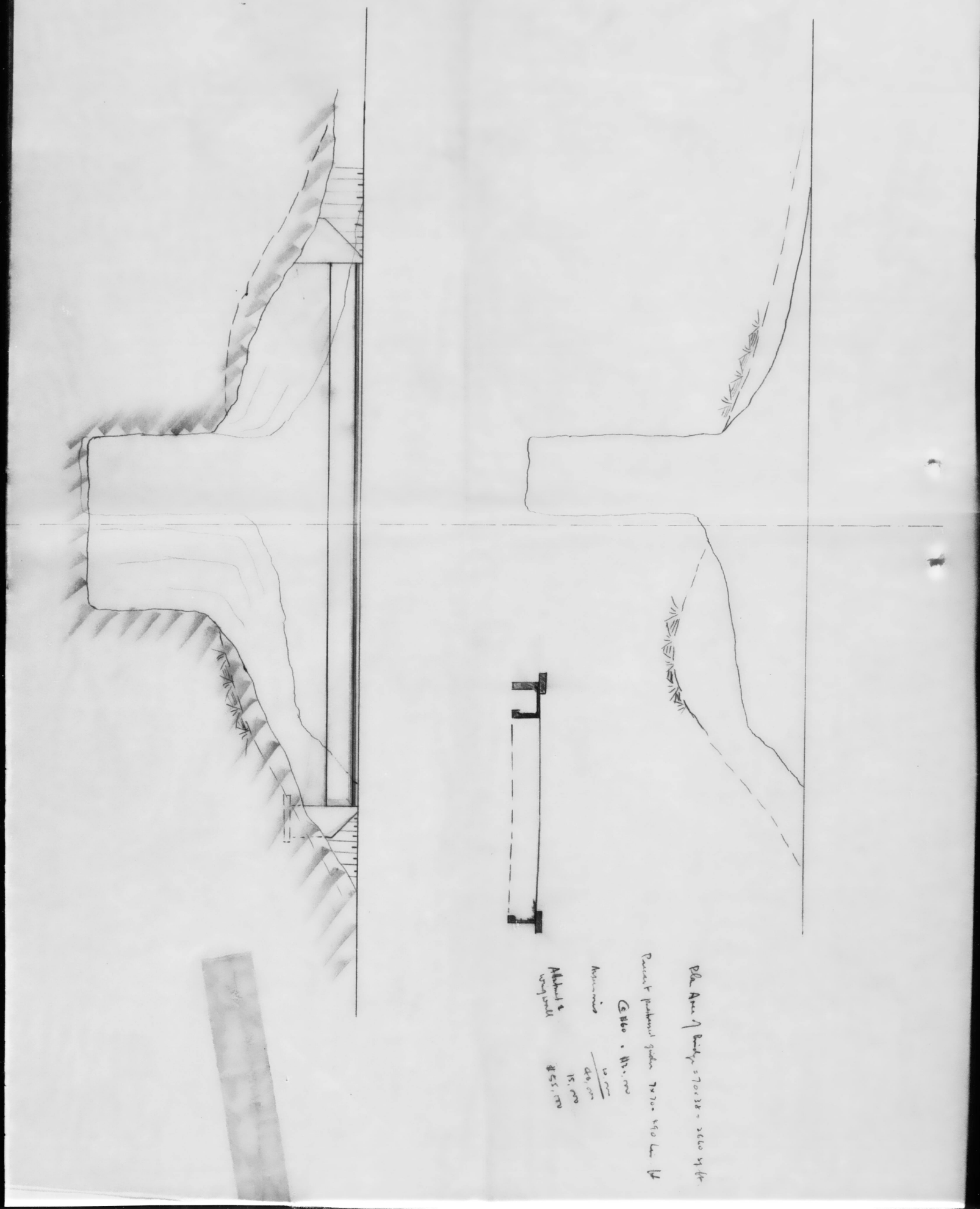

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PARKS CANADA

CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

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RG 84, A-2-a, vol. 1614
File/dossier J60-2 Plans (1)

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GOVERNMENT OF CANADA
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DO NOT DESTROY THIS ENVELOPE UNTIL ALL BLOCKS ARE USED UP.
CROSS OUT PREVIOUSLY USED BLOCK. PRINT NAME AND ADDRESS IN NEXT BLOCK.

ENVELOPPE EXPÉDIÉE PAR PORTEUR

GOUVERNEMENT DU CANADA
EXPÉDITION PAR PORTEUR SEULEMENT—NE PAS METTRE À LA POSTE
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RAYER LA CASE PRÉCÉDEMMENT UTILISÉE. ÉCRIRE LES NOM ET ADRESSE EN LETTRES MAJUSCULES DANS LA CASE SUIVANTE.

Financial Mgmt
Room 1100
G. [illegible]
Room 1203

J60-2 Plans & Specs.

Vol. 1.

Maligne (Medicine)
Lake Road.

CGSB STANDARD FORM 14CP-3 7530-21-855-4891 FORMULE NORMALISÉE 14CP-3 DE L'ONGC

CONTINUE ON OTHER SIDE—À CONTINUER

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ENVELOPPE EXPÉDIÉE PAR PORTEUR

GOUVERNEMENT DU CANADA
EXPÉDITION PAR PORTEUR SEULEMENT — NE PAS METTRE À LA POSTE
NE PAS JETER CETTE ENVELOPPE AVANT QUE TOUTES LES CASES AIENT ÉTÉ UTILISÉES.
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CGSB STANDARD FORM 14CP-3 7530-21-855-4891 FORMULE NORMALISÉE 14CP-3 DE L'ONGC

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

NATIONAL PARKS BRANCH ENGINEERING SERVICES DIVISION

file copy PA file

CONTRACT AND SPECIFICATIONS FOR

J60-2

Construction of the Medicine Lake - Maligne Lake Road

from mile 0 to mile 5.5, Jasper National Park.

CONTRACTOR: Brent Construction Company Limited,
5723 - 103A Street,
Edmonton, Alberta.

ESD 19

CONTRACT No. 200

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH. ENGINEERING SERVICES DIVISION.

CONTRACT AGREEMENT
FOR
THE CONSTRUCTION OF THE MEDICINE LAKE-MALIGNE LAKE ROAD FROM MILE 0.0 TO MILE 5.5 (APPROX.) IN JASPER NATIONAL PARK.

SECTION I

Articles of Agreement
General Conditions
Labour Conditions
Special Provisions

SECTION II

Specifications

Part 2 - Clearing, Grading and Pipe Culverts
Part 3 - Gravel Surfacing and Base Course
Part 6 - Miscellaneous Construction Items
Part 7 - Typical drawings

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ARTICLES OF AGREEMENT made the 5th day of June 19 61

HER MAJESTY THE QUEEN
in right of Canada,
hereinafter called "Her Majesty",

OF THE FIRST PART,

AND Brent Construction Company Limited,

a body corporate, incorporated
under the laws of Alberta
and having its registered
office at 5723-103A Street in the
City of Edmonton and
Province of Alberta,
hereinafter called "the Contractor",

OF THE SECOND PART,

WITNESSETH that in consideration of the covenants and agreements hereinafter contained the parties covenant and agree as follows:

1. The following documents, namely:

(a) these Articles of Agreement;

(b) the General Conditions attached hereto;

(c) the Labour Conditions attached hereto;

(d) the Specifications and drawings attached hereto;

(e) the plans of the work referred to in Section 3; and

(f) Special Provisions

executed by the parties and attached hereto, form the contract between the parties and enure to their benefit and are binding upon them, their successors, and assigns.

2. These Articles of Agreement prevail over provisions inconsistent therewith found in any other document forming part of the contract.

3. The Contractor will supply the materials and perform the work in the manner provided in this contract, in connection with the following, hereinafter called "the work": construction of the Medicine Lake - Maligne Lake Road from mile 0 to mile 5.5, Jasper National Park, Alberta, in accordance with the attached plans and specifications.

4. The Contractor will commence the work within fifteen days from the day of receiving a notice therefor from the Minister of Northern Affairs and National Resources, hereinafter called "the Minister" but the Chief Engineer of the Engineering Services Division of the National Parks Branch of the Department of Northern Affairs and National Resources, hereinafter called "the Engineer", may allow an extension of the period in the case of inclement weather or other circumstances beyond the Contractor's control.

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5. If so required by the Engineer, the Contractor will, in addition to or in lieu of, the work or part thereof, supply and perform extra work or dispense with the work or any part thereof.

6. The Engineer may at all times inspect any place, wherever work is done in connection with the contract, and the Contractor will, as a condition precedent to the Engineer certifying that any portion of the work or extra work has been supplied and performed, follow his instructions pertaining to the performance of the contract, including the supply and use of materials and equipment.

7. The Contractor will delegate its powers to a person approved by the Engineer, and this person will continuously supervise the performance of the contract, and any communication intended for the Contractor may be made to this person.

8. The Contractor will deliver the work and extra work, completed and cleared from waste material and temporary structures to the Engineer, on or before the 30th day of November, 1961 and time shall be of the essence of this covenant, but should, prior to delivery, the work and extra work or any part of either be damaged or lost, the Contractor will deliver the work and extra work, completed and cleared from waste material and temporary structures to the Engineer within a reasonable time, to be determined by the Minister.

9. As security for the performance of the contract the Contractor has deposited with Her Majesty

, receipt whereof is hereby acknowledged.

10. Her Majesty will pay in the aggregate to the Contractor for the work the contract price calculated as follows:

Item	Description	Unit	Quantity	Rate	Price
1.	Spec. Ref.			$	$
1.	2.2.5 Excavation, common	cu.yd.	254,000	0.25	63,500.00
2.	2.2.5 Excavation, rock	cu.yd.	51,000	1.15	58,650.00
3.	2.3.5(c) Watering	1000 gal.unit	600	2.50	1,500.00
4.	3.1.5(c) Excavation for Structures				
	2.4.5 Common	cu.yd.	700	0.40	280.00
	2.4.5 Rock	cu.yd.	200	3.00	600.00
5.	2.5.5(a) Granular Borrow Excavation	ton	3,000	0.20	600.00

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Item	Description	Unit	Quantity	Rate	Price
				$	$
6.	2.6.5 Overhaul of Granular Borrow ($\frac{1}{2}$ mile free)	ton mile	9,000	0.15	1,350.00
7.	2.7.5 Install corrugated Metal pipe culverts				
	(1) 24" dia.	lin.ft.	400	1.00	400.00
	(2) 36" dia.	lin.ft.	350	1.70	595.00
8.	2.7.5 Supply, deliver and install, Corrugated Metal pipe culverts				
	(1) 18" dia. x 16 ga.	lin.ft.	240	3.75	900.00
	(2) 72" dia. x 8 ga.	lin.ft.	220	32.00	7,040.00
9.	3.1.5(a) Crushed Gravel Base Course	ton	20,000	1.45	29,000.00
10.	3.1.5(b) Hauling Base Course	ton mile	60,000	0.15	9,000.00
11.	3.1.5(d) Stripping borrow areas	cu.yd.	1,500	0.20	300.00
12.	6.1.5 Hand placed Rip-Rap	cu.yd.	100	4.00	400.00
13.	6.2.5 Random Rip-rap	cu.yd.	10,000	1.25	12,500.00
14.	Spec. Equipment Rental				
	Prov. 5-D.8 Crawler Tractors or equivalent - 300 Hr. each	Hour	1,500	12.00	18,000.00
	2-14-18 cu.yd. sprapers 300 hr. each	Hour	600	4.00	2,400.00
	2- Angle Dozers 300 hr. each	Hour	600	3.00	1,800.00
	1- Ripper	Hour	300	8.00	2,400.00
		Total price			$211,215.00

Note: The D8 Crawler Tractors or equivalent shall have a draw bar Horse Power of no less than 155.

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11. For Extra work performed in addition to or in lieu of, the work or part thereof and for work deleted the sum to be added to or deducted from the contract price, will be agreed upon by the parties by calculating the costs of the applicable items enumerated in Section 10, and if no agreement can be reached, Her Majesty will pay the Contractor the following for extra work:

(a) the aggregate of all sums paid by the Contractor

(i) as wages to workmen,

(ii) for material,

(iii) for the transport of material, and

(iv) for loading and unloading of equipment and its transport.

(b) ten per cent of the aggregate of the sums referred to in paragraph (a); and

(c) such further sums for the rental of certain equipment, as may be agreed upon between the parties,

and will deduct from the contract price for work dispensed with the aggregate of the sums corresponding to thos enumerated in paragraph (a), which the Contractor would, in the Minister's opinion, have paid.

12. The Engineer will, within two months from the day mentioned in Section 4 and thereafter once a month, certify in writing to the Minister and to the Contractor how much of the work and the extra work has been supplied and performed and Her Majesty will pay to the Contractor ninety per cent of the price thereof within thirty days of the issue of each certificate and will pay the balance of the contract price and return the security to the Contractor within two months from the delivery of the work and extra work.

13. All materials supplied and all equipment used by the Contractor in the performance of the contract are the property of Her Majesty, but on delivery of the work the Contractor may remove unused materials and the equipment supplied by the Contractor.

14. Her Majesty may employ on or about the work other contractors and workmen and the Contractor will co-operate with them.

15. The Contractor will promptly pay workmen, subcontractors and suppliers of material, permit the Engineer to inspect all books of account and other documents evidencing the performance of this covenant, and the Contractor will submit further evidence as to the performance of this covenant to the Engineer within such time and in such form as required by him.

16. The Contractor will at its own expense insure the work and extra work against the risk of fire in the amount of the contract price with an insurer acceptable to the Minister for a period starting on commencement of the work and ending on the delivery of the work and extra work, and the Contractor will forwith deposit the policy or policies with the Minister.

17. The Contractor will indemnify and save harmless Her Majesty from and against all claims, loss, damages, costs, actions and other proceedings made, sustained, brought or prosecuted in any manner based upon, occasioned by or attributable to, any injury or damage arising from the performance or purported performance of the contract.

18. The contract may not be assigned in whole or in part and no subcontractor may be employed without the Minister's consent.

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19. No Member of the House of Commons shall be admitted to any share or part of this contract or to any benefit to arise therefrom.

20. Whenever it appears to the Minister that the Contractor is about to do, is doing or has done anything that may result or has resulted, in a breach of the contract, the Engineer may, in the name of Her Majesty, repudiate the contract or may at any time before the delivery of the work and extra work and at any time within one year thereafter, require the Contractor to remedy the defect and, if the Contractor fails to do so forthwith or within the time permitted therefor by the Engineer, Her Majesty may remedy the defect at the Contractor's expense.

IN WITNESS WHEREOF the Minister of Northern Affairs and National Resources on behalf of Her Majesty in right of Canada has hereunto set his hand and seal and Brent Construction Company Limited has hereunto affixed its corporate seal attested to by its proper officers in that behalf.

SIGNED, SEALED AND DELIVERED on behalf of Her Majesty the Queen in right of Canada, in the presence of

_____
Witness

_____

SEALED AND DELIVERED AND SIGNED by the and the of Brent Construction Company Limited

_____

_____

_____

(SEAL)

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DEPARTMENT OF LABOUR

OTTAWA, CANADA

CANADA

LABOUR CONDITIONS April 5, 1961.

Our Ref. N.A. & N.R. 227

THE FOLLOWING SCHEDULE OF LABOUR CONDITIONS IS APPLICABLE TO THE WORK OF

construction of the Medicine Lake - Maligne Lake Road

AT Jasper National Park, Alberta.

TO BE UNDERTAKEN FOR THE DEPARTMENT OF Northern Affairs and National Resources

Classifications, Wages and Hours.

(1) All persons in the employ of the contractor, subcontractor, or any other person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour.

Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week and nothing herein contained shall prevent the Minister of Labour from requiring hours of labour less than 44 per week where by current practice, collective agreement, or provincial legislation or regulation, such shorter hours are applicable in the area in which the contract is being performed.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
	$
Carpenters & joiners	2.45
Compressor operators	1.70
Drill runners	1.65
Firemen	1.70
Grader operators	2.10
Labourers	1.60
Oilers (construction equipment)	1.70
Operators (draglines, cranes, shovels, etc.)	2.40
Pile driver engineers	2.20
Powdermen	1.65
Structural steel erectors	2.83
Timbermen & cribmen	1.70
Tractor operators (large)	2.10
Tractor operators (small)	1.75
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	2.05
Welders & burners (steel erection)	2.83

SECTIONS 2 TO 9 OF THIS SCHEDULE OF LABOUR CONDITIONS SHOWN OVERLEAF.

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MINISTER OF LABOUR TO DETERMINE OVERTIME RATES AND PROPER CLASSIFICATIONS

(2) Where there are special circumstances which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what are the current or fair and reasonable rates of wages for overtime, and what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision. In case the Contractor shall fail so to do, or fail at any time to pay to any employee or employees for any services performed or for any hours of labour wages according to the rates set forth in the schedule or fixed therefor by the Minister of Labour hereunder regarding overtime and classification, the Minister of Labour may authorize and direct the Minister of the Contracting Department to pay any such wages at the rates so fixed and to deduct the amount thereof from any moneys owing by the Government to the Contractor and any such payment shall for all purposes as between the Contractor and the Government be deemed and taken to be payment to the Contractor, and the Contractor shall be bound in every particular by any such authority, direction and payment as aforesaid.

SCHEDULE TO BE POSTED

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

CONTRACTOR TO KEEP RECORDS WHICH ARE TO BE OPEN FOR INSPECTION

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

DEPARTMENTAL REQUIREMENTS BEFORE PAYMENTS MADE TO CONTRACTOR

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

AUTHORITY TO PAY WAGES IN EVENT OF DEFAULT BY CONTRACTOR

(6) All cases of default in the payment of wages to employees by the contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

CONDITIONS OF SUBCONTRACTING

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contract shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

WORKMEN TO BE RESIDENTS OF CANADA

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

GENERAL CONDITIONS FOR ROAD CONSTRUCTION
NATIONAL PARKS

March, 1961.

SECTION I DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.S.H.O.	American Association of State Highway Officials
A.S.T.M.	American Society of Testing Materials
C.S.A.	Canadian Standards Association
C.G.S.B.	Canadian Government Specifications Board

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

Employee - Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control or receives compensation from the Contractor or Subcontractor.

Engineer - Shall mean the Chief Engineer of the Engineering Services Division of the National Parks Branch of the Department of Northern Affairs and National Resources, having control over the work and shall extend to and include any of the officers or employees of the Department of Northern Affairs and National Resources, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any acting for the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Inspector - The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

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Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to the specifications.

Profile Grade - Line representing the surface elevation as shown on the Standard Plan along the longitudinal centreline of the proposed subgrade surface. Profile grade means either elevation or gradient of such trace according to the context.

Right of Way - (a) The land secured and reserved to the public for highways purposes.

(b) The lines shown on the plan (or as indicated by the Engineer) roughly parallel to the centreline of the highway showing the area reserved for highway purposes.

Roadway - The portion of the right of way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structures.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction. This representative of the Contractor is also defined in Section 7 of the Articles of Agreement.

Working Drawings - Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2 - SCOPE OF WORK

2.1 The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract agreement.

All clauses of the above documents forming this contract shall apply to any changes or additions, ordered by the Engineer, equally and to the same extent as to the works contracted for.

2.2 Special Work

Should any construction or conditions which are not covered by the plans or the specifications be anticipated, special provisions for such work will be prepared by the Engineer, and shall be considered a part of the specifications the same as though contained full herein. Should any such special provisions or requirements conflict with the specifications or supplements thereto, the special provisions shall govern.

2.3 Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

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2.4 Provision for Traffic

(1) If the section of road under construction is to be open to public traffic the Contractor shall be responsible for providing a safe road between the limits of his contract for such traffic and maintain this road to the satisfaction of the Engineer. The Contractor shall also prosecute his work in a manner which will least interfere with traffic, consistent with the faithful performance of the work. The Contractor shall provide, to the satisfaction of the Engineer, sufficient signs, lights, barricades, flagmen and other approved control devices for the safe handling of this traffic.

(2) No traffic shall be diverted or detoured outside the limits of the right of way unless approved by the Engineer and is so the requirements outlined in (1) above shall equally apply to this detour.

(3) If the section of road under construction replaces a portion of a National Park fire road, provision shall be made by the Contractor, to the satisfaction of the Engineer, to allow for the passage of traffic at any time in the event of an emergent situation requiring use of the road.

(4) The Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the Contract.

2.5 Removal and Disposal of Structures and Obstructions

(1) All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the Contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, which the Engineer may order salvaged, shall be carefully removed and shall become the property of the Department.

(2) Payment for this work shall be made under the pay items identified for such work in the tender, except that when the work is of minor consequence, it shall be considered as incidental to and included in other items.

2.6 Final Cleaning Up

The Contractor shall, upon completion of the works, remove all temporary structures and clear away all rubbish, debris surplus and waste materials and equipment remaining on or about the works and leave all work trimmed in a neat and tidy condition, satisfactory to the Engineer.

SECTION 3 - CONTROL OF THE WORK

3.1 Authority of the Engineer

The Engineer shall be the sole judge of the work and material in respect to both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intent of this contract and as to the meaning or interpretation of the plans, drawings and specifications shall be final. No works under this contract shall be deemed to have been performed nor materials or things provided so as to entitle the Contractor for payment unless and until such receives the approval of the Engineer as evidence by his certificate in writing.

The work shall be under and subject to the control and supervision of the Engineer and the Contractor shall obey and comply to all orders, directions or instructions at any time given by the Engineer relating to the work.

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3.2 Plans

Plans consisting of general drawings and showing such details as are necessary to indicate the construction contemplated, will be furnished by the Department. Roadway plans will show alignment, profile grade and typical cross sections.

3.3. Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions and adjustments shown on the approved plans, except as modified by written orders of the Engineer. The crown or rise of the finished surfaces of the roadway, from the curb side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves, or at other places where deemed necessary, the Contractor will be required to widen, superelevate and spiral the roadway according to Departmental standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the Engineer in writing.

3.4 Coordination of Plans, Specifications, Supplemental Specifications and Special Provisions

These specifications, the supplemental specifications, the plans, Special Provisions and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

3.5 Cooperation by Contractor

See Article 7 of the Articles of Agreement.

3.6 Cooperation with Utilities

(1) It shall be the responsibility of the Contractor to notify the Engineer when necessary adjustments of public or private utility fixtures, pipelines and other appurtenances within or adjacent to the limits of the construction are required.

(2) It will be the Department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

(3) Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners under agreement with the Department except as otherwise provided for in the special provisions or as noted on the plans.

(4) It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

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3.6 Cooperation with Utilities (Cont'd)

(5) At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made. The Contractor shall be fully responsible for all losses and damage to such properties caused by the result of his negligence.

(6) The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication or rearrangement of work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

3.7 Cooperation Between Contractors and Park Forces

The Contractor shall cooperate full and afford all reasonable facilities to the satisfaction of the Engineer to other contractors or workmen and equipment controlled by the Department, which the Engineer may deem necessary at any time to perform any work not comprised in the contract, the work of the Contractor being interferred with as the Engineer may deem practical.

3.8 Construction Stakes, Lines and Grades

The Engineer will set construction stakes establishing lines, slopes and continuous profile-grade in road work, for culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work.

The Contractor shall protect and shall not remove or destroy such stakes or marks set by the Engineer. He shall furnish the necessary assistance to correct or replace any stake or mark which through his negligence has been removed or destroyed.

3.9 Authority and Duties of Inspector

(1) Inspectors, employed by the Department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to alter or waive the provisions of these specifications.

(2) An Inspector is placed on the work to keep the Engineer informed as to the progress of the work and the manner in which it is being done; also to call the Contractor's attention to any nonconformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and specifications. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

(3) The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

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3.10 Inspection of Work

(1) All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection. Another phase of the work shall not be commenced which will permanently cover any previous work until such work inspected and approved by the Engineer. Any such approval shall in no way constitute final acceptance of the work.

(2) If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good or the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

(3) Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

3.11 Defective and Unauthorized Work or Materials

(1) The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

(2) No work shall be done without lines and grades having been given by the Engineer.

(3) Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twnety-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance of the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor.

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3.12 Maintenance of Work During Construction

(1) The Contractor shall maintain the work during construction. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer.

(2) All cost of maintenance of the work during construction shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

(3) In the event that the Contractor's work is ordered shutdown for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract is terminated.

(4) In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

(5) The Contractor is also responsible for such maintenance on any Park roads or structures forming part of these roads, such as fire roads, service or access roads which the Contractor may use, after prior approval from the Engineer, for haulage or other purposes in order to prosecute the work. Any such roads or structures shall be properly strengthened in order to sustain the loading placed thereon and the Contractor shall be fully responsible to rectify any damage caused as a result of his negligence in this respect.

3.13 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Articles 2.5 and 3.12 above, will result in the Engineer immediately notifying the Contractor to Comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

3.14 Tentative Acceptance

(1) At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract: provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor on an extra work basis at rates agreed upon by the Engineer. Any damage to the highway that may occur on such section not attributable to traffic, shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

(2) If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

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3.15 Claims for Adjustment and Disputes

In any case where the Contractor deems the extra compensation is due to him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra as defined herein, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost, then the Contractor hereby agrees to waive the claim for such extra compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost as aforesaid shall not in any way be construed as proving the validity of the claim.

3.16 Final Acceptance

(1) Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

(2) Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer shall make a semi-final inspection and if at such semi-final inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

(3) If, however, at any semi-final inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the Contractor the necessary instructions as to replacement of material and performance or re-performance of work necessary and pre-requisite to final completion and acceptance, and the Contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or re-performance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

SECTION 4 - CONTROL OF MATERIAL

4.1 Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

4.2 Source of Supply and Quality Requirements

The materials supplied by the Contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other approved sources.

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4.3 Designated Local Material Sources

(1) The Department will acquire and make available to the Contractor the right to make materials from sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads. In every case of the above the Engineer will outline the absolute limits to which the Contractor must strictly confine his operation and the Contractor shall not commence work until such limits have been obtained. Any damage caused as a result of negligence in this regard shall be fully rectified, to the full satisfaction and by whatever means deemed necessary by the Engineer with all resulting costs completely borne by the Contractor.

(2) The quality of material in such deposits will be acceptable in general, but the Contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications and whether blending with other materials will be necessary. It shall be understood that it is not feasible to ascertain for samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

(3) If the Contractor desires to use material from sources other than those designated, he shall do so only on written authority of the Engineer. The Engineer may, if he deems it practical and desirable, authorize the use of such sources, only after samples have been submitted under the direction of the Engineer. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

(4) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

4.4 Field Office and Laboratory

Wherever indicated in the contract, the Contractor shall provide a field office and/or laboratory.

4.5 Delivery and Storage of Materials

(1) Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

(2) Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

(3) Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the Engineer, and the limits of the sites defined and strictly adhered to by the Contractor. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the Contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

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4.5 Delivery and Storage of Materials (Cont'd)

(4) During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. C.S.A. standard practice shall govern the storage of materials unless otherwise provided.

4.6 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

4.7 Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

4.8 Materials Inspection

In order to expedite the inspection and testing of materials, the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources of supply.

4.9 Department Furnished Material

(1) The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

(2) The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

(3) The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

(4) The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returned to the supplier which are surplus to contract requirements for any cause whatsoever.

4.10 Trade Names and Catalogue Numbers

Where trade names and catalogue numbers have been used in the specification, they are intended to establish a standard and quality. The Contractor may substitute for any article or material so designated, provided such substitution is of equal quality and manufacture and incorporates all the features of design of the article or material specified. Before such substitution can be made however, the substitutes must be approved by the Engineer in writing.

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4.11 Samples

The Contractor shall furnish for approval all necessary samples of materials to be used and employed in the work as directed. The work shall be in accordance with the approved samples.

SECTION 5 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

5.1 Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order of decree, whether by himself or his employees.

5.2 Permits, Licenses Taxes, Regulations

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosectuion of the work.

The work shall be performed in accordance with all local ordinance laws rules and regulations. It shall be noted that any work performed within a National Park is subject to the terms of the National Parks Act.

5.3 Health and Sanitary Provisions - Camps

The Contractor shall erect and maintain suitable privies, properly disinfected for the use of the workman. If the Contractor considers it necessary to erect a camp for the work, this camp shall be erected and maintained in accordance with all local sanitary regulations. If the camp is to be erected within a National Park the location of the camp and the limits of said camp shall be approved by the Park Superintendent and shall conform to the requirements of the Public Works Health Act and shall be subjected to periodic inspections by the local Sanitary Inspector and representative of the Department of National Health and Welfare.

The Contractor shall keep the camp area in a orderly condition, dispose of all refuse and obtain approval of Engineer for the construction of any buildings, latrines, cesspools, septic tanks etc.

Upon completion of the work clean-up of the camp area disposal of surplus structures materials and equipment removal of debris rubbish etc. shall be carried out to the satisfaction of the Engineer.

5.4 Barricades and Warning Signs and Project Sign Boards

(1) The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

(2) The Contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by

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5.4 Barricades and Warning Signs and Project Sign Boards (Cont'd)

(2) Cont'd

traffic, and at all intermediate points where the new work crosses or concides with an existing road. Such warning signs and devices shall be constructed and erected in accordance with the Manual for Uniform Traffic Control Devices for Canada or if not covered in this Manual as approved by the Engineer.

(3) If required the Contractor shall, at his own expense, provide and erect project sign boards at either or both or one end of the contract, at locations approved by the Engineer. The sign boards shall be appropriately lettered in accordance with Standard Plan.

5.5 Use of Explosives

(1) When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.

(2) All explosives shall be stored in a secure manner, in compliance with laws, ordinances and regulations and all such storage shall be marked clearly "DANGEROUS - EXPLOSIVES".

(3) The Contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the Contractor of responsibility for any damage resulting from his blasting operations.

5.6 Damage of Property and Persons

(1) See Article 17 of the Articles of Agreement.

(2) The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions. If required by the Engineer the Contractor shall retain at designated points a certain amount of fire fighting equipment as stipulated by the Engineer. This equipment shall be in a condition satisfactory to the Engineer and shall be maintained in this condition at all times.

(3) Unless specifically excepted in the General Conditions the requirements for fire insurance as outlined under Section 16 will not apply to this work.

5.7 Contractor's Responsibility for Work

The Contractor shall assume all risk and shall bear all loss or damage whatsoever, by any cause, which may occur to works, until same is finally accepted by the Minister and if any damage shall occur prior to such acceptance the Contractor shall immediately, at his own expense repair the damage and restore the work to the satisfaction of the Engineer.

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5.8 Furnishing Right of Way

The Department will be responsible for the securing of all necessary rights of way in advance of construction.

5.9 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-contractor or cause in whole or in part by an act or omission of the Contractor, any Sub-contractor, or any officer, servant or agent of the Contractor or of any Sub-contractor whether or not such act or omission was negligent.

SECTION 6 - PROSECUTION AND PROGRESS

6.1 Subletting of Contract

See Article 18, Articles of Agreement.

6.2 Prosecution of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work such times and seasons, in such order or procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized. The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

6.3 Limitation of Operations

The Contractor shall not open up work to the prejudice of work already started and he may be required by the Engineer to finish a section of which work is in progress before work is started on any additional section.

6.4 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work wholly or in part by written order, for such period as he may deem necessary due to unsuitable weather, to conditions, considered unfavourable for the suitable prosecution of the work, or to failure on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

6.5 Extension of Time

The Contractor shall be extended beyond the stipulated completion date only after requesting such extention in writing to the Engineer outlining the extenuating reasons for the delay occassioned in the work. The decision of the Engineer as to what additional time, if any, beyond the time specified will be allowed.

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6.6 Default and annulment of Contract

In case the Contractor defaults or delays in commencing work or otherwise fails to observe the terms of the contract, the Engineer may give six days notice in writing requiring the Contractor to put an end to such default or delay, and in case the Contractor fails to observe the letter of such notice, the Minister may take all of the work out of the Contractors; hands and employ such means as will guarantee completion of the work, and in such case the Contractor shall have no claim to further payments. Furthermore, Her Majesty shall take possession of all materials, machinery, tools, equipment provided by the Contractor for the work without compensation to the contractor, and Her Majesty may sell or otherwise dispose of such materials, machinery, tools and equipment as satisfaction, or part satisfaction, for losses incurred by Her Majesty on account of default or delay by the Contractor.

SECTION 7 - MEASUREMENT AND PAYMENT

7.1 Measurement of Quantities

(1) General

All work completed under the contract shall be measured by the Engineer according to British Standard measure.

(2) Linear and Area

(a) All longitudinal and transverse measurements for areas will be measured horizontally.

(b) Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

(c) All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

(3) Volume and Weight

(a) In computing volumes of excavation, embankment and borrow, the average end area method will be used.

(b) The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weithts will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible indentification mark.

(c) All materials for which measurement are obtained by the cubic yards, "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of unifrom capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

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7.1 Measurement of Quantities (Cont'd)

(3) Volume and Weight (Cont'd)

(d) When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(e) The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(f) The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(4) Materials

(a) Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

(b) The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

(c) Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the Contractor.

(d) Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

(5) Time

Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions make some other method of measurement desirable.

(6) Lump Sum

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

7.2 Extra Work

For extra work performed under the terms of the Contract the detailed method of payment shall be either:

(1) A unit price or lump sum price mutually agreed upon by both parties and stipulated in a supplemental agreement (Extra Work Order Certificate).

(2) On a equipment rental basis at rates mutually agreed upon by both parties and stipulated in a supplemental agreement.

(3) As outlined in Article 11 of the Articles of Agreement.

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7.3 Progress Payments

See Article 12 of Articles of Agreement.

7.4 Payment for Material Delivered on Project

(1) Partial payments may be made to the extent of 75 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the Department, or leased by the Contractor and transferred to the Department providing such is done to the satisfaction of the Engineer. If requested to do so, the Contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

(2) No payment shall be made upon fuels, supplies, for lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

(3) In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

7.5 Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the Engineer as provided in section 3.16 the Engineer shall prepare the final estimate of the quantities of the various classes or work performed, and after the approval of such final estimate by the Minister, there shall be paid to the Contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

SECTION 8 - WAGES AND CONDITIONS OF EMPLOYMENT

8.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) to the Contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by sub-contract.

8.2 Labour Conditions

(1) The Contractor's attention is directed particularly to the provisions and requirements of the Province's Workmen's Compensation Act and to Statutes regulating the hours of employment on public work.

(2) In addition to the Provincial Laws restricting the hours of labour, and minimum wage rates, the Contractor shall abide by the Labour Conditions of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

By my/our signature I/we hereby acknowledge these General Conditions as forming part of the Contract for .....

.....

.....

dated this ..... day of ..... 19 ....

_____
Signature

(Seal)

_____
Signature

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

GENERAL CONDITIONS

FOR: The construction of the Medicine Lake - Maligne Lake Road from mile 0 to mile 5.5, Jasper National Park, Alberta.

1. PERMITS AND REGULATIONS - All permits and licences etc. that may be required by local and Provincial authorities necessary for the prosecution of the work shall be secured and paid for by the Contractor.

The work shall be performed in accordance with all local ordinances, laws, rules and regulations. If the work as outlined above is located within the confines of National Park it shall be subject to the regulations as laid out in the National Parks Act.

2. PROTECTION OF WORK AND PROPERTY - The Contractor shall provide and maintain all necessary safeguards to adequately protect the work from damage and shall take all necessary precautions for the safety of workmen and the public. In this regard the Contractor shall comply in all respects to Federal, Provincial and Municipal Safety laws and building codes, particularly the Workmen's Compensation Board Regulations for the Province in which the work is being performed.

3. USE OF PREMISES - The Contractor shall confine his operations within the limits of the site. If the site is so confined that the Contractor is unable to store materials, erect an office, camp etc. or similar works necessary to the satisfactory performance of the contract, he shall contact the Engineer who will arrange for additional area, if this is possible and if the Engineer deems it necessary. The Contractor shall not utilize such additional areas without obtaining prior approval from the Engineer.

The Contractor shall not unreasonably encumber the site with his materials or equipment.

4. SANITATION - The Contractor shall erect and maintain suitable privies, properly disinfected for the use of the workman. If the Contractor considers it necessary to erect a camp for the work, this camp shall be erected and maintained in accordance with all local sanitary regulations. If the camp is to be erected within a National Park the location of the camp shall be approved by the Park Superintendent and shall conform to the requirements of the Public Works Health Act and shall be subjected to periodic inspections by the local Sanitary Inspector and representative of the Department of National Health and Welfare.

5. TEMPORARY SERVICES - The Contractor is responsible for the supply of all temporary services - light, heat, power, telephone, water etc. necessary for the performance of the work. If required by the Engineer the Contractor shall erect a field office in which space shall be provided for the Engineer to carry out any drafting, reviewing of drawings etc. incidental to the work.

6. GUARANTEE - The work shall be guaranteed against defects in materials and workmanship for a period of one year, except as may be otherwise noted in the specifications, from the date of acceptance of the work by the Department. The Contractor shall remedy any such defects to the satisfaction of the Engineer, at his own expense, upon the receipt of written notice from the Engineer to do so. The Contractor shall commence such remedial measures within 15 days of receipt of such notice.

If the Contractor refuses to remedy any such defect, the Engineer will arrange to carry out proper measures to remedy same, the cost of which shall be borne by this Contractor.

7. SHOP DRAWINGS - The Contractor shall furnish to the Engineer, at proper times, all shop and setting drawings or diagrams which the Engineer may deem necessary in order to make clear the work intended or to show its relation to adjacent work of other trades. The Contractor shall make any changes in such drawings or

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diagrams which the Engineer may require consistent with the Contract. When submitting such shop and setting drawings the Contractor shall notify the Engineer in writing of changes made therein from the Engineer's drawings or specifications. The Engineer's approval of such drawings or of the revised drawings shall not relieve the Contractor from responsibility for errors made by the Contractor therein or for changes made from the Engineer's drawings or specifications not covered by the Contractor's written notification to the Engineer.

All shop and setting drawings shall be submitted in the following manner:

The Contractor shall submit one standard blue line print and a legible ozalid (sepia) print capable of receiving pencil notes and changes, and suitable for serving as an original for the purpose of obtaining additional prints. After examination, and correction, (if necessary) and approval by the Engineer, the Engineer will retain the sepia copy of shop drawings and will supply to the Contractor, free of charge, the required number of standard blue line prints from the approved sepia copy, and he will also return the standard blue line print originally forwarded by the Contractor, with corrections if any noted thereon.

8. DISCREPANCIES IN PLANS AND SPECIFICATIONS - In the event there is a discrepancy between the plans, specifications or any other conditions stipulated in this Contract or there is some doubt as to the intent of the work, the Contractor shall be responsible to obtain an interpretation or decision from the Engineer and his decision will be binding. The Contractor shall be responsible for clarifying all such discrepancies prior to the submission of his tender, and as such the contract price shall fully provide for the work in question as interpreted by the Engineer.

9. PLANS AND SPECIFICATIONS - The Contractor shall have available at all times on the job one complete set of contract documents, plans and specifications and working drawings relating to the work for use by the Engineer.

10. INSPECTION OF WORK - The Engineer shall have full access, at all times, for inspection of any part of the work, whether it is completed in progress or in preparation and the Contractor shall provide all necessary facilities to permit such inspection. No portion of the work shall be permanently covered without inspection and approval by the Engineer.

11. TRADE NAMES AND CATALOGUE NUMBERS - Where trade names and catalogue numbers have been used in the specification, they are intended to establish a standard and quality. The Contractor may substitute for any article or material so designated, provided such substitution is of equal quality and manufacture and incorporates all the features of design of the article or material specified. Before such substitution can be made however, the substitutes must be approved by the Engineer in writing.

12. SAMPLES - The Contractor shall furnish for approval all necessary samples of materials to be used and employed in the work as directed. The work shall be in accordance with the approved samples.

13. CLEAN-UP - Upon completion of the work the Contractor shall remove from the site all temporary structures, equipment, waste material, rubbish etc. caused by the performance of the work and shall clean up the area to the satisfaction of the Engineer.

By my/our signature I/we hereby acknowledge the General Conditions as forming part of the Contract.

_____
Signature

(SEAL)

_____
Signature

Dated .....19....

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

SPECIAL PROVISIONS FOR CONSTRUCTION OF
THE MEDICINE LAKE - MALIGNE LAKE ROAD
FROM MILE 0.0 TO MILE 5.5. (APPROX.)
IN JASPER NATIONAL PARK.

1. DESCRIPTION OF WORK

A certain amount of grading work was carried out on this road last season by Park Forces in the sections station 0+00 to 80+00, and station 180+00 to 191+00. In order to complete the grading in these two sections, the Contractor will be required to do the work on an equipment rental basis at the contract hourly rental rates for the various items of equipment used.

The remainder of the grading work will be carried out by the Contractor at the contract unit prices as far as Mile 5.5. (approx.), as well as the application of crushed gravel base from Mile 0 to Mile 5.5. (approx.)

2. EQUIPMENT RENTAL WORK

The hourly rental rates for the various items of equipment will be full compensation for operator's and oiler's wages, fuel, lubricants, repairs, replacements, depreciation, interest and all other costs pertaining to the operation including the provision of from 1 to 2 foremen to supervise the work. These rental rates will also include compensation for all transportation costs to and from the site of the work. The hourly rental rates will only apply for the actual hours worked by the equipment.

It may prove necessary to clean up slide areas after construction and the equipment rental rates will apply for the carrying out of this work, if in the opinion of the Engineer such slides were not caused by faulty techniques on the part of the Contractor.

Equipment used on an hourly rental basis shall be of a type and condition to perform the work required in a manner satisfactory to the Engineer. If in the opinion of the Engineer any unit of equipment being used on an hourly rental basis is not of the type or in a condition to properly perform the work it shall be removed and replaced with a unit to the satisfaction of the Engineer.

3. LOCATION OF AGGREGATE MATERIALS

The known source of material for crushed gravel base course is at Mile 4.5 of the contract. Some borrow material may also come from this source.

4. EXCAVATION, COMMON

Included in the Tender Schedule quantity of 254,000 cu. yd. of excavation, Common, is approximately 10,000 cu. yd. of Borrow excavation which will be paid for at the contract unit price for excavation, common and this material will be used in the construction of the roadway in the same manner as if obtained from roadway excavation and spread, compacted and levelled to the same specifications and tolerances. There will be no additional compensation for hauling of this borrow material.

5. CULVERTS

A quantity of culverts are on the job site and the Contractor will be required to install them as directed by the Engineer and for the contract unit price for installation only.

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5. CULVERTS (Cont'd)

Additional culverts will be required and it will be the Contractor's responsibility to supply and deliver them to the job site as well as carry out their installation for the contract unit price for supply, delivery and installation.

6. HAND PLACED RIP-RAP

This item shall be carried out by the Contractor at the ends of all culverts and as directed by the Engineer in accordance with Division 1, Part 6.

7. HIGH WATER IN MEDICINE LAKE

Due to high water, usually between mid-June to mid-August, the work may be only accessible from the north end for this period.

8. MAINTENANCE OF TRAFFIC

Traffic need only be maintained for the Contractor and Engineering staff until the time of final acceptance.

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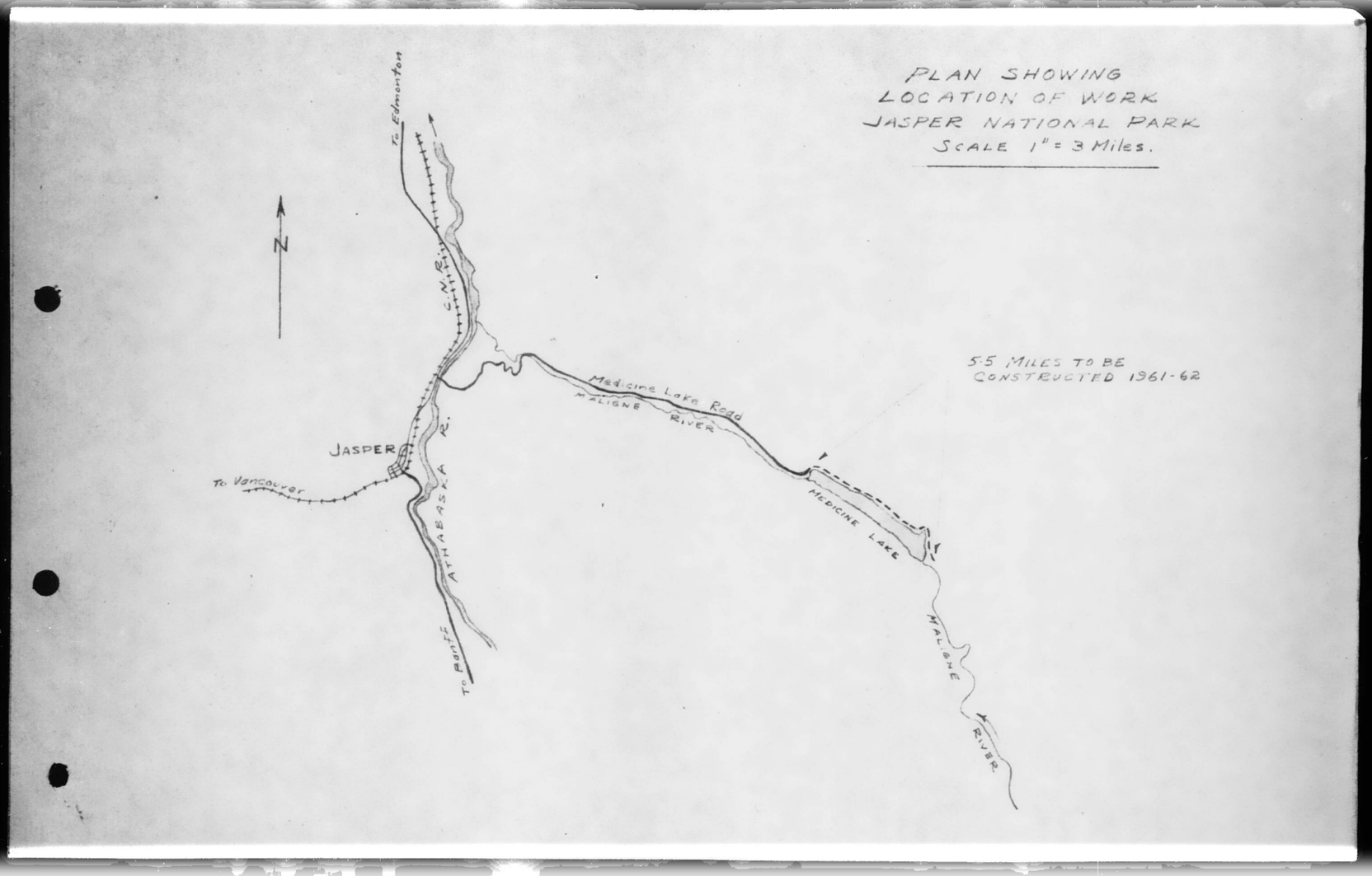

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PART 2

CLEARING, GRADING AND PIPE CULVERTS

Division

1. Clearing and Grubbing.

2. Roadway Excavation.

3. Embankment Construction.

4. Excavation for Structures.

5. Granular Borrow Excavation.

6. Overhaul of Granular Borrow.

7. Installation of Pipe Culverts.

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DIVISION 1 - CLEARING AND GRUBBING

2.1.1. DESCRIPTION:

This item shall consist of the complete removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans as well as any other areas which may be designated by the Engineer.

2.1.2. MATERIALS:

No Materials are involved.

2.1.3. METHODS OF CONSTRUCTION:

(a) Clearing:

Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush, windfalls and other fallen timber, stumps and rubbish except such trees and shrubs as may be designated for preservation by the Engineer. Such designated trees and shrubs shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, all trees, roots and existing stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging and off the right-of-way, shall be removed.

Clearing shall be completed at least one-half mile in advance of grading operations.

(b) Salvage:

All merchantible timber not required for constructional purposes shall be cut and trimmed in suitable lengths, as designated by the Engineer and neatly piled at convenient points for removal.

(c) Grubbing:

Grubbing shall include the excavation and complete removal and disposal of all roots and stumps to a minimum depth of eighteen (18) inches below the profile ground line. Submerged logs, corduroy, and similar objectionable matter shall be completely removed.

On areas where grubbing is required as an operation separated from actual grading operations, cross-sectioning will be done after grubbing operations have been completed.

(d) Disposal:

All timber, logs, trees, stumps, brush and other rubbish shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

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2.1.4. METHOD OF MEASUREMENT:

The area to be paid for under this item shall be the number of acres, and fractions thereof, of land actually cleared and/or grubbed in accordance with these specifications and completed to the satisfaction of the Engineer.

2.1.5. BASIS OF PAYMENT:

Clearing and grubbing will be considered as separate items. The acreage, determined as provided above, will be paid at the contract unit price per acre for clearing and the contract unit price per acre for grubbing, which price and payment will constitute full compensation for all labour, equipment, tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 2 - ROADWAY EXCAVATION

2.2.1. DESCRIPTION:

(a) This item consists of the removal of all soil and rock materials from within the right-of-way to the lines and grades indicated on the Plans or as staked by the Engineer, and the satisfactory disposal of these materials as hereinafter described.

Roadway Excavation includes:

(1) Excavation for the preparation and construction of the subgrade of the highway.

(2) Excavation for the formation of embankments (see specification for methods of construction and compaction of embankments).

(3) Excavation for the construction of side ditches.

(4) Excavation for construction of permanent access roads and cross-roads, approaches and entrances, and parking areas.

(5) Stripping of cut and embankment areas.

(6) Utilization of granular materials encountered within the right-of-way and stockpiling, if necessary.

(7) Removing and disposing of muck or other unsuitable material.

(8) Breaking up and satisfactorily removing or incorporating into the embankment as specified, all existing gravel, macadam, bituminous or concrete road surfaces.

(9) Excavation for backfilling holes outside the roadway limits and within the right-of-way to correct surface irregularities.

(10) The transportation of excavated materials.

(11) Compaction of subgrade materials in embankments and cuts to the densities specified and including scarifying where required.

(12) Trimming and rounding of cut and embankment slopes and fine grading of finished subgrade surface.

(13) The construction of detours or other suitable provision to accommodate traffic, either pedestrian or vehicular, over or around any part of the roadway upon which work is being performed, as well as supplying and maintaining such signs, barriers, fences, lights and watchmen as the Engineer may consider necessary for the protection of the public.

(14) Maintaining the work outlined under this section in a finished condition until it or any portion thereof, has been accepted as completed by the Engineer.

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(b) Classification:

Roadway excavation will be classified as follows:

(1) Excavation, Common

(2) Excavation, Rock

and will include all authorized excavation within the right-of-way, exclusive of that included under Excavation for Structures.

Excavation, Common, will include the excavation of all materials not hereinafter classified as Excavation, Rock, and will include any wet or swamp excavation.

Excavation, Rock, will include the excavation of all boulders more than 1/3 cubic yard in volume, all stone fence and masonry walls, all concrete or masonry structures, concrete pavements, and all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. Excavation, Rock, will not apply to old, plain, or bituminous bound base courses or surface courses of macadam, bituminous pavement, gravel, or broken stone. All such materials will be classified as Excavation, Common.

2.2.2. MATERIALS

No materials are involved.

2.2.3. METHODS OF CONSTRUCTION:

(a) Utilization of Excavated Materials:

All suitable materials removed by excavation shall be used, as far as practicable, in the formation of embankments, and elsewhere as directed. When, in the opinion of the Engineer, substantial quantities of suitable granular material are encountered in excavation sections, such material shall be conserved for incorporation into the roadway as the Engineer shall direct.

If, to properly utilize such granular material, it is necessary to stockpile this material it shall be done at locations designated by the Engineer and with no additional compensation.

Removal from the stockpile for direct use on the roadway will be compensated for in the same manner as removal from granular borrow pits.

(b) Conservation of Topsoil:

The ground surface shall be stripped of all material to the depth and width as directed by the Engineer. Where the material is suitable for topsoiling it shall be stock-piled in locations designated by the Engineer. Where it is unsuitable it shall be wasted as directed by the Engineer.

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(c) Unsuitable Materials:

When soft, spongy, or other unsuitable material is encountered in areas on which an embankment is to be constructed, or below the top of the subgrade in cuts, the material shall be removed to the lateral limits and depths specified by the Engineer. The Engineer will specify such lateral limits and depths, station by station. Any material removed in excess of approved limits and depths will not be measured for payment and the contractor shall be required to provide, at his own expense, the material, properly compacted, necessary to replace the excess material which has been excavated.

Where the roadway crosses deposits of peat, muck, muskeg or swamp, the unsuitable material shall be excavated to a firm foundation and to the width indicated on the Plan "Standard Design for Swamp Areas" unless otherwise indicated on the Plans and Profiles or directed by the Engineer. In such cases supplementary specifications and plans will be supplied to the Contractor.

(d) Disposal of Materials:

Excavated muck and other material to be wasted shall be disposed of as directed by the Engineer. All costs related thereto, including haul, will be included in the contract unit prices for the various excavation items.

(e) Construction in Roadway Cuts:

See Plan "Standard Section - Earth Cut".

After removal of soft, spongy or unsuitable material, as detailed in (c) above, the excavated area shall be backfilled with approved material to the grade indicated by the Engineer.

The entire subgrade area in all cuts from inslope to inslope of ditches shall be treated as follows:-

Case 1 - Where no granular sub-base is specified. Remove material to a depth of six (6) inches below subgrade elevation. Scarify the newly exposed surface to a depth of six (6) inches and compact it to 100% of maximum density. Replace material removed from the top six inches and compact it to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

Case 2 - Where six (6) inches or less of granular sub-base is specified. Remove the material below the sub-base to a depth of six (6) inches. Scarify the newly exposed surface to a depth of six (6) inches and compact it to 95% of maximum density. Replace material previously removed and compact it to 100% of maximum density. Compact granular sub-base to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

Case 3 - Where more than six (6) inches of granular sub-base is specified. Scarify the material below the sub-base to a depth of six (6) inches and compact it to 100% of maximum

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density. Place granular sub-base in layers not thicker than six (6) inches and compact each layer to 100% of maximum density. No. stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade. Maximum density referred to above is that determined by the current A.A.S.H.O. standard density test T99-57 either method A or C.

See Specification Items 2.3.3 (g) and 2.3.3. (h) for Embankment Construction compaction requirements.

Where the subgrade is in transition from excavation to embankment the ground slopes at the grade point shall be treated in accordance with the Plan "Construction Methods at Transitions from Earth Cuts to Fills".

(f) Rock Excavation:

If, during excavation, material appearing to conform to the classification for Excavation, Rock, is encountered, the Contractor shall notify the Engineer to that effect and shall provide ample opportunity for him to investigate and make such measurements as are necessary to determine the volume of the material in question.

The Contractor must salvage and place in the embankment, in accordance with these Specifications and the standard cross-section sheet, all the material dislodged by blasting.

All rock used in the construction of the embankments shall be reduced in size so as when placed it shall not exceed in vertical dimensions one-third of the height of the fill.

In no case shall the spacing of the drill holes exceed the depth of the cut at the point of drilling.

Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the true slope line.

Where rock is encountered in the excavation of roadway cuts it shall be shattered one foot eight inches (1' - 8") below subgrade elevation for the full width of the cut and shattered one (1) foot below the grade of the ditch bottom. The rock shall be removed to a depth of eight (8) inches below the subgrade elevation. The exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface. The granular sub-base shall be placed in two four (4) inch layers and each layer shall be compacted to 100% of maximum density. See Plan "Rock Cuts".

In order to obtain uniform shattering, drilling shall be carried out to a plane parallel to, and at a minimum of two feet eight inches (2' - 8") below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified above as two feet eight inches (2' - 8") any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both

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ends of cuts on level gradients, to a point at least three feet eight inches (3' - 8") below grade, or correspondingly lower if this minimum drilling in the cut has been exceeded. See Plan "Rock Cut Construction". All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(g) Drainage:

Side ditches shall mean ditches which are parallel to and have one side adjacent to the roadway. All such ditches shall be constructed where necessary to the depths and widths indicated on the Plans or as ordered by the Engineer.

In cut sections the subgrade and the surface beneath the sub-base shall be crowned, as indicated on the Plans, to permit ready run-off of free water.

(h) Widening Cuts:

In the event the Contractor desires to excavate beyond the widths specified in the Plans, in order to provide material for use in embankments, he must first obtain the written approval of the Engineer. The Engineer's approval will be granted only if

(1) The materials to be obtained by such widening are suitable for embankment construction, and

(2) Slope requirements of the Plans and Specifications are met.

(i) Trimming and Finishing Slopes:

The top surface of ditches and side slopes of cuts and embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown in the Plans or as staked by the Engineer. When boulders are encountered in cut slopes they may be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

The finish left by scrapers or blade graders will be satisfactory provided no ridges or windrows of material or depressions exceeding 3 inches in height or depth are left.

(j) Fine Grading of Subgrade:

Before application of base courses, the rough subgrade surface in cut sections and on embankments shall be cleaned of all foreign material and reshaped if rutted. The finished surface shall be smooth and even within the following tolerances:

(a) No point on the surface shall vary more than $\pm \frac{1}{2}$ tenth of a foot from the elevation as shown on the profile and cross-sections or as staked by the Engineer. Subgrade material shall be added or removed by the Contractor to bring all points within the above tolerances and where such work is necessary, the area shall be recompacted to the original density specified.

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(b) The evenness of the completed surface will be tested by the Engineer using a 10 foot straight-edge. Any vertical irregularities that exceed ½ inch from the straightedge grade shall be remedied by the Contractor to the satisfaction of the Engineer by adding or removing subgrade material. Where such work is necessary the area shall be recompacted to the original density specified.

The above conditions will also apply to the subgrade surface before application of any granular sub-base materials but the specified tolerances will be increased to twice that allowed above.

Payment for fine grading will be included in the unit prices for excavation.

(k) Hauling of Materials:

The Contractor shall haul excavated material to any distance specified by the Engineer.

2.2.4. METHOD OF MEASUREMENT:

(a) Excavation, Common:

The quantity of Excavation, Common, for which payment will be made, will be the volume in cubic yards measured in its original position, and computed by the average end area method for materials acceptably excavated, as hereinabove prescribed. The measurement will include undergrading for removal of soft and spongy material and the authorized stripping of cut and embankment areas.

In cut sections where material is removed and replaced (Case 1 and 2, Item 2.2.3. (e) of this Specification), the volume for which payment will be made shall be considered as the volume contained in a prism having a depth of six (6") inches and an area equal to the top area of the replaced material. The measurement will not include the yardage scarified.

Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material due to slides which has to be moved to complete the roadway but only when such slides are not attributable to the carelessness of the Contractor.

(b) Excavation, Rock:

The quantity of Excavation, Rock, for which payment will be made will be the volume in cubic yards measured in its original position and computed by the average end area method for material acceptably excavated.

At the discretion of the Engineer the quantity of excavation for which payment will be made may also include unavoidable over-breakage to an amount not exceeding 10% of the volume of the individual rock cut as staked by the Engineer.

The measurement will include the volume of boulders more than one third a cubic yard each in volume, stone fences, masonry walls, concrete or masonry structures and concrete pavements, the volume measured in place by methods determined by the Engineer.

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(c) Overhaul:

Overhaul will not be an item in the contract.

2.2.5. BASIS OF PAYMENT

(a) Payment for Excavation, Common, and Excavation, Rock, will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment will include full compensation for all labour, equipment, tools, explosives, excavation, loading and hauling, scarifying in earth cuts and on side hill slopes before constructing embankments, shattering of rock below grade in rock cuts, compaction of sub-grade materials, the formation of embankments, the stockpiling of stripped material for topsoiling, the stockpiling of granular materials obtained from the right-of-way, the trimming and finishing of slopes and fine grading of subgrade surfaces, disposal of surplus or unsuitable materials, maintaining the work in good condition until acceptance, and all work subsidiary and incidental thereto for which separate payment is not provided elsewhere.

(b) Except where noted specifically otherwise, no separate allowance will be made in this contract for the hauling of material paid for under items of excavation. Payment of the unit contract price or prices for excavation will provide full compensation for all loading, hauling and spreading of excavated material.

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DIVISION 3 - EMBANKMENT CONSTRUCTION

2.3.1 DESCRIPTION:

This item shall include the placing in embankments and cuts of suitable materials obtained from the various scheduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross-sections and dimensions shown on the plans, staked by the Engineer or indicated in the Specifications and compacted to the densities specified herein.

2.3.2 MATERIALS:

Materials used for embankments shall be free from muck, wood, brush, roots, sod, ashes, rubbish, top soil and any other organic matter that may decay.

The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All materials will be approved by the Engineer prior to incorporation in embankments.

In the upper portion of embankments and in cuts the sub-base materials, when directed by the Engineer, shall be a pit-run granular material, approved by the Engineer and placed to the depth indicated on the Plans, or as directed by the Engineer in accordance with the conditions for embankment construction as hereinafter specified. Adjacent to abutments and other structures, where shown on the plans, and within the limits there specified, or as directed by the Engineer, the material shall be granular in nature and approved by the Engineer.

Where filling or backfilling is to be placed under water, approved granular material or rock shall be used.

To the extent that these various embankment materials are available, unless otherwise provided by the Supplementary Specifications, they shall be obtained from Roadway Excavation, Channel Excavation or Excavation for Structures. Any such materials wasted or otherwise improperly disposed of by the Contractor, shall be replaced with other suitable material at his own expense.

In the event that suitable local granular materials are not available from the right-of-way for sub-base or porous backfill, the Engineer may require the use of either a pit-run or a processed granular sub-base material from another source for embankment construction if such an item is provided in the contract.

2.3.3 METHODS OF CONSTRUCTION:

(a) Embankment Foundation:

Embankments shall be formed of suitable materials. The foundation for the embankments shall be prepared by removing the topsoil and sod as specified in Item 2.2.3 (e) of the Specifications (Roadway Excavation), by benching or scarifying existing slopes, and compacting the underlying soil before construction of the embankment is begun. If unsuitable material exists in the foundation for the embankment, it shall be removed to a firm bearing strata as shown on the plans or as directed by the Engineer.

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When the subgrade elevation of the new embankment is less than two (2) feet above an existing pavement, the existing pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

(b) Side Hill Construction:

When an embankment is to be constructed on a natural ground slope steeper than 4:1 or against an existing embankment, the entire existing surface on which the embankment is to be placed shall be ploughed, benched or broken up in such manner that the new material will bond with the resulting surface. The specific method employed in this operation shall be subject to the approval of the Engineer.

(c) Earth Embankments:

Material shall not be placed while frozen nor shall it be placed on a frozen surface.

The embankment shall be constructed to the cross-section as shown on the Plans accompanying these Specifications. A crown shall be maintained at all times during construction to ensure ready run-off of free water.

The excavation or borrow shall be placed in successive uniform layers across the entire area of the embankment. The thickness of the layer shall be a maximum of six (6) inches before being compacted for material containing soil, gravel, and small stones with less than fifteen (15) per cent by volume of stone larger than four (4) inches in greatest dimension. If the embankment material contains more than fifteen (15) per cent by volume of stone or ledge rock, too large to be compacted in six (6) inch layers, it shall be constructed in layers not to exceed the maximum size of the rock or stone in thickness, but in no case shall the layer exceed two (2) feet. Stone larger than four (4) inches in greatest dimension shall not be placed within one (1) foot of the subgrade elevation.

(d) Rock Embankments:

See Plan "Rock Fills".

In embankments composed principally of material obtained from rock cuts, the requirements for layer construction and mechanical compaction will be waived. In such embankments the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. As soon as practicable, such embankments shall be constructed in layers having a maximum height of five (5) feet. The top of the rock fill shall be eight (8) inches below the subgrade elevation. The top of this rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(e) Granular Sub-Base:

The granular sub-base shall be placed to the thickness indicated on the Plans or as directed by the Engineer. This material shall be spread in uniform layers, not exceeding six (6) inches in thickness, without segregation, over the full width of the embankment and shall be compacted to the required density as hereinafter specified.

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(f) Swamp or Muskeg Treatment:

See Plan "Standard Design for Swamp Areas".

In embankment construction through swamps, muskeg, peat, and other such undesirable materials, it shall be the general policy to excavate these materials for the full width of the embankment and adjacent ditches, and the embankment shall be constructed with approved materials in accordance with Article 2.3.2 herein. However, each case will be considered individually and supplementary plans and specifications indicating the particular method of construction will be supplied the Contractor well in advance of construction if this general policy is altered.

An alternative method might be the displacement method with or without the use of explosives.

(g) Compaction:

The material shall be spread in layers, as required herein, by bulldozers, scrapers, graders, or other equipment. Each layer shall then be thoroughly rolled by sheepsfoot, pneumatic-tired, or smooth-wheel rollers for the full width of layer and to the required degree of compaction. Successive layers shall not be placed until the layer under construction has been thoroughly compacted. Whenever the embankment has not received sufficient compaction, the placing of embankment material shall cease and rolling shall be continued until the required degree of compaction is obtained.

The embankment shall be compacted to a minimum dry density of 90% of the maximum dry density in pounds per cubic foot as determined by the current A.A.S.H.O. Standard Density Test T99-57 either Method A or C except that the twelve (12) inches below the top of the subgrade shall be compacted to a dry density of 95% of the Standard Dry Density. However, if the Engineer finds that it is impractical to obtain the specified degree of compaction with the material encountered, he may limit rolling operations as he deems proper and may increase the sub-base thickness to compensate for any anticipated loss in strength of the subgrade.

The Engineer will specify the type of compaction unit to be used on the different soil types encountered during construction. In general the sheepsfoot roller, shall be used to compact clays, the pneumatic-tired rollers shall be used to compact sands and gravels, and smooth-wheel rollers shall be used to compact slag, rock and coarse gravel. Sheepsfoot rollers and pneumatic-tired rollers may be used in tandem if authorized by the Engineer.

If it is anticipated that operations will cease for three hours or longer, smooth-wheel or pneumatic-tired rollers shall be used to roll the entire embankment working area after it has been properly crowned, shaped and drained.

During rolling operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated by mechanical means, or work shall cease temporarily to bring the material to a proper moisture content. The proper moisture content is

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approximately the Optimum Moisture Content as determined by the A.A.S.H.O. Standard Density Test T99-47.

(h) Compaction Equipment:

All rollers specified herein for the compaction of materials shall comply with the following minimum requirements:

(1) Sheepsfoot rollers shall consist of metal rollers or drums, the outer surface of which shall be studded with tamping feet not less than seven (7) inches long and having a flat end surface area of not less than five (5) nor more than ten (10) square inches. The roller shall be of such weight that the load upon each square inch of foot surface, when any row of feet is supporting the whole weight of the roller shall be not less than two hundred and fifty (250) pounds per square inch. The roller shall be weighted by sand or liquid or both to obtain the proper pressure on the feet. Proper ports shall be provided in the roller drum for adding sand and liquid. The load per tamper foot will be determined by dividing the total weight of the loaded roller by the maximum number of tamper feet in one row parallel to the axis of the roller. The roller shall have a device for keeping the space between the feet from clogging. The tamping roller shall have a dual drum, each unit having a minimum width of four (4) feet, and flexible connections between drums to allow the rollers to fit the contours of the embankment layer. The average speed of the tamping roller shall be three (3) miles per hour and shall not exceed five (5) miles per hour.

(2) Pneumatic-tired rollers shall have a width of not less than five (5) feet and not more than seven (7) feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than five (5) inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than five (5) pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than six (6) tons and that the roller shall develop a minimum of three hundred (300) pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(3) Three wheel power rollers shall not weigh less than ten (10) tons and shall provide a compression on the rear wheels of not less than three hundred and thirty (330) pounds per lineal inch of tire width.

(4) Tandem power rollers shall not weigh less than eight (8) tons and shall provide a compression on the drive roller of not less than two hundred and fifty (250) pounds per lineal inch of tire width.

At least one of the above approved rollers shall be in continuous operation for each one hundred and twenty-five (125) cubic yards or less of embankment material placed per hour. When several embankments, each of small area, are so isolated from one another that one roller cannot compact the areas satisfactorily, additional rollers shall be provided.

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Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of Standard units required in the Specifications.

(i) Backfill of Structures:

Granular fill material meeting the approval of the Engineer shall be placed adjacent to bridge abutments, culverts, and other structures within the limits shown on the plans. All material shall be placed in six (6) inch layers and compacted to one hundred (100) per cent of the maximum density as determined by the A.A.S.H.O. Standard Test T99-57 Method C. Where the work consists of backfilling box or pipe culverts the granular material shall be placed in layers not exceeding six (6) inches alternately on each side of the culvert. Each layer shall be compacted as specified above so as not to displace the culvert before succeeding layers are deposited.

(j) Trimming:

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown on the plans and profiles. The finished subgrade surface must, at all points, be within the tolerances stated in Section 2.2.3 (j) "Fine grading of subgrade".

2.3.4 METHOD OF MEASUREMENT:

Watering:

The quantity of water to be paid for will be measured in units of 1000 gallons, (Imperial).

2.3.5 BASIS OF PAYMENT:

(a) Payment for construction of embankment, as above described, including granular fill in sub-base, at abutments, and elsewhere, will not be made under a specific scheduled item. Compensation is included in the contract unit price for the various scheduled excavation items.

(b) Payment for compaction, as above described, will not be made under a specific scheduled item. Compensation is included in the contract unit prices for the various scheduled excavation items, which prices will also be full compensation for performing the work specified, and will include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(c) Payment for watering will be made at the contract unit price for the number of 1000 gallon units, which price will be full compensation for furnishing, hauling, and distributing, and for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 4 - EXCAVATION FOR STRUCTURES

(BRIDGES EXCEPTED)

2.4.1 DESCRIPTION

This item shall consist of the provision of all labour, materials and equipment necessary to complete the excavation for pipe and box culverts, pipe lines, underdrains, walls, etc. (bridges excepted) at the required locations and as shown or described by, or reasonably inferable, from the Drawings and Specifications, or as ordered in writing by the Engineer.

It shall also include the following:

Clearing and grubbing
Shoring and bracing as necessary
Backfilling
Disposal of surplus materials
Protection
Clean-up

2.4.2 MATERIALS

No materials are involved.

2.4.3 METHODS OF CONSTRUCTION

(a) Classification

Excavation, Common, shall include the excavation of all materials not hereinafter classified as Excavation, Rock.

Excavation, Rock, shall include the excavation of all rock in mass formation and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. It shall include the excavation of boulders more than one third (1/3) cubic yard in volume, concrete or masonry structures, concrete pavements, stone fence and masonry walls. It shall not apply to old, plain or bituminous pavement, gravel or broken stone, and such materials will be classed as Excavation, Common.

(b) Preliminary Measurements

The Contractor shall notify the Engineer a sufficient time in advance of the beginning of excavation for structures, so that cross-sectional elevations and measurements may be taken of the undisturbed ground.

(c) Excavation

(i) Excavation shall include the removal of all material of whatever nature necessary for the construction of the culvert, pipe line, wall, etc.

(ii) Trenches or foundation pits shall be of sufficient size to permit the placing of the full width and length of structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary to secure a satisfactory foundation.

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(iii) When masonry is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation, and excavation to final grade shall not be made until just before the masonry is to be placed, except where the material encountered is found to be unsuitable at the foundation elevation, and a granular backfill is called for by the Engineer.

(iv) Where foundation piles are used, the excavation of each pit shall be completed, when necessary, before the piles are driven. After the driving is completed all loose and displaced material shall be removed, leaving a smooth solid bed to receive the masonry.

(v) Concrete slabs or foundations shall not be poured on soil which has been allowed to dry out appreciably. If soil is exposed to drying for three or more days, it shall be moistened by sprinkling water on it before any concrete is placed. Care shall be exercised in order that no earth is washed down during such sprinkling operation.

(vi) In no case shall concrete be deposited against frozen material. The Contractor shall provide a means of thawing out, and protecting from further frost, any material such as earth, etc., which becomes frozen.

(vii) After such excavation is completed the Contractor shall notify the Engineer and no concrete shall be placed until the Engineer has approved the depth of the excavation and the character of the bearing material.

(d) Culvert Foundation in Embankments

Where pipe culverts are to be placed in trenches excavated in embankments, the excavation of each trench shall be performed after the embankment has been constructed to a plane parallel to the proposed profile grade and to such height above the bottom of the pipe as is shown on the plans or required by the Engineer.

(e) Disposal of Excavated Material

All excavated material, so far as suitable, shall be utilized as backfill or embankment. The surplus material, whether or not temporarily allowed to be placed within the stream area, shall be disposed of finally in such manner as not to obstruct the stream or otherwise impair the efficiency or appearance of the structure. No excavated material shall be deposited at any time so as to endanger the partly finished structure, either by direct pressure or indirectly by overloading banks contiguous to the operation, or other manner.

2.4.4 - METHOD OF MEASUREMENT

(a) The quantity of Excavation for Structures, either Rock or Common, or both, paid for under this item, will be the number of cubic yards of material, measured in its original position, actually excavated from within the payment limits shown or indicated on the contract plans or called for in the specifications.

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(b) Unless otherwise shown or indicated on the contract plans, payment limits for excavation for pipe lines or pipe culverts will be considered as follows:

(i) The bottom surface of a trench which is two (2) feet wider at the bottom than the outside diameter of the pipe.

(ii) The side surfaces of the trench; these surfaces shall have an inclination of 3 vertical to 1 horizontal.

(iii) The ground or subgrade surface existing at the site prior to beginning the trench excavation.

(c) The yardage of any material rehandled will not be included in the measurement for payment, except that where plans indicate or the Engineer directs the excavation of trenches for culverts after embankment has been placed, the yardage of excavation for such culvert trenches will be included in the measurement for payment under this item.

(d) The yardage of any material displaced into an excavation by pile driving will be included in the measurement for payment.

2.4.5 BASIS OF PAYMENT

Payment for Excavation for Structures will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for "Excavation for Structures, Common", or "Excavation for Structures, Rock", or both, which price or prices will be full compensation for all labour, equipment, tools, explosives, excavation, transportation and disposal of excavated materials, the trimming and restoration of the site of the work, and the disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 5 - GRANULAR BORROW EXCAVATION

2.5.1 DESCRIPTION:

This item shall include the furnishing from approved borrow pits outside the right-of-way, of all approved pit-run granular materials which are not available from Roadway Excavation and which are required for embankments, for the formation of the subgrade in cuts, and backfill of structures, culverts, etc. together with the excavation, hauling (except overhaul), and placing of all such materials.

2.5.2 MATERIALS:

All materials excavated under this item shall be as specified by the Engineer. In general these materials, classed as Granular Borrow Excavation shall consist of pit-run gravels or sands and shall have all stones larger than four (4) inches in greatest dimension removed in the pit, if so directed by the Engineer.

2.5.3 METHODS OF CONSTRUCTION:

(a) Selection and Location:

The Engineer will locate and the Department will furnish all borrow pits. The Contract shall notify the Engineer sufficiently in advance of opening any approved borrow pits, so that necessary measurements may be made.

(b) Access Roads:

The Engineer will locate all necessary access roads and other facilities which may be required for hauling granular borrow excavation to and over the right-of-way. Any work and materials required for the construction of such access roads, will be specified by the Engineer and paid for under the contract unit prices for the various items.

(c) Clearing and Grubbing:

Clearing and Grubbing will be measured and paid for as stated in Part 2, Division 1 - "Clearing and Grubbing".

(d) Stripping:

Prior to the removal of granular borrow for use in an embankment, the borrow pits shall be stripped of all unsuitable material. Where any such material is suitable for top soiling, the Engineer may direct, that it be stock piled in approved locations. Stripping will be measured and paid for as stated in Part 3, Division 1, "Base- Course".

(e) Use of Granular Borrow Excavation:

No materials from Granular Borrow Excavation shall be used until all sources of roadway excavation have been exhausted, except as otherwise approved by the Engineer. If the Contractor places more granular borrow material than is required, causing waste of other granular excavation, the amount of such waste will not be included for payment.

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Granular borrow material shall be used in the construction of the roadway in the same manner as if obtained from roadway excavation and spread, compacted and levelled to the same specifications and tolerances.

(f) Final Trimming and Restoration:

All borrow pits shall be neatly trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or stand therein. Upon completion of the hauling, the Contractor shall restore the entire right-of-way and abutting lands, which were disturbed by such operation, to a satisfactory and sightly condition.

2.5.4 METHOD OF MEASUREMENT

(a) If the Contractor has suitable weigh scales available in the pit from which granular borrow is to be taken, the quantity of Granular Borrow Excavation for which payment will be made, will be the number of tons of Granular Borrow actually placed in or on the roadway.

The weight measurements will be carried out as in Part 3, Division 1, Section 4 (a) "Base Course".

(b) If suitable weigh scales are not available in the pit from which Granular Borrow is to be taken, the Engineer may require that such scales be made available and the material measured in tons as in (a) above or the Engineer may decide that the quantity of Granular Borrow Excavation for which payment will be made, will be the quantity in cubic yards measured in its original position, after stripping, and computed by the average end area method for materials acceptably excavated.

(c) Overhaul will be measured for payment as stated in Part 2, Division 6, "Overhaul of Granular Borrow".

2.5.5 BASIS OF PAYMENT

(a) Payment for Granular Borrow Excavation will be made for the quantities as above determined, measured in cubic yards or in tons, whichever may be the case, at the contract unit price per ton or where material is measured in cubic yards payment per cubic yard will be at a rate of one and a half times the unit price per ton. This price and payment will be full compensation for all labour, equipment, tools, the excavation and hauling (except overhaul), the removal of oversize stones, the formation of embankments, the formation of subgrade in cuts, the backfill of structures, the storing of stripped material for top soiling, the disposal of unsuitable materials, the trimming and restoration and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Overhaul

Overhaul on Granular Borrow only will be paid for as stated in Part 2, Division 6, "Overhaul of Granular Borrow".

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DIVISION 6 - OVERHAUL OF GRANULAR BORROW

2.6.1. DESCRIPTION:

This item shall consist of authorized hauling in excess of the free haul distance of one half (1/2) mile of granular borrow excavation paid for under item 2.5.5, and disposed of as required under the various items prescribed for the disposal of such material.

2.6.2. MATERIALS:

Not applicable.

2.6.3. METHODS OF CONSTRUCTION:

Not applicable.

2.6.4. METHOD OF MEASUREMENT:

(a) If the quantity of Granular Borrow Excavation is measured in tons as outlined in Part 2, Division 5, then the quantity of overhaul to be paid for will be measured in ton-miles and will be the product of the quantity of Granular Borrow in tons acceptably placed, by the overhaul distance in miles and fractions thereof.

The overhaul distance will be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of one half (1/2) mile. The haul distance will be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment will be based on the haul distance measured along the route designated by the Engineer.

(b) If the quantity of Granular Borrow Excavation is measured in cubic yards as in Part 2, Division 5, then the quantity of overhaul to be paid for will be measured in cubic-yard miles and will be the product of the volume of the overhauled material acceptably placed, in cubic yards, by the overhaul distance in miles and fractions thereof.

The overhaul distance will be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of one half (1/2) miles. The haul distance will be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment will be based on the haul distance measured along the route designated by the Engineer.

For the purpose of calculating overhaul in cubic-yard miles on granular borrow the volume of material will be measured by the "struck volume" of each haul unit involved.

Such "struck volume" will be determined beforehand by the Engineer by measurement of the capacity of each unit. Measurements will be the inside dimensions of the haul unit and "struck volume" will mean that volume that would remain in the box or body after levelling the load with a straightedge resting on the uppermost edges of the sides.

This above measurement will be for the determination of overhaul quantities only. The measurement and payment for excavation of granular borrow material will be as described in the applicable section of Part 2, Division 5, "Granular Borrow Excavation".

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2.6.5 BASIS OF PAYMENT:

Payment for Overhaul of Granular Borrow will be made for the quantities as above determined, measured in ton miles or cubic yard miles as applicable, at the contract unit price per ton-mile **or** where material is measured in cubic yards payment per cubic-yard mile will be at a rate of one and a half times the unit price per ton-mile, which price and payment will be full compensation for all labour, equipment and tools necessary to complete the hauling operations satisfactorily, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 7 - INSTALLATION OF PIPE CULVERTS

2.7.1. DESCRIPTION:

This item shall consist of preparing bedding for pipe culverts, placing them and backfilling to subgrade level after the culverts are installed. All work under this item shall be done in accordance with these specifications and in conformity with the plans or as staked by the Engineer.

2.7.2. MATERIALS:

When reinforced Concrete Culvert Pipe is specified it shall meet the requirements of A.A.S.H.O. Specification M 170-57 or subsequent revisions thereof.

When Corrugated Metal Culvert Pipe is specified it shall meet the requirements of A.A.S.H.O. Specification M 36-17 or subsequent revisions thereof.

The responsibility for provision of culvert materials will be as specified in the Special Provisions Section of these specifications.

The Engineer reserves the right to inspect and test the pipe after its delivery to the work, and if defects are found which make it unserviceable, the pipe may be rejected for use on the project. If these defects are deemed the fault of the Contractor, the pipe will be replaced by the Department at the expense of the Contractor, if originally supplied by the Department. If originally supplied by the Contractor, any defective pipe rejected for use on the project shall be replaced by the Contractor at his expense.

The materials used for bedding and backfilling of culverts shall be granular material selected by the Engineer from one of the various classes of excavation.

2.7.3. METHODS OF CONSTRUCTION:

(a) Trenches:

Where the foundation for the culvert is below the natural ground or existing subgrade surface, a trench shall be excavated in which to form the bed and place the culvert. This trench shall have a width of not less than two (2) feet greater than the external diameter of the culvert, unless otherwise authorized due to unsuitable material encountered. Where multiple pipes are laid, they shall be spaced not less than one diameter apart and excavation will be allowed one (1) foot beyond the outside of each pipe as well as between them.

The excavation shall be carried out in accordance with Article 2.4.3. of the Specification for "Excavation for Structures."

(b) Bedding:

The bedding surface for pipe culverts shall provide a firm foundation of uniform density throughout the entire length of the culvert and shall in general be slightly cambered in the direction parallel with the pipe centre line to correct for expected settlement and ensure tight joints in the lower half of the pipe. Recesses shall be excavated for any bells involved.

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(b) Bedding: (Cont'd.)

The culverts shall be bedded in a granular foundation of uniform density and carefully shaped, by means of a template supported at the desired grade, to fit the lower part of the culvert exterior for at least ten (10) percent of its overall height.

All materials encountered shall be removed below grade and replaced with suitable granular material obtained from one of the various classes of excavation, in such manner as to provide a compacted cushion having a thickness under the culvert of not less than one half (1/2) inch per foot height of fill over the top of the culvert, with a minimum allowable thickness of eight (8) inches.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, unless other special construction methods are called for on the plans, as much of such unstable soil under the culvert as the Engineer decides is necessary and for a width of at least one diameter on each side of the culvert shall be removed and replaced with granular material properly compacted to provide adequate support for the culvert.

(c) Installation of Reinforced Concrete Culvert Pipe:

The pipe shall be laid carefully, hubs upgrade, ends fully and closely jointed, and true to lines and grades as given. Proper facilities shall be provided for lowering the sections when they are to be placed in a trench . Each section shall be securely attached to the adjoining sections by the method contemplated for the type of joint used. All joints, unless otherwise specified, shall be filled with stiff mortar composed of one part portland cement and one and one-half (1-1/2) parts of sand. The cement, sand and water shall be approved by the Engineer and shall be supplied as indicated in the Special Provisions. The mortar shall be placed so as to form a durable, watertight joint. After each section of pipe is laid and before the succeeding section is laid, the lower portion of the hub shall be plastered thoroughly on the inside with mortar to such depth as to bring the inner surfaces of the abutting pipes flush and even. After the section is laid, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the air and sun with a cover of thoroughly wetted earth or burlap. Before backfilling, any pipe which is not in true alignment or which shows any undue settlement after being laid, or is damaged, shall be taken up and relaid or replaced without extra compensation.

(d) Installation of Corrugated Metal Culvert Pipe:

Every culvert under the highway shall be so laid that the minimum distance from the subgrade to the top of the pipe shall be not less than 1/5 (one-fifth) the diameter of the pipe with a minimum of one (1) foot.

The pipe shall be laid with the separate sections joined firmly together and with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides. Any metal in the joints which is not protected thoroughly by galvanizing shall be coated with a suitable asphaltum paint.

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(d) Installation of Corrugated Metal Culvert Pipe: (Cont'd.)

Proper facilities shall be provided for lowering the pipe when it is to be placed in a trench. The pipe shall be laid carefully and true to lines and grades as given. Any pipe which is not in true alignment after being laid, or is damaged, shall be taken up and relaid or replaced without extra compensation.

Pipes of forty-two (42) inch or larger diameter shall be strutted as shown on the plans or in accordance with the manufacturer's recommendations. The struts shall be placed before the embankment is made and shall be removed when removal is ordered by the Engineer.

(e) Sealing of Fill at Inlet End:

The foregoing notwithstanding, no granular material shall be placed under or around the outer circumference of the pipe from the inlet end for a distance of 5 feet into the grade measured along the axis of the pipe.

For this distance the pipe shall be bedded on & backfilled with an approved impervious soil or clay seal. This clay seal shall extend the full five feet along the pipe and completely fill the excavated trench to a distance of 1 foot above the top of the pipe and also 1 foot below the invert of the pipe. In any event the pipe shall be completely surrounded by a minimum thickness of 1 foot of clay or other approved impervious soil compacted to 100% of its dry density as specified in A.A.S.H.O. Standard Test T 99-[illegible] d A.

The price bid per lineal foot for installation of culverts will also include all costs related to obtaining, hauling, placing and tamping of clay seal material for culverts. Materials shall be obtained from within the right-of-way and within the confines of the project and will be supplied [illegible].

(f) Backfilling:

After the bedding has been prepared, the culvert installed, and in the case of concrete pipe the mortar has aged to the satisfaction of the Engineer, granular material obtained from one of the various scheduled excavation items shall be placed alongside the culvert in layers not exceeding six (6) inches in depth and within the limits of the trench excavation as defined in Part 2, Division 4, Section 4, "Excavation for Structures". The layers of backfill shall be placed alternately on each side of the culvert so as not to displace it during the operation, and they shall be compacted to one hundred (100) per cent of the maximum dry density as determined by the A.A.S.H.O. Standard Test T 99-[illegible]thod . F layer, if dry, shall be moistened and then compacted by rolling or by tamping with approved mechanical rammers. Special care shall be taken to compact the fill thoroughly under the haunches of the pipe. This method of filling and compacting shall be continued until the embankment has reached an elevation of at least 12" inches above the top of the culvert and shall be continued higher if directed by the Engineer. The balance of the backfill shall be completed using the same materials as the adjoining subgrade is constructed of and compacted to the same density.

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2.7.4. METHOD OF MEASUREMENT:

The quantity for which payment will be made in pipe culvert installation, will be the actual lengths in feet, constructed in accordance with Plans or as directed by the Engineer measured in place where laid or relaid.

2.7.5. BASIS OF PAYMENT:

(a) Pipe culvert materials, cement and reinforcing steel shall be furnished as specified in the Special Provisions Section of these specifications

(b) Payment for the installation of pipe culverts of the types and sizes specified will be made for the length of each type and size as above determined, measured in lineal feet, at the contract unit prices per lineal foot for these items. These prices shall include the transportation from the point of delivery, the laying, assembling and caulking the pipe complete, making clay seal as described in section 2.7.3. (e) herein, all materials, labour, equipment, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided. If so stated in the Special Provision Section, these prices will also include the supply and delivery of all pipe culvert materials.

(c) The cost of excavation will be paid for as stated in Section 2.4.5. "Excavation for Structures" which price will include the cost of any bracing, sheeting or shoring necessary to retain the walls of the excavation.

(d) Payment for backfill material and compaction will not be made under a specific scheduled item. Compensation is included in the contract unit prices for the various scheduled excavating items.

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PART 3

GRAVEL SURFACING AND BASE COURSES

Division

1. Base Course

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PART 3

DIVISION 1 - BASE COURSE

3.1.1 DESCRIPTION

This item shall consist of a foundation course composed of crushed granular material conforming to the specified gradation, constructed on the prepared sub-grade in accordance with these specifications and in conformity with the lines, grades and typical cross-sections shown on the plans and to the thickness specified in the Special Provisions.

3.1.2 MATERIALS

(a) Granular Material:

This material shall consist of broken stone or crushed gravel of a quality approved by the Engineer and it shall be composed of clean, hard, angular particles free from clay lumps, cementation, and organic material.

(b) Gradation:

The aggregate shall conform within the limits specified in Table 1 hereunder. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes herein specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 1

Base Course Aggregate

Sieve No.	Percent Passing
7/8"	100%
3/4"	90-100
1/2"	73-92
No. 4	42-62
No. 10	28-48
No. 40	11-23
No. 200	0-8

The fraction of the material passing the No. 40 sieve shall have a plasticity index of not more than 6 or a liquid limit of not more than 25.

Materials will be considered unsuitable even though particle sizes are within the limits of the grading sizes herein provided, if particle shapes such as thin and elongated or any other characteristic precludes satisfactory compaction or fails to provide a roadway suitable for traffic.

(c) Source of Supply:

Possible sources of local materials may be designated on the plans and described in the special provisions but in any event the source of supply shall be approved by the Engineer. The contractor shall satisfy himself before tendering as to the amount of equipment and work required to secure a finished product meeting the specifications and whether it will be necessary for him to blend with other materials.

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If it is found that after production has started the source or sources of supply can not provide satisfactory products meeting the specifications then the Contractor shall furnish materials from another approved source without additional compensation except for necessary work done under the various scheduled items of the contract.

(d) Water:

The Contractor shall supply all water required for the base course construction. The water shall be reasonably clean and, in the opinion of the Engineer, acceptable for use in the work.

3.1.3. METHODS OF CONSTRUCTION

(a) Clearing and Grubbing:

The clearing and grubbing of borrow pits from which the base course raw material is obtained will be carried out as specified in Division 1 of Part 2 of these specifications, and payment will also be as specified in this section.

(b) Stripping:

The pits from which this material is obtained shall be stripped of all overburden by the Contractor, and this over burden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

(c) Operation and Clean-up of Pit Areas:

The pit area shall be so operated and with suitable equipment to obtain the maximum use of the raw materials in the pit. If in the opinion of the Engineer the equipment is not capable of producing material meeting the specifications or in sufficient quantities to complete the work by the contract completion date then it shall be replaced or improved upon with more suitable equipment.

For the purpose of excavating material from the pit the Contractor will be required to use a type of equipment which will excavate to a face extending from the floor of the pit to the surface of the deposit. The use of scrapers, bulldozer or other types of equipment which by nature of their use remove the deposit in more or less horizontal layers will be prohibited.

After completion of the work the pit area shall be cleaned up, any debris removed and the entire area left in a condition satisfactory to the Engineer. If required by the Engineer the sides of the pit shall be trimmed to a minimum slope of $1\frac{1}{2}$:1 and smoothed off to a neat and acceptable appearance.

(d) Access Roads:

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right of way. Any work and materials required for the construction of such access roads, shall be specified by the Engineer and paid for under the contract unit prices for the various scheduled items.

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(e) Blending Aggregates:

It shall be permissible to blend or mix two or more materials to meet the gradation requirements of the base course. When two or more materials are blended they shall be thoroughly mixed by mechanical means so as to achieve uniformity throughout the finished product.

(f) Foundation for Base Course:

The surface on which the base course is laid shall be reasonably dry, free from frost, snow and foreign materials and properly finished and compacted. Any damage or irregularities in the subgrade surface shall be repaired by the Contractor at his expense and to the satisfaction of the Engineer before placing the base course.

(g) Spreading:

The base course material shall be placed in layers of not less than three inches and not more than 6 inches in compacted thickness as directed by the Engineer.

(h) Rolling and Compaction:

Immediately following spreading and smoothing of each layer, all the material placed shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, or rubber tired rollers, providing they are in accordance with section 2.3.3 (h) "Embankment Construction".

Each layer shall be compacted to the satisfaction of the Engineer. In the event of controversy, the degree of compaction shall be determined by the current A.A.S.H.O. Test T99-57 Method C and at least 100% of the maximum density as determined by this method will be required. During rolling, the base course shall be reasonably maintained at the optimum moisture content as determined by the above method.

The base course shall not be laid in excess of five hundred (500) lineal feet in advance of rolling.

(i) Controlling Thickness of Base Course:

The Engineer shall assume full responsibility for the quantities of granular material to be placed in order to obtain the desired base course thickness.

The Engineer will test the completed surface of the base course with a ten (10) foot straight-edge. Any irregularities that exceed 1/2 inch from the template grade shall be remedied by the Contractor to the satisfaction of the Engineer by adding or removing base course material. Where such work is necessary the area shall be re-compacted to the original density specified.

3.1.4. METHOD OF MEASUREMENT

(a) The quantity of base course for which payment will be made, shall be the number of tons of base course material, placed, bonded, and accepted in the completed base course.

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The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

The contractor shall provide suitable housing at the scales for the Department weighmaster to perform his work and maintain his records.

(b) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producting the base course material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

(d) The quantity of stripping of borrow or pit areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

3.1.5 BASIS OF PAYMENT

(a) Payment for base course shall be made for the quantities as above determined, measured in tons (2000 lbs.) at the contract unit price for "Base Course", which price and payment will constitute full compensation for all labour, equipment, and tools, excavation, crushing, screening, loading, blending, spreading, compacting, surface finishing, and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for hauling base course material shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course", which price and payment will constitute full compensation for all labour, equipment, and tools, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) Payment for watering shall be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling, and distributing, and for all labour equipment, tools, and all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(d) Payment for stripping of borrow areas shall be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Excavation, Common" which price shall be full compensation for all labour, equipment, tools, excavation, and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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PART 6

MISCELLANEOUS CONSTRUCTION ITEMS

DIVISION

1. Hand Placed Rip-rap.

2. Random Rip-rap.

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PART 6

DIVISION 1 - (A) HAND-PLACED RIPRAP

(B) GROUTED HAND-PLACED RIPRAP

6.1.1 DESCRIPTION

This item shall consist of constructing hand-placed riprap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.1.2 MATERIAL

The Contractor shall supply all materials.

(a) Cement:

Cement for mortar shall be Portland Cement conforming to the requirements of the C.S.A. Specification A5-1951.

(b) Sand:

Sand for mortar shall conform to the C.S.A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(c) Rock:

Stone for riprap shall be durable field or quarry stone of approved quality, sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects. For wall construction no stone shall be less than 1/2 cubic foot in volume and 75 per cent of the stones shall be at least 1 cubic foot in volume. For gutter construction stones shall be not less than 4 inches and not more than 6 inches in thickness with approximately flat top surfaces with widths of not less than 2 inches and lengths of not less than 6 inches. Spalls shall be supplied to fill open joints.

6.1.3 METHODS OF CONSTRUCTION

EXCAVATION

(a) Hand-Placed Riprap:

Where shown on the plans and as directed by the Engineer the contractor shall excavate so as to provide for an adequate granular foundation upon which the bottom of the riprap shall rest and he shall fine grade to a uniform and even surface the whole area to be riprapped. Depressions shall be filled and thoroughly compacted.

(b) Grouted Hand-Placed Riprap

Excavation shall be performed as for (A) above.

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PLACING

(a) Hand-Placed Riprap:

Unless laid to form a flat apron, the riprap shall commence in a trench below the toe of the slope. Stones shall be placed at the locations and to the required dimensions and cross-section shown on the plans and as directed by the Engineer. Stone shall be laid with close broken joints and shall be firmly bedded into the slope and against adjoining stones, The larger stones shall be placed in the lower courses and all shall be thoroughly compacted as construction progresses. Spalls shall be used to fill voids.

(b) Grouted Hand-Placed Riprap:

The placing of the stones shall be as required under (A) above. The space between the stone shall be filled with cement mortar composed of 1 (one) part Portland Cement to 3 (three) parts fine aggregate, and shall be of such consistency that it can be placed with a mason's trowel. Before applying mortar the surfaces of the stones shall be amply wetted. Mortar shall be placed from the bottom to top, and worked with suitable tools to completely fill all voids except that the outer faces of the stones shall be left exposed. Grouted hand-laid riprap shall be cured in accordance with the curing requirements of the C.S.A. Standard Specifications for Concrete and Reinforced Concrete A23-1942 and amendments thereto.

6.1.4 METHOD OF MEASUREMENT

(A) The quantity of Hand-placed Riprap and Grouted Hand-placed Riprap for which payment shall be made shall be the number of cubic yards measured in place and accepted in the completed work.

6.1.5 BASIS OF PAYMENT

(A) Payment for Hand-placed Riprap and for Grouted Hand-placed Riprap shall be made for the quantities as above determined, at the contract price per cubic yards for "Hand-placed Riprap" and "Grouted Hand-placed Riprap" which price and payment shall constitute full compensation for excavating the bed, for trimming and consolidating the foundation as directed, for excavating, selecting and transporting all stones, for placing stones by hand, for backfilling and grouting when required, and for all labour, materials, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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PART 6

DIVISION 2 - RANDOM RIPRAP

6.2.1. DESCRIPTION:

This item shall consist of stone riprap for bank protection furnished and constructed at the locations indicated, in accordance with these specifications and in conformity with the lines, grades, and dimensions shown on the plans or required by the Engineer.

6.2.2. MATERIALS:

The stones for the riprap shall be hard, angular, quarry stones of such a quality that they will not readily disintegrate on exposure to water or weathering. Stones shall vary in weight from 20 to 400 pounds each. Not less than 25 percent of the individual stones shall weigh from 200 to 400 pounds each. The source of this material will be approved by the Engineer.

6.2.3. METHODS OF CONSTRUCTION:

Foundation trenches and other necessary excavations shall be excavated by the Contractor and approved by the Engineer before the placing of riprap is begun. The stones shall be handled or dumped into place so as to form the cross sections as directed by the Engineer. Unless changes are ordered by the Engineer, the riprap shall extend from two (2) feet below the bed of a stream to the mean high water line. Stones above a low water line shall form a uniform surface free from humps or depressions and with no excessively large cavaties below, or individual stones projecting above the general surface.

6.2.4. METHOD OF MEASUREMENT:

(a) The quantity of Random Riprap for which payment shall be made, shall be the quantity measured in cubic yards in place, and computed by the average end area method, for materials satisfactorily incorporated in the work.

(b) The quantity of foundation excavation shall be measured as in Article 2.4.4. - Excavation for Structures.

6.2.5. BASIS OF PAYMENT:

(a) Payment for Random Riprap shall be made for the quantities as above determined, measured in cubic yards at the contract unit price per cubic yard for "Random Riprap", which price and payment shall constitute full compensation for excavating, selecting, transporting and placing all stones, backfilling, and for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Payment for foundation excavation shall be made as stated in Article 2.4.5. - Excavation for Structures.

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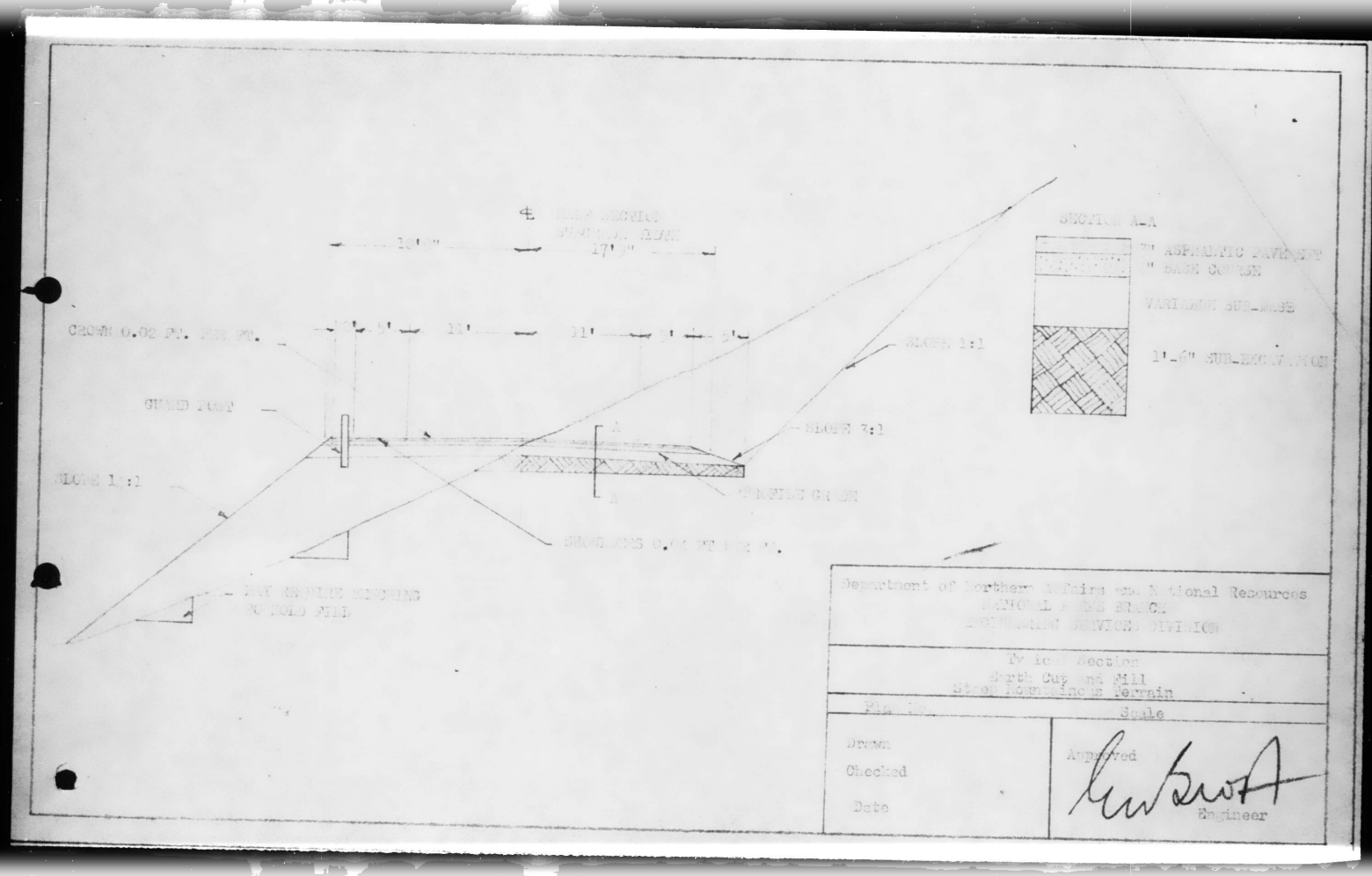

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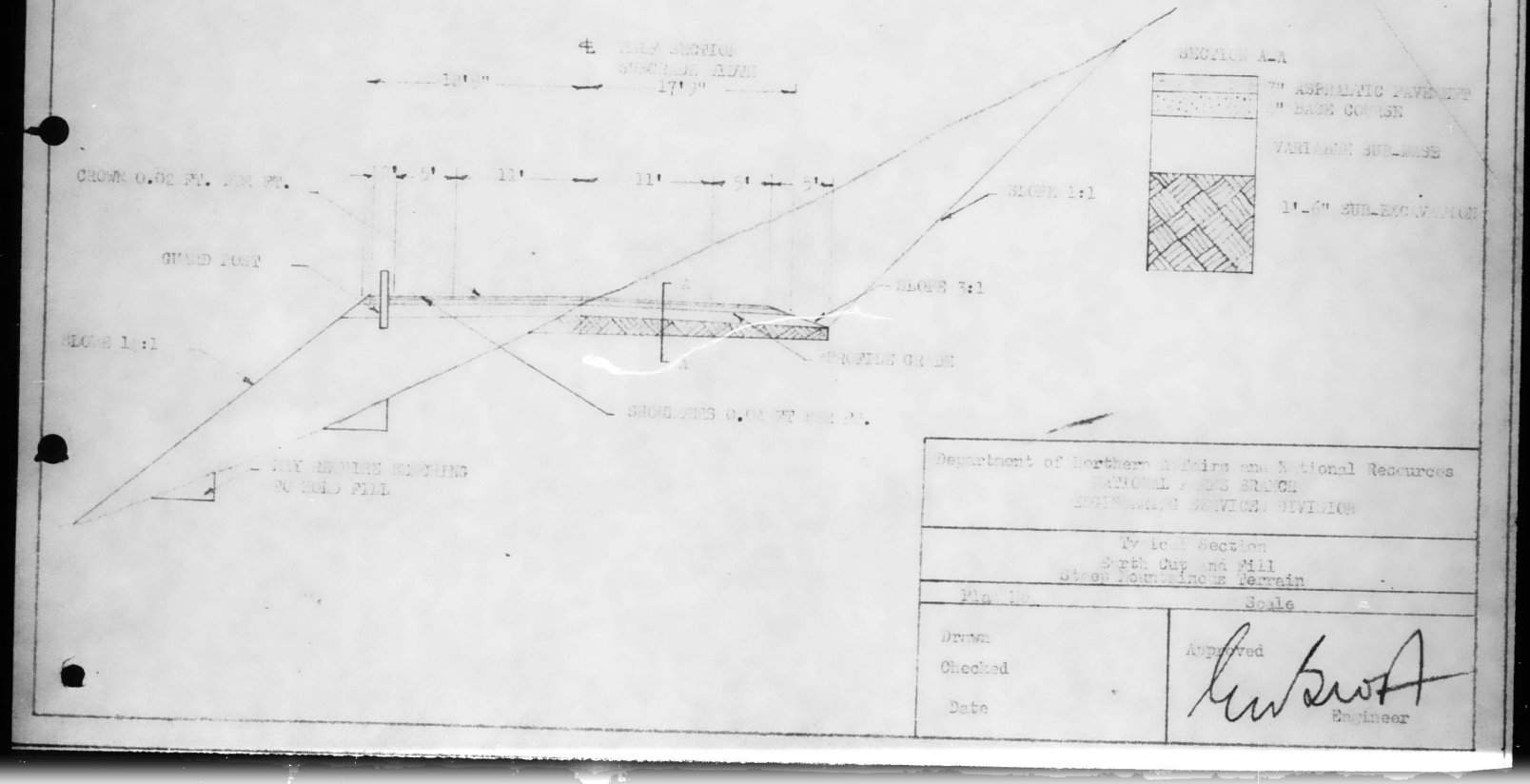

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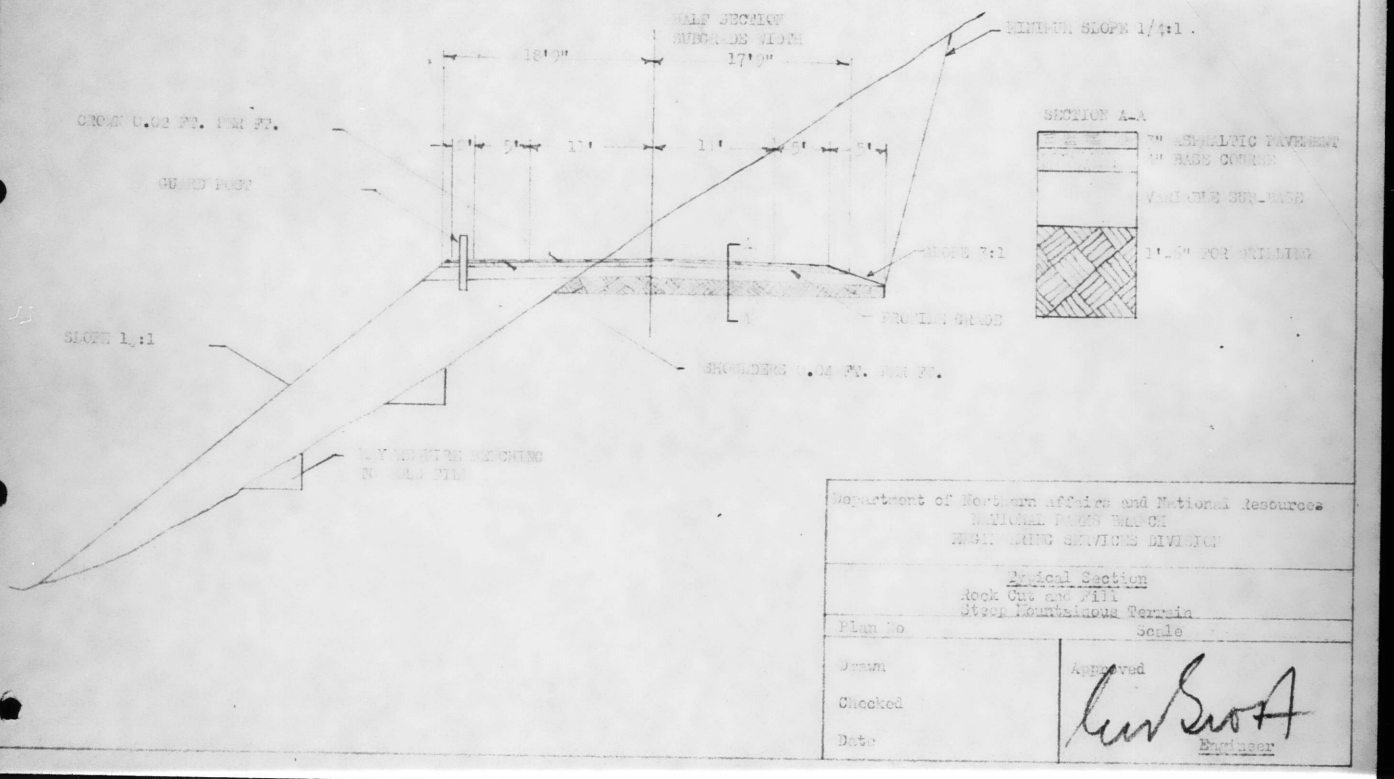

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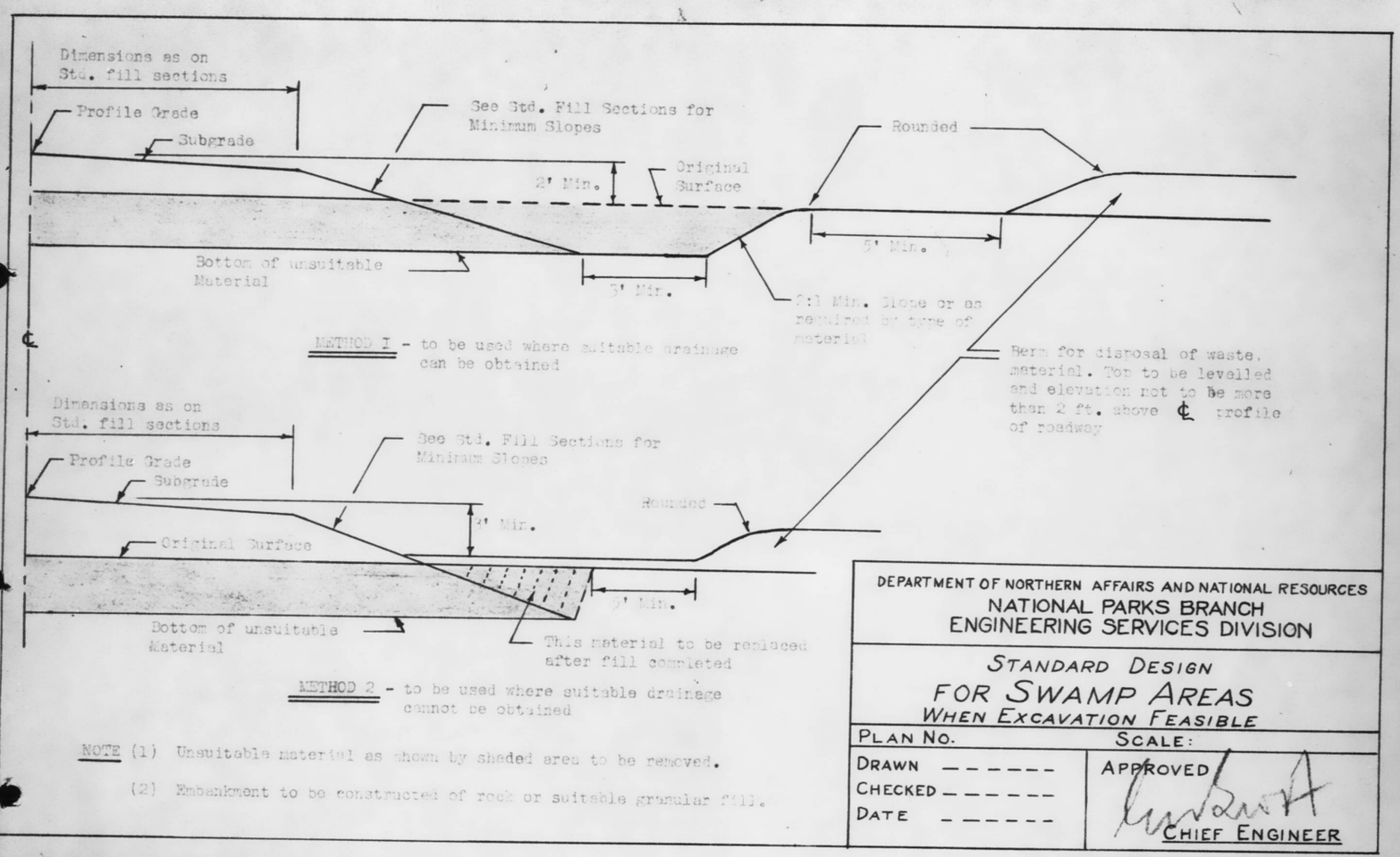

METHOD 1 - to be used where suitable drainage can be obtained

METHOD 2 - to be used where suitable drainage cannot be obtained

NOTE (1) Unsuitable material as shown by shaded area to be removed.

(2) Embankment to be constructed of rock or suitable granular fill.

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

STANDARD DESIGN
FOR SWAMP AREAS
WHEN EXCAVATION FEASIBLE

PLAN NO. | SCALE:

DRAWN ------
CHECKED ------
DATE ------

APPROVED
CHIEF ENGINEER

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Parcs Canada

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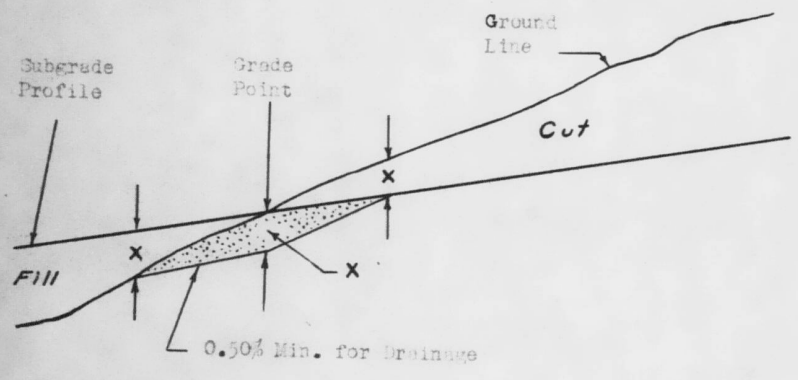
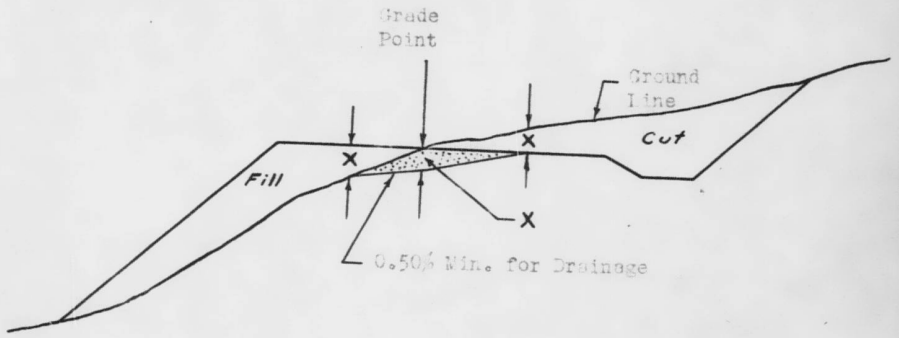
TRANSITION IN PROFILE (A)





TRANSITION IN SECTION (B)

NOTE.....

1. The distance (X) shall be determined by the Engineer and will depend on field conditions, but generally 2-0".

2. All material shown by the shaded area shall be removed for (A) full width of subgrade or (B) full length of cut section and replaced with approved material compacted according to the specification.

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

STANDARD PLAN
CONSTRUCTION METHODS AT TRANSITIONS FROM EARTH CUTS TO FILLS

PLAN No. | SCALE:

DRAWN ------
CHECKED ------
DATE ------

APPROVED
CHIEF ENGINEER

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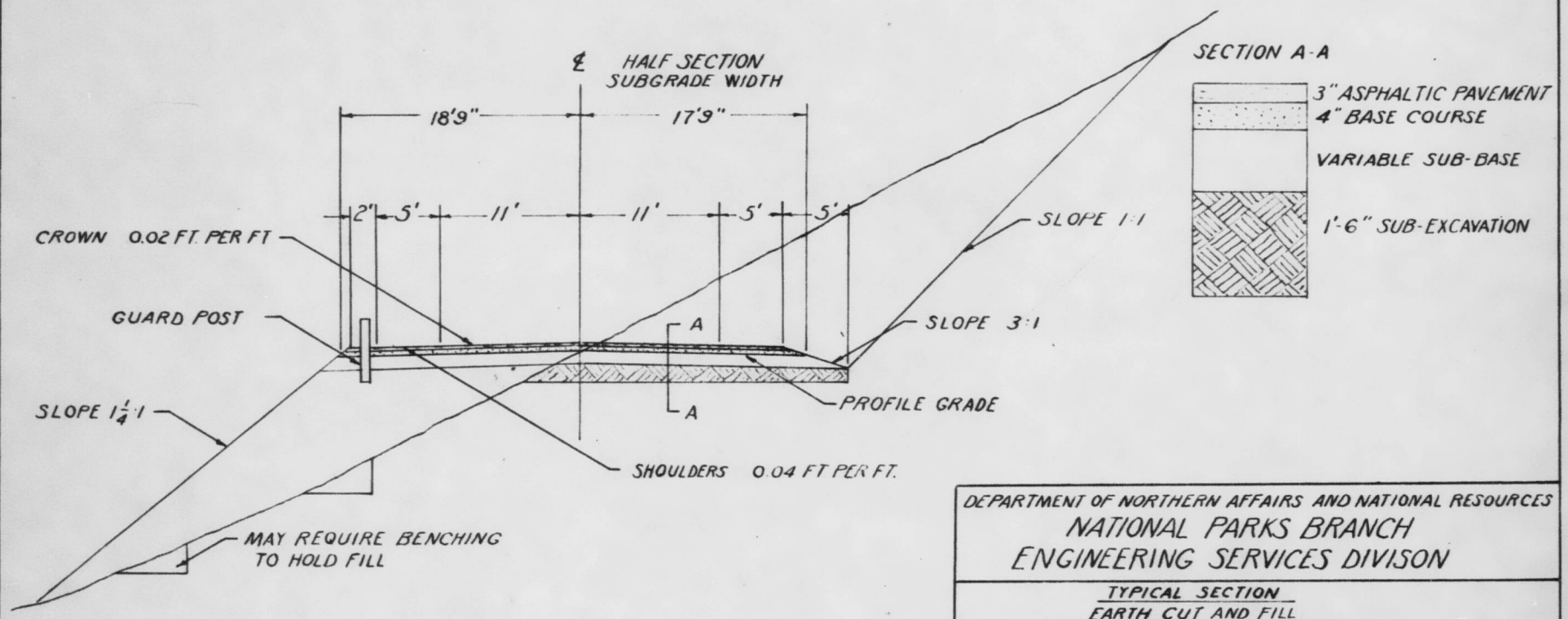

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NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISON

TYPICAL SECTION
EARTH CUT AND FILL
STEEP MOUNTAINOUS TERRAIN

PLAN NO. SCALE

DRAWN R.L.A. APPROVED

CHECKED

DATE ENGINEER

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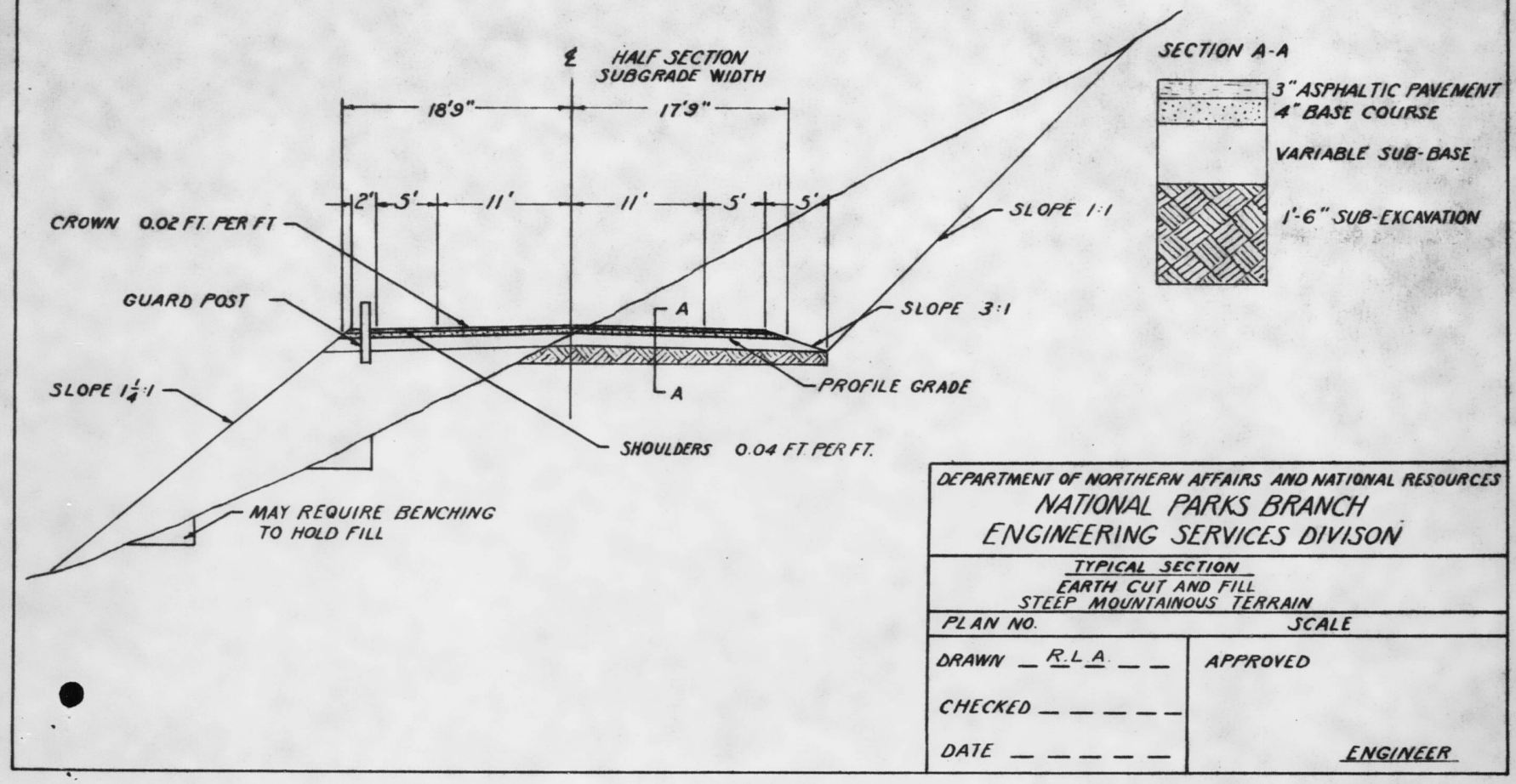

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TYPICAL SECTION
EARTH CUT AND FILL
STEEP MOUNTAINOUS TERRAIN

PLAN NO. SCALE

DRAWN R.L.A.

CHECKED

DATE

APPROVED

ENGINEER

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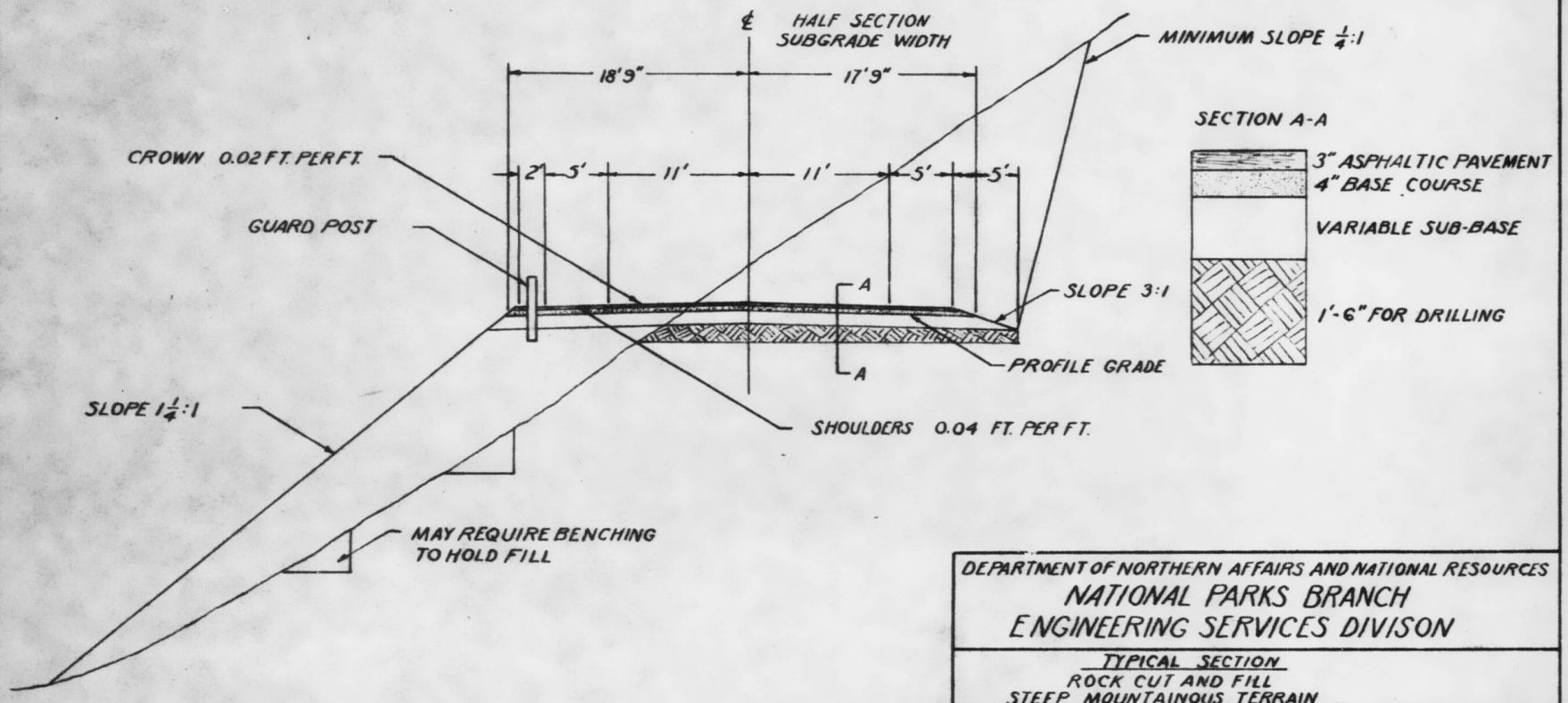

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NATIONAL PARKS BRANCH

ENGINEERING SERVICES DIVISON

TYPICAL SECTION
ROCK CUT AND FILL
STEEP MOUNTAINOUS TERRAIN

PLAN NO. SCALE

DRAWN R.L.A. APPROVED

CHECKED

DATE ENGINEER

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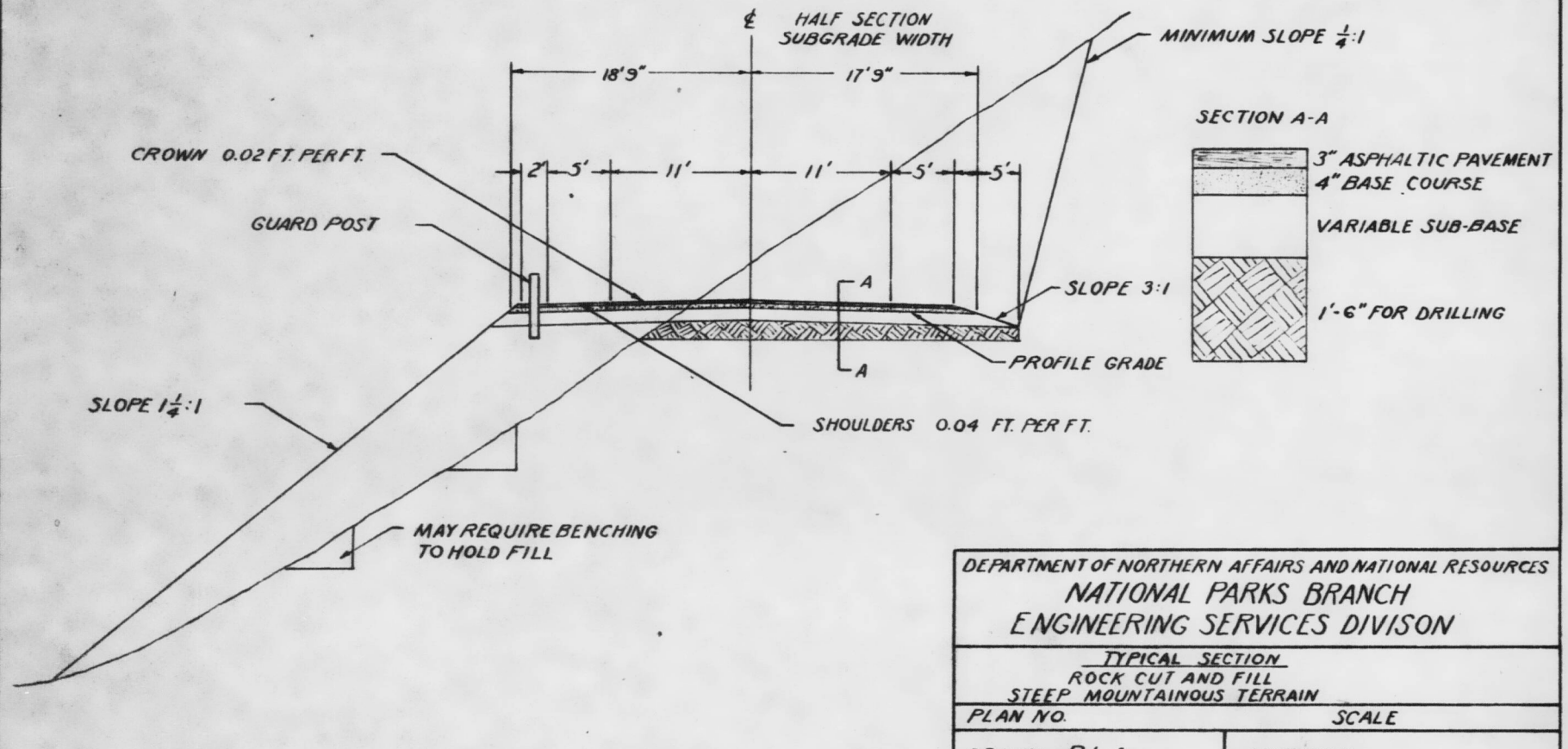

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NATIONAL PARKS BRANCH

ENGINEERING SERVICES DIVISON

TYPICAL SECTION
ROCK CUT AND FILL
STEEP MOUNTAINOUS TERRAIN

PLAN NO. SCALE

DRAWN R.L.A.

CHECKED

DATE

APPROVED

ENGINEER

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TENDER CALL FOR:

Construction of the Medicine Lake - Maligne Lake Road, Jasper National Park, Alberta.

J60-2

20 sets to Fenton Apr 7

TENDER CLOSING DATE:

May // , 1961 at 3:00 P.M., Ottawa

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

INSTRUCTIONS TO TENDERERS

With respect to the proposed work described as follows:

Construction of the Medicine Lake - Maligne Lake Road

from Mile 0 to Mile 5.5, Jasper National Park, Alberta.

1. Tenders shall be submitted in the attached form together with:

   (a) A brief description of similar work undertaken and completed by the tenderer;

   (b) A statement describing the type, capacity and location of equipment (except tradesmen's tools) under the control of the tenderer and available for performing the work;

   (c) The name of a chartered bank of reputable financial firm from which a reference can be obtained in respect of the financial condition of the tenderer; and

   (d) A bid bond for 10% of the total tender price in an approved form and issued by a company whose guarantee bonds are acceptable to the Government of Canada, or security having a par value of not less than

      (i) 10% of the total tender price where such price is $250,000.00 or less, or

      (ii) $25,000.00 plus 5% of the amount by which the total tender price exceeds $250,000.00 if such price exceeds $250,000.00,

   the security to be in the form of a certified cheque drawn on a bank to which the Bank Act or the Quebec Savings Banks Act applies, or bonds of the Government of Canada or of a company included in "National Railways" (as that expression is defined in the Canadian National Railways Capital Revision Act) unconditionally guaranteed as to principal and interest by the Government of Canada, if such bonds are payable to bearer, hypothecated to the Minister of Finance and Receiver General of Canada in accordance with the Domestic Bonds of Canada Regulations, or registered in the name of the Minister of Finance and Receiver General of Canada.

2. Where a tender is not accepted the said bid bond, certified cheque, or bonds shall be returned to the tenderer as soon as possible after knowledge of the successful tenderer.

3. Where a certified cheque or bonds are submitted with a tender which is accepted but the tenderer fails or refuses to enter into the contract for the amount of the tender the said certified cheque or bonds shall be applied to any damages suffered by Her Majesty due to such action.

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4. Where a tender is accepted the tenderer may submit a performance bond for 50% of the total tender price together with a labour and material payment bond for 50% of such price in lieu of the said security each in an approved form and issued by a company whose guarantee bonds are acceptable to the Government of Canada.

5. Telegraphic tenders are not acceptable, however, modifications to tender by wire up to the deadline set will be accepted.

6. No relief on plea of error will be granted in case of error in extension of prices. In unit price bids the unit price will govern.

7. If a discrepancy exists between a written amount and figures in the tender the written amount will govern.

8. Each tenderer must inform himself fully of the conditions relating to the work to be performed and shall inspect the site and be thoroughly familiar with the Plans, Specifications and all terms and covenants of the Contract Documents. Failure to do so will not relieve a successful tenderer of his obligation to carry out the work for the consideration as set forth in his tender.

9. Tenderers or their representatives may attend the opening of tenders at the time and place noted below.

10. Tenders and supporting documents shall be enclosed in sealed envelopes addressed to:

Mr. Gordon L. Scott,
Chief Engineer,
Engineering Services Division,
National Parks Branch,
Department of Northern Affairs
and National Resources,
Room 402,
Norlite Building,
Ottawa 4, Ontario,

and clearly marked:

Tender for: **Medicine Lake - Maligne Lake Road**
Jasper National Park

11. Tenders will be opened at 3:00 P.M. Eastern Standard Time in Room 402, Norlite Building, 150 Wellington Street, Ottawa, Ontario, on **May // , 1961** .

12. The Department reserves the right to reject any or all tenders, and the lowest tender will not necessarily be accepted.

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

ADDENDUM TO

INSTRUCTIONS TO TENDERERS

Tenderers shall list below the full description, capacity, condition, age and present location of the equipment they are tendering on with respect to Item 14 of the Tender Schedule and for the work as outlined in section 2 of the Special Provisions.

EQUIPMENT STATEMENT

Description of Unit	Capacity, etc.	Condition	Age	Present Location

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

TENDER

Submitted by: Date:

To: Mr. Gordon L. Scott,
Chief Engineer,
Engineering Services Division,
National Parks Branch,
Department of Northern Affairs
and National Resources,
Room 402,
Norlite Building,
Ottawa 4, Ontario.

Sir:

Having examined the proposed contract including all documents forming part thereof and having inspected the site of the proposed work described hereunder the undersigned hereby offers to furnish all labour, equipment and materials necessary for the completion of: construction of the Medicine Lake - Maligne Lake Road from Mile 0 to Mile 5.5, Jasper National Park, Alberta.

in accordance with the said contract and to complete the said work on or before the 30th day of November 19 61, for the sum of ($) being the aggregate of either the unit prices or the lump sum price as specified in the schedule hereto and to perform extra work in accordance with the terms of the said contract.

The undersigned encloses herewith:

(a) A bid bond for 10% of the total amount of this tender issued by , or

(b) A certified cheque drawn in favour of the Receiver General of Canada in the amount of ($), and/or

(c) Bonds of the having a par value of ($),

as required by the Government Contracts Regulations and to be dealt with in accordance therewith.

Yours truly,

Signature _____

Address _____

_____

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

TENDER SCHEDULE

The lump sum and/or the unit price or (prices) hereby tendered includes Custom Duties, Sales Tax, handling charges, transportation and all other charges. Any exceptions to the above are noted hereunder:

The quotation for the proposed work is as follows.
Tenderers must submit prices for all items of work outlined below:

Item No.	Spec. Ref.	Description of Work	Unit of Measure	Estimated Quantity	Unit Price	Amount
1.	2.2.5	Excavation, common	cu. yd.	254,000		
2.	2.2.5	Excavation, rock	cu. yd.	51,000		
3.	2.3.5 (c)	Watering	1000 gal. unit	600		
4.	3.1.5 (c)	Excavation for Structures				
	2.4.5	Common	cu. yd.	700		
	2.4.5	Rock	cu. yd.	200		
5.	2.5.5 (a)	Granular Borrow				
		Excavation	ton	3,000		
6.	2.6.5	Overhaul of Granular Borrow (½ mile free)	ton mile	9,000		
7.	2.7.5	Install corrugated Metal pipe culverts				
		(1) 24" dia.	lin. ft.	400		
		(2) 36" dia.	lin. ft.	350		
8.	2.7.5	Supply, deliver and install, Corrugated Metal pipe culverts				
		(1) 18" dia. x 16 ga.	lin. ft.	240		
		(2) 72" dia. x 8 ga.	lin. ft.	220		
9.	3.1.5 (a)	Crushed Gravel Base Course	ton	20,000		
10.	3.1.5 (b)	Hauling Base Course	ton mile	60,000		
11.	3.1.5 (d)	Stripping borrow areas	cu. yd.	1,500		
12.	6.1.5	Hand Placed Rip-rap	cu. yd.	100		
13.	6.2.5	Random Rip-rap	cu. yd.	10,000		
14.	Spec. Prov.	Equipment Rental 5-D.8 Crawler Tractors or equivalent - 300 Hr. each	Hour	1,500		

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Item No.	Spec. Ref.	Description of Work	Unit of Measure	Estimated Quantity	Unit Price	Amount
		2- 14-18 cu.yd. scrapers 300 hr. each	hour	600		
		2- Angle Dozers 300 hr. each	hour	600		
		1- Ripper	hour	300		
			Total tender price			$

On unit price contracts the total of the above amounts will serve as a basis of comparison between tenders received and will also serve as a basis for the Security Deposit.

_____ Actual signatures of authorized officer, owner or partners.

_____
(Title)

_____

_____
(Title)

Dated at.....in the Province of

.....this.....day of.....19.....

Signature of Witness_____

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File/dossier J60-2 Plans (1)

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INFORMATION ON TENDERER

The following information is required for departmental use and should accompany each tender.

If the contract will be signed for the tenderer by an agent appointed by power of attorney, mark this square ☐ , forward with this form a copy of the power of attorney and the original on award of the contract.

If the tenderer is a corporation, mark this square ☐ and fill in the items under A only.

If the tenderer is a partnership or persons engaged in business using as firm a designation other than their own name, mark this square ☐ and fill in the items under B only.

In all other cases mark this square ☐ and fill in the items under C only.

"A"

1. Name of corporation as in charter:

2. Under which laws incorporated (state: Canada or the name of the province):

3. Full address of (delete which is inapplicable) registered office or head office:
in the City of (Street), and Province of

4. Full names and titles of signing officers:

(a) Title:

(b) Title:

5. Which of the signing officers is appointed by power of attorney?

Affix an imprint of the engraved seal and add the signatures of the signing officers to the following:

CERTIFIED COMPLETE AND CORRECT this.....day of, ...19....

_____)
_____)
_____)
_____) (SEAL)

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" B "

1. Name under which business is carried on:

2. Description of court where partnership is registered:

3. Full address of firm:
City of , in the and Province of

4. Full names and address of the person or persons, but not of a limited or special partner, carrying on business under the said firm name who will sign for the firm:

(a) of (Street),
in the City of
in the Province of

(b) of (Street),
in the City of
in the Province of

The person or persons here named should sign the following:

CERTIFIED COMPLETE AND CORRECT this.....day of .....19....

_____

_____

_____

" C "

1. I carry on business under my own name which is:

2. I do not act for anybody else.

3. My full names are:

4. My business address is: (Street),
in the City of and the Province of

5. My occupation is and I carry on business as:

CERTIFIED COMPLETE AND CORRECT this.....day of 19

Signed: _____

_____

_____

_____

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES,
NATIONAL PARKS BRANCH, ENGINEERING SERVICES DIVISION.

INFORMATION ON SUB-CONTRACTOR

It is (my, our) intention to employ the following sub-contractors whom (I, we) believe, after investigation, to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (myself, ourselves), or may be let out to sub-contract. Strike out the trades not included in this contract.

WORK	SUB-CONTRACTOR	ADDRESS
Piling		
Waterproofing		
Curtain Walls, Spandrels		
Structural Steel		
Steel Joists		
Reinforcing Steel		
Roofing and Sheet Metal		
Roof Insulation		
Plastering		
Marble and Tile		
Terrazzo		
Painting		
Glazing		
Movable Partitions		
Finishing Hardware		
Plumbing		
Heating		
Ventilation		
Refrigeration		
Sprinkler Systems		
Electrical		
Fire Alarm Systems		

(see next Page)

0 0 7 2 1 5

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(Continued)

WORK	SUB-CONTRACTOR	ADDRESS
Elevators		
Laboratory Fittings		

(attach additional sheet if required)

It is agreed that (I, we) shall not sub-contract with any other individual or organization or for any other work without the written consent of the Minister of Northern Affairs and National Resources.

(Signature)

0 0 0 2 1 6

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

FILE No. J 60-3 **Vol.** 1

SUBJECT:

ADMINISTRATION OF ROAD ALLOWANCES

FILE No. J 60-3 **Vol.** 1

FROM Nov 65 **TO** Jan 65

FOR INSTRUCTIONS RE USE OF FILE COVER SEE BACK COVER

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	P.A. DATE OR T.	B.F. DATE	INITIALS	REGISTRY INSPECTION

FILE No. J 60-3

YEAR ..... MONTH	DAY	CHARGED TO	IN	YEAR ..... MONTH	DAY	CHARGED TO	IN

PARKS CANADA

CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

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RG 84, A-2-a, vol. 1614
File/dossier J60-3
pt 1

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

FILE No. J 60-3 **Vol.** 1

SUBJECT:

ADMINISTRATION OF ROAD ALLOWANCES

FOR INSTRUCTIONS RE USE OF FILE COVER SEE BACK COVER

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	P.A. DATE OR T.	B.F. DATE	INITIALS	REGISTRY INSPECTION

FILE No. J 60-3

YEAR ..... MONTH	DAY	CHARGED TO	IN	YEAR ..... MONTH	DAY	CHARGED TO	IN

FILE No.....

YEAR..... MONTH	DAY	CHARGED TO	IN	YEAR..... MONTH	DAY	CHARGED TO	IN

Mr. C.T. Clarke,
Chief Engineer,
Development Engineering Branch,
Department of Public Works,
Sir Charles Tupper Bldg.,
Riverside Drive,
Ottawa, Ontario.

Ottawa 4, November 8, 1965.

J.60-3

Dear Mr. Clarke:

Contract 41/65/ALTA-MA
Maligne River Bridge

Please refer to your letter of November 2 concerning tenders received on the above-noted project.

The bids received on this contract have been reviewed, and although the low bid is considerably in excess of the Engineers' estimate, in view of the apparent continuing trend toward higher prices in the construction field, we agree that a recall might well result in even higher contract prices.

We therefore concur with your recommendation to proceed with award of the contract to Square M Construction Limited and Coleman Collieries Limited at their tender amount of $337,100.

Yours sincerely,

ORIGINAL SIGNED BY
J. E. SAVAGE

J.R.B. Coleman,
Director.

Baillie/sw

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Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-3
pt. 1

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TEMPORARY FILE

FILE NO. J 60-3 TEMP. FILE NO.

SUBJECT

MAIN FILE IS CHARGED TO

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	DATE OF P.A. OR T.	DATE OF B.F.	INITIALS	REGISTRY INSPECTION
Smith	93405	4-11-65	[illegible]	T		[illegible]	
Savage	action	5/11/65	DS	8/11/65		[illegible]	

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File/dossier J60-3
pt 1

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093405

CANADA

Department of Public Works / **Ministère des Travaux publics**

NATIONAL PARKS BRANCH
REFERRED TO

Nov 4 11 58 AM '65

CODE 160-2 no copy

NATURAL AND HISTORIC RESOURCES BRANCH
NOV 1965
ENGINEERING AND ARCHITECTURAL DIVISION

Mr. J. R. B. Coleman,
Director,
Natural & Historic Resources Branch,
Department of Northern Affairs and
National Resources,
Centennial Towers, 400 Laurier Ave.,
Ottawa, Ont. Attention Mr. J.E.Savage.

your file / votre dossier
our file / notre dossier 90-3-21

November 2, 1965.

Dear Sir:

Re: Contract 41/65/ALTA-NA - Maligne River Bridge
Mile 27.0 Maligne Lake Road, Jasper National Park, Alta.

Tenders for the above contract were opened 3.00 P.M. October 26 and the following bids were received:

Square M Construction Ltd. & Coleman Collieries Ltd.	Edmonton, Alta. 10310-61 Ave., Box 4456	$337,100.00
Fraser & Rice Constr. Ltd.	Edmonton, Alta. 10105-108th Ave.	349,520.00
Burns & Dutton Constr. (1962) Limited	Calgary, Alta. Box 220, Station "A"	452,640.00
Departmental estimate		269,880.00

You will note that the lowest bid is approximately 25% above the departmental estimate and, in keeping with our present policy, the matter is being referred to you for review and approval before proceeding to Treasury Board. In this connection attached are two copies of the tender tabulation for your information.

The Unit Price Table shows that the discrepancy between the estimate and the low bidder lies entirely in the lump sum items for the superstructure and the prestressed girders. The upward trend of contract prices appears to be continuing, as evidenced by the bids received for the first contract on Northumberland Strait Crossing just opened, thus indicating that this trend is not only of a localized nature but rather nation-wide.

As this contract lends itself to winter work, and in view of the fact that it is doubtful prices would be lower in the spring, it is our

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Parcs Canada
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pt 1
National Archives of Canada
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view that we proceed with the award of the contract to Square M Construction Ltd. & Coleman Collieries Ltd., a combined venture, at their tender amount of $337,100.00.

A submission to Treasury Board has been prepared on this basis, but is being withheld pending your approval to proceed.

Yours very truly,

G.T. Clarke

G.T.Clarke,
Chief Engineer.

Encl.

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pt 1

28/10/65

CONTRACT A1/65/ALTA-N.A. MALIGNE RIVER BRIDGE M.27.0 MALIGNE LAKE RD JASPER NAT PARK

ITEM	ESTIMATED QUANTITY	ENGINEER'S ESTIMATE		(1) SQUARE M' AND COLEMAN COLLIERIES		(2) FRASER & RICE CONST. LTD	
		UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID
(1) Exc. for Structure	1440 cu yd	22.00	31.680.00	6.40	9216.00	19.00	27.360.00
(2) Supply Untreated Timber Piles	7200 lin ft	2.00	14.400.00	1.70	12.240.00	2.25	16.200.00
(3) Supply Creosoted Timber Piles	3600 lin ft	2.00	7.200.00	2.75	9.900.00	3.00	10.800.00
(4) Supply & Install Pile Shoes	360 each	5.00	1.600.00	9.40	3384.00	6.00	2.160.00
(5) Driving Timber Piles	360 each	60.00	21.600.00	30.00	10.800.00	75.00	27.000.00
(6) Conc. in Substructure	720 cu yd	60.00	43.200.00	81.75	58.860.00	45.00	32.400.00
(7) Reinforcing in Substructure	36.000 lbs	0.20	7200.00	0.18	6.480.00	0.15	5.400.00
(8) Superstructure	—	Lump Sum	70.500.00	Lump Sum	123.640.00	Lump Sum	121.000.00

FOR: J.R.B. COLEMAN, Dept. N.A. & N.R.

28/10/65

CONTRACT A1/65/ALTA-NA. MALIGNE RIVER BRIDGE M 27.0 MALIGNE LAKE RD JASPER NAT PARK

FOR: J.R.B. COLEMAN, Dept. N.A. & N.R.

ITEM	ESTIMATED QUANTITY	ENGINEER'S ESTIMATE		(1) SQUARE M' AND COLEMAN COLLIERIES		(2) FRASER & PRICE CONST. LTD	
		UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID
(1) Excav for Structure	1440 cu yd	22.00	31.680.00	6.40	9216.00	19.00	27.360.00
(2) Supply Untreated Timber Piles	7.200 lin ft	2.00	14.400.00	1.70	12.240.00	2.25	16.200.00
(3) Supply Creosoted Timber Piles	5.600 lin ft	2.00	7.200.00	2.75	9.900.00	3.00	10.800.00
(4) Supply & Install Pile Shoes	360. each	5.00	1.600.00	9.40	3384.00	6.00	2.160.00
(5) Driving Timber Piles	360 each	60.00	21.600.00	30.00	10.800.00	75.00	27.000.00
(6) Conc. in Substructure	720 cu yd	60.00	43.200.00	81.75	58.860.00	45.00	32.400.00
(7) Reinforcing in Substructure	36.000 lbs	0.20	7200.00	0.18	6.480.00	0.15	5.400.00
(8) Superstructure	—	Lump Sum	70.500.00	Lump Sum	123.640.00	Lump Sum	121.000.00

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pt 1

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PAGE 2

CONTRACT 41/65/ALTH-NA-MALIGNE RIVER BRIDGE M.27.0 MALIGNE LAKE ROAD.

ITEM	ESTIMATED QUANTITY	ENGINEER'S ESTIMATE		D. SQUIRE 'M' AND COLEMAN COLLIERIES		2 FRASER & KILE CONST. LTD	
		UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID
(9) Prestressed Girders	—	Lump Sum.	64.000 00	Lump Sum	98.650 00	Lump Sum	85000 00
(10) Armour Rip Rap.	500 c/y d	7.00	3500 00	4.90	2450 00	12 00	6000 00
(11) Removal of Existing Structure	—	Lump Sum.	5.000 00	Lump Sum	1.480 00	Lump Sum	1200 00
Totals:-			269.880 00		337.100 00	Telegram add	334.520 00 15.000 00 349 520 00
ADDITIONAL BIDS:- BURNS & DUTTON CONST. (1962) LTD					$452.640 00		

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PARKS CANADA

CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

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Parcs Canada

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File/dossier J60-23
pt 1

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No. J.60-23 PLANS&SPECS Volume 1

From May/59 To Apr/61

CLOSED

DEPARTMENT OF
Northern Affairs And National Resources
19

Subject:
Banff & Jasper Highway
in Jasper

L.L. IND.

NPC 442

CLOSED

NATIONAL PARKS BRANCH

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File/dossier J60-23
pt 1

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File

J60-23 Plans

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

Highways Division

CONTRACT AND SPECIFICATIONS

FOR

GRADING, CULVERTS, BASE COURSE AND PRIME COAT

MILE 96.6 TO MILE 104.5 BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALBERTA.

CONTRACT NO. 5/60/B-J

00022

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 5/60/B-J

GRADING, CULVERTS, BASE COURSE AND PRIME COAT

MILE 96.6 TO MILE 104.5 BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALBERTA.

Instruction to Bidders

(1) Pages 2,3(a) 5(f) 9 &10inclusive must be duly executed.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

INSTRUCTIONS TO BIDDERS FEBRUARY, 1960

PART 1 - BIDDING REQUIREMENTS AND CONDITIONS

1.1 Qualifications of Bidders

The bidder will be required to show that he is capable of performing the class of work contemplated and shall submit with the tender on questionnaire forms supplied by the Department:-

(a) A Declaration of Equipment giving a description of the various units, their capacity, condition, age and present location that the bidder will definitely assign to the project being tendered on for its duration.

(b) A statement of his experience in performing work of the type or character for which his bid is submitted.

The bidder may be required to submit such additional evidence of his qualifications as may be deemed necessary by the Department.

1.2 Contents of Tender Forms

All papers bound with or attached to the tender form are necessary parts thereof and must not be detached or altered.

All plans, specifications and other documents, designated in the tender form, will be considered a part of the tender whether attached or not.

The bidder will be required to deposit with the Department the sum stated in the notice to contractors for each copy of tender form and plans.

1.3 Interpretation of Quantities in Bid Schedule

The quantities appearing in the prepared bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the contract, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased, diminished, or omitted as hereinafter provided without in any way invalidating the unit prices bid.

1.4 Examination of Plans, Specifications, Special Provisions, and Site of Work

The bidder is required to examine carefully the site of the proposed work, the tender, plans, specifications, special provisions, and contract forms before submitting a tender. It is mutually agreed that submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the

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1.8 Interest

Tenderers are notified that they must make their own arrangments with their bankers as to the payment of interest, if any, on the amount of any certified cheque accompanying their tender. The Government of Canada will not pay interest on said cheque pending the awarding of the contract, nor be responsible for the payment of interest under any arrangements made by the tenderers. The cheque of the tenderer to whom the contract has been awarded will forthwith be deposited in the Department of Finance and interest on the amount thereof at the prevailing rate of interest under the regulations governing deposits in Post Office Savings Banks will be allowed.

1.9 Delivery of Tenders

Each tender must when possible be submitted in a special envelope furnished by the Department and the blank spaces on the envelope must be filled in correctly so as to clearly indicate its contents. When an envelope other than the special one furnished by the Department is used it must be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail the sealed tender must be addressed to the Department at the address and in the care of the official in whose office the bids are to be received. All tenders shall be filed prior to the time and at the place specified in the notice to Contractors. Tenders received after the time for opening of bids will be returned to the bidder unopened.

1.10 Withdrawal or Revision of Tenders

A bidder may, without prejudice to himself, withdraw a tender after it has been deposited with the Department, provided the request for such withdrawal is received by the Department, in writing or by telegram, before the time set for opening tenders. The bidder may then submit a revised tender provided it is received prior to the time set for opening tenders.

1.11 Material Guaranty

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

1.12 Insurance

Tenderers shall take note that insurance of the type specified in Clause 1.5.11 of the General Conditions will be required for all contracts for the construction of a bridge or bridges and all such other work as may, from time to time, be especially provided for in the Information to Bidders.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 5/60/B-J

FOR: GRADING, CULVERTS, BASE COURSE AND PRIME COAT

LOCATION: MILE 96.6 TO MILE 104.5 BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALBERTA.

The Undersigned, hereby offer to the Honourable the Minister of Public Works, to furnish all necessary machinery, tools, apparatus, and other means of construction, do all the work, furnish all the material except as otherwise specified and, for the prices named in the attached itemized Bid Schedule, to complete the work herein described in strict accordance with the plans, profiles and specifications therefor and such other special provisions and supplemental specifications listed in the Schedule of Plans and Specifications which are provided by the Department for the performance of this work.

The Undersigned, hereby certify that (I, we) have visited and examined the site of the proposed work or have caused it to be visited and examined by a competent person on (my, our) behalf and have made all enquiries relative to the amount of work and value of the materials and plant required for this work.

The Undersigned, understands that the quantities shown on the Bid Schedule are to be considered as approximate only and the Department reserves the right of increasing or diminishing any or all of the items. However, the bids will be compared on the basis of estimated quantities of work to be done as given on the attached Bid Schedule.

The Undersigned herewith enclose:

(a) a security deposit equal to 10% of the tender, or $25,000 plus 5% of the amount by which the tender exceeds $250,000, in one or more of the following forms:

(i) a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act, payable to the Receiver General of Canada;

(ii) Government of Canada bonds payable to bearer, with unmatured coupons attached if coupon bonds;

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(iii) Bonds issued by Canadian National Railways or its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada and payable to bearer, with unmatured coupons attached if coupon bonds.

OR

(b) a bid bond in an approved form equal to at least 10% of the tender.

The Undersigned understands that before a contract is awarded, the successful tenderer must furnish either a security deposit as described in (a) above, or a Performance Bond and a Labour and Material Payment Bond in approved forms, each bond being equal to 50% of the tender. A successful tenderer, who has furnished a Security Deposit with the tender and substitutes a Performance Bond and a Labour and Material Payment Bond upon award of the contract, will have the Security Deposit returned. Bid Bonds, Performance Bonds, and Labour and Material Payment Bonds must be issued by a surety company approved by the Department of Insurance. A list of approximately 100 approved companies may be obtained from any office of the Department of Public Works.

Envelopes containing this tender are to be endorsed:

"Tenders for Contract No. 5/60/B-J "

and addressed to the Secretary of the Department of Public Works, Ottawa.

The signature(s) of the person(s) tendering must be in their respective handwriting.

In the case of partnerships, the signature, post office address and occupation of each partner must be given.

By my/our signature hereunder, I/we hereby identify this as the tender for Contract No. 5/60/B-J executed by me/us and bearing

date the second day of May 1960

WITNESS Thomas C. Rutherford
SIGNATURE Square M. Construction Limited
Per: F.G. Missiaen, Sec.-Treas.

ADDRESS Thomas C. Rutherford
10959 - 77 Avenue
Edmonton, Alta.

ADDRESS Coleman Collieries Limited
Per: W.J. Missiaen, Director
Box 4456,
Edmonton, Alta.

JOINT TENDER

Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 1
National Archives of Canada
Archives nationales du Canada

Schedule of Documents, Plans and Specifications

Provided by the Department

for

Tender Submission

Contract No. 5/60/B-J

1. Information to Bidders — Page 4 - 4 (b)
2. Bid Schedule — " 5 - 5 (f)
3. Construction Programme and Equipment Statement — " 6 - 6 (a)
4. Schedule of Equipment Rental Rates, Alberta National Parks
5. Statement of Experience — " 8
6. Employment of Sub-Contractors — " 9
7. Notice to Tenderers — " 10
8. Instructions to Bidders
9. Indenture
10. Labour Conditions
11. Plans and Specifications

(a) General Specifications

Division	Section
(i) General Conditions	1 - 8 incl.
(ii) Earthwork	1, 2, 3, 4, 6
(iii) Base Course	1
(iv) Pavements	4
(vi) Incidental Construction	1, 2, 3, 4, 8, 10

(b) Standard Plans for Class 'C' Highway

Earth Fill; Earth Cut; Rock Fill; Rock Cut; Rock Cut Construction; Earth Cut and Fill Construction Method at Grade Points; Installation of Pipe Culverts, Construction through Swamp Area; Typical Barricade; Typical Signs; Project Sign Board.

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(c) Plan and Profile

Plan of Location, Mile 96.6 to Mile 104.5
Line Diagram Mile 96.6 to Mile 104.5
Profile Mile 96.6 to Mile 104.5
Soils Profile Mile 96.6 to Mile 104.5

By my/our signature hereunder, I/we hereby identify this as the Schedule of Plans and Specifications provided by the Department of Public Works for the performance of the work under and forming part of this Contract No. 5/60/B-J executed by me/us and bearing date

the second day of May 1960.

WITNESS Thomas C. Rutherford
SIGNATURE Per: F.G. Missiaen, Sec. Treas
Square M Construction Limited

ADDRESS Thomas C. Rutherford
10959 - 77 Avenue
Edmonton, Alta.

ADDRESS Per: W.J. Missiaen, Director
Coleman Collieries Limited
Box 4456
Edmonton, Alta.

JOINT TENDER

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

INFORMATION TO BIDDERS

FOR

CONTRACT NO. 5/60/B-J

1. Description

The work under this contract consists of grading, supply and installation of culverts, base course and prime coat on the Banff-Jasper Highway, Mile 96.6 to Mile 104.5, Jasper National Park.

2. Completion Date

October 31, 1961.

3. Nearest Railway Siding

Jasper Alberta - approximately 40 miles from the north end of the contract.

4. Nearest Post Office

Jasper, Alberta.

5. Maintenance of Traffic

Between the middle of June and Labour Day heavy traffic made up largely of tourists may be expected. The Contractor shall, therefore, conduct his work so as to create a minimum amount of inconvenience to traffic.

6. Snow Ploughing

No winter maintenance of the Banff-Jasper Highway is carried out by the Government of Canada. Any arrangements made by the Contractor to keep the road open shall be at his own expense and shall require the approval of the Engineer.

SPECIAL PROVISIONS

7. Equipment Rentals

All equipment or vehicles engaged at hourly rates shall be equipped with approved devices to register the hours of operation, the costs of such devices to be included in the rental rates. Payment for the rental of such equipment or vehicles will be computed on the basis of the actual operating time on the work as approved by the Engineer.

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8. Excavation, Common

The Bid Schedule Item "Excavation, Common" includes an estimated 130,000 cubic yards of spoil excavation, and approximately 560,000 cubic yards of borrow excavation. An estimated quantity of 10,000 cubic yards of select granular borrow material required for bedding and backfill around culverts is included in the 560,000 cubic yards of borrow excavation. The select granular borrow material shall be clean, pit-run gravel with 100% passing a 4-inch square mesh and not more than 8% passing a No. 200 mesh sieve.

9. Sources of Aggregate

Suitable aggregate for the production of Base Course Class 1 and Sub-Base Class 2 may be obtained from a deposit located at Mile 103.5.

10. Bituminous Prime Coat with Sand Cover

The Contractor shall so plan and perform the overall construction work that completed prime coat with sand cover, 43 feet in width, shall be kept within two miles of the main subgrade construction at all times.

The bituminous material for prime coat shall be special primer conforming to the Canadian Government Specifications Board Specification 16-GP-1B.

The work shall be performed and will be paid for in accordance with the provisions of Division 4, Section 4, of the Standard Specifications amended to include the following:

a) Application of Bituminous Material and Sand Cover

Bituminous material shall be applied in two separate coats as directed by the Engineer. After the first application the Engineer may order the spreading of sand cover. The sand cover, as required, shall be thoroughly rolled by approved pneumatic and/or steel wheel rollers to ensure a firm bond with the asphalt. The second application of bituminous material shall be covered immediately with sand cover uniformly distributed by an approved mechanical spreader and again rolled as above.

b) Prime Coat Maintenance

Continuous surface maintenance of completed sections of prime coat shall be performed by the Contractor as directed by the Engineer. Repair of surface damages, when not attributable to negligence on the part of the Contractor, shall be performed and paid for on a force account basis in accordance with Article 1.7.3 of the Standard Specifications.

11. Vehicles for the Use of the Engineer

The Contractor shall supply the following vehicles for the use of the Engineer:

a) Two standard 1/2-ton Panel Trucks

b) Two standard 1/2-ton Pick-up Trucks

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12. Force Account

A sum of $40,000 is included in the tender for cleaning out and repairing ditches or slopes damaged due to slides only on sections on which grading has been completed, and holes in prime coat surface where damage is not due to negligence on the Contractor's part. This amount is to be added to the sums of the other items of the Bid Schedule in arriving at the total tender amount.

Extra work orders will be issued against this item as required, and payment will be made only for work so completed in accordance with Article 1.7.3 of the Standard Specifications.

13. Extension of Time

Clause 50 of the Standard Departmental Indenture is cancelled and superseded by the following:

Extensions

"The decision of the Minister as to what additional time, if any, beyond the time specified for the completion of the works may be allowed to the Contractor for such completion and as to the reasonableness or sufficiency thereof shall be final.

If any additional time for such completion is so allowed the Contractor shall, if and to such extent as the Minister requires, pay to Her Majesty all salaries and wages paid by Her Majesty to the person or persons superintending the work during the additional time so allowed and all other costs, expenses and damages incurred by Her Majesty as a result of the allowance of such additional time for completion. Any extension of time that may be granted to the Contractor shall not affect any rights of Her Majesty under this contract, and no assent thereto on the part of the Contractor shall be necessary."

The second paragraph of Clause 20 of the Standard Departmental Indenture is also cancelled.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

BID SCHEDULE

CONTRACT NO. 5/60/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
1.	2.1.5	Clearing, at Five Hundred and Fifty Seven Dollars per acre	10	557	00	5,570	00
2.	2.1.5	Grubbing, at One Hundred Dollars per acre	50	100	00	5,000	00
3.	2.2.5(a) & Infor.to Bidders Para. 8	Excavation, Common at Thirty-one cents per cu.yd.	910,000		31	282,100	00
4.	2.2.5(a)	Excavation, Rock, at Eighty Cents per cu.yd.	125,000		80	100,000	00
5.	2.3.5(2) 3.1.5(4)	Compaction (pneumatic tired roller), at (complete unit) Five Dollars per hour	3,000	5	00	15,000	00
6.	2.3.5(4) 3.1.5(4)	Compaction (pneumatic tired roller only in tandem), at Three Dollars per hour	300	3	00	9,000	00
7.	2.3.5(2)	Compaction (tamping roller complete unit), at Five Dollars per hour	1,000	5	00	5,000	00
8.	2.3.5(4)	Compaction (tamping roller unit only in tandem), at Three Dollars per hour	100	3	00	300	00

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HIGHWAYS DIVISION

BID SCHEDULE

CONTRACT NO. 5/60/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
9.	2.3.5(2)	Compaction (grid-roller, weighing at least 15 tons), at Ten Dollars per hour	4,500	10	00	45,000	00
10.	2.3.5(2)	Compaction (vibratory type compactor weighing from 12 to 16 tons if mounted on pneumatic tires or weighing at least 3-1/2 tons if on steel drum), at Nine Dollars per hour	3,500	9	00	31,500	00
11.	2.3.5(3) 3.1.5(3)	Water for Compaction, at Two Dollars & Twenty-Five Cents per 1,000 gal.unit	8,000	2	25	18,000	00
12.	2.4.5	Channel Excavation, Common, at Thirty-eight cents per cu.yd.	30,000		38	11,400	00
13.	2.4.5	Channel Excavation, Rock, at Two Dollars and Fifty Cents per cu.yd.	500	2	50	1,250	00
14.	2.3.5(2)	Self-Powered Hand-Operated Compaction Unit (vibratory or ram type weighing not less than 100 lbs.), at Four Dollars per hour	500	4	00	2,000	00
15.	3.1.5(4) 4.3.5(5)	Tandem Power Rollers (steel), at Seven Dollars per hour	1,500	7	00	10,500	00
16.	2.6.5	Overhaul (1000 feet free), at Fifteen cents per cu.yd. mile	740,000		15	111,000	00

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BID SCHEDULE

CONTRACT NO. 5/60/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Prices		Total Amount	
17.	3.1.5(6)	Stripping of Borrow Areas, at Twenty-nine cents per cu.yd.	60,000		29	17,400	00
18.	3.1.5(1)	Base Course (Class 1), at Seventy-six cents per ton	40,000		76	30,400	00
19.	3.1.5(2)	Hauling Base Course (Class 1), at Thirteen cents per ton-mile	140,000		13	18,200	00
20.	3.1.5(1)	Sub-Base Course (Class 2), at Forty-three cents per ton	150,000		43	64,500	00
21.	3.1.5(2)	Hauling Sub-Base Course (Class 2), at Thirteen cents per ton-mile	525,000		13	68,250	00
22.	6.8.5(1)	Supply & Deliver Calcium Chloride, at One Hundred Dollars per ton	130	100	00	13,000	00
23.	6.8.5(2)	Apply Calcium Chloride for Dust Control, at Five Dollars per ton	130	5	00	650	00
24.	6.1.5	Random Riprap, at One Dollar & Eighty Five cents per cu.yd.	1,000	1	85	1,850	00

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HIGHWAYS DIVISION

BID SCHEDULE

CONTRACT NO. 5/60/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Prices		Total Amount	
25.	6.2.5	Hand-Placed Riprap, at Seven Dollars & Seventy-five cents per cu.yd.	1,000	7	75	7,750	00
26.	6.3.5(1)(a)	Supply & Deliver Plain Galvanized Corrugated Metal Pipe Culverts					
		(1) 18" diam., 16 gauge, at Three dollars & Five Cents per lin. ft.	300	3	05	915	00
		(2) 24" diam., 14 gauge, at Four Dollars & Eighty-Five Cents per lin. ft.	2,600	4	85	12,610	00
		(3) 36" diam., 14 gauge, at Seven Dollars per lin. ft.	1,000	7	00	7,000	00
		(4) 48" diam., 12 gauge, at Thirteen Dollars per lin. ft.	320	13	00	4,160	00
27.	6.3.5(2)(a)	Installation of Plain Galvanized Corrugated Metal Pipe Culverts					
		(1) 18" diam., at One Dollar and Forty-Five Cents per lin. ft.	300	1	45	435	00

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BID SCHEDULE

CONTRACT NO. 5/60/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Prices		Total Amount	
27.	6.3.5(2)(a)	(2) 24" diam., at One Dollar & Seventy-Five Cents per lin. ft.	2,600	1	75	4,550	00
		(3) 36" diam., at Two Dollars & Thirty Cents per lin. ft.	1,000	2	30	2,300	00
		(4) 48" diam., at Three Dollars & Ninety Cents per lin. ft.	320	3	90	1,248	00
28.	6.4.5	Excavation for Underdrains, Common, at One Dollar & Twenty Four Cents per cu.yd.	700	1	24	868	00
29.	6.4.5	Excavation for Underdrains, Rock, at Seven Dollars per cu.yd.	50	7	00	350	00
30.	6.4.5(2)	Supply & Deliver Perforated Pipe Underdrains, 8" diam., 16 gauge, at One Dollar & Sixty Five Cents per lin. ft.	2,000	1	65	3,300	00
31.	6.4.5(3)	Installation of 8" diam., Underdrains, at Forty Five Cents per lin. ft.	2,000		45	900	00
32.	6.10.5 & Info.to Bidders Para. 11	Supply Two 1/2 ton Pick-up Trucks, at Two Hundred & Thirty Six Dollars per vehicle-month	24	236	00	5,664	00

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DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

BID SCHEDULE

CONTRACT NO. 5/60/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Prices		Total Amount	
33.	6.10.5 Info. to Bidders Para. 11	Supply Two 1/2-ton Panel Trucks, at Two Hundred & Fifty Two Dollars per vehicle-month	24	252	00	6,048	00
34.	Info. to Bidders Para. 12	Force Account (repairing damage to ditches, slopes, prime coat and any other work authorized by the Engineer) Forty Thousand Dollars	As ordered by the Engineer			40,000	00
35.	Info. to Bidders Para. 10 4.3.5(1)	Prime Coat, at Twenty-two & eight tenths cents per gal.	100,000	0	228	22,800	00
36.	4.3.5(2) & Info. to Bidders Para. 10	Sand Cover for Prime Coat, at Three Dollars per cu.yd.	2,000	3	00	6,000	00
37.	4.3.5(3) & Info. to Bidders Para. 10	Hauling Sand Cover, at Fifteen cents per cu.yd. mile	10,000		15	1,500	00
				TOTAL		987,168.00	

TOTAL WRITTEN IN WORDS NINE HUNDRED EIGHTY SEVEN THOUSAND, ONE HUNDRED AND SIXTY EIGHT DOLLARS

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NOTE 1: If other than Canadian materials are to be used, list below the item and country of origin.

All Canadian Materials

NOTE 2: The Contractor shall list below the names and addresses of the supplier of the following materials:

Pipe Culverts — Armco Drainage & Metal Products Of Canada Ltd., Edmonton, Alberta

Underdrains — Armco Drainage & Metal Products of Canada Ltd., Edmonton, Alberta

NOTE 3: IMPORTANT

The tenderer or the person or persons duly authorized to sign on his behalf must initial and date each and every correction, change, erasure or alteration contained in this completed tender document.

CONTRACTOR'S SIGNATURE — Square M Construction Limited
Per: F.G. Missiaen, Sec-Treas.
Coleman Collieries Limited
Per: W.J. Missiaen, Director

DATED May 2, 1960

JOINT TENDER

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CONSTRUCTION PROGRAM AND EQUIPMENT STATEMENT

The Contractor shall in the spaces provided hereunder furnish a detailed outline of the construction program to be followed and a list and complete description of the plant and equipment available, if required, for the satisfactory prosecution of the work within the time limit specified in the "Information to Bidders". The Department reserves the right to inspect all equipment listed prior to the award of a contract.

CONSTRUCTION PROGRAM

1. On award clear, grub & strip borrow pits.
2. Start ditching
3. On completion of 1 & 2 start stripping roadway from north end.
4. Start roadway excavation from north end.
5. Start borrow from Pit At Mile 103
6. When Borrow removed from Mile 103 Pit start crushing & placing Class 2.
7. When section of road is completed & trimmed place Class 1 material and oil.

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EQUIPMENT STATEMENT

Description of Unit (Make, Model, Year)	Capacity, etc. (Size, Capacity and Horse Power Rating)	Auxiliary and/or Special Equipment (Power take-off, Power Control Units, etc.)	Condition	Present Location
3 Motor Scrapers	13-18 c.y. 208 h.p.		Good	Edmonton
1 Pusher	235 H.D.-H.D. 21	Hyd. Dozer&Ripper	"	"
2 Bulldozers	D-7 112 H.P.	P.C.U & Dozer	"	"
2 Tractors	D-8 225 H.P.	P.C.U	"	New
1 Tractor	D8, 225 H.P.	P.C.U & Dozer	"	Jasper
3 Scrapers	Cat.463 -18-25 c.y.		"	1.Taber 2.Jasper
1 Grader	Cat. 14 150 H.P.	Scarifier	"	Jasper
1 Dragline	3/4 cu. yd.		"	Edmonton
1 Shovel	2½ cu. yd.		"	Jasper
1 Shovel	1½ cu. yd.	Dragline Attach.	"	"
8 Trucks	10 cu. yd. tandem		"	Edmonton
1 Water truck	2800 gallon		"	"
1 Crushing Plant	Pioneer 355		"	"

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EQUIPMENT RENTAL RATES

FOR FORCE ACCOUNT WORK IN ALBERTA NATIONAL PARKS

HIGHWAYS DIVISION, DEPARTMENT OF PUBLIC WORKS

GENERAL CONDITIONS

In the event that extra and force account work is required under the contract, the following equipment rental rates may be used by the Department in settling such accounts.

1. These rates include operators' and oilers' wages, fuel, lubricants, repairs, replacements, depreciation, interest, servicing, and other costs pertaining to operation of the equipment except where equipment only is specified.

2. Where equipment only is specified the rates as given include fuel, lubricants, repairs, replacements, depreciation, interest and servicing but the Department will pay the wage of the operator(s) when operator(s) are required by the Department.

3. Rates for equipment not shown shall be interpolated from the rates given for that class of equipment.

4. For purpose of payment 10 hours constitutes a day and where hourly and daily rates are both shown for a piece of equipment, the least expensive rate or combination of rates will be used for payment.

5. No transportation costs or standby time will be paid for by the Department.

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EQUIPMENT	HOURLY RENTAL RATE
AIR COMPRESSOR	
DIESEL	
185 cfm.	4.50
210 cfm.	5.50
365 cfm.	7.50
600 cfm.	11.50
GASOLINE	
105 cfm.	2.50
125 cfm.	3.00
210 cfm.	4.80
365 cfm.	7.30
600 cfm.	10.50
AIR TOOLS AND ACCESSORIES (EQUIPMENT ONLY)	
Air hose or pipe, line oilers and couplers per 50 ft.	.15
Clay digger 22 lbs.	.25
Jackhammer 48 lbs.	.40
Jackhammer 60 lbs.	.40
Paving breaker 55 lbs.	.35
Paving breaker 80 lbs.	.40
Wagon Drill Model DR 34	1.35
MIXERS	
3½ "S" Tilt Type	2.00
6 & 7 "S" Non-Tilt	2.75
11 "S" Non-Tilt Power Loader	3.40
14 "S" Non-Tilt Power Loader	3.70
16 "S" Non-Tilt Power Loader	4.00
VIBRATORS	
2 H.P. Gas Driven, 12' Flexible Shaft	1.60
6 H.P. Gas, 21' Flexible Shafting	2.20
EUCLID EQUIPMENT	
91 F.D. Reardump 10 c.y. or 15 tons	16.00
31 T.D. Reardump 14.8 c.y. or 22 tons	20.00
36 T.D. 45-46-53 Reardump 14.8 c.y. or 22 tons	21.00
4 F.FD. Reardump 20.0 c.y. or 34 tons	30.00
70 FDT-71 FDT-89W. Bottom Dump 13 c.y. or 20 tons	17.00

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EQUIPMENT	HOURLY RENTAL RATE
POWER GRADERS	
(Grader Blades to be included under "All Found")	
Gradall	18.50
80 to 90 h.p.	12.60
90 to 100 h.p.	14.00
SCRAPERS (EQUIPMENT ONLY)	**DAILY RENTAL RATE**
6 to 8 cu. yds.	30.00
8 to 11 cu. yds.	40.00
12 to 15 cu. yds.	42.00
14 to 18 cu. yds.	65.00
25 cu. yds.	85.00
SCRAPERS SELF-PROPELLED	**HOURLY RENTAL RATE**
D Tournapull E9 and Scraper 8 c.y. 9 tons 122 h.p.	15.00
C Tournapull and Scraper 14.7 cu. yds. 22 tons 206 h.p.	19.00
B Tourhapull and Scraper 23 cu. yds. 294 h.p.	27.00
2T55-2S55, 10-13 cu. yds. 165 h.p.	20.00
2T75-2S75, 15-20 cu. yds. 262 h.p.	25.00
TH 200, 15 cu. yds. 176 h.p.	19.50
TH 0142, 14-18 cu. yds. 225 h.p.	24.00
DW 21, 25 cu. yds. 300 h.p.	26.00
GRADALL with Remote Control	16.00
SHOVELS	
N.B. The Lessor will provide all Maintenance, Operator, Fuel, and Grease, Cables, Shovel Teeth, Welding Repairs to Dippers and Crawlers. Padmen not Included.	
3/8 Yard	9.00
1/2 Yard	11.00
3/4 Yard	14.00
1 Yard	19.00
1 1/2 Yard	25.00
1 3/4 Yard	30.00

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EQUIPMENT	HOURLY RENTAL RATE
TRACTORS "BARE"-Cont'd	
Prior to 1948	
D8 130 h.p.	11.25
1948 to 1953	
D8, 130 h.p.	13.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, 104 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 20, 175 h.p.	12.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	15.00
1956	
D9, 286 h.p.	23.00
TRACTORS WITH BLADE	
Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 11B, 66 h.p.	8.70
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	10.00
1956	
D6, 75 h.p. TD 14A, 66 h.p. HD 11B, 85 h.p.	12.00

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EQUIPMENT	HOURLY RENTAL RATE
2 Yard	33.00
2 1/2 Yard	36.00
3 Yard	40.00
3 1/2 Yard	52.00
5 1/2 Yard	94.00

TRACTORS "BARE"

N.B. The Lessor will build up Crawlers on "All Found" Rates.

Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	7.75
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	8.20
1956	
D6, 66 h.p. TD 14A 78 h.p. HD 11B, 85 h.p.	10.00
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	9.50
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 13A, 124 h.p.	10.25
1956	
D7, 81 h.p. TD 18, 103 h.p. RD 16A, 141 h.p.	12.60

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EQUIPMENT	HOURLY RENTAL RATE
TRACTORS WITH BLADE-Cont'd	
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 15A, 124 h.p.	11.10
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	12.25
1956	
D7, 102 h.p. TD 18A, 103 h.p. HD 16A, 125 h.p.	15.25
Prior to 1948	
D8, 130 h.p.	13.00
1948 to 1953	
D8, 130 h.p.	15.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, AC 204 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 19, 175 h.p.	14.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	16.50
1956	
D9, 230 h.p.	26.50
TRUCKS	
1/2 Ton Light Delivery	2.50
3/4 " " "	2.75
1 " " "	3.00

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EQUIPMENT	HOURLY RENTAL RATE
TRUCKS-Cont'd.	
1/2 Ton Panel	3.00
3/4 " "	3.25
1 " Flat Deck	3.00
1 1/2 Ton Flat Deck	3.25
2 " " "	4.00
3 " " "	4.50
4 " " "	5.00
5 " " "	6.50
2 Ton Dump	4.50
3 " "	5.00
4 " "	6.00
5 " "	7.00
6 " "	8.00
8 " "	10.50
10 " "	13.00
12 " "	15.00
14 " "	17.00
16 " (4 Wheel Tandem) (Includes use of Winch)	20.00
LOW-BOY TRAILER AND TRUCK	
5 Ton	7.00
10 "	10.00
15 "	13.00
20 "	16.00
25 "	19.00
30 "	24.00
40 "	30.00
PILE DRIVER	
Steam Power	9.00
Gasoline Power	8.00
FRONT END LOADERS	
No. 933 Traxcavator 50 h.p.	8.50
1 1/3 H.D. 60, 45 h.p.	10.00
No. 955 Traxcavator, 70 h.p.	11.00
No. 6 " ,100 h.p.	14.00
2 1/4 c.y. H.D. 116, 75 h.p.	15.00
DUMPTOR	
Koehring 60, 6 c.y.	14.50

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STATEMENT OF EXPERIENCE

The tenderer shall state below his experience on similar work to that, which is included in this tender. The date and place of work as well as the agency for whom the work was undertaken shall be clearly stated. Tenderers who have contract work STILL UNDERWAY for the Department of Public Works need not furnish this information.

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EMPLOYMENT OF SUB-CONTRACTORS

It is (my, our) intention to employ the following sub-contractors whom (I, we) believe, after investigation to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (me, us).

	Name and Address of Sub-Contractors	Description of Work to be Done by Sub-Contractors
1.	None contemplated	
2.		
3.		
4.		

It is agreed that (I, we) shall not sub-contract with any other individual or organization or for any other work without the consent of the Minister of Public Works.

JOINT TENDER

Square M Construction Limited
Per: F.G. Missiaen, Sec.Treas.
Coleman Collieries Limited

Contractor's Signature Per: W.J. Missiaen, Director

DATED May 2, 1960

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NOTICE TO TENDERER

THE FOLLOWING INFORMATION IS REQUIRED FOR DEPARTMENTAL USE

PLEASE PRINT CLEARLY

---

1 - LIMITED COMPANY

If this tender is made by a limited company, then the full name of the company should be accurately PRINTED in the space provided for that purpose and its corporate seal, if any, affixed where indicated.

NAME OF COMPANY	SEAL
SQUARE M CONSTRUCTION LIMITED	
COLEMAN COLLIERIES LIMITED	COMPANIES CRESTS

JOINT TENDER

2 - PARTNERSHIP

If this tender is made by a partnership, then the firm name or the business name should be accurately PRINTED in the space provided and the name or names of the partners should be PRINTED where indicated

NAME OF PARTNERSHIP	LIST OF PARTNERS

3 - SOLE PROPRIETORSHIP

If this tender is made by an individual carrying on business under a name other than his own, then his business name should be PRINTED in the space provided and the name of the sole proprietor should be printed where indicated. In the event that the sole proprietor carries on business in his own name, he should merely PRINT his name where indicated.

BUSINESS NAME	NAME OF SOLE PROPRIETOR

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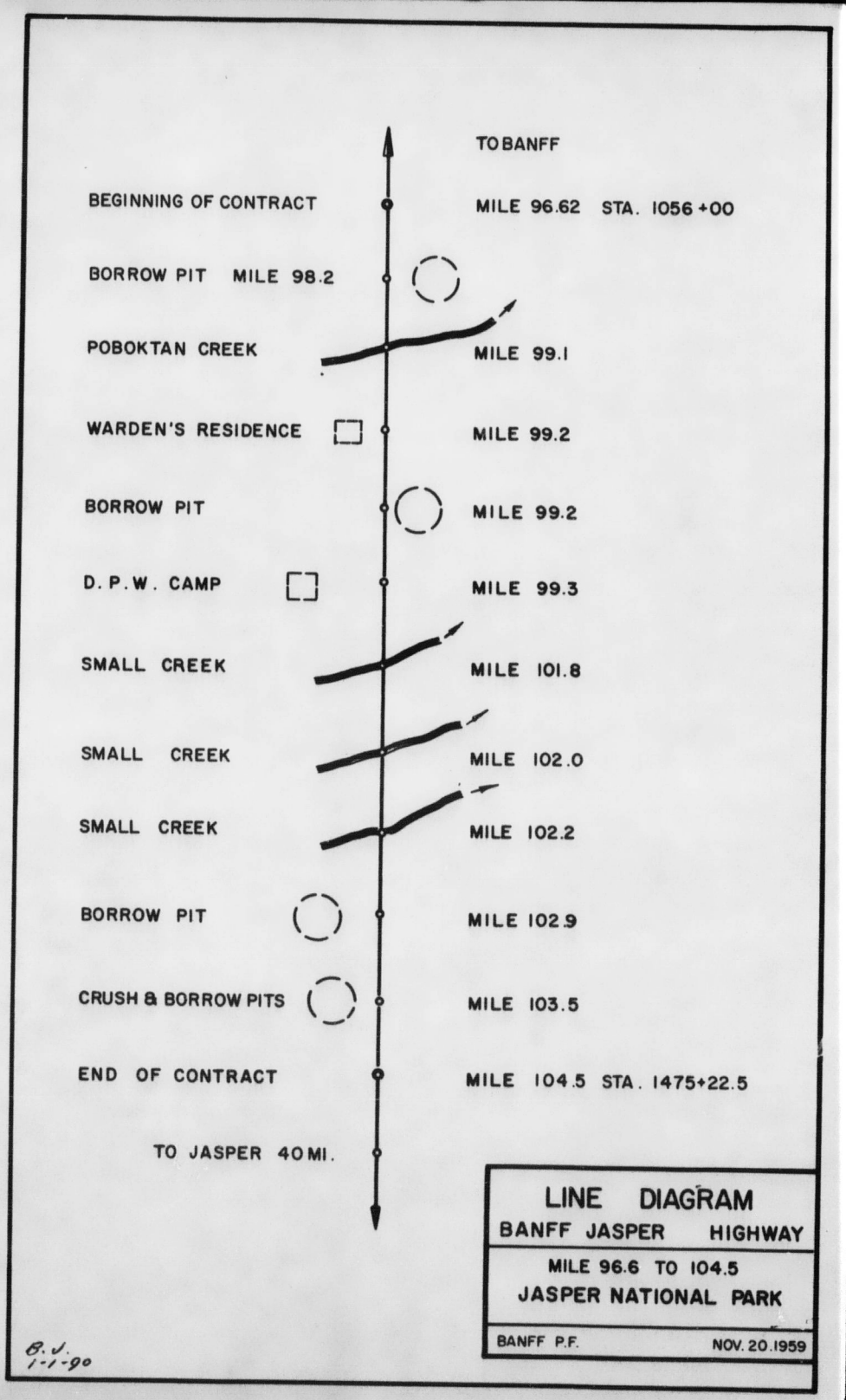

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This Indenture, MADE IN DUPLICATE

this day of

one thousand nine hundred and

BETWEEN

hereinafter called "the Contractor," of the first part;

And HER MAJESTY THE QUEEN, in the right of Canada represented by the Minister of Public Works of Canada, of the second part.

WHEREAS the party of the first part for the consideration hereinafter mentioned has agreed with the party of the second part to do, furnish and perform the works, materials, matters and things required to be done, furnished and performed, in the manner hereinafter described, in connection with the following work or works namely:— Work to be done.

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Now this indenture witnesseth that the said parties hereto hereby covenant, promise and agree each with the other, as follows:—

1. In this contract the following words shall, unless the context requires a different meaning, have the following meanings, respectively, that is to say:— **Interpretation.**

"Contractor" or other words relative thereto, or of like import, shall mean and include, irrespective of sex or number, the party or parties of the first part as above designated or described, jointly and severally, and their and each of their executors, administrators, curators, successors, or assigns.

"Her Majesty" or other words relative thereto, or of like import, shall mean and include the reigning Sovereign or the successors or assigns of the Sovereign.

"Minister" shall mean the person holding the position or acting in the capacity of the Minister of Public Works and shall include the person holding the position or acting in the capacity of the Deputy Minister of Public Works.

"Engineer" shall mean the Chief Engineer or Chief Architect or Director of Property and Building Management, as the case may be, of the Department of Public Works of Canada, having control over the work, and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer or Chief Architect or Director of Property and Building Management, and all instructions or directions, or certificates given, or decisions made by any one acting for the Chief Engineer or the Chief Architect or the Director of Property and Building Management shall be subject to the approval of the Chief Engineer or the Chief Architect or the Director or Property and Building Management and may be cancelled, altered, modified and changed as the Chief Engineer or Chief Architect or Director of Property and Building Management may see fit: Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer or the Chief Architect or Director of Property and Building Management in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or the Chief Architect or Director of Property and Building Management or by any one acting for such Chief Engineer or Chief Architect or Director of Property and Building Management shall be subject to the approval of or modification or cancellation by the Minister of the Department of Public Works of Canada.

"Work or works" shall mean the whole of the work, materials, matters and things required to be done, furnished and performed by the Contractor, as above described, this contract.

2. All the covenants and agreements in this contract binding on and all the provisions in this contract inuring to the benefit of the Contractor shall, respectively, be binding on and inure to the benefit of the executors, administrators, curators, successors and assigns of the Contractor and all the covenants and agreements in this contract binding upon and all the provisions in this contract inuring to the benefit of Her Majesty shall, respectively, be binding upon and inure to the benefit of the successors and assigns of Her Majesty.

3. The Contractor shall at his own expense (except as in this contract otherwise specifically provided) provide all and every kind of labour, superintendence, services, tools, implements, machinery, plant, materials, articles and things necessary for the due execution and completion of all and every the works set out or referred to in the specification hereto annexed, and in any special specification referred to therein and set out or referred to in the plans and drawings prepared and to be prepared for the purposes of the work, and shall forthwith commence the works and diligently execute and fully complete the respective portions thereof, **Provision by contractor for completion of work.**

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and shall deliver the works complete in every particular to Her Majesty on or before the date or dates following, viz:—

Time shall be deemed to be material and of the essence of this contract. Time for completion.

4. The works shall be constructed by the Contractor, and under his personal supervision, of the best materials of their several kinds and finished in the best and most workmanlike manner and in the manner required by and in strict conformity with this contract, the said specifications and special specifications, and the plans and drawings relating thereto, and the working or detail drawings which may from time to time be furnished (which said specifications, and special specifications, plans and drawings are hereby declared to be part of this contract), and to the complete satisfaction of the Engineer. Quality. Plans and specifications part of contract.

5. The work shall be commenced, carried on and prosecuted to completion by the Contractor in all its several parts in such manner and at such points and place as the Engineer shall from time to time direct, and to his satisfaction, but always according to the provisions of this contract, and if no direction is given by the Engineer, in a careful, prompt, and workmanlike manner. Execution of work directed by Engineer.

6. The several parts of this contract shall be taken together to explain each other and to make the whole consistent; and, if it is found that anything has been omitted or misstated which is necessary for the proper performance or completion of any part of the work the Contractor shall, at his own expense, execute the same as though it had been inserted and properly described, and the correction of any such omission or error shall not be deemed to be an addition to or deviation from the works herein described. Construction of contract.

7. The Engineer may, in writing, at any time before the final acceptance of the works, order any additional work or materials or things not covered by the contract to be done or provided, or the whole or any portion of the works to be dispensed with, or any changes to be made which he may deem expedient in or in respect of the works hereby contracted for, or the plans, dimensions, character, quantity, quality, description, location or position of the works or any portion or portions thereof or in any materials or things connected therewith or used or intended to be used therein or in any other thing connected therewith or used or intended to be used therein or in any other thing connected with the works, whether or not the effect of such orders is to increase or diminish the work to be done or the materials or things to be provided or the cost of doing or providing the same, and the Engineer may in such order, or from time to time as he may see fit, specify the time or times within which each order shall, in whole or in part, be complied with. The Contractor shall comply with every such order of the Engineer. The decision of the Engineer as to whether the compliance with such order increases or diminishes the work to be done or the materials or things to be provided, or the cost of doing or providing the same and as to the amount to be paid or deducted, as the case may be, in respect thereof, shall be final. As a condition precedent to the right of the Contractor to payment in respect of any such order of the Engineer the Contractor shall obtain and produce the order, in writing, of the Engineer and a certificate in writing, of the Engineer showing compliance with such order and fixing the amount to be paid or deducted in respect thereof. Extra work. How treated. Engineer's order and decision.

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8. All the clauses of this contract shall apply to any changes, additions, deviations, or additional work, so ordered by the Engineer, in like manner and to the same extent as to the works contracted for. **Covenants herein apply to extra work.**

9. If any change or deviation in or omission from the works be made by which the amount of work to be done shall be decreased, or if the whole or any portion of the works be dispensed with, no compensation shall be claimable by the Contractor for any loss of anticipated profits in respect thereof. **No claim for anticipated profits.**

10. The Engineer shall be the sole judge of the work and material, in respect of both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intention of this contract and as to the meaning or interpretation of the plans, drawings and specifications, shall be final, and no works under this contract shall be deemed to have been performed nor materials nor things provided so as to entitle the Contractor to payment therefor unless and until the Engineer is satisfied therewith, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor. **Engineer sole judge of work and materials.**

11. The work shall, in every particular, be under and subject to the control and supervision of the Engineer; and all orders, directions or instructions at any time given by the Engineer with respect thereto, or concerning the conduct thereof, shall by the Contractor promptly and efficiently be obeyed, performed and complied with to the satisfaction of the Engineer. **Work subject to control of Engineer.**

12. The description or descriptions of the work and materials or any portion or portions of the works set out or referred to in or covered by any item or items for which a price or prices are given in this contract include not only the particular kinds of materials mentioned in the said item or items but also all and every kind of work, labour, tools, plant, materials, equipment, articles and things, whatsoever necessary for the full execution, completion and delivery, ready for use, of such respective portions of the works, in accordance with the plans, drawings and specifications, to the satisfaction of the Engineer. The said price or prices shall cover not only the particular descriptions of work and materials mentioned herein or in the specifications or plans but also all and every kind of work, labour, tools, plant, material, equipment, articles and things whatsoever necessary for the full execution, completion and delivery, ready for use, of the entire work as herein contracted for, to the satisfaction of the Engineer. In case of dispute as to what work, labour, tools, plant, material, equipment, articles and things are so included or covered the decision of the Engineer shall be final and conclusive with respect thereto. **Descriptions of work. What items include.** **Price, what it covers.**

13. A competent foreman shall be kept on the ground by the Contractor during all working hours to receive the orders of the Engineer. Such foreman shall be considered as the lawful representative of the Contractor and shall have full power to carry out all requisitions and instructions of the said Engineer, but this clause shall not relieve the Contractor from the duty of personally superintending the work. **Foreman of the works.**

14. Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twenty-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance by the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor. **Defective work or material.** **Engineer may order removal or re-execution.** **Non-compliance by Contractor.**

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Contractor's machinery, plant, etc.

15. All machinery, tools, plant, materials, equipment, articles and things whatsoever provided by the Contractor or by the Engineer under the provisions of sections 14 and 16 for the works, and not rejected under the provisions of section 14, shall from the time of their being so provided become and, until the final completion of the said work, be the property of Her Majesty for the purposes of the said works, and the same shall on no account be taken away, used, or disposed of, except for the purposes of the said works, without the consent in writing of the Engineer. Her Majesty shall not, however, be answerable for any loss or damage whatsoever which may at any time happen to such machinery, tools, plant, materials, equipment, articles or things. Upon the completion of the works and upon payment by the Contractor of all such moneys, loss, costs and damages, if any, as shall be due from the Contractor to Her Majesty, or chargeable against the Contractor under this contract, such of the said machinery, tools, plant, materials, equipment, articles and things as shall not have been used and converted in the works or disposed of by Her Majesty under powers conferred in this contract, shall be delivered up to the Contractor in such condition as they may be in.

Becomes property of H.M. until completion of work.

Insufficient workmen, plant, etc.

16. If the Engineer shall at any time consider the number of workmen, horses, quantity of machinery, tools, plant or equipment, or of proper materials, articles or things, employed or provided by the Contractor on or for the said works to be insufficient for the advancement of such works or any part thereof towards completion within the time limited in respect thereof, or that the works are, or some part thereof, is not being carried on with due diligence, then the Engineer may, in writing, order the Contractor to employ or provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may think necessary, and in case the Contractor shall not within three days, or such other longer period as may be fixed by any such order, in all respects comply therewith the Engineer may employ and provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as he may think proper and may pay such additional workmen such wages, and for such additional horses, machinery, tools, plant, equipment, materials, articles and things, any such prices as he may think proper, and all such amounts so paid shall, on demand, be repaid to Her Majesty by the Contractor, or the same may be retained or deducted from any sum that may then or thereafter be or become due from Her Majesty to the Contractor. The Contractor shall employ the additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things so provided and employed by the Engineer in the diligent advancement of the works; the workmen and horses so provided shall, however, be thereafter subject to discharge by the Contractor, but only with the consent and approval of the Engineer.

Work not proceeding with due diligence.

Engineer may provide additional equipment, etc., at Contractor's expense.

Repayment by Contractor.

Work not comprised in contract.

17. Her Majesty may, at any time, and without payment therefor, send and employ on, in and about the works other contractors and workmen, with such horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may deem necessary to do any work not comprised in this contract, and the Contractor shall afford to them all reasonable facilities, to the satisfaction of the Engineer, for doing such work, the work of the Contractor being interfered with as little as the Engineer may deem practicable.

The taking of possession of the whole or any part of the works of the Contractor for such purpose shall not be deemed an acceptance by or on behalf of Her Majesty of the whole or any portion of the works comprised in this contract.

18. That whenever and so often as it may be necessary for the Contractor to co-operate with other contractors on this work, the Contractor shall diligently and under the directions of the Engineer perform all such works as shall be requisite and proper on the part of the Contractor herein for such co-operation and for securing and placing in proper position the portion necessary herein and hereby contracted to be constructed and erected for the proposed work in a proper and secure mode, and to prevent the possibility of any accident therefrom, without any extra charge therefor, and shall be bound in all things to conform to the direction of the Minister or the Engineer touching such co-operation and work.

Default or delay by Contractor.

19. In case the Contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or

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that may be ordered under this contract, to the satisfaction of the Engineer, the Engineer may give a general notice to the Contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the Engineer to the Contractor or should the Contractor make default in the completion of the works, or any portion thereof within the time limited with respect thereto in or under this contract, or should the Contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the Contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the Contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the Contractor of the works, and no objection or claim shall be raised or made by the Contractor by reason or on account of the ultimate cost of the works so taken over for any reason proving greater than, in the opinion of the Contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired, possessed or provided by the Contractor for the purposes of the work, or by the Engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the Contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the Contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Notice by Engineer.

Minister may take work out of Contractor's hands.

Damages arising from non-completion.

20. Whenever in this contract power or authority is given to Her Majesty, the Minister, the Engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the Contractor or upon the acts, default, neglects, delays, breaches, non-observance or non-performance by the Contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to further proceed with the execution of the works.

Power to take action on default of Contractor.

21. The Contractor shall be at the risk of and shall bear all loss or damage whatsoever, from whatsoever cause arising, which may occur to the works or any part thereof, until the same be finally accepted by the Minister, and if any such loss or damage occur before such final acceptance the Contractor shall immediately, at his own expense, repair, restore and re-execute the work so damaged so that the whole works, or the respective portions thereof, shall be completed within the time limited for completion thereof and any delay occasioned by the Contractor to the other contractors on the work or any interference by the Contractor with the operation which may be a cause of delay or damage shall be rectified at the cost and the claim for damage or delay (if any) shall be at the charge of the Contractor.

Damages to work in progress. Contractor assumes risk.

22. The Contractor shall, during the period of one year after the date of the final certificate of the completion of the work, at the sole cost of the Contractor,

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and to the satisfaction of the Engineer, rectify any defects in the works caused by faulty workmanship or materials of which he shall have received notice from the Engineer. The Contractor shall be responsible for and shall reimburse Her Majesty with respect to any loss or damage sustained by Her Majesty and shall save harmless and indemnify Her Majesty from and against all claims, demands or actions based upon or arising out of the negligence of the Contractor, his officers, servants or agents during the rectification of the said defects. This clause shall not in anyway affect the rights of Her Majesty under any other agreement, deed or bond pursuant to which the works or any portion thereof are guaranteed free of defects or are to be repaired or replaced by the Contractor or any other person.

Damages to persons or property.

23. The Contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever, occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the Contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement, and to prevent the interruption of or any danger or menace to the traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the Contractor shall indemnify and save harmless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable to any such damage, injury or infringement.

Contractor assumes liabilities.

Contractor to clean premises on completion.

24. The Contractor shall, upon the completion of the works, remove all temporary structures and clear away all rubbish and surplus and waste materials remaining on or about the works and place the premises in a neat and tidy condition, satisfactory to the Engineer.

Precautions as to fire.

25. The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions.

26. The Contractor shall insure buildings, structures and materials in accordance with the provisions of the specification in respect thereto.

Assignments.

27. The Contractor shall not assign or sublet this contract without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any moneys due to any sub-contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for.

Members of H. of C. not to benefit.

28. Pursuant to the provisions of the Statute in such case made and provided, no Member of the House of Commons of Canada shall be admitted to any share or part of this contract or to any benefit to arise therefrom.

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29. The Contractor shall not allow any public ceremony in connection with the work without having previously obtained the written permission of the Minister. — No public ceremony.

30. No work whatever shall at any time or place be carried on during Sunday and the Contractor shall take all necessary steps for preventing any foreman or agent or men from working or employing others on that day. — No work on Sunday.

31. The Contractor shall promptly pay for all labour, services and materials in or about the construction of the works, and all payments for such purposes shall be made by the Contractor at least as often as payments are made to the Contractor by Her Majesty under this contract, and in the event of failure by the Contractor at any time so to do, or if any sum due for labour of any foreman or workman, or for hire of horses, teams or carts upon or in respect of the works or any part thereof remains in arrear or unpaid, or if there be at any time found to exist any claims against the Contractor, or any sub-contractor, for labour, teams, tools, plant, equipment, materials, articles or things employed, hired or supplied upon or for the works or any part thereof, or if the Minister has reason to believe that any such payments, sums or claims will not be promptly made or paid, the Minister may, in addition to or in lieu of exercising any powers conferred by the Fair Wages Clause, at his option, retain out of any moneys due or to become due to the Contractor from Her Majesty such amount or amounts as the Minister may deem sufficient to satisfy the same, or pay the Contractor the moneys due him in instalments, giving him from time to time such sums as the Minister or the Engineer deems sufficient to meet such payments, sums or claims or any of them, and witholding the balance until the same are satisfied, or may pay all or any of such payments, sums or claims, rendering to the Contractor the balance due him after deducting the payments so made. The Contractor shall be stopped from denying the accuracy and correctness of any and all payments so made by the Minister. — Payment by Contractor for labour, etc. — Power to retain money on default of Contractor paying for labour, etc.

The Contractor's pay-rolls, time-books, books of account, invoices and statements shall at all time be open for inspection and extract by the Engineer and any authorized representative of the Minister, or either of them, who shall be assisted in every possible way by the Contractor, to enable the Engineer and such representative to ascertain, as far as possible, the exact payment, sums or claims so due and remaining unpaid by the Contractor. — Books, etc., of Contractor open for inspection.

32. Before making any payment on any progress or final estimate the Minister may require the Contractor to satisfy the Engineer, or other authorized representative of Her Majesty, that all work performed and material supplied and all structures built for which payment is being made are free and clear from all lawful claims or liens under any law of labour, workmanship, materials or otherwise; the Contractor shall indemnify and hold harmless Her Majesty from and against any and all kinds of claims or liens accruing from labour and services performed and material furnished, or otherwise, and any of the same in or about the works. — Work to be free from all encumbrances.

33. The Contractor shall comply with and the works shall be carried on subject to all regulations made by any lawful authority and applicable to said works and all orders given by the Engineer with respect to sanitation or preservation of health on the work. The Contractor shall, at his own expense, make adequate arrangements, to the satisfaction of the Engineer, for the medical and sanitary supervision of all his employees. — Sanitation.

34. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes, buoys and other marks placed on or about the said works by the Engineer or his assistants and shall furnish the necessary assistance to correct or replace any stake, buoy or mark which through any cause may have been removed or destroyed. — Engineer's stakes or other marks not to be removed.

35. Any notice, order, direction or other communication given to the Contractor under any of the provisions of this contract shall be sufficiently given if delivered to the Contractor personally, or to his foreman, or left at the Contractor's office, or mailed at any post office to the Contractor or foreman, addressed to the — Notice; how given.

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address mentioned in this contract, or to the Contractor's last known place of business or residence. Every such notice, order, direction or communication shall be sufficient which expresses in general language and without detail the matters required or communicated, or which follows the general language of the section or sections of this contract under which it is given, and no objection shall be taken to the form thereof.

Payment by Her Majesty.

36. Her Majesty, in consideration of the premises, and subject to the performance and observation on the part of the Contractor of all the covenants, provisos and conditions in this contract contained, will pay to the Contractor for and in respect of the works in manner hereinafter stated, viz:—

Payment for additional work.

And for any work or additional work done or materials or things provided, under the written orders of the Engineer, for which no price or prices are named herein, Her Majesty, in consideration and subject as aforesaid, will pay to the Contractor the actual and reasonable cost as determined by the Engineer of such work, materials and things, with an additional ten per cent thereon for the use of tools, Contractor's plant, superintendence and profits.

Approximate quantities.

37. The quantities (if any) given are approximate only and no claim shall be made by the Contractor against Her Majesty on account of any excess or deficiency, absolute or relative, in the same.

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38. The said price or prices shall be accepted by the Contractor as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not included in the items hereinabove mentioned, and also for all loss or damage arising out of the nature of the works or the action of the weather, tides, elements, or any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the works, and for all expenses incurred by or in connection with the works, and for all works, and for all expenses incurred by or in consequence of any delay or suspension or discontinuance of the work as herein specified, and for well and faithfully completing the works as in this contract provided.

Prices to be accepted as full compensation.

39. Cash payments equal to about ninety percent of the value of the work done approximately estimated from progress measurements and computed at the price or prices agreed upon or determined under the provisions of this contract will be made to the Contractor monthly, if practicable, on the written certificate of the Engineer stating that the work for or on account of which the certificate is granted has been done, and stating the value of such work completed as above mentioned; and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent or any part thereof. The remaining ten per cent shall be retained till the final completion of the whole work to the satisfaction of the Engineer and will be paid within two months after such completion. The written certificate of the said Engineer certifying to the final completion of the said works to his satisfaction shall be a condition precedent to the right of the Contractor to receive or to be paid the remaining ten per cent or any part thereof.

Progress payments.

Ninety per cent. Ten per cent retained until completed.

40. Provided always that where in the opinion of the Engineer the work done is not sufficiently finished or is not of sufficient value to justify payment at the price or prices agreed upon or determined under the provisions of this contract, the Engineer may, for the purpose of such payment, disregard the price or prices agreed upon or determined and may estimate the proportionate value payable in respect of such work and issue a certificate accordingly; in which case the Contractor shall only be entitled to receive ninety per cent of such estimated proportionate value as stated in such certificate and shall not be paid the ninety per cent of the price or prices agreed upon or determined under the provisions of this contract until such time as the Engineer, by reason of the performance of additional work, shall certify that the Contractor is entitled thereto.

Engineer in certifying values for progress payments may disregard price-list.

41. It is intended that every allowance to which the Contractor is fairly entitled will be embraced in the Engineer's monthly certificate, but should the Contractor at any time have claims of any description which he considers are not included in the progress certificates such claims must be made in writing to the Engineer within thirty days after the date of the delivery to him of the certificate from which he considers the items of such claims to have been omitted, but in no case beyond the period of sixty days from the date of the practical completion of that portion of the work to which such claims apply. And in default of the presentation of such claims within the time or times so limited the Minister may treat such claims as absolutely barred.

Full prices when obtainable. Claims under progress certificate.

Limitation of time for presentation of claims.

42. The Contractor in presenting claims of the kind referred to in the last preceding clause must accompany them with satisfactory evidence of their accuracy and the reason why he thinks they should be allowed.

Claims evidence of accuracy.

43. The progress measurements and progress certificates shall not in any respect be taken as binding upon the Engineer, or as final measurements or as fixing final amounts; they are to be subject to the revision of the Engineer in making up his final certificate and they shall not in any respect be taken as an acceptance of the work or as a release of the Contractor from responsibility in respect thereof.

Progress measurements and certificates not binding.

44. The Contractor shall not have nor make any claim or demand nor bring any action or suit or petition against Her Majesty for any damage which may be

Delays.

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sustained by reason of any delay or delays from whatever cause arising in the progress of the work.

45. It is distinctly declared that no implied contract of any kind whatsoever by or on behalf of Her Majesty shall arise or be implied from anything in this contract contained, or from any position or situation of the parties at any time, it being clearly understood and agreed that the express contracts, covenants and agreements herein contained and made by Her Majesty are and shall be the only contracts, covenants and agreements upon which any rights against Her Majesty are to be founded.

Parliamentary appropriations exhausted.

46. Should the amount voted by Parliament and applicable towards payment for the work hereby contracted for be at any time expended previous to the completion of the works the Minister or the Engineer may give the Contractor written notice to that effect. And, upon receiving such notice, the Contractor may, if he thinks fit, stop the work, but in any case shall not be entitled to any payment for work done beyond the amount voted and applicable as aforesaid unless and until the necessary funds shall have been voted by Parliament in that behalf. And in no event shall the Contractor have or make any claim on Her Majesty for any damages or compensation by reason of the suspension of payment, or by reason of any delay or loss caused by the stoppage of work. And in the event of the Contractor electing to proceed or proceeding with such work after such notice and before additional funds are voted, no action of the Engineer or of any other person on behalf of Her Majesty in giving orders, directions or instructions or otherwise acting with respect to such work shall be taken or considered as in any manner improving the rights of the Contractor or as waiving in any particular any of the provisions of this section.

Contractor proceeds at own risk.

Minister may suspend work.

47. The Minister may, from time to time and for such period as he may deem expedient, delay or suspend, in whole or in part operations under this contract, either upon the whole of the works or at any particular point or points. Should any such delay or suspension, or the stoppage of the works under the last preceding clause of this contract, or should any delay caused by any circumstance which, in the opinion of the Engineer is beyond the control of or not the fault of the Contractor, unreasonably limit the time for the completion of the works within the time specified by this contract, the Minister, as often as the case occurs, shall allow such additional time as to him may seem sufficient in the extension of such time for completion; but no such delay, suspension or stoppage shall vitiate or void this contract or any part thereof, or any security or obligation for the performance thereof, nor shall the Contractor be entitled to make any claim for damages by reason thereof. Upon the termination of such delay, suspension or stoppage, or upon the removal of the cause thereof, or upon the Contractor receiving notice from the Minister or Engineer requiring him to resume the work, he shall at once resume operations and diligently carry on the same.

No compensation to contractor for delay.

Liquors.

48. The Contractor shall not bring nor permit to be brought anywhere on or, as far as the Contractor can prevent the same, near the works any spirituous or intoxicating liquor; and if any person employed on the works be in the opinion of the Engineer intemperate, disorderly, incompetent, wilfully negligent or dishonest in the performance of his duties, he shall on the direction of the Engineer be forthwith discharged and the Contractor shall not employ or permit to remain on the work any person who shall have been discharged for any or all of said causes.

Orders by Engineer's agent.

49. All orders, directions, instructions or notices to be given or issued by the Engineer under and pursuant to any section in this contract may be given or issued by a duly and expressly authorized agent or agents of the Engineer.

Extension of time.

50. The decision of the Minister as to what additional time, if any, beyond the time specified for the completion of the works may be allowed to the Contractor for such completion and as to the reasonableness or sufficiency thereof shall be final.

If any additional time for such completion is so allowed the Contractor shall, if and to such extent as the Minister requires, pay to Her Majesty all salaries and wages paid by Her Majesty to the person or persons superintending the work

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during the additional time so allowed and all other costs, expenses and damages incurred by Her Majesty as a result of the allowance of such additional time for completion. Any extension of time that may be granted to the Contractor shall not affect any rights of Her Majesty under this contract, and no assent thereto on the part of the Contractor shall be necessary.

51. The Contractor hereby and herewith deposits with and delivers to Her Majesty as security for the due fulfilment of his contract the sum of

Security deposit.

upon the express understanding that the same shall be held and retained by Her Majesty as security for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this contract contained, on the part of the Contractor to be observed, performed and complied with. Provided always and it is understood and agreed that the Contractor assumes the risk and must bear any loss in respect of the security deposited as aforesaid occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid.

52. If at any time hereafter the said Contractor should make default under the said contract, or if Her Majesty acting under the powers reserved in the said contract shall determine that the said works or any portion thereof remaining to be done should be taken out of the hands of the Contractor and be completed in any other manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay any salaries or wages or any accounts for materials due by the said Contractor for work done or materials supplied by any person in connection with the said work, Her Majesty may, in either case, dispose of said security and of the interest which may have accrued thereon for the carrying out of the construction and completion of the work of the contract, or for paying any salaries or wages for work done, or any accounts for materials supplied for the said works that may be left unpaid by the said Contractor.

53. Upon the due and faithful performance, observance and fulfilment by the Contractor of all and every the terms, provisions, covenants, agreements, conditions and reservations hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Contractor shall be entitled to be repaid or to receive again the money so deposited, together with so much interest upon such money as Her Majesty may, during her retention or possession of the same actually receive by reason thereof; it being, however, understood that Her Majesty shall not be under any obligation to cause the said money to be placed at interest, or to earn, or to endeavour to earn, interest thereon.

Repayment of security deposit.

54. In the event of any breach, default, or non-performance being made or suffered by the Contractor in or in respect of any of the terms or conditions, covenants, provisos, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said money and interest thereon so delivered to or deposited with Her Majesty, or by her received in respect thereof shall, by the Contractor, be forfeited absolutely to Her Majesty.

Interest a security deposit.

55. No condoning, excusing, or overlooking by Her Majesty or any person acting on her behalf, on previous occasions of breaches or defaults similar to that for which any action is taken or power exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken to operate as a waiver of any provisions of this contract, nor to defeat or prejudice in any way the right of Her Majesty hereunder.

Forfeit of security.

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56. This contract is made and entered into by the Contractor and Her Majesty on the distinct understanding that the Contractor has, before execution, investigated and satisfied himself of everything and of every condition affecting the works to be executed and the labour and material to be provided, and that the execution of this contract by the Contractor is founded and based upon his own examination, knowledge, information and judgment, and not upon any statement, representation, or information made or given, or upon any information derived from any quantities, dimensions, tests, specifications, plans, maps or profiles made, given or furnished by Her Majesty or any of Her officers, employees or agents; and that any such statement, representation or information, if so made, given or furnished, was made, given or furnished merely for the general information of bidders and is not anywise warranted or guaranteed by or on behalf of Her Majesty; and that no extra allowance will be made to the Contractor by Her Majesty and the Contractor will make no claim against Her Majesty for any loss or damage sustained in consequence of or by reason of any such statement, representation or information being incorrect or inaccurate, or on account of unforeseen difficulties of any kind.

Waiver negatived. Contractor to investigate every condition of work before execution of contract.

57. In the event of any inconsistency between the provisions of this contract and the provisions of the specifications forming part hereof the provisions of the contract shall prevail.

Inconsistency between contract and specification.

IN WITNESS whereof the respective parties hereto have executed these presents on the day, month and year first above written.

Signed, sealed and delivered by the Contractor in the presence of:

Signed, sealed and delivered by Her Majesty, in manner aforesaid, in the presence of:

Deputy Minister of Public Works

.....
Secretary.

The Queen's Printer and Controller of Stationery, Ottawa, 1959

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No.....

Date.....19

PUBLIC WORKS — CANADA

Articles of Agreement entered into between

AND

Her Majesty the Queen, represented by the Minister of Public Works of Canada.

For

Amount:

Date of Completion:

File No.

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DEPARTMENT OF LABOUR

OTTAWA, CANADA

LABOUR CONDITIONS

Ref: PWD 12615

The following schedule of labour conditions is applicable to the work of Grading, Culverts, Base Course & Prime - Mile 96.6 to Mile 104.5 - Banff-Jasper Highway

AT Jasper National Park, Alberta

to be undertaken for the Department of PUBLIC WORKS

Classifications, Wages and Hours.

(1) All persons in the employ of the contractor, subcontractor, or any other person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour.

Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week and nothing herein contained shall prevent the Minister of Labour from requiring hours of Labour less than 44 per week where by current practice, collective agreement, or provincial legislation or regulation, such shorter hours are applicable in the area in which the contract is being performed.

CLASSIFICATION OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Asphalt tampers, smoothers & spreaders	$ 1.60
Carpenters & joiners	2.45
Compressor operators	1.65
Drill runners	1.65
Firemen	1.60
Grader operators	1.90
Labourers	1.60
Oilers (construction equipment)	1.60
Operators (draglines, cranes, shovels, etc.)	2.20
Powdermen	1.65
Pump operators	1.60
Tractor operators (large)	1.90
Tractor operators (small)	1.65
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	1.90

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LABOUR CONDITIONS (1)

MINISTER OF LABOUR TO DETERMINE OVERTIME RATES AND PROPER CLASSIFICATIONS

(2) Where there are special circumstances which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what are the current or fair and reasonable rates of wages for overtime, and what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision. In case the Contractor shall fail so to do, or fail at any time to pay to any employee or employees for any services performed or for any hours of labour wages according to the rates set forth in the schedule or fixed therefor by the Minister of Labour hereunder regarding overtime and classification, the Minister of Labour may authorize and direct the Minister of the Contracting Department to pay any such wages at the rates so fixed and to deduct the amount thereof from any moneys owing by the Government to the Contractor and any such payment shall for all purposes as between the Contractor and the Government be deemed and taken to be payment to the Contractor, and the Contractor shall be bound in every particular by any such authority, direction and payment as aforesaid.

SCHEDULE TO BE POSTED

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

CONTRACTOR TO KEEP RECORDS WHICH ARE TO BE OPEN FOR INSPECTION

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

DEPARTMENTAL REQUIREMENTS BEFORE PAYMENTS MADE TO CONTRACTOR

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

AUTHORITY TO PAY WAGES IN EVENT OF DEFAULT BY CONTRACTOR

(6) All cases of default in the payment of wages to employees by the Contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

CONDITIONS OF SUBCONTRACTING

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contractor shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

WORKMEN TO BE RESIDENTS OF CANADA

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The Contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purpose of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DIVISION 1

GENERAL CONDITIONS OF THE CONTRACT

Section

1 Definitions and Terms

2 Scope of Work

3 Control of Work

4 Control of Materials

5 Legal Relations and Responsibility to Public

6 Prosecution and Progress

7 Measurement and Payment

8 Wages and Conditions of Employment

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GENERAL CONDITIONS OF THE CONTRACT

(These Conditions are Supplemental to the Indenture)

SECTION 1. DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.S.H.O.	American Association of State Highway Officials
A.S.T.M.	American Society for Testing Materials
C.S.A.	Canadian Standards Association
C.G.S.B.	Canadian Government Specifications Board

Bridge - A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the centre of roadway of more than 20 feet between under-copings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening.

Length - The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end of the bridge floor; but in no case less than the total clear opening of the structure.

Roadway Width - The clear width measured at right angles to the longitudinal centreline of the bridge between the bottom of curbs or guard timbers or in the case of multiple height curbs, between the bottoms of the lower risers.

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

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Section 1 (Cont'd)

Contract Time or Completion Date - The number of working or calendard days shown in the proposal indicating the time allowed for the completion of the work contemplated in the contract.

In case a calendar date of completion is shown in the proposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

Culvert - Any structure not classified as a bridge which provides an opening under any roadway.

Density - Shall mean the maximum dry density in pounds per cubic foot as determined by the standard method of test for the compaction and soils A.A.S.H.O. designation T.99-49.

Employee - Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control or receives compensation from the Contractor or Subcontractor.

Engineer - Shall mean the Chief Engineer of the Development Engineering Branch of the Department of Public Works of Canada, having control over the work and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any one acting for the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Inspector - The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified in the tender form.

Profile Grade - Line representing the surface elevation as shown on the Standard Plan along the longitudinal centreline of the proposed wearing surface. Profile grade means either elevation or gradient of such trace according to the context.

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Right of Way - (a) The land secured and reserved to the public for highway purposes.

(b) The lines shown on the plan (or as indicated by the Engineer) roughly parallel to the centreline of the highway showing the area reserved for highway purposes.

Roadway - The portion of the right-of-way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structures.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Substructure - All of that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and footings of rigid frames, except as noted above for substructure.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

Working Drawings - Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2 - SCOPE OF WORK

1.2.1 Intent of Contract

applies to extra work definitions

See Indenture Article 8 and 12.

The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract.

1.2.2 Special Work

Should any construction or conditions which are not covered by the plans or these specifications be anticipated, special provisions for such work will be prepared by the Engineer, stated on or attached

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1.2.2 Special Work (Cont'd)

to the tender form, and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications or supplements thereto, the special provisions shall govern.

1.2.3 Alterations of Plans or of Character of Work and Extra Work

See Indenture Article 7, 8, 9 and 10.

1.2.4 Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

1.2.5 Provision for Traffic

(1) Unless otherwise provided, the Contractor shall be responsible for the provision of a safe road for traffic between the extreme limits of his contract and for the maintenance of this road to the satisfaction of the Engineer.

(2) The Contractor shall at all times carry on the work in a manner that will create the least interference with traffic, consistent with the faithful performance of the work. He shall not close any portion of the existing road nor divert traffic outside the limits of the right-of-way except by written order of the Engineer.

(3) The Contractor shall construct and maintain at his own expense a safe road for traffic in every case where traffic is maintained within the limits of the right-of-way or carried on detours, deemed to be a part of the work under this contract. He shall make provisions, acceptable to the Engineer, for the handling of traffic.

(4) The Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the contract.

See also Article 1.5.8 of these Specifications "Barricades and Warning Signs and Project Sign Boards".

1.2.6 Temporary Structures

(1) In bridge contracts, the Contractor will not be required to construct or maintain temporary structures unless the construction and maintenance of such structures are stipulated in the contract or ordered as extra work by the Engineer.

(2) Plans for temporary structures and procedure for moving existing structures to temporary location, when not provided by the Engineer, shall be subject to his approval.

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1.2.7 Removal and Disposal of Structures and Obstructions

(1) All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the Contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, which the Engineer may order salvaged, shall be carefully removed and shall become the property of the Department.

(2) Payment for this work shall be made under the pay items identified for such work in the tender, except that when the work is of minor consequence, it shall be considered as incidental to and included in other items.

1.2.8 Rights In and Use of Materials Found on the Work

(1) The Contractor, with the approval of the Engineer, may use in the proposed construction such stone, gravel, sand, or other material as may be found in the excavation. The Contractor will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material, all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills, approaches or otherwise. No charge for the materials so used will be made against the Contractor. The Contractor shall not excavate or remove any material from within the right-of-way which is not within the excavation, as indicated by the slope and grade lines, without written authorization from the Engineer.

(2) Unless otherwise provided, the material from any existing old structure may be used temporarily by the Contractor in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the Engineer.

1.2.9 Final Cleaning Up

See Indenture Article 24.

SECTION 3 - CONTROL OF THE WORK

1.3.1 Authority of the Engineer

See Indenture Article 10 and 11

1.3.2 Plans

Plans consisting of general drawings and showing such details as are necessary to indicate the construction contemplated, will be furnished by the Department. Roadway plans will show alignment, profile grade and typical cross sections.

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1.3.3 Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions and adjustments shown on the approved plans, except as modified by written orders of the Engineer. The crown or rise of the finished surfaces of the roadway, from the curb side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves, or at other places where deemed necessary, the Contractor will be required to widen, superelevate and spiral the roadway according to Departmental standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the Engineer in writing.

1.3.4 Coordination of Plans, Specifications, Supplemental Specifications and Special Provisions

These specifications, the supplemental specifications, the plans, Special Provisions and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

See also Indenture Article 57.

1.3.5 Cooperation by Contractor

See Indenture Article 13.

1.3.6 Cooperation with Utilities

(1) It shall be the responsibility of the Contractor to notify the Department's Officer when necessary adjustments of public or private utility fixtures, pipelines and other appurtenances within or adjacent to the limits of the construction are required.

(2) It shall be the Department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

(3) Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners under agreement with the Department except as otherwise provided for in the special provisions or as noted on the plans.

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1.3.6 Cooperation with Utilities (Cont'd)

(4) It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

(5) At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

(6) The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication or rearrangement of work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

1.3.7 Cooperation between Contractors

See Indenture Article 17 and 18.

1.3.8 Construction Stakes, Lines and Grades

See Indenture Article 34.

(1) Highways and Roads

The Engineer will set construction stakes establishing lines, slopes and continuous profile-grade in road work, for culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work.

(2) Structures

The Engineer will set stakes and establish bench marks necessary to mark properly the locations, alignment and reference elevations for bridge piers and abutments. The Contractor shall completely check the Engineer's layout, before commencement of the work, after which he shall assume responsibility for detail dimensions and elevations measured from the lines and elevations thus established.

(3) Preservation of Stakes

The Contractor is responsible for the preservation of Construction Stakes.

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1.3.9 Authority and Duties of Inspector

(1) Inspectors, employed by the Department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to alter or waive the provisions of these specifications.

(2) An Inspector is placed on the work to keep the Engineer informed as to the progress of the work and the manner in which it is being done; also to call the Contractor's attention to any non-conformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and specifications. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

(3) The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

1.3.10 Inspection of Work

(1) All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

(2) If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

(3) Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

1.3.11 Defective and Unauthorized Work or Materials

See Indenture Article 14

(1) The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

(2) No work shall be done without lines and grades having been given by the Engineer.

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1.3.12 Maintenance of Work During Construction

(1) The Contractor shall maintain the work during construction. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer.

(2) All cost of maintenance of the work during construction shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

(3) In the event that the Contractor's work is ordered shut-down for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract is terminated.

(4) In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

1.3.13 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Articles 1.2.5 and 1.3.12 above, will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

1.3.14 Tentative Acceptance

(1) At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract: provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor in the manner provided hereinafter in Article 1.7.3. Any damage to the highway that may occur on such section not attributable to traffic, shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

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1.3.14 Tentative Acceptance (Cont'd)

(2) If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

1.3.15 Claims for Adjustment and Disputes

See Indenture Article 41 and 42.

In any case where the Contractor deems that extra compensation is due to him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra as defined herein, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost as defined for force account, then the Contractor hereby agrees to waive the claim for such extra compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost as aforesaid shall not in any way be construed as proving the validity of the claim. Nothing in this Article shall be construed as establishing any claim contrary to the terms of Indenture Articles 7, 8, 9 and 10.

1.3.16 Final Acceptance

(1) Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

(2) Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer shall make a semi-final inspection and if at such semi-final inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

(3) If, however, at any semi-final inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the Contractor the necessary instructions as to replacement of material and performance or re-performance of work ncessary and pre-requisite to final completion and acceptance, and the Contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or re-performance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

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SECTION 4 - CONTROL OF MATERIAL

1.4.1 Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. Tenderers shall state in their tender the country or origin of items where such items originate in countries other than Canada. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

1.4.2 Source of Supply and Quality Requirements

The materials supplied by the Contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other approved sources.

1.4.3 Designated Local Material Sources

(1) The Department will acquire and make available to the Contractor the right to take materials from sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads.

(2) The quality of material in such deposits will be acceptable in general, but the Contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications and whether blending with other materials will be necessary. It shall be understood that it is not feasible to ascertain from samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

(3) If the Contractor desires to use material from sources other than those designated, he shall do so only on written authority of the Engineer. The Engineer may, if he deems it practical and desirable, authorize the use of such sources, only after samples have been submitted under the direction of the Engineer. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

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1.4.3 Designated Local Material Sources (Cont'd)

(4) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

1.4.4 Field Office and Laboratory

Wherever indicated in the contract, the Contractor shall provide a field office and/or laboratory.

1.4.5 Delivery and Storage of Materials

(1) Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

(2) Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

(3) Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the Contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

(4) During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. C.S.A. standard practice shall govern the storage of materials unless otherwise provided.

1.4.6 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

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1.4.7 Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

1.4.8 Materials Inspection

In order to expedite the inspection and testing of materials, the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources of supply.

1.4.9 Department Furnished Material

(1) The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

(2) The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

(3) The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

(4) The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returned to the supplier which are surplus to contract requirements for any cause whatsoever.

SECTION 5 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1.5.1 Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

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1.5.2 Trade Names. Catalogue Nos. Samples

1.5.2 Permits, Licenses and Taxes

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

1.5.3 Patented Devices, Materials and Processes

If the Contractor is required or desires to use any design, device, material or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Department; if no such agreement is made or filed as noted, the Contractor and the surety shall indemnify and save harmless, the Department, any affected railroad or railway company, or political subsdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the Department, any costs, expenses, and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

1.5.4 Restoration of Surfaces Opened by Permit — Use of Park Roads

(1) The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time is hereby expressly reserved by the Department for the proper authorities of the municipality in which the work is done and the Contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

(2) Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department, and the Contractor s hall not allow any person or persons to make an opening unless a duly authorized permit of the Department is presented. The Engineer may authorize the Contractor to allow parties bearing such permits to make openings in the highway. The Contractor shall, when ordered by the Engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work shall be paid for as extra work, as provided in these specifications and shall be subject to the same conditions as original work performed.

1.5.5 Health and Sanitary Provisions

See Indenture Article 33.

1.5.6 Railway - Highway Separation

(1) In case the Contractor is required to haul materials across the tracks of any railway, or elects to do so, he shall make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing.

(2) All work to be performed by the Contractor in the construction of railway - highway separation structures on the railroad right-of-way shall be done in a manner satisfactory to the Engineer of the railway company and shall be performed at such times and in such manner as not

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1.5.6 Railway - Highway Separation (Cont'd)

to unnecessarily interfere with the movement of trains or traffic upon the track of the railway company. The Contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property.

1.5.7 Impeding Navigation

In all matters connected with the prosecution of the works, the transportation or delivery of materials of any kind required for them and in making arrangements for these purposes, the Contractor must be governed by the laws and rules of navigation and the interpretation put upon them by the Officer entrusted to enforce them, and he must use every precaution to guard against interrupting, impeding or in any way interfering with the navigation, as he will be held strictly and legally liable for all damage, loss or detention that any vessel may sustain from any of his acts, whether such may result from a desire to prosecute the works or any other cause.

1.5.8 Barricades and Warning Signs and Project Sign Boards

(1) The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

(2) The Contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished or as required by local ordinances.

(3) The Contractor shall, at his own expense, provide and erect project sign boards at either or both ends of the contract, at locations approved by the Engineer. The sign boards shall be appropriately lettered in accordance with Standard Plan.

1.5.9 Use of Explosives

(1) When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.

(2) All explosives shall be stored in a secure manner, in compliance with laws, ordinances and regulations and all such storage shall be marked clearly "DANGEROUS - EXPLOSIVES".

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1.5.9 Use of Explosives (Cont'd)

(3) The Contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the Contractor of responsibility for any damage resulting from his blasting operations.

1.5.10 Damage to Property and Persons

See Indenture Article 23 and 25.

1.5.11 Insurance

Unless specifically excepted in the special provisions, no payment will be made under a contract for the construction of a bridge or bridges as defined in Section 1 of these General Conditions until the Contractor deposits with the Chief of Legal Services, Department of Public Works, Ottawa, an insurance policy that complies with the following conditions:

(i) All money payable by the Insurer under the policy shall be payable to Her Majesty the Queen in Right of Canada and the Contractor jointly.

(ii) The policy shall cover all structures to be constructed whether temporary or not and all materials provided by the Contractor for the work while on property owned or leased by the Crown.

(iii) The policy shall be enforced until the work is completed and accepted by the Crown.

(iv) The policy shall ensure against loss equal in amount to the total value of the contract.

(v) The policy shall be a Bridge Builders All Risk Policy.

(vi) The policy shall provide that in event of loss the amount of such loss shall be automatically reinstated.

(vii) The policy shall provide for a deductible amount of one thousand dollars ($1,000.00) in respect of every claim.

1.5.12 Camps

In carrying out work within or adjacent to Forests, the Contractor shall comply with all of the regulations of the Provincial or Federal Forestry Department, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep all the areas in an orderly condition, dispose of all refuse and obtain approval of the Engineer for the construction of camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the forest protection agency.

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1.5.13 Contractor's Responsibility for Work

See Indenture Article 21.

1.5.14 Furnishing Right-of-Way

The Department will be responsible for the securing of all necessary rights-of-way in advance of construction.

1.5.15 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-Contractor or caused in whole or in part by an act or omission of the Contractor, any Sub-Contractor, or any officer, servant or agent of the Contractor or of any Sub-Contractor whether or not such act or omission was negligent.

SECTION 6 - PROSECUTION AND PROGRESS

1.6.1 Subletting of Contract

See Indenture Article 27.

1.6.2 Prosection of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized. The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

1.6.3 Limitation of Operations

The Contractor shall not open up work to the prejudice of work already started and he may be required by the Engineer to finish a section on which work is in progress before work is started on any additional section.

1.6.4 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work wholly or in part by written order, for such period as he may deem necessary due to unsuitable weather, to conditions, considered unfavourable for the suitable prosecution of the work, or to failure

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1.6.4 Temporary Suspension of Work (Cont'd)

on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

1.6.5 Extension of Time

See Indenture Article 20 and 50.

1.6.6 Default and Annulment of Contract

See Indenture Article 19.

SECTION 7 - MEASUREMENT AND PAYMENT

1.7.1 Measurement of Quantities

(1) General

All work completed under the contract shall be measured by the Engineer according to British standard measure.

(2) Linear and Area

(a) All longitudinal and transverse measurements for areas will be measured horizontally.

(b) Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

(c) All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

(3) Volume and Weight

(a) In computing volumes of excavation, embankment and borrow, the average end area method will be used.

(b) The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible indentification mark.

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1.7.1 Measurement of Quantities (Cont'd)

(c) All materials for which measurement are obtained by the cubic yards, "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

(d) When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(e) The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(f) The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(4) Materials

(a) Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

(b) The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

(c) Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the Contractor.

(d) Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

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1.7.1 Measurement of Quantities (Cont'd)

(5) Time

Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions make some other method of measurement desirable.

(6) Lump Sum

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

1.7.2 Scope of Payment

See Indenture Article 12 and 38.

1.7.3 Extra and Force Account Work

(1) General

For extra work performed in accordance with Article 7 of the Indenture, the detailed method of payment shall be either at the unit price or lump sum stipulated in a supplemental agreement or in lieu of such agreement, the Department will require the Contractor to do such work on a force account basis to be compensated in the following manner:

(2) Labour

For all labour and teams and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labour, teams and foremen are actually engaged in such work, to which cost shall be added an amount equal to 10 percent of the sum thereof.

(3) Bond, Insurance and Tax

For property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions on the force account work, the Contractor shall receive the actual cost, to which no percentage shall be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and tax.

(4) Materials

For materials accepted by the Engineer, and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost shall be added an amount equal to 10 percent of the sum thereof.

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1.7.3 Extra and Force Account Work (Cont'd)

(5) Equipment

For any machinery or special equipment, (other than small tools) the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum no percentage shall be added.

(6) Superintendence

No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(7) Compensation

The compensation as set forth above shall be received by the Contractor as payment in full for extra work done on a force account basis. At the end of each day the Contractor's representative and the Inspector shall compare records of the cost of work done as ordered on a force account basis.

(8) Statements

No payment will be made for work performed on a force account basis until the Contractor shall furnish to the Engineer duplicate itemized statements of the cost of such force account work detailed as to the following:

(i) Name, classification, date, daily hours, total hours, rate and extension for such labourer, foreman and team.

(ii) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(iii) Quantities of materials, prices and extensions.

(iv) Transportation on materials.

(v) Cost of property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions. Such statements shall be accompanied and supported by original receipted invoices for all materials used and transportation charges, provided that, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

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1.7.4 Progress Payments

See Indenture Article 39 and 40.

1.7.5 Payment for Material Delivered on Project

(1) Partial payments may be made to the extent of 75 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the Department, or leased by the Contractor and transferred to the Department providing such is done to the satisfaction of the Engineer. If requested to do so, the Contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

(2) No payment shall be made upon fuels, supplies, form lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

(3) In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

1.7.6 Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the Engineer as provided in Article 1.3.16 the Engineer shall prepare the final estimate of the quantities of the various classes of work performed, and after the approval of such final estimate by the Minister, there shall be paid to the Contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

SECTION 8 - WAGES AND CONDITIONS OF EMPLOYMENT

1.8.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) the the Contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by sub-contract.

1.8.2 Labour Conditions

(1) The Contractor's attention is directed particularly to the provisions and requirements of the Province's Workmen's Compensation Act and to Statutes regulating the hours of employment on public work.

(2) In addition to the Provincial Laws restricting the hours of labour, and minimum wage rates, the Contractor shall abide by the Labour Conditions of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

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1.8.3 Employment of Canadian Labour

In engaging labour for the work contemplated by this contract as far as practicable and consistent with reasonable efficiency and economy, only Canadian residents shall be used and first consideration shall be given to the employment of available and competent workmen who are most in need and are resident in the district in which the works are to be performed. Preference is to be given to veterans of the Armed Forces of Canada and to married men and single men with dependants.

1.8.4 Records

The Contractor shall maintain and keep available for inspection by the Minister, a record of the names and addresses of ex-servicemen employed on this work, together with a record of the steps taken to implement this requirement.

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 2

EARTHWORK

Section 1 - Clearing and Grubbing

" 2 - Roadway and Borrow Excavation

" 3 - Embankment Construction

" 4 - Channel Excavation

" 5 - Excavation for Structures

" 6 - Overhaul

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SECTION 1 - CLEARING AND GRUBBING

SEPTEMBER 1959

2.1.1 DESCRIPTION

This item shall consist of the complete removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans as well as any other areas which may be designated by the Engineer.

2.1.2 MATERIALS

No materials are involved.

2.1.3 CONSTRUCTION

(1) Clearing

(a) Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush, windfalls and other fallen timber, stumps and rubbish except such trees and shrubs as may be designated for preservation by the Engineer. Such designated trees and shrubs shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, all trees, roots and existing stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging and off the right-of-way, shall be removed.

(b) Clearing shall be completed at least one-half mile in advance of grading operations.

(2) Salvage

All merchantable timber shall become the property of the Contractor and may be disposed of at his discretion, provided it be removed from the site of the work before the completion date of the contract.

(3) Grubbing

Grubbing shall include the removal and disposal of all roots 2 inches in diameter and larger and stumps, imbedded logs, and other objectionable debris.

(4) Disposal

All timber, logs, trees, stumps, brush and other rubbish

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shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

(5) Excavation

If the Contractor clears or grubs in a manner such that excavation is removed during the operation, payment will not be made for the excavation so removed. Cross-sectioning for excavation quantities will be done after clearing and/or grubbing operations have been completed.

2.1.4 MEASUREMENT

The quantity to be paid for under this item shall be the number of acres, and fractions thereof, of land actually cleared and/or grubbed in accordance with these specifications and completed to the satisfaction of the Engineer.

2.1.5 PAYMENT

Clearing and grubbing shall be considered as separate items. The acreage, determined as provided above, will be paid for at the contract unit price per acre for clearing and the contract unit price per acre for grubbing, which price and payment shall constitute full compensation for all labour, equipment, tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 2 - ROADWAY AND BORROW EXCAVATION

SEPTEMBER 1959

2.2.1 DESCRIPTION

(1) Scope

This item consists of the excavation and disposal of all materials in conformity with the lines and grades or dimensions indicated on the plans or as staked or directed by the Engineer, and includes:

(a) All roadway and borrow excavation.

(b) Excavation for all culverts and other drainage installations not requiring footings.

(c) Formation of side ditches, embankments, permanent access and connecting roads, approaches, entrances, parking areas, berms and any other earthworks necessary for the proper construction of the road.

(d) Removal and disposal of unsuitable materials from excavation, embankment and borrow areas.

(e) Transportation of excavated materials for the freehaul distance.

(f) Trimming and rounding of slopes.

(g) Maintenance of the work set forth under this section in a finished condition until it or any portion thereof has been accepted as completed by the Engineer.

(2) Classification

(a) Excavation Common will include the excavation of all materials not hereinafter classified as Excavation Rock.

(b) Excavation Rock will include the excavation of all boulders more than ½ cubic yard in volume, all stone fences and masonry walls, all concrete or masonry structures, concrete pavements and all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. Excavation Rock will not apply to bituminous pavement, gravel, or broken stone which will be classified as Excavation Common.

2.2.2 MATERIALS

Not applicable.

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2.2.3 CONSTRUCTION

(1) Utilization of Excavated Materials

All suitable materials removed by excavation from the roadway shall be used as far as practicable, in the formation of embankments before any material from Borrow Excavation shall be used, except as otherwise directed by the Engineer.

(2) Location of Borrow Pits

The Engineer will locate and the Department will furnish all borrow pits. The Contractor shall notify the Engineer sufficiently in advance of opening any approved borrow pits, so the necessary measurements may be made.

(3) Unsuitable Materials

When unsuitable material is encountered in areas on which an embankment is to be constructed, or below the subgrade in cuts, the material shall be removed to the lateral limits and depths specified by the Engineer. Any material removed in excess of approved limits and depths will not be measured for payment and the Contractor will be required to provide at his own expense, the material, properly compacted, necessary to replace the excess material which has been excavated.

(4) Swamp Treatment

Where the roadway crosses deposits of peat, muck, muskeg or swamp, the unsuitable material shall be excavated to a firm foundation and to the width indicated on the Standard Plans unless otherwise indicated. In such cases supplementary specifications and plans will be supplied to the Contractor.

(5) Clearing and Grubbing

Clearing and Grubbing will be measured and paid for as stated in Division 2, Section 1 -- "Clearing and Grubbing". Original measurements for all excavation shall be taken after Clearing and/or Grubbing operations are complete.

(6) Stripping and Conserving Topsoil

Prior to the excavation of embankment materials the ground surface shall be stripped of all unsuitable material. Where material is suitable for top soiling the Engineer may direct that it be stock-piled at approved locations.

(7) Trimming and Restoration of Borrow Pits

All borrow pits shall be trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or remain therein. Upon completion of the hauling, the Contractor shall restore the sites which were disturbed by such operation to a satisfactory and sightly condition.

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(8) Construction in Roadway Cuts

(a) Where the subgrade is on transition from excavation to embankment the ground slopes at the grade point shall be treated in accordance with the Standard Plan "Earth Cut and Fill Construction Method at Grade Point."

(b) Where there is no subexcavation in cuts the area from inslope to inslope of ditches shall be treated as follows:

(i) Where granular sub-base is not provided the basement soil shall be sub-excavated one foot and replaced in 6 inch layers compacted to 100% of maximum density.

(ii) When granular sub-base is provided the basement soil shall be scarified to a depth of 6 inches and compacted to 100% of maximum density.

(c) Where unsuitable materials are sub-excavated, as detailed in (3) above, the excavated areas shall be back-filled in 6 inch layers with approved materials and to the elevations indicated by the Engineer and compacted to 95% of maximum density except that the top 12 inches shall be compacted to 100% of maximum density.

(d) In rock cuts the rock shall be removed to the subgrade elevation as shown on the standard plan and the exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface.

(9) Rock Excavation

(a) If, during excavation, material appearing to conform to the classification for Excavation Rock is encountered, the Contractor shall notify the Engineer and shall provide ample opportunity for him to investigate and make such measurements as are necessary to determine the volume of the material in question.

(b) Rock Excavation in roadway cuts shall be carried out in accordance with the Standard Plans.

(c) The Contractor shall collect and place in the embankment, all the material dislodged by blasting.

(d) In order to obtain uniform shattering drilling shall be carried out to a plane parallel to and at a minimum of 2 feet below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to

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the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both ends of cuts on level gradients, to a point at least 3 feet below sub-grade or correspondingly lower if this minimum drilling in the cut has been exceeded. See Standard Plan "Rock Cut Construction". All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(e) Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the limits of the staked sections.

(10) Drainage

Side ditches shall be constructed to the depths and widths indicated on the plans, to permit ready run-off of surface water.

(11) Rounding and Finishing Slopes

The top surface and side slopes of cuts shall be left in a neat condition and true to the lines and grades shown in the Plans. When boulders are encountered in cut slopes they shall be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

When in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand finishing may be called for.

2.2.4 MEASUREMENT

(1) Excavation Common

(a) The quantity of Excavation Common for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for materials acceptably excavated. The measurement will include subexcavation of unacceptable material, surface boulders less than $\frac{1}{2}$ cubic yard in volume and the authorized stripping of excavation and embankment areas.

(b) In cut section where material is removed and replaced (Item 2.2.3 (8) (b) of this Specification), the volume for which payment will be made shall be considered as twice the volume contained in a prism having a depth of 12 inches and an area equal to the top area of the replaced material. There will be no measurement for scarifying the 6 inches under Item 2.2.3 (8) (b).

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(c) Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material, due to slides, which is necessary to move in order to complete the roadway but only when such slides are not attributable to the negligence of the Contractor.

(2) Excavation Rock

(a) The quantity of Excavation Rock for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for material including surface boulders greater than ½ cubic yard in volume which is acceptably excavated.

(b) Where in the opinion of the Engineer unavoidable overbreak occurs payment will be made for the actual quantity involved but not to exceed 10 percent of the volume of the individual cut as staked by the Engineer.

(c) All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position as for Excavation Rock and paid for at the unit price for Excavation Common.

2.2.5 PAYMENT

(a) Payment for Excavation Common (roadway and borrow) and Excavation Rock will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment shall include full compensation for all labour, equipment, tools, explosives, excavation and hauling (except overhaul), scarifying in earth cuts, benching or scarifying slopes, scarifying or breaking up old pavement, shattering rock below grade in rock cuts, the formation of embankments, stockpiling stripped material for topsoiling, trimming and finishing slopes and top surfaces, disposal of surplus or unsuitable materials, maintaining the work until acceptance, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Additional payment at the contract unit price for Excavation Common will be made for topsoil material taken from the stockpile and placed as directed by the Engineer.

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2.3.1 DESCRIPTION

Scope: This item shall include the placing in embankments and cuts of suitable materials obtained from the various scheduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross sections and dimensions shown on the plans or as staked by the Engineer.

2.3.2 MATERIALS

(1) Materials used for embankments shall be free from muck, wood, brush, roots, sods, ashes, rubbish, top soil and other organic matter.

(2) The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All material shall be approved by the Engineer prior to incorporation. In embankments adjacent to abutments and other structures, where shown on the plans, the material shall be granular in nature and approved by the Engineer.

2.3.3 CONSTRUCTION

(1) Embankment Foundation

(a) The foundation for the embankments shall be prepared by removing unsuitable materials as specified in Article 2.3.3 (3) and (4) of the Specification "Roadway Excavation".

(b) When the sub-grade elevation of the new embankment is less than 1 foot above an existing pavement, the pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

(2) Side Hill Construction

When an embankment is to be constructed on a slope or against an existing embankment, the entire sloping surface on which the embankment is to be placed shall be ploughed, benched or broken up in such a manner that the new material will bond with the resulting surface. The specific method employed shall be subject to the approval of the Engineer.

(3) Placing Embankment

(a) Material shall not be placed while frozen nor shall it be placed on a frozen surface.

(b) The embankment shall be constructed to the cross-section shown in the Standard Plans. A crown shall be maintained at all times during construction to ensure ready run-off of surface water.

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(c) The embankment material will be placed in successive uniform layers across the entire area of the embankment as follows:

(i) Material containing less than 25 percent by volume of stone larger than 4 inches shall be placed in 6 inch compacted layers.

(ii) Material containing 25 percent or more in volume of stone or ledge rock larger than 4 inches shall be placed in layers not to exceed the maximum size of the rock or stone in thickness but in no case shall the thickness of the layer exceed 2 feet. Stone larger than 4 inches shall not be placed within 6 inches of the sub-grade elevation.

(iii) In embankments composed principally of material obtained from rock cuts, the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. Such embankments shall be constructed in layers having a maximum height of 3 feet. Even though the thickness of the layers is limited as provided above, the placing of individual rocks and boulders of a size not exceeding 5 feet in least dimension will be permitted provided they are carefully distributed and the interstices filled with finer material to form a dense and compact mass. Each layers, before starting the next shall be levelled and smoothed by means of power driven graders, bulldozers, or other suitable equipment. Hauling and spreading equipment shall be operated over the full width of each layer.

(iv) The top of the rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(4) Compaction

(a) The material shall be spread in layers. Each layer shall be thoroughly compacted by approved compaction equipment for the full width of the layer and to the required degree of compaction before successive layers are placed.

(b) The embankment shall be compacted to not less than 95 percent of the maximum density except that the top 6 inches below the subgrade shall be compacted to a dry density of 100 percent of the maximum density.

(c) The Engineer shall specify the type of compaction units to be used during construction.

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(d) During compaction operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank, or other suitable indicating gauge approved by the Engineer. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated or work shall cease temporarily while the material is brought to approximately the optimum moisture content.

(e) On each embankment at least one approved compactor shall be in continuous operation while material is being placed. Additional units shall be used only as directed by the Engineer.

(5) Embankment Adjacent to Structures

(a) Embankment on Bridge Approaches. The permission of the Engineer must be obtained before any fill is placed against concrete abutments or wing walls. Approach fills within the lines shown on the plan or as directed shall be constructed of approved granular material placed in 6" layers and compacted to 100% maximum density. Where approach fill is to be placed on ground sloping toward an abutment or wing wall, the Engineer may require the slope to be benched to prevent wedging action against the structure. The puddling method for placing any part of an approach fill will not be permitted. In the case of rigid frame structures the embankment shall be placed in approximately equal lifts on both sides of the structure and the compacted height shall be maintained at approximately the same elevation.

(b) Embankments at Culverts. Embankment around culverts shall consist of approved granular material placed to the limits shown on Standard Plan "Installation of Culverts". Material shall be placed in 6" layers alternately on each side of the culvert so as not to displace it during installation and shall be compacted to 100% maximum density. Special care shall be taken to obtain the required compaction under the haunches of pipe and pipe arch culverts.

(c) Fill - Retaining Walls. The fill behind the wall shall be of approved granular material as indicated on the plans, placed in layers not exceeding 6 inches in thickness and tamped or consolidated as directed by the Engineer. In the case of cell type retaining walls the fill behind the wall shall be tamped and kept near but not above the level of the compacted material within the cells. Where fill is to be placed on a sloping surface, the surface must be benched to reduce the load on the retaining structure. The puddling method of filling will not be permitted.

(6) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

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(a) Sheepsfoot compactors shall consist of two drum units, each drum having a minimum length of 4 feet. The length of the tamping feet shall not be less than 7 inches. Under working conditions, the compactor shall be of such weight that the minimum load upon each tamper foot will not be less than 250 pounds per square inch of cross sectional area. The sheepsfoot compactor shall be of the self-cleaning type and so constructed that each drum will oscillate independently of the other.

(b) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(c) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(d) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(e) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(f) Vibratory Compactors shall be of a design approved by the Engineer with weight variable, depending on the application but not to exceed 16 tons.

(g) Prime movers shall be capable of pulling compaction units at a minimum of 3 miles per hour, and each prime mover shall have an hour meter of approved design installed.

(h) Where directed by the Engineer additional compaction units shall be hauled in tandem.

(i) Self-powered hand-operated tamping units for compaction of back-fill and/or embankments contiguous to structures shall be of the vibratory or ramming type of approved design and weighing not less than 100 pounds.

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(j) Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of standard units required in the Specifications.

(7) Trimming

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown in the plans and profiles or as staked by the Engineer. Where in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand trimming may be called for.

(8) Maintenance of Roadbed

The finished roadbed shall be maintained continuously in a condition suitable for traffic until the next course, if any, of material is placed or until the final completion of the work as the case may be.

2.3.4 MEASUREMENT

(1) Embankment shall not be measured for direct payment.

(2) Compaction

(a) The quantity of compaction for which payment will be made shall be the actual number of hours that the equipment worked, as recorded on the installed hour meter of the hauling unit.

(b) In the case of hand-operated tamping units the quantity for which payment will be made will be the actual number of hours worked.

(3) Watering

The quantity of water for which payment will be made shall be measured in units of 1,000 gallons for quantities authorized by the Engineer.

2.3.5 PAYMENT

(1) Payment for construction of embankment, as above described, including granular fill at abutment, and elsewhere, is not payable directly but shall be considered as a subsidiary obligation of the contractor, covered under the contract unit prices for performance of work under the various scheduled excavation items except as provided below.

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(2) Payment for compaction will be made for the number of hours, as above determined, at the contract unit prices for the individual units of compaction equipment, which prices shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided. No payment will be allowed for interruptions or down-time of any kind.

(3) Payment for watering shall be made at the contract unit price for the number of 1000 gallon units authorized by the Engineer, which price shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) When more than one compaction unit is driven by a single prime mover payment will be made for the additional unit(s) at the contract unit price for the compaction unit only i.e. "Compaction (Tamping Roller only)". No additional compensation will be allowed for an increase in the size of the machinery supplying the motive power.

(5) When granular material is used as directed by the Engineer, for the work detailed in Article 2.3.3 paragraph 5, payment will be made at the contract unit price for one of the various scheduled item.

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SECTION 4 - CHANNEL EXCAVATION

SEPTEMBER 1959

2.4.1 DESCRIPTION

This item shall include the excavation required for deepening, widening and relocating water channels, and the construction of ditches other than roadway side ditches, to the lines and grades, and at the locations shown on the plans or designated and staked by the Engineer.

2.4.2 MATERIALS

No materials are involved.

2.4.3 CONSTRUCTION

Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.4.4 MEASUREMENT

The quantity of Channel Excavation for which payment will be made will be the volume, measured in its original position, computed by the method of average end areas, removed within the neat lines of Channel Excavation shown on the plans or as staked by the Engineer. The material shall be classified as Channel Excavation Common, or Channel Excavation Rock, in accordance with Item (2), Article 2.2.1.

2.4.5 PAYMENT

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, Common, and Channel Excavation, Rock, which prices shall include full compensation for all labour, equipment, tools, explosives, excavating and hauling materials (except overhaul), placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 6 - OVERHAUL

SEPTEMBER 1959

2.6.1 DESCRIPTION

This item shall consist of authorized hauling in excess of the free haul distance of 1000 feet of any material paid for under one of the various classes of excavation, and disposed of as required under the various items prescribed for the disposal of such material.

2.6.2 MATERIALS

Not applicable.

2.6.3 CONSTRUCTION

Not applicable.

2.6.4 MEASUREMENT

(1) The quantity of Overhaul, measured in cubic-yard-miles, to be paid for shall be the product of the volume of the overhauled material, measured in its original position, in cubic yards, by the overhaul distance in miles and fractions thereof.

(2) The overhaul distance shall be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of 1000 feet. The haul distance shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment shall be based on the haul distance measured along the route designated by the Engineer.

(3) In calculating Overhaul for Roadway Excavation, the Mass Diagram method will be used by the Engineer. In this method the limits of free haul will be determined by fixing on the profile two points 1000 feet apart, one on each side of the neutral grade point, selected in such a way that the included quantities of excavation will balance the included quantities of embankment plus the proper allowance for shrinkage or swell. All material within the balance points beyond this limit of 1000 feet will be calculated and payment will be made on the basis of the following method of computation:

(a) All material within the limits of the 1000 feet will be eliminated from further consideration in overhaul compensation.

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(b) The overhaul distance will be the distance between the centre of gravity of the remaining mass of excavation and the centre of gravity of the resulting embankments, measured in miles or fractions thereof, less 1000 feet free haul.

(c) The amount of overhaul to be paid for shall be obtained by multiplying the overhaul distance in miles by the quantity of the remaining mass of excavation in cubic yards and shall be expressed in units of cubic-yard-miles.

2.6.5 PAYMENT

Payment for Overhaul will be made for the quantities as above determined, measured in cubic-yard-miles, at the contract unit price for Overhaul, which price and payment shall be full compensation for all labour, equipment and tools necessary to complete the hauling operations satisfactorily, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 3

BASE COURSE

Section 1 - Base Course (Class 1) and Sub-base Course (Class 2) and (Class 3)

" 2 - Bituminous Stabilized Base Course (Plant Mixed)

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DIVISION 3

SECTION 1 - BASE COURSE (CLASS 1) AND SUB-BASE COURSES (CLASS 2) AND (CLASS 3)

3.1.1 DESCRIPTION

This item shall consist of crushing and screening gravel or stone and placing in stockpile(s) or on the road in accordance with these specifications.

3.1.2 MATERIALS

(1) Base Course Class 1

(a) This material shall consist of crushed stone or crushed gravel meeting the requirements of Tables 1 and 2. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 1

Physical Requirements for Coarse Aggregate (Material Retained on No.4 Sieve)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	35	35
(b) Crushed fragments, min. % by wt.	-	50
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Method T-104-46	15	15

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

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TABLE 2

Physical Requirements - Deleterious Materials

Description	Stone	Gravel
1. Shales	4%	4%
2. Siltstones	1	1
3. Chert	2	2
4. Ochre	1	1
5. Clay ball	1	1
Max. allowable total % by weight of deleterious material	8	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

(b) Gradation

The aggregate shall conform within the limits specified in Table 3. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 3

Base Course (Class 1)

Sieve No.	Percent Passing
3/4"	100%
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

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(2) Sub-Base Course (Class 2)

This material shall consist of crushed stone or crushed gravel, meeting the gradation requirements of Table 4. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 4

Sub-Base Course (Class 2)

Sieve No.	Percent Passing
2"	100%
1"	70 - 100
½"	55 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

(3) Sub-Base Course (Class 3)

This material shall consist of gravel, talus rock, desintegrated granite, sand, or other granular materials meeting the gradation requirements of Table 5. It shall be composed of clean, hard particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 5

Sub-Base Course (Class 3)

Sieve No.	Percent Passing
4"	100%
1"	60 - 100%
No. 4	25 - 100%
No. 10	12 - 85%
No. 40	5 - 40%
No. 200	0 - 8%

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The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

(4) General - Base Course (Class 1) and Sub-Base Courses (Classes 2 and 3)

(a) The portion of the material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

(b) Even though particle sizes are within the limits of the grading sizes herein provided, materials will be considered unsuitable, if particle shapes are thin or elongated or exhibit other characteristics precluding satisfactory compaction and a roadbed acceptable to the Engineer.

(c) The source of supply for the Base Course and Sub-Base Courses shall be in accordance with Section 1.6.1 - "Source of Supply and Quality Requirements".

3.1.3 CONSTRUCTION

(1) Clearing and Grubbing

The clearing and grubbing of deposits from which these materials are obtained, stockpile sites and access roads thereto, shall be carried out as specified in Article 2.1.3 - "Clearing and Grubbing".

(2) Stripping

The pits from which these materials are obtained shall be stripped of all overburden, and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

(3) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, will be specified by the Engineer.

(4) Blending Aggregates

It shall be permissible to blend or mix two or more materials to meet the gradation requirements. When two or more materials are blended, they shall be thoroughly mixed by mechanical means.

(5) Preparation of Surface Prior to Placing

Each course shall be placed on a surface which shall be clean, dry, free from frost, snow, and loose or adhering deleterious materials, properly shaped and compacted. Any damage to a finished surface shall be repaired by the Contractor at his own expense and to the satisfaction of the Engineer, before the next course is placed.

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(6) Spreading and Compacting Base Course (Class 1)

The granular material shall be laid so as to avoid segregation in layers of not more than three (3) inches in compacted thickness or as directed by the Engineer. Tail-gating will not be permitted. Immediately following spreading and smoothing of each layer, all the material shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, rubber tired rollers or vibratory compactors, meeting the requirements of Item 2.3.3(6) of the "Specification for Embankment Construction". All compacting shall start at the edges and progress towards the centre, so that each succeeding pass will uniformly overlap the previous one. While compacting progresses, the entire surface of each layer shall be shaped and dressed with a motor grader, having a blade at least twelve (12) feet in length, to maintain a uniformly smooth surface conforming to the required lines and grades.

Any irregularities in the completed surface of each lift that exceed 3/8 inch from the template grade for that lift when tested with a 10 foot straight edge shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Additional material when required shall be paid for at the contract unit price for base course material.

Each layer shall be compacted to at least 100% maximum density. During compaction, the base course shall be maintained at the optimum moisture content. Water, when required, shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank.

(7) Placing, Spreading and Compacting Sub-base (Class 2 and Class 3)

This material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer. The placing, spreading and compacting shall be done in accordance with Articles 2.3.3(3) and 2.3.3(4) - "Embankment Construction".

(8) Stockpiling

The stockpile site(s) shall be cleaned of all deleterious material and shall be firm and level. The stockpile(s) shall be constructed in layers not exceeding three feet and be built to eliminate coning and segregation of aggregate sizes. During winter operations, stockpile(s) shall be kept free of ice and snow to the satisfaction of the Engineer.

3.1.4 MEASUREMENT

(1) The quantity of base course for which payment will be made, shall be the number of tons (2000 lbs) of base course or sub-base course material, placed and accepted in the completed work. The weight measurements shall be made by a weighmaster provided by the Department using scales provided by the contractor. These scales shall be of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested

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for accuracy as often as may be required by the Engineer. The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as often as required.

(2) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course or sub-base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(3) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

(4) The quantity for which payment will be made for the compaction of the base course or the sub-base course, shall be the actual number of hours as recorded on the installed hour meter on the hauling unit of the particular equipment for the time of operation approved by the Engineer.

(5) The quantity of clearing and/or grubbing of borrow areas, stockpile sites and access roads thereto for which payment will be made, shall be measured as specified in Article 2.1.4 "Clearing and Grubbing".

(6) The quantity of stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

(7) The quantity of work and materials required for the construction of access roads, will be measured as specified under the various scheduled items.

3.1.5 PAYMENT

(1) Payment for base course or sub-base course will be made for the quantities as above determined, measured in tons (2000 lbs) at the contract unit price for "Base Course" or "Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Payment for hauling base course or sub-base course material will be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course" or "Hauling Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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(3) Payment for watering will be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all other work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(4) Payment for compaction will be made for the quantities above determined, measured in hours for a particular unit at the contract unit price or prices for "Compaction" which price or prices and payment shall constitute full compensation for performing the work specified and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which payment is not elsewhere provided. No payment will be allowed for interruption or down time of any kind.

(5) Payment for clearing and/or grubbing borrow areas, stockpile sites and access roads thereto, will be made as specified in Article 2.1.5 "Clearing and Grubbing".

(6) Payment for stripping of borrow areas will be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping of Borrow Areas", which price and payment shall be full compensation for all labour, equipment, tools, excavation and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(7) Payment for work and materials required for the construction of access roads will be made as specified under the various scheduled items.

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 4

PAVEMENTS

Section 1 - Bituminous Concrete Pavements Type "A", "B" and "C"

" 2 - Seal Coat

" 3 - Bituminous Prime Coat

" 4 - Bituminous Tack Coat

" 5 - Equipment for Stabilized Base and Paving Operations

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SECTION 4 - BITUMINOUS TACK COAT

FEBRUARY, 1960

4.4.1 DESCRIPTION

This item shall consist of furnishing and applying bituminous material to a previously prepared, bonded bituminized surface in accordance with these specifications.

4.4.2 MATERIALS

(1) Bituminous materials shall be of the type and grade called for in the "Information to Bidders" and shall conform to the requirements of the Canadian Government Specifications Board specifications for the material.

(2) Samples of bituminous materials which are to be used under these specifications shall be submitted to the Department laboratory or specified agent for analysis.

(3) The Contractor shall obtain from the manufacturer and furnish in tabular or graphical form the temperature - viscosity relationship of the bituminous material to be used.

4.4.3 CONSTRUCTION

(1) Weather Limitations

Tack coat shall be applied only when the surface is dry or in the case of asphalt emulsions slightly damp, when the air temperature in the shade is not less than 50°F and rising, and when the weather is not foggy or rainy.

(2) Cleaning Surface

Where necessary, in the opinion of the Engineer, the full width of the surface to be treated shall be cleaned with a power broom and/or hand broom to remove dirt and other objectionable material.

(3) Application of Bituminous Materials

(a) Bituminous material shall be applied on the prepared surface by means of a distributor at the rate or rates directed by the Engineer, usually between 1/10 and 1/15 gallon per square yard. For cut-back asphalts the application temperature shall be such that the Saybolt Furol Viscosity will be between 25 and 50 seconds. For emulsified asphalts the temperature shall be between 70°F and 150°F depending on the material being used. Where slow setting emulsions are called for dilutions ranging

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4.4.4 MEASUREMENT

The quantity of bituminous tack coat, for which payment will be made shall be the number of imperial gallons, measured at a temperature of 60°F, of bituminous tack coat material applied and accepted on the surface to be treated in accordance with the specifications or as directed by the Engineer. Measurement will not be made of water used to dilute emulsified asphalts.

4.4.5 PAYMENT

Payment for this item will be made for the quantities as above determined at the contract unit price for Bituminous Tack Coat which price and payment shall include full compensation for all operations required for its incorporation into the work, supplying the bituminous material, delivery (including all freight, demurrage and storage charges) and all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 6

INCIDENTAL CONSTRUCTION

Section 1 - (A) Random Rip-Rap
(B) Armour Rip-Rap

" 2 - (A) Hand-Placed Rip-Rap
(B) Grouted Hand-Plant Rip-Rap

" 3 - Culverts

" 4 - Underdrains

" 5 - Guide Fence and Guide Posts

" 6 -

" 7 - Metal Type Retaining Wall

" 8 - Dust Control

" 9 - Conditioning of Roadbed

" 10 - Rental Vehicles

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SECTION 1 (A) RANDOM RIP-RAP
(B) ARMOUR RIP-RAP

FEBRUARY, 1960

6.1.1 DESCRIPTION

This item shall consist of stone rip-rap for bank protection furnished and constructed in accordance with these specifications at the locations indicated and in conformity with lines, grades and dimensions shown on the plans or required by the Engineer.

6.1.2 MATERIALS

The Contractor shall supply all materials. The stones for the rip-rap shall be hard, angular and of such quality that they will not readily disintegrate on exposure to water or weather. The source of the material must be approved by the Engineer.

(a) RANDOM RIP-RAP

In random rip-rap the stones shall weigh between 20 and 400 pounds. Not less than 25% of the individual stones shall weigh over 200 pounds.

(b) ARMOUR RIP-RAP

In armour rip-rap 60% of the individual stones shall weigh between 1200 and 2000 pounds each and an additional 20% shall weigh between 400 and 1200 pounds. The remaining 20% shall not weigh less than 200 pounds.

6.1.3 CONSTRUCTION

When shown on the plans and as directed by the Engineer, the Contractor shall excavate an adequate foundation bed upon which the bottom of the rip-rap shall rest. The stones shall be handled or dumped into place so as to form the required cross-sections. Stone above the low water line shall form a uniform surface free from humps or depressions with no excessively large individual stones projecting from the general surface. Armour rip-rap stone excessively large and tending to extend beyond the average general surface shall be embedded into the surface or broken down or discarded.

6.1.4 MEASUREMENT

The quantity for which payment will be made shall be the quantity measured in cubic yards in place and computed by the average end area method for materials satisfactorily incorporated into the work.

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6.1.5 PAYMENT

Payment for rip-rap will be made for the quantities as above determined, measured in cubic yards at the contract unit prices per cubic yard for "Random Rip-Rap" and "Armour Rip-Rap", which prices and payment shall constitute full compensation for excavating, blasting, selecting, transporting and placing all stones, excavating and preparing the foundation bed and for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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SECTION 2 (A) HAND-PLACED RIP-RAP
(B) GROUTED HAND-PLACED RIP-RAP

FEBRUARY, 1960

6.2.1 DESCRIPTION

This item shall consist of constructing hand-placed rip-rap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.2.2 MATERIAL

(1) General

The Contractor shall supply all materials.

(2) Rock

(a) Stone for rip-rap shall be of approved quality sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects.

(b) For wall construction no stone shall be less than ½ cubic foot in volume and 75 percent of the stones shall be at least 1 cubic foot in volume.

(c) For gutter construction stones shall not be less than 4 inches and not more than 6 inches in thickness with approximately flat surfaces with widths of not less than 2 inches and lengths of not less than 6 inches.

(d) Spalls shall be supplied to fill open joints.

(3) Sand

Sand for mortar shall conform to the C.S.A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(4) Cement

Cement for mortar shall be Portland Cement conforming to the requirements of the C.S.A. Specification A5-1951.

6.2.3 CONSTRUCTION

(1) Excavation

(a) HAND-PLACED RIP-RAP

Where shown on the plans and as directed by the Engineer the

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Contractor shall excavate so as to provide for an adequate foundation upon which the bottom of the rip-rap shall rest and he shall fine grade to a uniform and even surface the whole area to be rip-rapped. Depressions shall be filled and thoroughly compacted.

(b) GROUTED HAND-PLACED RIP-RAP

Excavation shall be performed as for (a) above.

(2) Placing

(a) HAND-PLACED RIP-RAP

Unless laid to form a flat apron, the rip-rap shall commence in a trench below the toe of the slope. Stones shall be placed at the locations and to the required dimensions and cross-section shown on the plans and as directed by the Engineer. Stone shall be laid with close broken joints and shall be firmly bedded into the slope and against adjoining stones. The larger stones shall be placed in the lower courses and all shall be thoroughly compacted as construction progresses. Spalls shall be used to fill voids.

(b) GROUTED HAND-PLACED RIP-RAP

The placing of the stones shall be as required under (a) above. The space between the stone shall be filled with cement mortar composed of one part Portland Cement to three parts fine aggregate, and shall be of such consistency that it can be placed with a mason's trowel. Before applying mortar the surfaces of the stones shall be amply wetted. Mortar shall be placed from the bottom to top, and worked with suitable tools to completely fill all voids except that the outer faces of the stones shall be left exposed. Grouted hand-laid rip-rap shall be cured in accordance with the curing requirements of the C.S.A. Standard Specifications for Concrete and Reinforced Concrete A23-1942 and amendments thereto.

6.2.4 MEASUREMENT

The quantity of Hand-placed Rip-rap and Grouted Hand-placed Rip-rap for which payment will be made shall be the number of cubic yards measured in place and accepted in the completed work.

6.2.5 PAYMENT

Payment for Hand-placed Rip-rap and for Grouted Hand-placed Rip-rap will be made for the quantities as above determined, at the contract prices per cubic yard for "Hand-placed Rip-rap" and "Grouted Hand-placed Rip-rap" which prices and payment shall constitute full compensation for excavating the bed, for trimming and consolidating the foundation as directed, for excavating, selecting and transporting all stones, for placing stones by hand, for backfilling and grouting when required, and for all labour, materials, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 6

SECTION 3 - CULVERTS FEBRUARY, 1960

6.3.1 DESCRIPTION

This item consists of the supply and/or installation of corrugated metal, structural plate, and reinforced concrete pipe or pipe arch culverts in accordance with the specifications and to the lines and grades shown on the plans or as directed by the Engineer.

6.3.2 MATERIALS

(1)

(a) All corrugated metal pipe or pipe arch culverts shall meet the requirements of the A.A.S.H.O. Specification M - 36 - 53, or subsequent revisions thereof.

(b) All structural plate pipe or pipe-arch culverts, shall meet the requirements of the A.A.S.H.O. Standard Specification for Highway Bridges, 1957 - Division 2, Section 23, or subsequent revision thereof.

(c) All reinforced concrete pipe or pipe-arch culverts shall meet the requirements of the A.A.S.H.O. Specification M 41 - 55, or subsequent revision thereof.

(d) Where specified, corrugated metal and structural plate pipe and pipe arch culverts shall be fully coated inside and outside with asphalt cement of approved quality not less than 0.05" thick at the crest of the corrugations. The coating shall adhere firmly to the galvanized metal and shall be moisture and erosion resistant.

(e) Where specified, corrugated metal and structural plate pipe and pipe arch culverts shall be asbestos fused by pressing asbestos fibres into the molten metallic zinc during the manufacturing process.

(f) Where specified, corrugated metal pipe and pipe arch culverts shall have their inverts paved with an asphaltic mixture having a minimum thickness over the crest of the corrugation of 1/8 of an inch. The paving shall adhere firmly to the adjacent layers and shall be moisture and erosion resistant.

(g) Where specified, corrugated metal and structural plate pipe and pipe arches shall have their inverts lined with metal or in the case of structural plate heaver inverts may be required. In these instances, detailed requirements will be set out in the Information to Bidders.

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(h) All culvert material, together with all necessary fittings and appurtenances shall be supplied by the Contractor in the gauges and dimensions specified.

(2) The materials used for the bed and fill around culverts shall be selected by the Engineer from one of the various scheduled contract items.

6.3.3 CONSTRUCTION

(1) Excavation

(a) Excavation shall be carried out in accordance with the appropriate Standard Plan and to the line and grade staked by the Engineer. During construction the Contractor may be required to provide for the temporary flow of water outside of the limits of the culvert.

(b) The excavated surface for culverts shall provide a firm foundation of uniform density throughout its entire length. Where a firm foundation is not encountered at the grade established, unless other special construction methods are called for, all the unstable soil under the culvert and for a width of at least one diameter on each side of the culvert shall be replaced with granular material properly compacted to provide adequate support for the culvert.

(2) Bedding

The culvert shall be bedded in a granular foundation compacted to 100% of Maximum Density and having a thickness under the culvert of not less than ½" per foot of fill over the top of the culvert, with a minimum allowable thickness of 8 inches. The bed shall be shaped by means of a template to fit the lower part of the culvert exterior for at least 10% of its overall height. Recesses shall be provided for any bells involved.

(3) Installation

(a) Corrugated Metal, Structural Plate Pipe and Pipe Arch

(i) Proper couplings shall be used to join separate sections firmly together, with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides.

(ii) Structural Plate pipe and pipe arches shall be placed in accordance with the manufacturer's recommendations.

(b) Reinforced Concrete Pipe and Pipe Arch

(i) The sections shall be laid carefully, hubs upgrade and with the ends fully and closely jointed. Unless otherwise specified, all joints shall be filled with

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stiff cement mortar composed of one part of portland cement and one and one-half parts of sand.

(ii) The section ends shall be thoroughly cleaned and wetted with water before the joint is made. Mortar shall then be placed in the lower half of the bell or groove of the section already laid and on the upper half of the spigot or tongue of the section being laid. The two sections shall then be tightly joined together with their inner surfaces flush and even. After the sections are joined, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the elements with a cover of thoroughly wetted earth or burlap.

(c) Strutting

Pipe culverts shall be strutted in accordance with the manufacturer's instructions.

(d) Appurtenances

(i) End sections, where specified, shall be installed in accordance with the manufacturer's recommendations.

(ii) Concrete inlets, cradles, aprons and headwalls shall be constructed, where specified, in accordance with the plans and the current Highways Division Standard Specification for "Concrete Structures".

(e) Fill Around Culverts

Fill around culverts shall be carried out in accordance with Article 2.3.3 Para. 5(b) and to the limits shown on the Standard Plans.

6.3.4 MEASUREMENT

(1) Supply

(a) The quantity of pipe and pipe arch or structural plate pipe and pipe arch for which payment will be made shall be the number of linear feet of the various types and sizes furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(b) The quantity of end sections for which payment will be made shall be the number of end sections furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

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(2) Installation

(a) The quantity of pipe and pipe arch and structural plate pipe and pipe arch for which payment will be made shall be the number of linear feet of the various types and sizes, measured along the invert centre line complete in place and accepted by the Engineer.

(b) The quantity of end sections for which payment will be made shall be the number of end sections of the various sizes and types complete in place and accepted by the Engineer.

(3) Excavation

The quantity of excavation for which payment will be made shall be in accordance with Article 2.2.4 - Roadway and Borrow Excavation.

(4) Bedding and Fill Around Culverts

The quantity of bedding and fill around culverts for which payment will be made shall be the quantity measured as directed by the appropriate specification for the material used and accepted by the Engineer.

6.3.5 PAYMENT

(1) Supply

(a) Payment for the supply of pipe, pipe arch, structural plate pipe and pipe arch culverts of the types and sizes specified, will be made for the quantities as determined above, at the contract unit price per linear foot for these items, which price and payment shall include the furnishing and fabrication of all material, transportation to the site of installation, or if surplus to requirements to stockpile, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for the supply of end sections will be made for the number as determined above, at the contract unit price for end sections, which price and payment shall include the furnishing and fabrication of all materials, transportation to the site of installation, or if surplus to requirements to stockpile, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Installation

(a) Payment for the installation of pipe, pipe arch, structural plate pipe and pipe arch culverts will be made for the quantities as determined above, at the contract unit price per linear foot for these items, which price and payment shall include compensation

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in full for preparation of bed, assembly and installation of the culverts and all materials, labour, tools, equipment and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for the installation of end sections will be made for the quantities as determined above, at the contract unit price per unit of measurement for these items, which price and payment shall include compensation in full for the assembly and attachment of the end sections and all material, labour, equipment and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(3) Excavation

Payment for excavation will be made in accordance with Article 2.2.5 - Roadway and Borrow Excavation.

(4) Bedding and Fill

Payment for bedding and fill around culverts will be made, for the quantities as determined above, as directed by the appropriate specification for the material used and accepted by the Engineer.

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6.4.1 DESCRIPTION

This item shall consist of the supply and placing of underdrains in accordance with these specifications and in conformity with the lines, grades, dimensions, and designs shown on the plans or designated by the Engineer.

6.4.2 MATERIALS

(1) Pipe for underdrains shall be either tile, or perforated corrugated metal pipe and shall conform to either A.A.S.H.O. Specification M 66-55 or M 136-47, or subsequent revisions thereof.

(2) Backfill for underdrains shall consist of granular material approved by the Engineer.

6.4.3 CONSTRUCTION

(1) Trench and Bedding

(a) The base of the trench in earth shall be deep enough to provide a minimum 4 inch granular bed under the pipe. The base of the trench in rock shall be deep enough to provide a 4 inch granular bed between the highest solid rock peaks and the under side of the pipe. The excavation in either rock or earth shall have a bottom width equal to the diameter of the pipe plus 2 feet. Excavated material shall be disposed of as directed by the Engineer.

(b) The bed of granular material shall be placed and tamped true to grade, providing recesses for the pipe bells if necessary.

(2) Placing the Pipe

(a) Pipe of the type and dimensions required shall be laid firmly in the prepared bed.

(b) Bell and spigot pipe shall be laid with bell ends upgrade and the spigot ends entered in the adjacent bells but not mortared or otherwise closed to the desired infiltration of water. The joints shall be covered with two-ply tar-paper strips not less than 6 inches in width and of sufficient length to permit the ends being turned outward and laid flat on the bottom course of gravel on either side of the pipe for a distance of 3 inches.

(c) Perforated pipe shall be laid with the perforated side of the pipe down and separate sections shall be firmly joined together with the appropriate connectors.

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(3) Granular Backfill

The granular backfill shall then be carefully placed by hand - shovelling to a depth of at least 6 inches over the top of the pipe, special care being taken not to disturb the alignment or grade of the pipe. The trench shall then be filled with granular material to the elevation shown on the plans or as directed by the Engineer. If the Engineer so directs, the top 1 foot of backfill shall be the same material as is in the adjacent area.

6.4.4 MEASUREMENT

(1) Excavation

The quantity of excavation for underdrains for which payment will be made shall be the volume measured in cubic yards in its original position, computed by the method of average end areas, removed within the neat lines of excavation for underdrains shown on the plan or staked by the Engineer.

(2) Supply

The quantity of pipe for which payment will be made shall be the number of linear feet of the various types of underdrain pipe furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(3) Installation

The quantity for which payment will be made shall be the number of linear feet of underdrain installed complete in place and accepted by the Engineer.

(4) Bed and Backfill

The quantity of granular backfill for which payment will be made shall be the quantity measured as directed by the appropriate specification for material used.

6.4.5 PAYMENT

(1) Excavation

Payment will be made for the quantities as above determined, measured in cubic yards at the contract unit prices for Excavation for Underdrains, Common and Excavation of Underdrains, Rock, which prices and payment shall include compensation in full for excavating and hauling the materials, placing excavated materials in embankments or disposal areas as may be directed by the Engineer, shaping and dressing the ditch, for all labour, explosives, tools and equipment and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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(2) Supply

Payment will be made for the quantities as above determined, at the contract unit price per linear foot for Supply of Underdrains which price and payment shall include full compensation for underdrain material delivered at the site of the work including all material necessary for joints, unloading and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(3) Installation

Payment will be made for the quantities as above determined at the contract unit price per linear foot for Installation of Underdrains which price and payment shall include compensation in full for preparation of bed, assembly and installation of the underdrain pipe and all material, labour, equipment and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) Bed and Backfill

Payment for granular backfill will be made as directed by the appropriate specification for the backfill material used.

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SECTION 8 - DUST CONTROL

MARCH 1960

6.8.1 DESCRIPTION

This item shall consist of the treatment of existing roads and such portions of the new road which are open to public travel during the construction of the new highway with calcium chloride at such locations and at such times as are ordered by the Engineer.

6.8.2 MATERIALS

(1) Calcium chloride shall be supplied by the Contractor in waterproof paper bags in the quantity ordered in writing by the Engineer.

(2) Calcium chloride shall conform to the A.A.S.H.O. Standard Specification for Calcium Chloride Designation M.144.

6.8.3 CONSTRUCTION

(1) Storage

Calcium chloride shall be stored in a weather tight storage shed provided by the Contractor within the limits of the contract until used or otherwise disposed of as directed by the Engineer.

(2) Application

(a) Calcium chloride shall be applied with mechanical equipment of an approved type to ensure even distribution.

(b) The quantity applied and rate of application shall be determined by the Engineer.

(c) When required, the surface shall be dampened by thoroughly sprinkling with an approved sprinkler or other approved method.

6.8.4 MEASUREMENT

(1) Supply

The quantity for which payment will be made shall be the number of tons or fractions thereof, furnished as ordered in writing by the Engineer, delivered and placed in storage as described in Article 6.8.3 (1) above.

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(2) Application

The quantity for which payment will be made shall be the number of tons applied at such locations and times and in such amounts as directed by the Engineer.

(3) Water

Water required for dampening the surface will be measured as provided for in Article 2.3.4.

6.8.5 PAYMENT

(1) Supply

Payment will be made for the quantities as above determined at the contract unit price per ton for "Supply Calcium Chloride" which price and payment shall be compensation in full for supplying, delivering to the storage shed and storing calcium chloride and all work subsidiary and incidental thereto.

(2) Application

Payment will be made for the quantities as above determined at the contract unit price per ton for "Apply Calcium Chloride for Dust Control" which price and payment shall be compensation in full for loading from the storehouse, delivery, applying, disposing of paper bags, and all work subsidiary and incidental thereto for which payment is not elsewhere provided.

(3) Water

Payment for water required for dampening the surface will be paid for as provided in Article 2.3.5

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SECTION 10 - RENTAL VEHICLES

MARCH 1960

6.10.1 DESCRIPTION

This item consists of supplying vehicles for the use of the Engineer and his representatives in relation to the work.

6.10.2 VEHICLES

(1) Type and Equipment

All vehicles shall be, and be kept, in good running order and equipped with heater, defroster, right and left hand mirrors, permanent type anti-freeze, a spare wheel, all weather mud and snow tires on the rear and spare wheels, directional signals with two-way flasher and safety equipment in accordance with provincial regulations, full width front seat and required licensing and shall be of the type and number specified in the "Information to Bidders".

(2) Delivery and Return of Vehicles

(a) The vehicles are to be delivered to a location designated by the Engineer, and from the time the vehicles are so delivered, they shall be deemed to be in the possession of the Crown until returned to the Contractor, as hereunder provided.

(b) The Engineer may, at any time or times, return any or all of the vehicles to the Contractor by advising the Contractor's representative in writing that a specified vehicle is not required. From the date of such advice to the Contractor's representative the specified vehicle shall be deemed to be in the possession of the Contractor until redelivered to the Engineer upon his request.

(c) The Contractor will upon written request from the Engineer redeliver to him any vehicle returned to the Contractor as aforesaid.

(d) The Engineer may require the Contractor to furnish vehicles until final measurements have been completed.

6.10.3 RENTAL CONDITIONS

(1) Damage and Repairs

(a) All vehicles supplied pursuant to this contract are at the risk of the Contractor whether in the possession of the Contractor or the Crown, and the Contractor shall not make any claim or demand, or bring any action or other legal proceedings against the Crown in respect of damage to any such vehicle, including

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damage caused by the negligence of an officer or servant of the Crown while acting within the scope of his duties or employment.

(b) All repairs to vehicles supplied under this contract will be performed expeditiously by the Contractor.

(2) Protection

The Contractor, for himself, his heirs, executors and administrators, hereby undertakes to indemnify and save harmless, the Crown, and officers, servants and agents of the Crown from and against all manner of actions, causes of action, suits, debts, duties, agreements, claims and demands whatsoever which may hereafter exist or be made for or by reason of any cause, matter or thing whatsoever arising out of these terms of rental and the transportation or operation of equipment herein referred to.

6.10.4 MEASUREMENT

The quantity for which payment will be made shall be the actual months or fractions thereof the vehicles are in the possession of the Crown.

6.10.5 PAYMENT

Payment will be made for the quantities as above determined at the contract unit prices for "Vehicles for the Use of the Engineer", which prices and payment shall be compensation in full for supplying, repairing and maintaining the vehicles excepting the cost of fuel and lubricants.

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CONTRACT 5/60/BJ

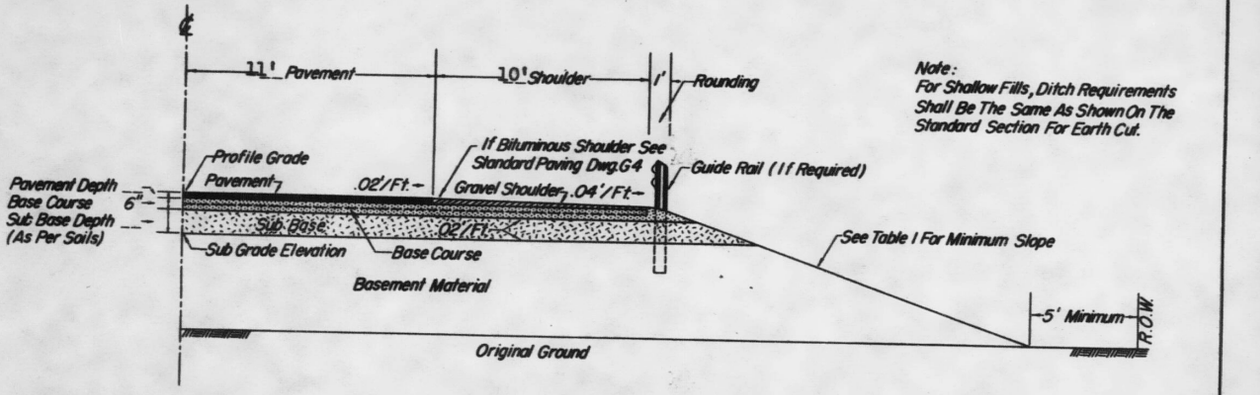

TABLE I MINIMUM SLOPES			
Heigth Of Cut Or Fill	TERRAIN Rolling	Mod. Steep	Steep
0-4'	4:1	4:1	4:1
4-10'	4:1	3:1	2:1
10-15'	3:1	2½:1	1½:1
15-20'	2:1	2:1	1½:1
Over 20'	2:1	1½:1	1½:1

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A1

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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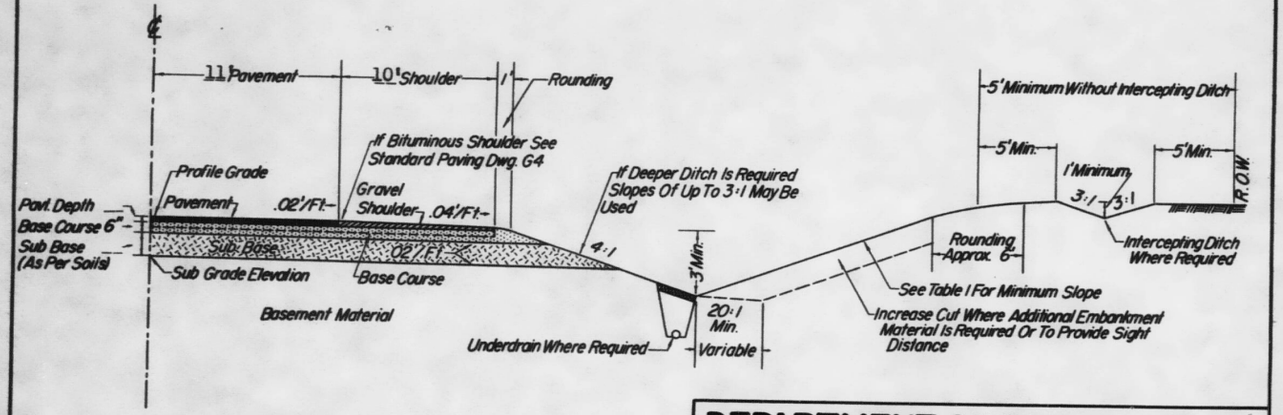

TABLE I
MINIMUM SLOPES

Heigth Of Cut Or Fill	TERRAIN		
	Rolling	Mod. Steep	Steep
0 - 4'	4:1	4:1	4:1
4 - 10'	4:1	3:1	2:1
10 - 15'	3:1	2½:1	1½:1
15 - 20'	2:1	2:1	1½:1
Over 20'	2:1	1½:1	1½:1

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HIGHWAYS DIVISION

EARTH CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A2

DRAWN BY B. Nicol CHECKED BY T.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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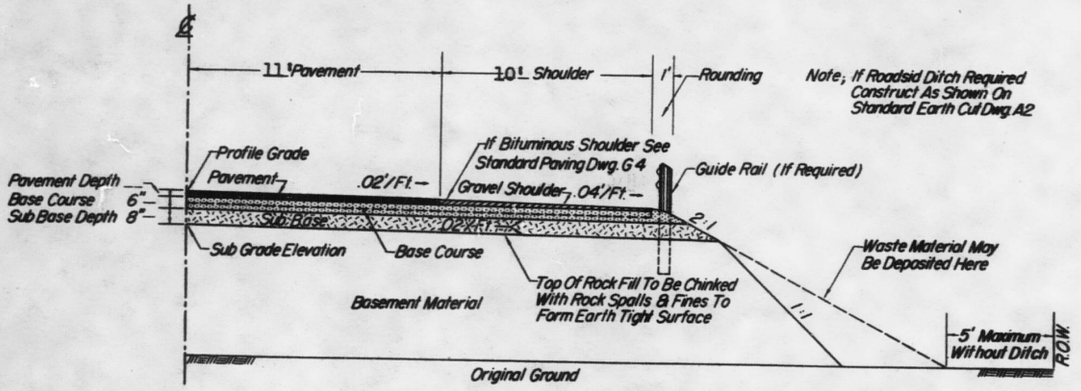

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HIGHWAYS DIVISION

ROCK FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A3

DRAWN BY B. Nicol CHECKED BY J.T.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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File/dossier J60-23
pt 1

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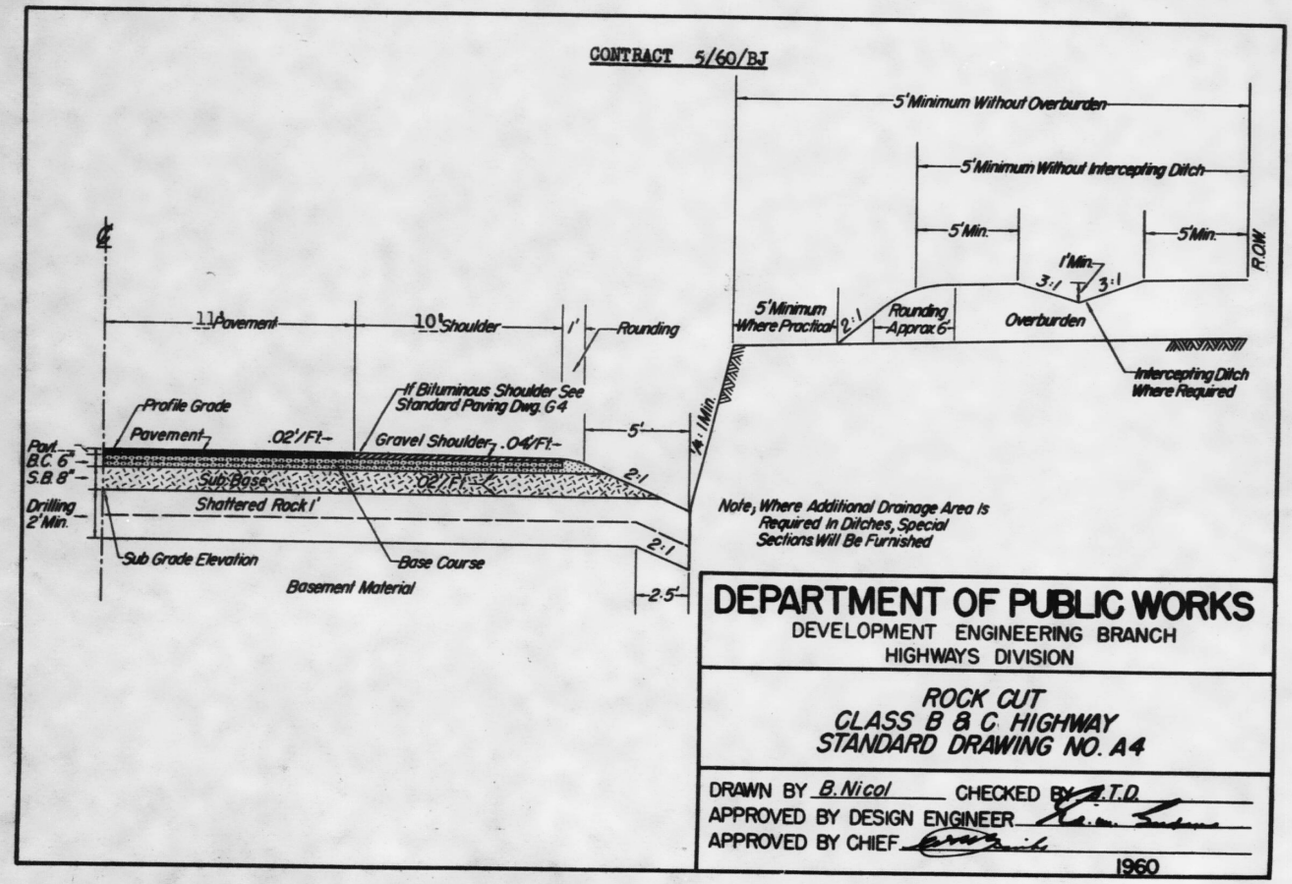
Archives nationales du Canada

000350

CONTRACT 5/60/BJ



DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A4

DRAWN BY B. Nicol CHECKED BY T.T.O.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

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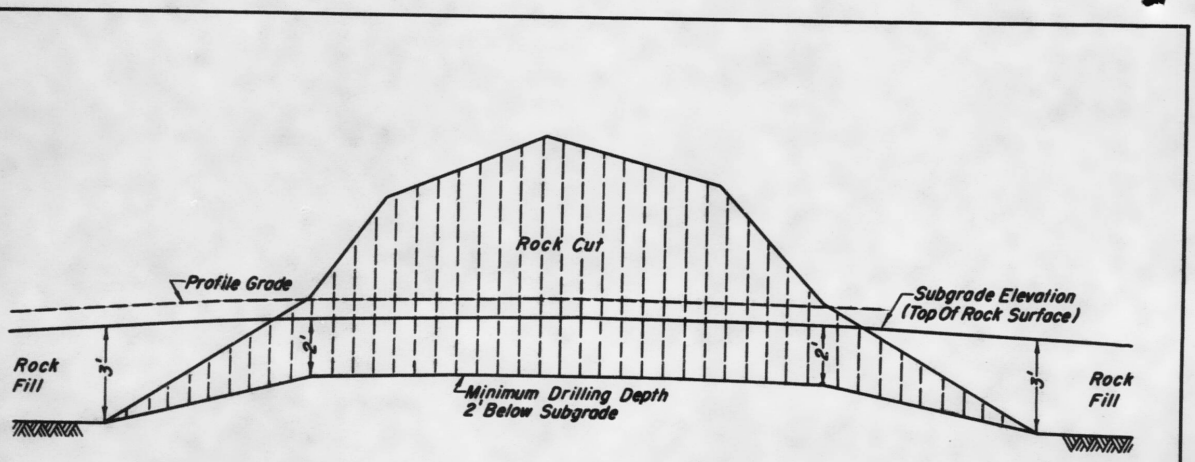

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CONSTRUCTION
STANDARD DRAWING NO. B1

DRAWN BY B.Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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pt 1

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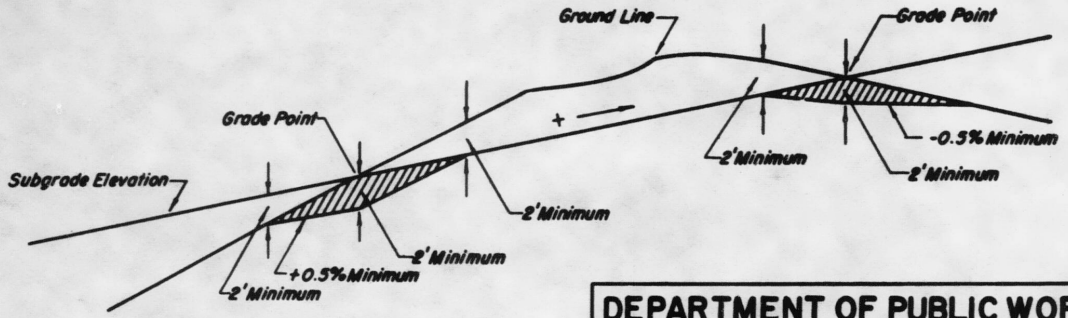

Note: The Material Shown By The Shaded Area Shall Be Removed For Full Width Of Cut & Fill Of The Section & Replaced With Approved Material In Accordance With Standard Specifications

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT & FILL
CONSTRUCTION METHOD AT GRADE POINTS
STANDARD DRAWING NO. B-2

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF:
1960

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File/dossier J60-23
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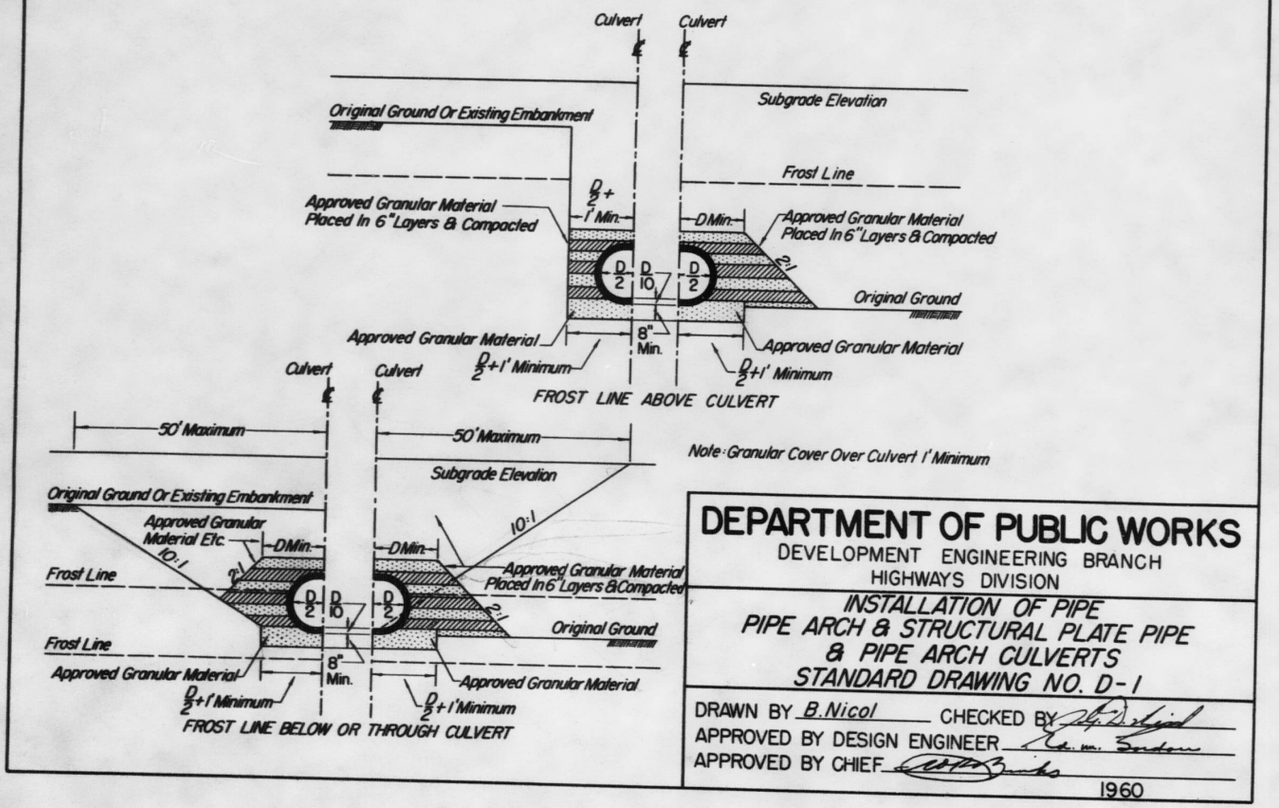

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

INSTALLATION OF PIPE PIPE ARCH & STRUCTURAL PLATE PIPE & PIPE ARCH CULVERTS STANDARD DRAWING NO. D-1

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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File/dossier J60-23
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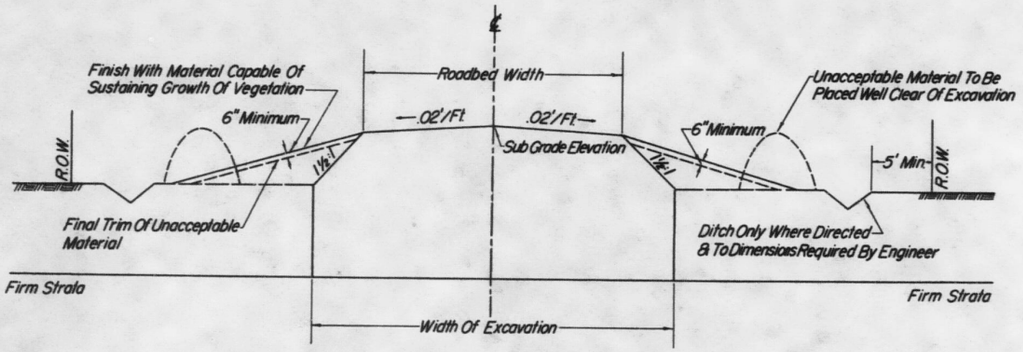

Note:
Roadbed Width Shall Be Sufficient To Receive Granular & Surface Courses In In Accordance With Standard Drawing No. A-1

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

CONSTRUCTION THROUGH SWAMP AREAS (EXCAVATION METHOD) STANDARD DRAWING NO. B3

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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File/dossier J60-23
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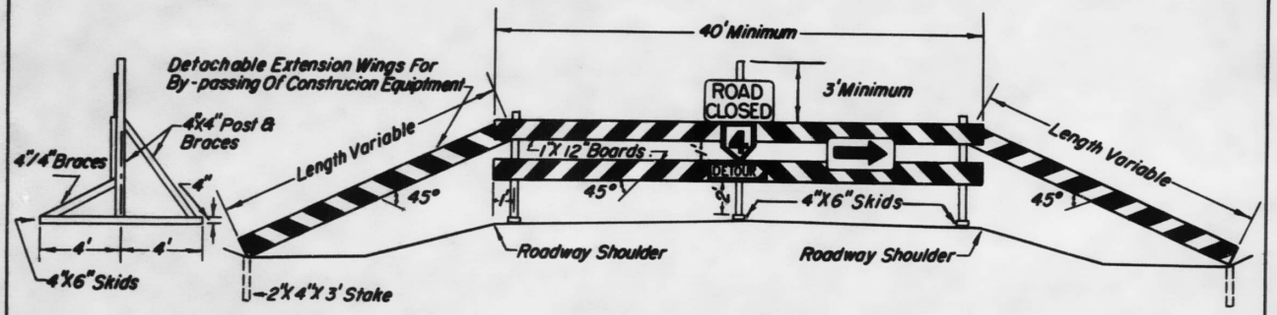

Notes:

1. The Various Types & Combinations Of Approved Signs For Barricades Required For Each Project Will Be Governed By Field Conditions & Subject To Approval By The Engineer
2. All Barricades To Be 1" X 12" Lumber Painted 8" Alternate Block & Yellow Strips
3. All Skids, Braces & Posts To Be Painted White & Nailed Together With No. 20d Nails
4. Bases To Be Weighted Where Necessary To Provide Stability

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 3

DRAWN BY B. Nicol CHECKED BY

APPROVED BY DESIGN ENGINEER

APPROVED BY CHIEF

1960

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File/dossier J60-23
pt 1

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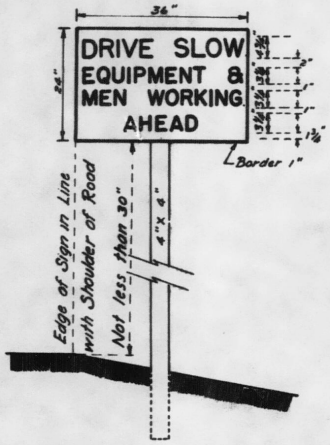



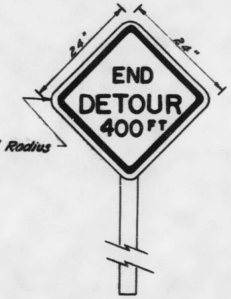

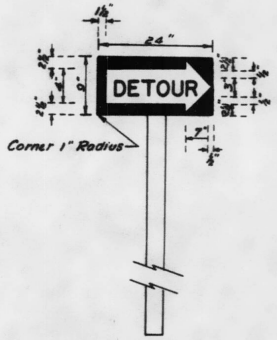

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL SIGNS

TO BE USED BY CONTRACTOR ON CONSTRUCTION

STANDARD PLAN No 6

DRAWN BY R.H. CHECKED BY

APPROVED BY

CHIEF ENGINEER 1956

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Parcs Canada

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File/dossier J60-23
pt 1

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THIS (See Note nº1) IS BEING (See Note nº2) BY

DEPARTMENT OF PUBLIC WORKS OF CANADA

AS A

NATIONAL PARKS PROJECT

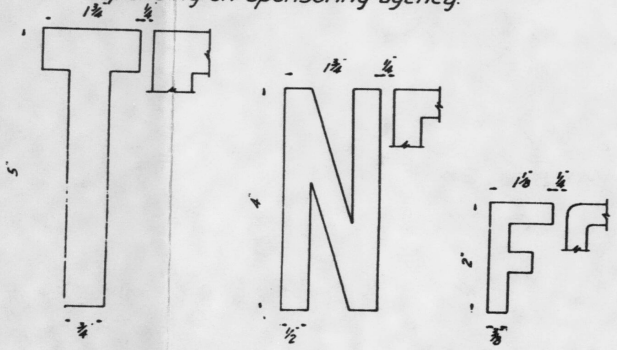
FOR

DEPT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

5'-0"

8'-0"

NOTE:
Sub-title of the above sign variable depending on sponsoring agency.



DETAIL OF LETTERS

THIS (See Note nº1) IS BEING (See Note nº2) BY

DEPARTMENT OF PUBLIC WORKS OF CANADA

AS A

TRANS CANADA HIGHWAY PROJECT

5'-0"

8'-0"

NOTES

(1) Here insert "Structure" "Highway" etc. as applicable.
(2) Here insert "Erected" "Constructed" etc as applicable.
(3) Colour to be black on white.

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

PROJECT SIGN BOARD

STANDARD PLAN NO 8

	APPROVED	DATE
DESIGN ENGINEER		
CHIEF		1957

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Parcs Canada

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File/dossier J60-23
pt 1

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Detached from
memo dated 20/9/60.

File J60-23.
Plans & Specs.

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Parcs Canada
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File/dossier J60-23
pt 1
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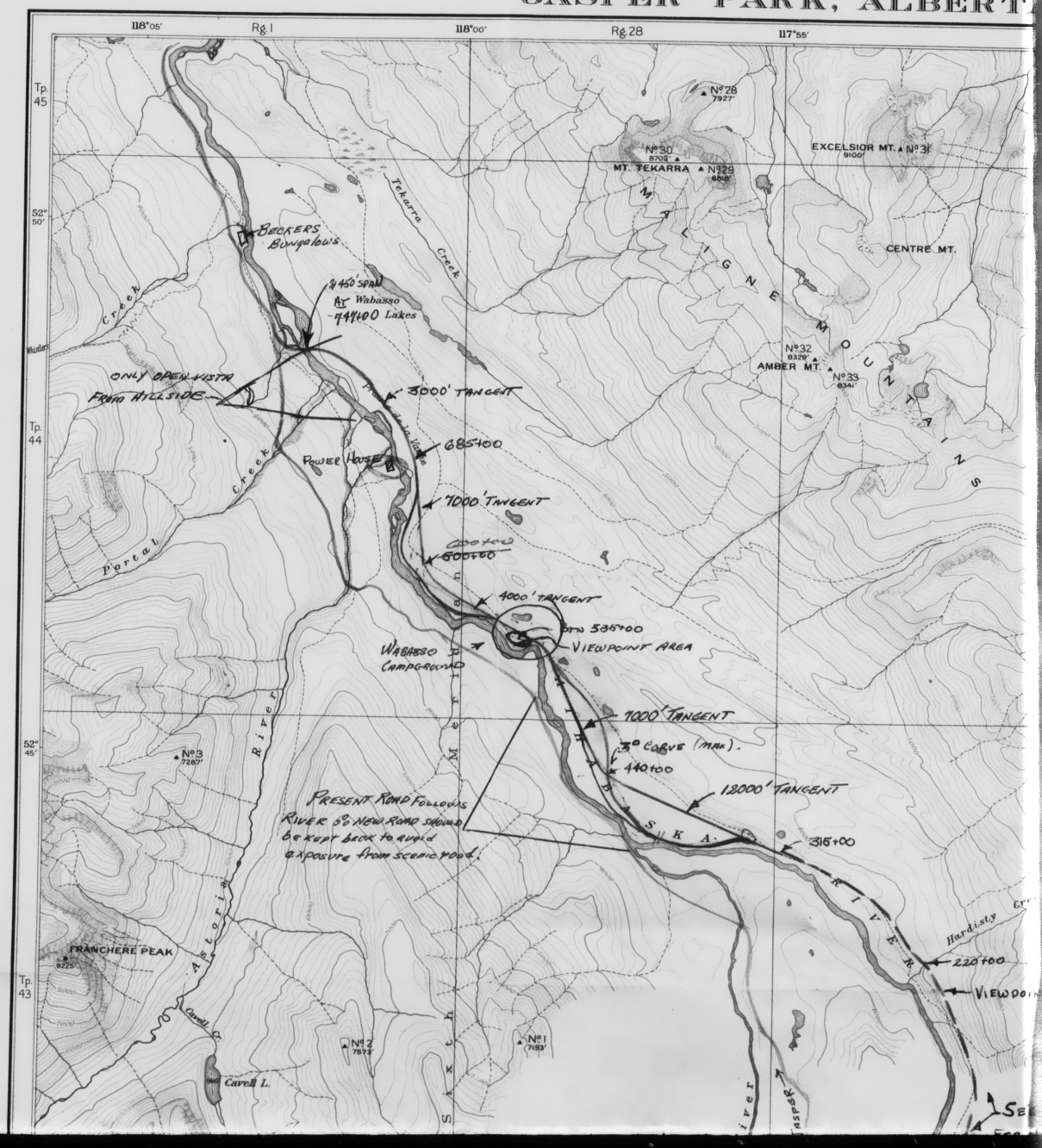
Department of the Interior Canada
HONOURABLE W. J. ROCHE, MINISTER
W. W. CORY, DEPUTY MINISTER

MAP OF THE CENTRAL PART OF JASPER PARK, ALBERT



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RG 84, A-2-a, vol. 1614
File/dossier J68-23
pt 1

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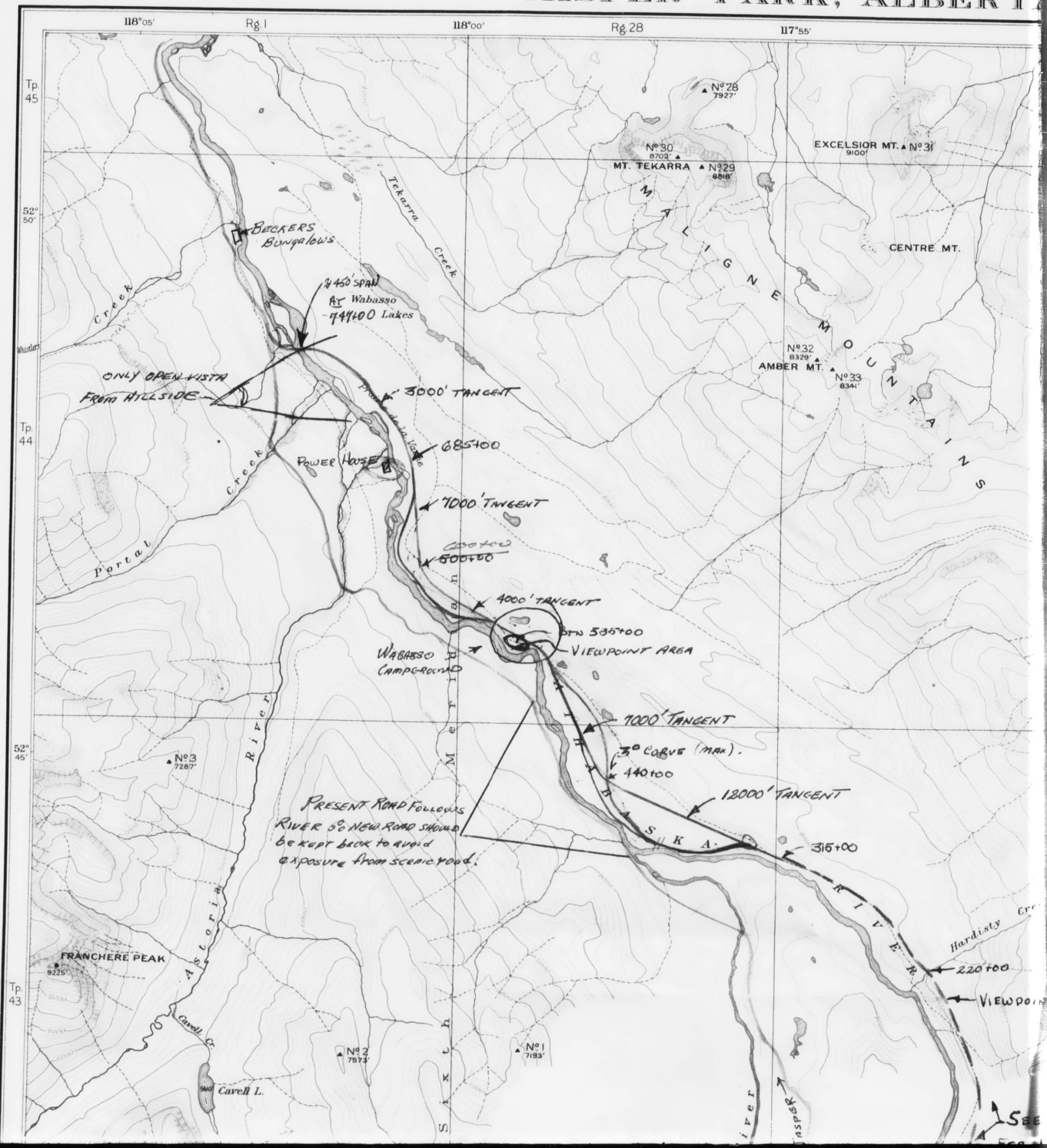
Archives nationales du Canada

Department of the Interior Canada
HONOURABLE W. J. ROCHE MINISTER
W. W. CORY, DEPUTY MINISTER

MAP OF THE CENTRAL PART OF JASPER PARK, ALBERT



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File/dossier J60-23
pt 1

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Department of the Interior Canada

HONOURABLE W. J. ROCHE, MINISTER

W. W. CORY, DEPUTY MINISTER

MAP OF THE CENTRAL PART OF JASPER PARK, ALBERTA

SHEET Nº 6 (SOUTH-EAST)

118°00′ Rg.28 117°55′ Rg.27 117°50′ 117°45′ Rg.26

Tp. 45

52° 50′

Tp. 44

52° 45′

Tp. 43

MEDI CINE LAKE

EXCELSIOR MT. ▲ Nº31 9100′

Nº30 8709′ ▲ MT. TEKARRA ▲ Nº29 8818′

Nº28 7927′

MALIGNE MOUNTAINS

CENTRE MT.

THE WATCHTOWER 9157′

Nº32 8329′ AMBER MT. ▲ Nº33 8341′

Tekarra Creek

450′ SPAN AT Wabasso 744+00 Lakes

3000′ TANGENT

685+00

Ranger House

7000′ TANGENT

600+00

4000′ TANGENT

STN 536+00

VIEWPOINT AREA

WABASSO CAMPGROUND

Shovel Pass

MT. CURATOR 8604′

ANTLER MT. 8400′

7000′ TANGENT

3° CURVE (MAX).

440+00

12000′ TANGENT

PRESENT ROAD FOLLOWS 6° NEW ROAD SHOULD BE BACK TO AVOID CUTS FROM SCENIC ROAD.

315+00

MALIGNE LAKE

ATHABASKA RIVER

Hardisty Creek

220+00

VIEWPOINT AREA.

MT. HARDISTY

Nº2 7573′ Nº1 7193′

SEE AERIAL PLAN

315+00

4000' TANGENT

STN 535+00

VIEWPOINT AREA

WABASSO CAMPGROUND

7000' TANGENT

3° CURVE (MAX).

440+00

12000' TANGENT

315+00

PRESENT ROAD FOLLOWS RIVER SO NEW ROAD SHOULD BE KEPT BACK TO AVOID EXPOSURE FROM SCENIC POINT.

MT. CURATOR 8604'

ANTLER MT. 8400'

MT. HARDISTY

Hardisty Creek

220+00

VIEWPOINT AREA.

SEE AERIAL PLAN FOR LOCATION 0+00 to 315+00

PARKING & ACCES TO HORSESHOE LAKE

ACCESS TO FALLS & BUNGALOW CAMP

ATHABASKA FALLS

WELLS BUNGALOWS 0+00

MT. KERKESLIN 9790'

FRANCHERE PEAK 9225'

No 3 7287'

No 2 7573'

No 1 7193'

Cavell L.

Cavell Gr.

Ghost Glacier

MT. EDITH CAVELL 11033'

Verdant Pass

Athabasca River

Sixteen Mile Creek

Whirlpool River

BANFF - JASPER

PRESENT BANFF-JASPER

APROXIMATE D.P.W. (SIGURDSON) LOCATION.

* APROXIMATE LOCATION EIDSVIK SUGGESTIONS.

* See comments on JGO-23 Oct 21/60.

52° 45'

52° 40'

Tp. 43

Tp. 42

118°05' Rg. 1

118°00' Rg. 28

117°55'

117°50' Rg. 27

REFERENCES

Triangulation and Camera Stations

Peaks located by triangulation

Glaciers

Talus

Railways and Stations

Roads

Trails

MAGNETIC VAR. 27°E

Scale: 1/62,500 or 1·014" - 1 mile

1 3/4 1/2 1/4 0 1 2 Miles

1 0 1 2 3 4 5 Kilometres

Contour interval 100 feet

Datum is mean sea level

INDEX TO SHEETS

1	2
3	4
5	6

DRAWN AND PRINTED AT THE SURVE

From Photographic Sur

3 OF/DE

STN 535+00
VIEWPOINT AREA
WABASSO CAMPGROUND
7000' TANGENT
3° CURVE (MAX).
440+00
12000' TANGENT
315+00
ANTLER MT. 8400'
SCENT ROAD FOLLOWS
& NEW ROAD SHOULD
back to avoid
e from scenic road.
Hardisty Creek
220+00
VIEWPOINT AREA.
MT. HARDISTY
No 2 7573'
No 1 7193'
Sixth Meridian
Whirlpool River
BANFF - JASPER
SEE AERIAL PLAN
FOR LOCATION 0+00 to 315+00
PARKING & ACCES
TO HORSESHOE LAKE
ACCESS TO FALLS
& BUNGALOW CAMP
WELLS
ATHABASKA FALLS
0+00
MT. KERKESLIN 9790'
PRESENT BANFF-JASPER
APROXIMATE D.R.W. (SIGURDSON) LOCATION.
* APROXIMATE LOCATION EIDSVIK SUGGESTIONS.
* See Comments on J60-23
Oct 21/60.
52° 45'
52° 40'
Tp. 43
Tp. 42
118°00'
Rg.28
117°55'
117°50'
Rg.27
117°45'
Rg.26

Scale: 1/63,360 or 1:014" - 1 mile
1 3/4 1/2 1/4 0 1 2 Miles
1 0 1 2 3 4 5 Kilometres
Contour interval 100 feet
Datum is mean sea level

INDEX TO SHEETS

1	2
3	4
5	6

DRAWN AND PRINTED AT THE SURVEYOR GENERAL'S OFFICE, OTTAWA, CANADA.

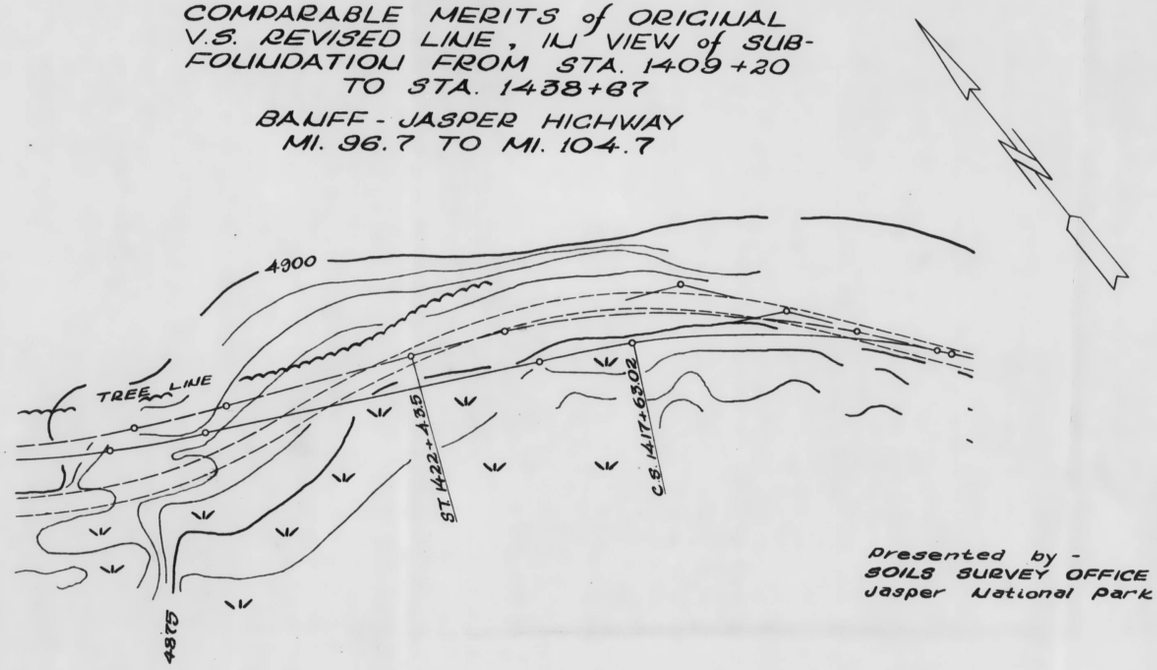
From Photographic Surveys by M.P. Bridgland, D.L.S., 1915.

PLAN & SUB - SURFACE PROFILE

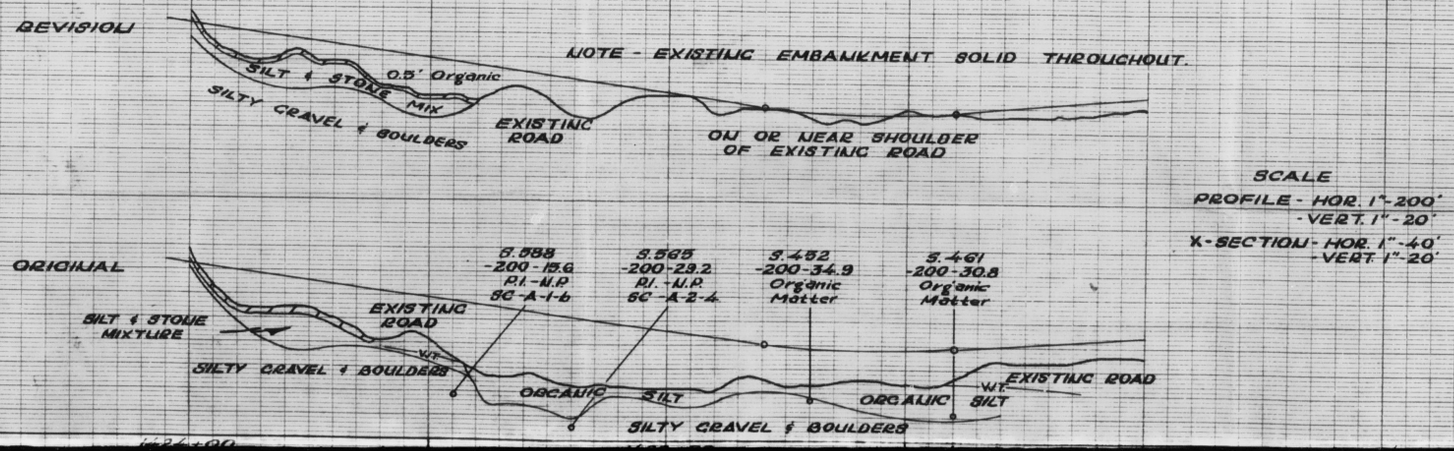
SHOWING

COMPARABLE MERITS of ORIGINAL V.S. REVISED LINE, IN VIEW of SUB-FOUNDATION FROM STA. 1409+20 TO STA. 1438+67

BANFF - JASPER HIGHWAY
MI. 96.7 TO MI. 104.7



Presented by -
SOILS SURVEY OFFICE
Jasper National Park



SCALE
PROFILE - HOR. 1"-200'
- VERT. 1"-20'
X-SECTION - HOR. 1"-40'
- VERT. 1"-20'

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Parcs Canada
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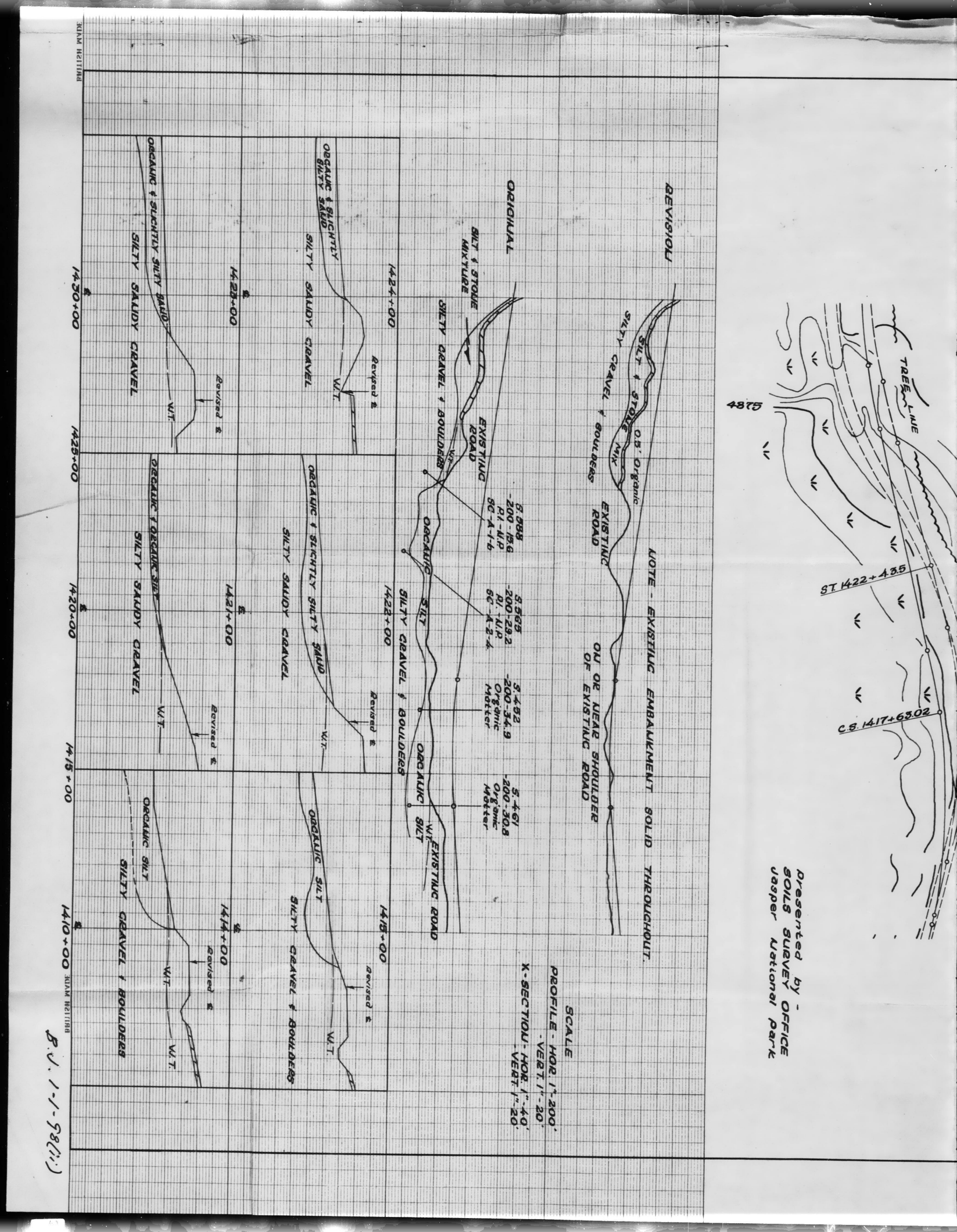

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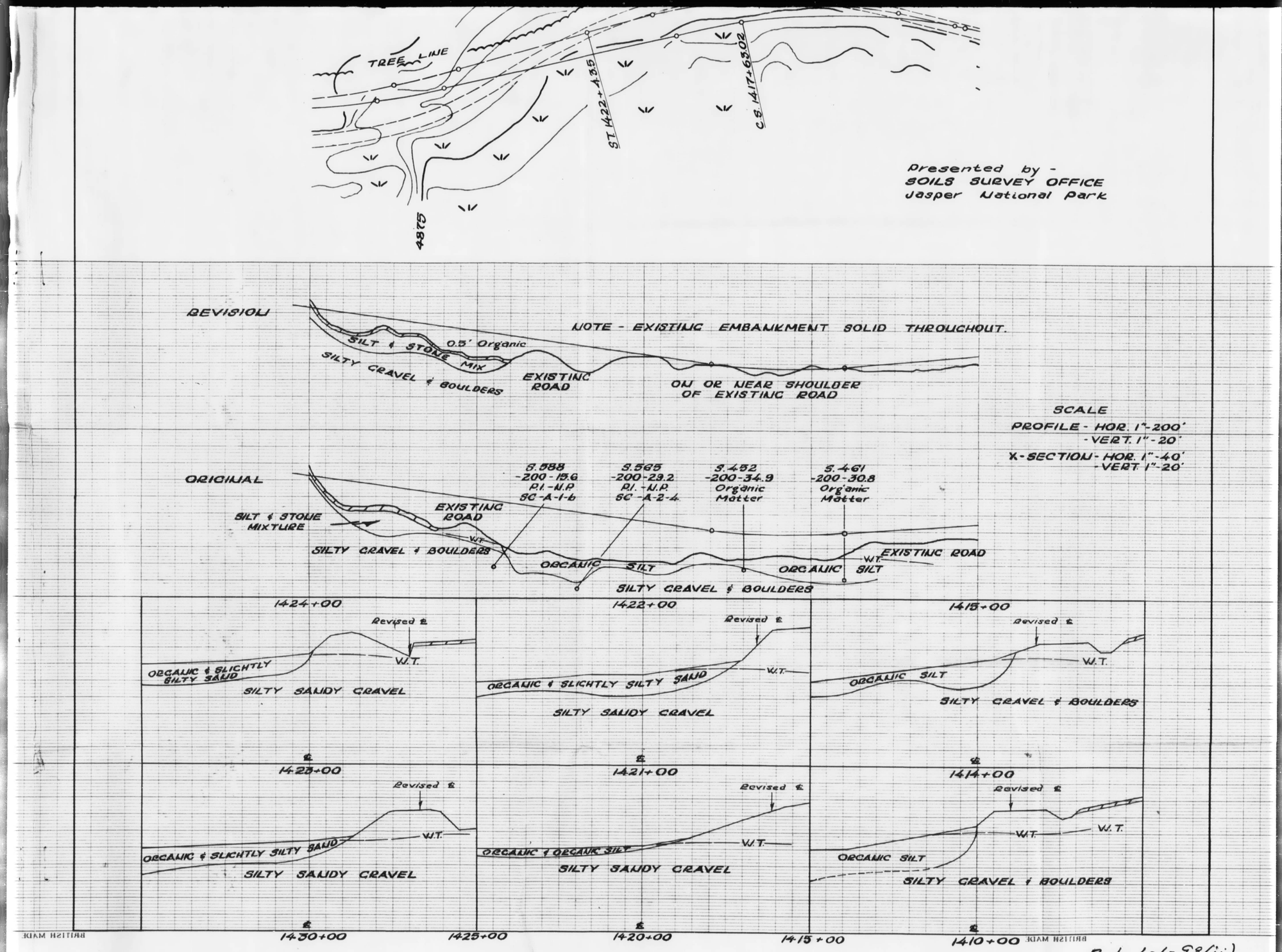

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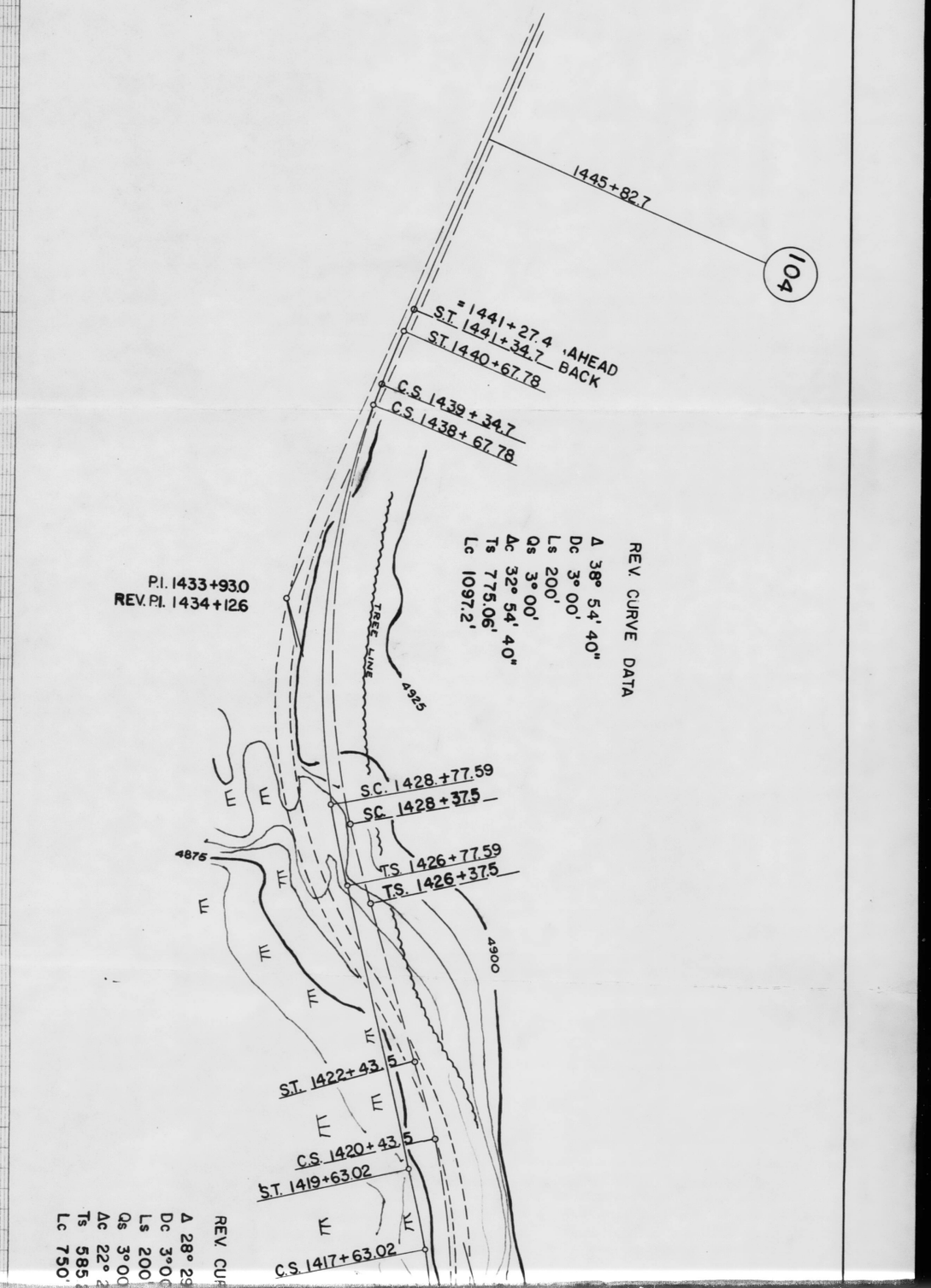

910.58

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Parcs Canada

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File/dossier J60-23
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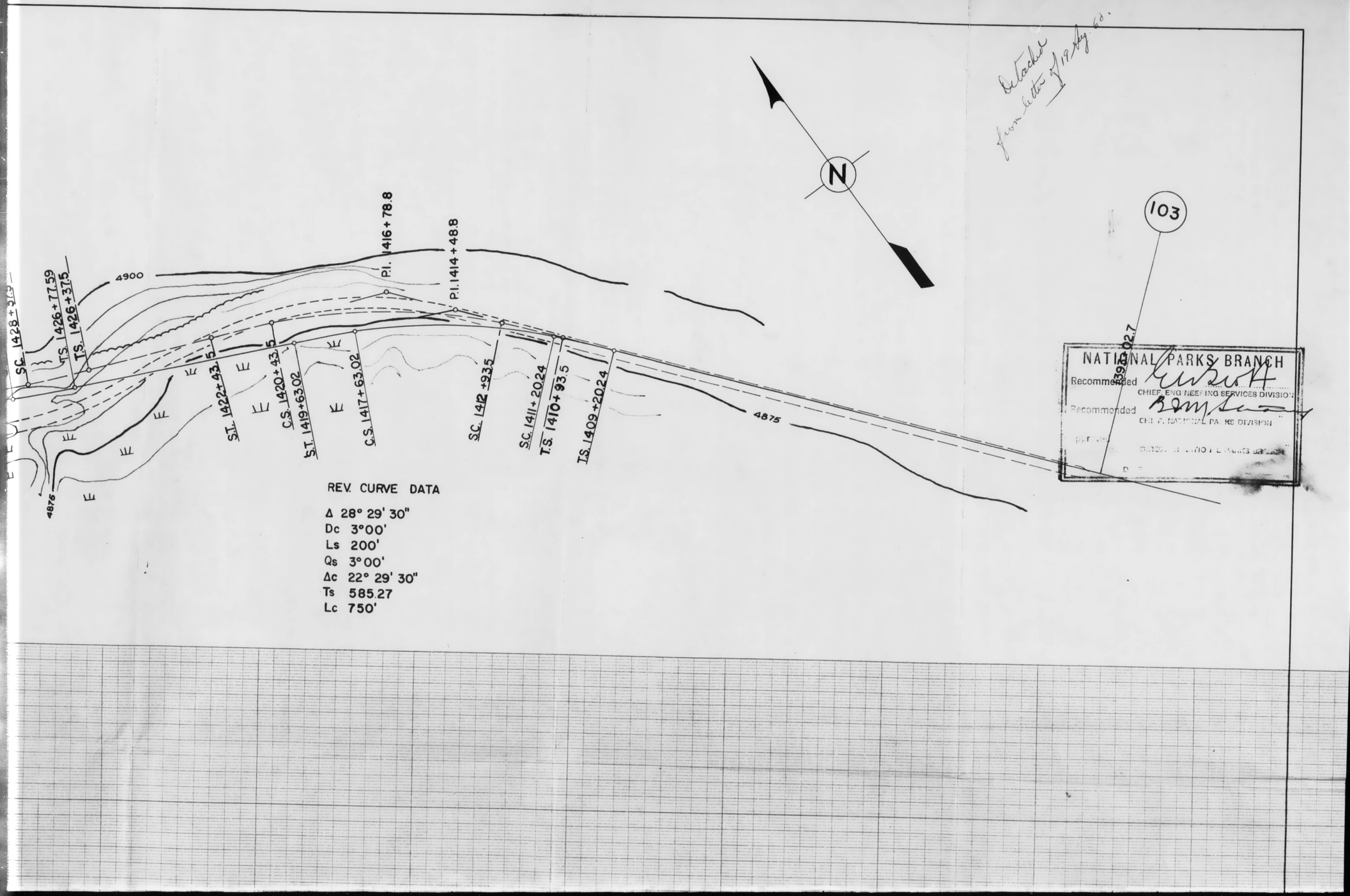
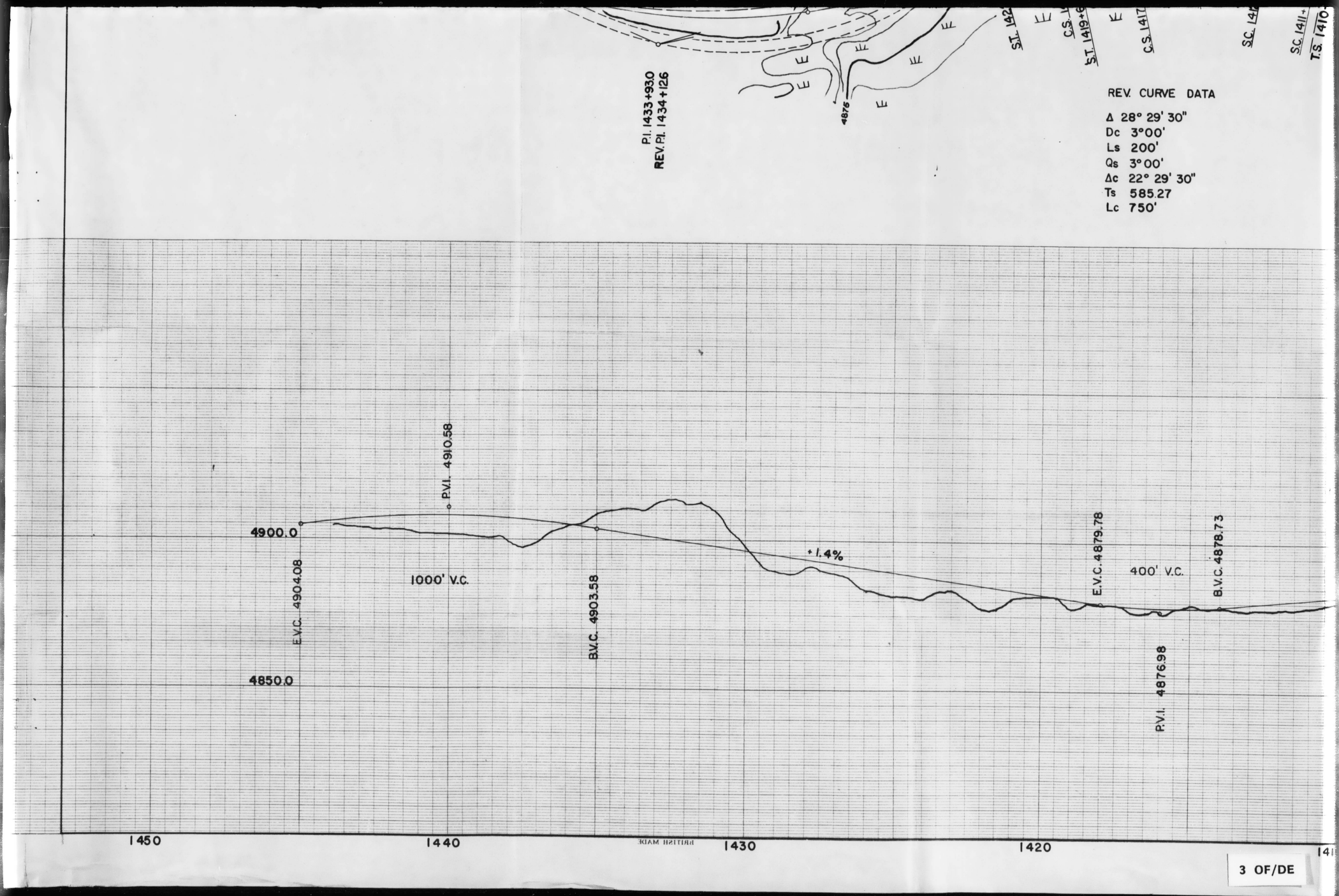
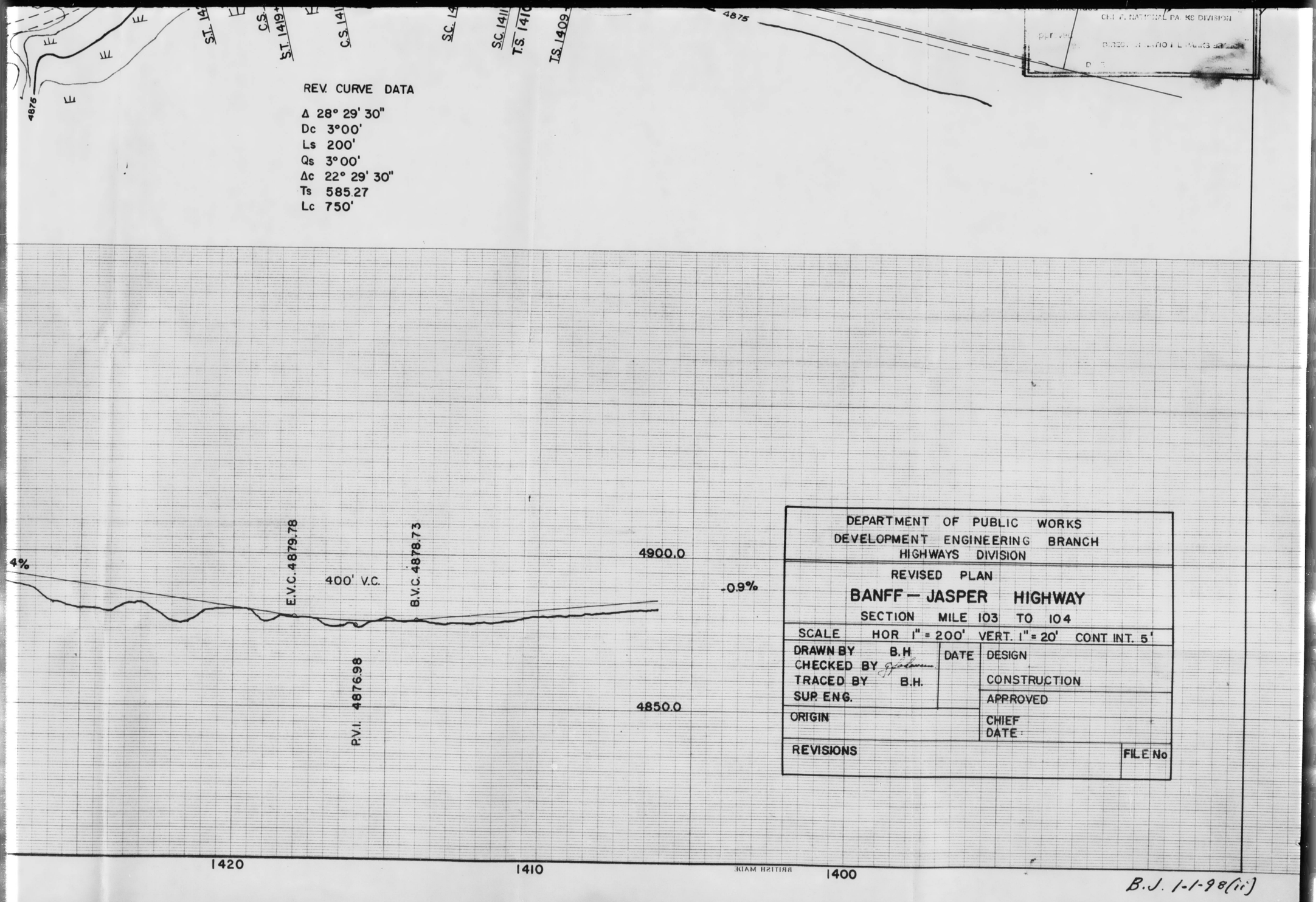


N
103
4900
4875
4875
P.I. 1416+78.8
P.I. 1414+48.8
S.C. 1428+37.5
T.S. 1426+77.59
T.S. 1426+37.5
S.T. 1422+43.5
C.S. 1420+43.5
S.T. 1419+63.02
C.S. 1417+63.02
S.C. 1412+93.5
S.C. 1411+20.24
T.S. 1410+93.5
T.S. 1409+20.24
REV. CURVE DATA
Δ 28° 29' 30"
Dc 3°00'
Ls 200'
Qs 3°00'
Δc 22° 29' 30"
Ts 585.27
Lc 750'
NATIONAL PARKS BRANCH
Recommended
CHIEF, ENGINEERING SERVICES DIVISION
Recommended
CHIEF, NATIONAL PARKS DIVISION


P.I. 1433+93.0
REV. P.I. 1434+126
S.T. 142
C.S. 1
S.T. 1419+6
C.S. 1417
S.C. 141
S.C. 1411+
T.S. 1410
REV. CURVE DATA
Δ 28° 29' 30"
Dc 3°00'
Ls 200'
Qs 3°00'
Δc 22° 29' 30"
Ts 585.27
Lc 750'
4900.0
4850.0
P.V.I. 4910.58
E.V.C. 4904.08
1000' V.C.
B.V.C. 4903.58
+1.4%
E.V.C. 4879.78
400' V.C.
B.V.C. 4878.73
P.V.I. 4876.98
1450
1440
1430
1420
BRITISH MADE
3 OF/DE



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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

REVISED PLAN

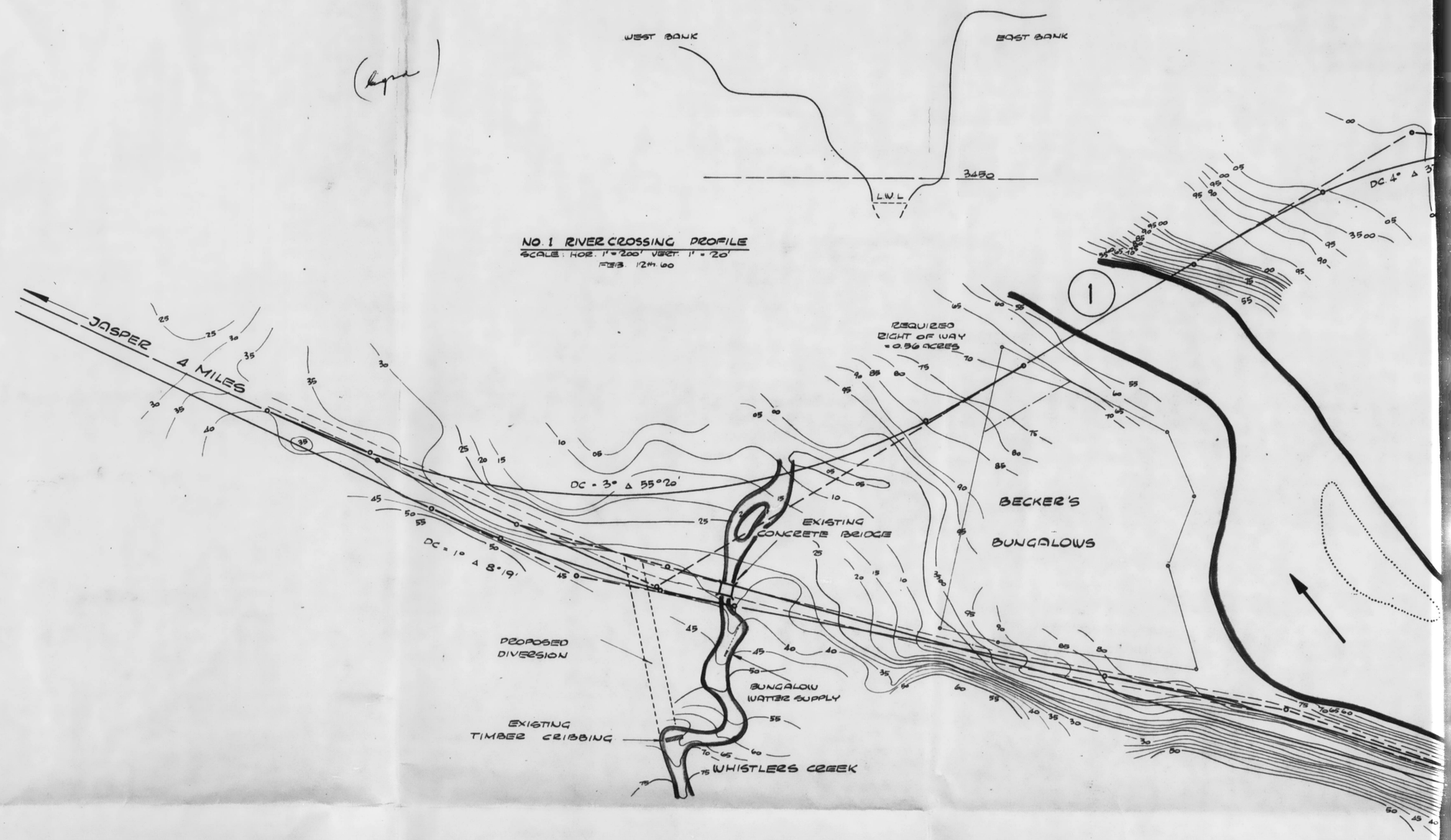
BANFF — JASPER HIGHWAY

SECTION MILE 103 TO 104

SCALE HOR 1" = 200' VERT. 1" = 20' CONT INT. 5'

DRAWN BY B.H CHECKED BY TRACED BY B.H. SUP. ENG.	DATE	DESIGN CONSTRUCTION APPROVED CHIEF DATE:
ORIGIN		
REVISIONS		FILE No

B.J. 1-1-98(ii)



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Archives nationales du Canada
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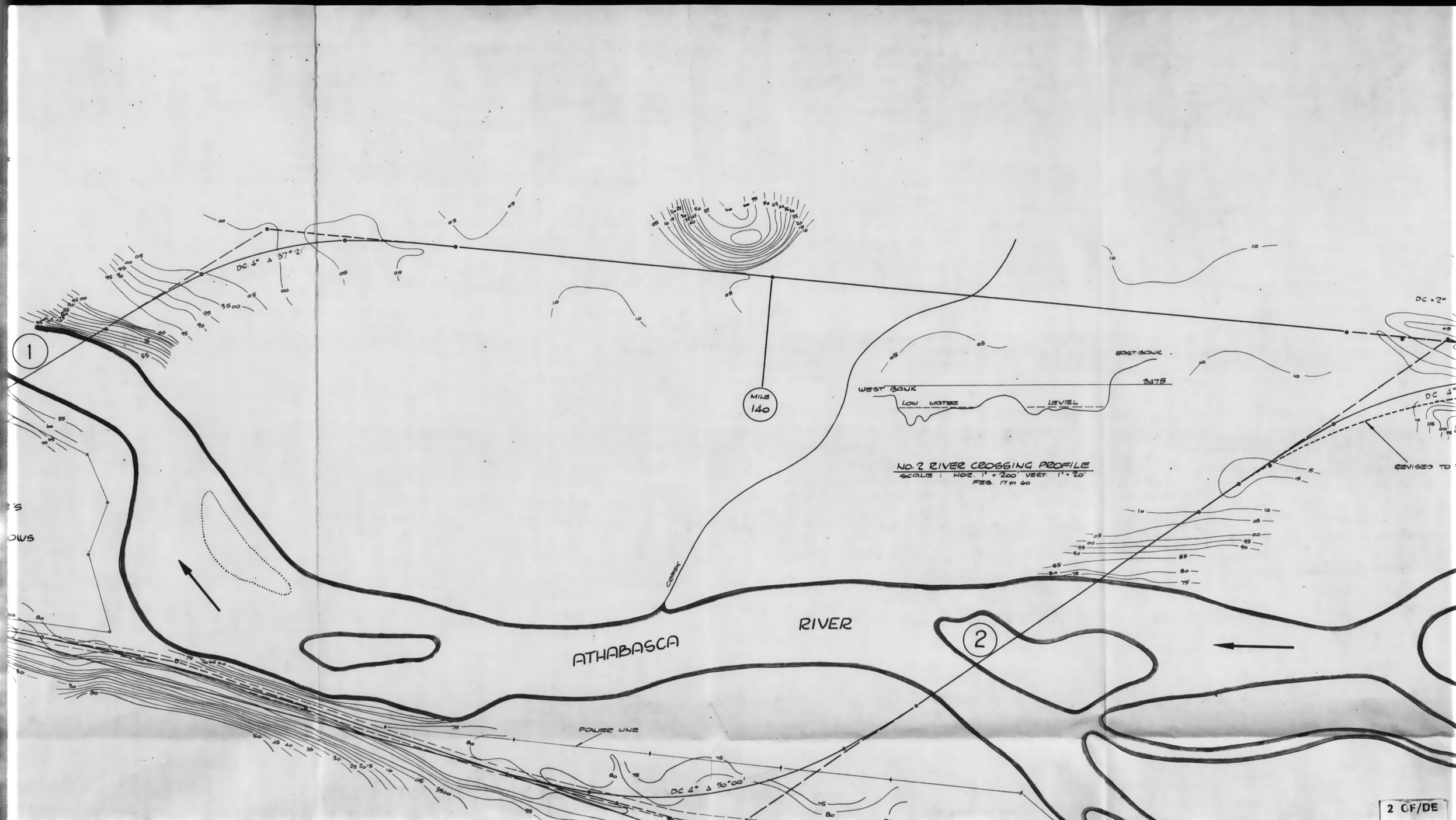
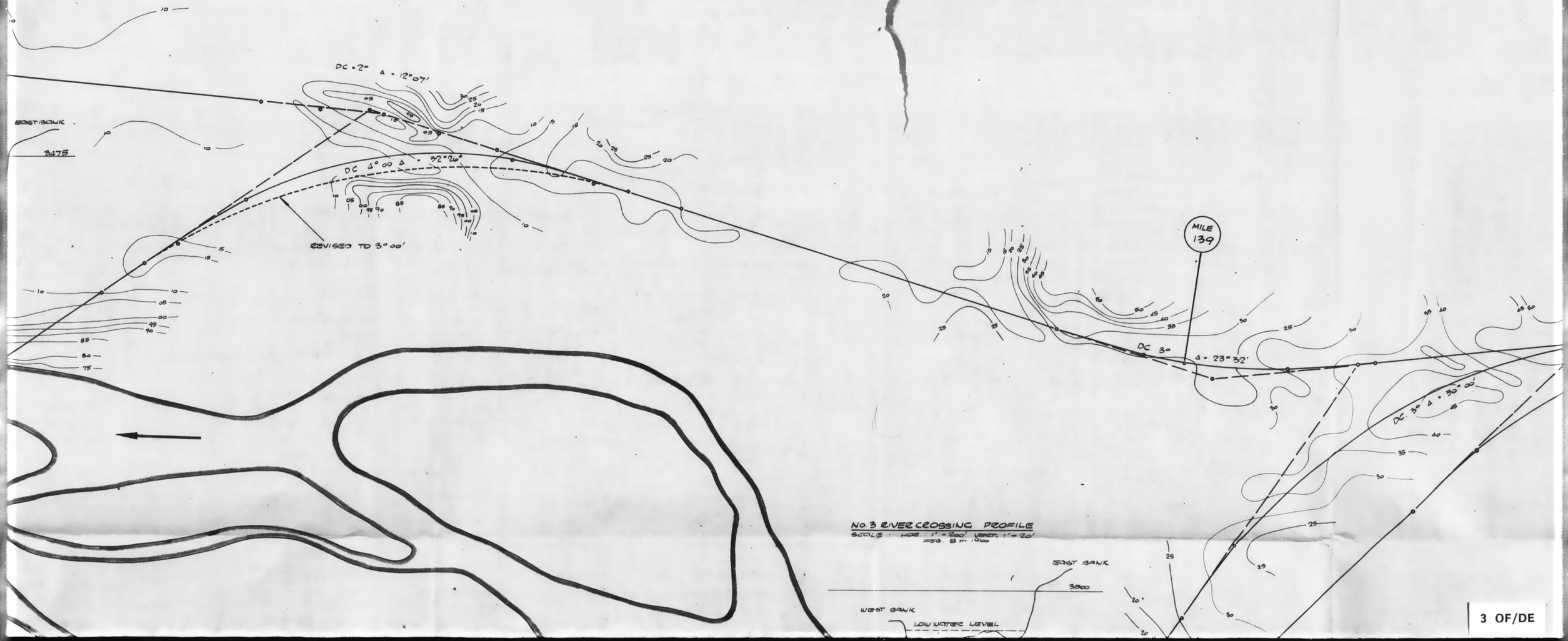
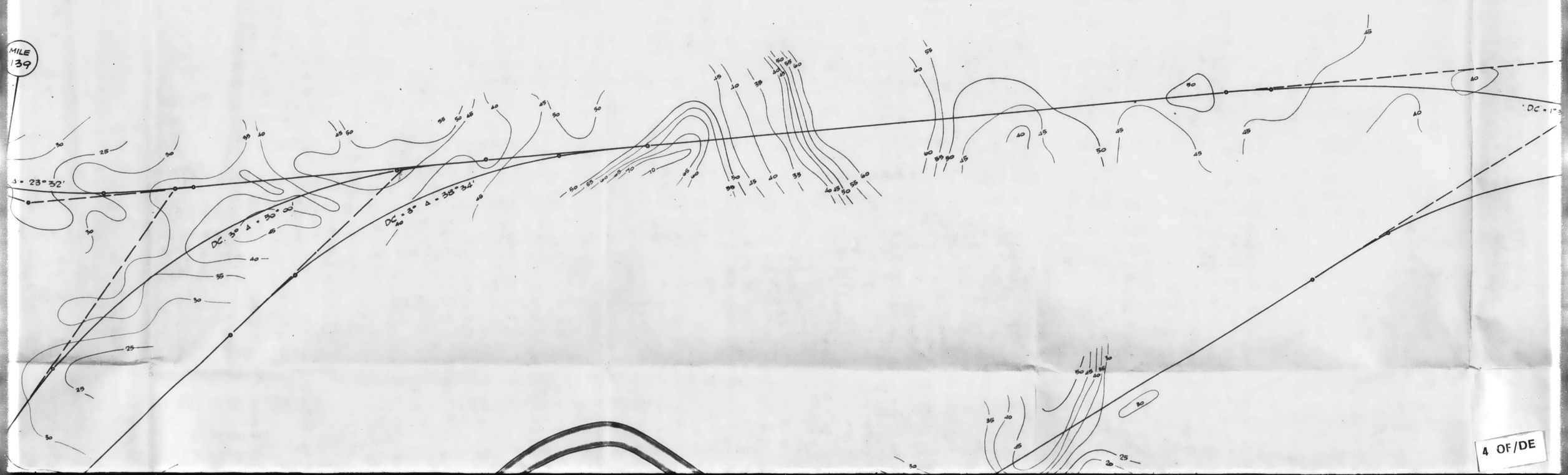


1
2
DC 4° Δ 37°21'
DC 4° Δ 50°00'
DC = 2°
MILE 140
EAST BANK
WEST BANK
3475
LOW WATER LEVEL
NO. 2 RIVER CROSSING PROFILE
SCALE : HOR. 1" = 200' VERT. 1" = 20'
FEB. 17th 60
REVISED TO 3
CREEK
ATHABASCA RIVER
POWER LINE
2 CF/DE

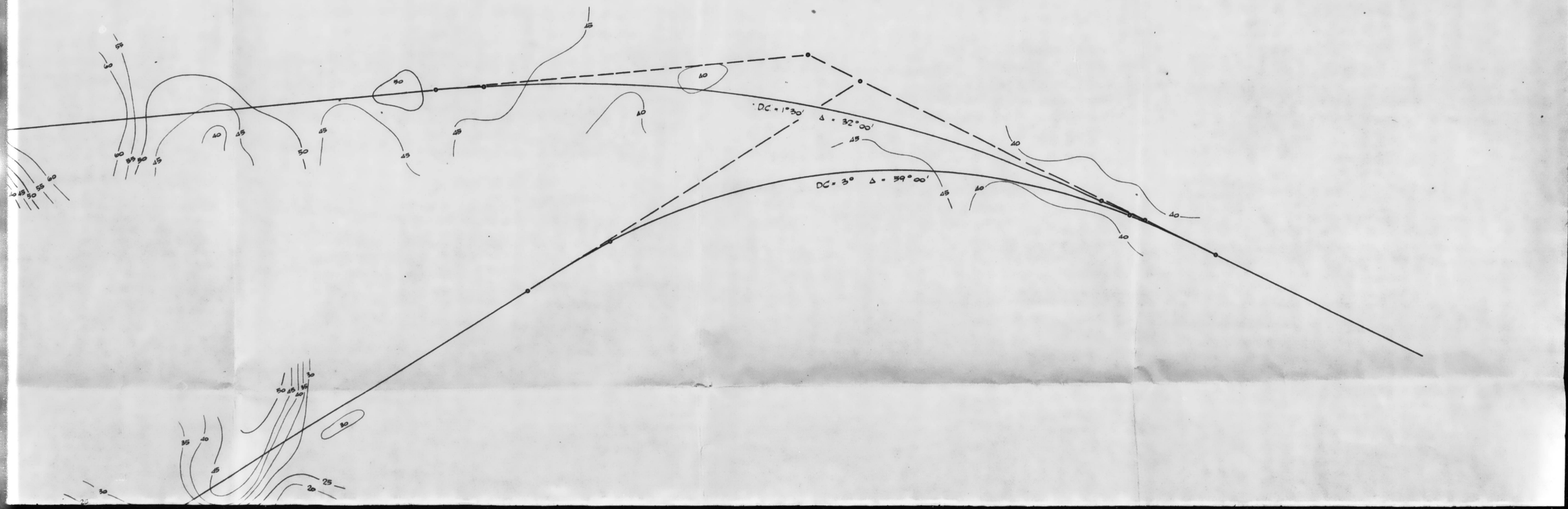


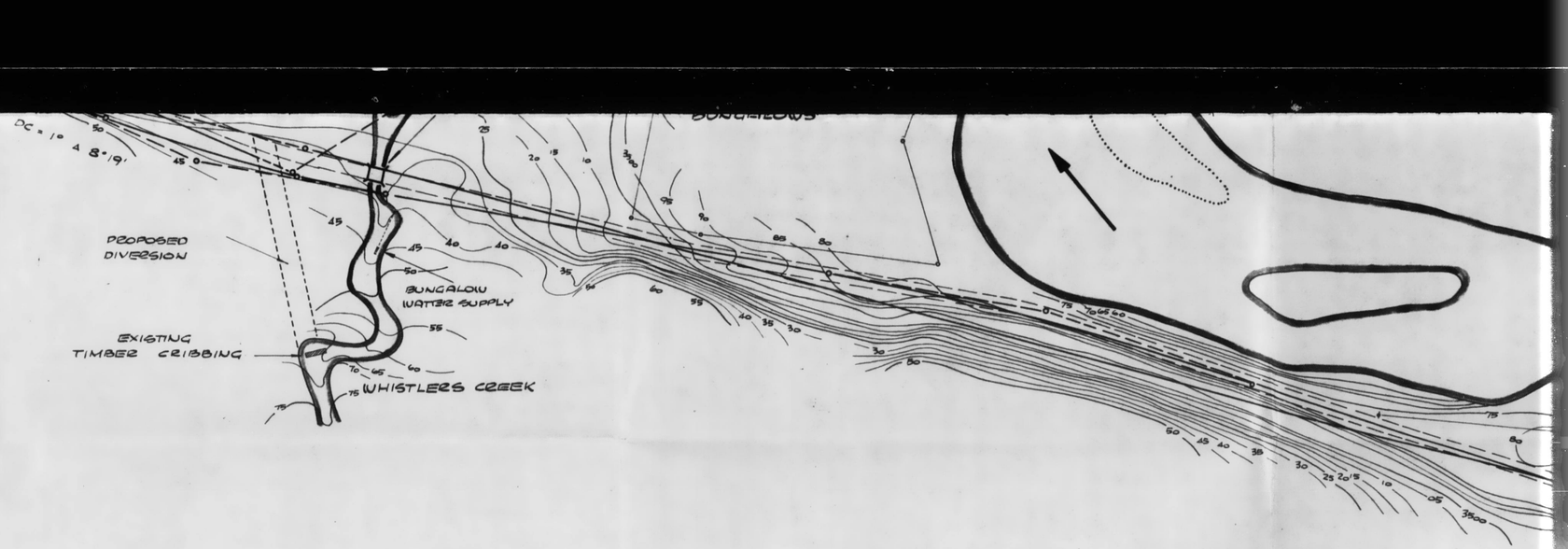
DC = 2° Δ = 12°07'
EAST BANK
3475
DC 4° 00 Δ = 32°26'
REVISED TO 3° 00'
MILE 139
DC. 3° Δ = 23°32'
DC. 3° Δ = 50° 00'
NO. 3 RIVER CROSSING PROFILE
SCALE: HOR. 1" = 200' VERT. 1" = 20'
FEB. 8th 1960
EAST BANK
3500
WEST BANK
LOW WATER LEVEL

3 OF/DE



4 OF/DE


DC = 1°30' Δ = 32°00'
DC = 3° Δ = 39°00'



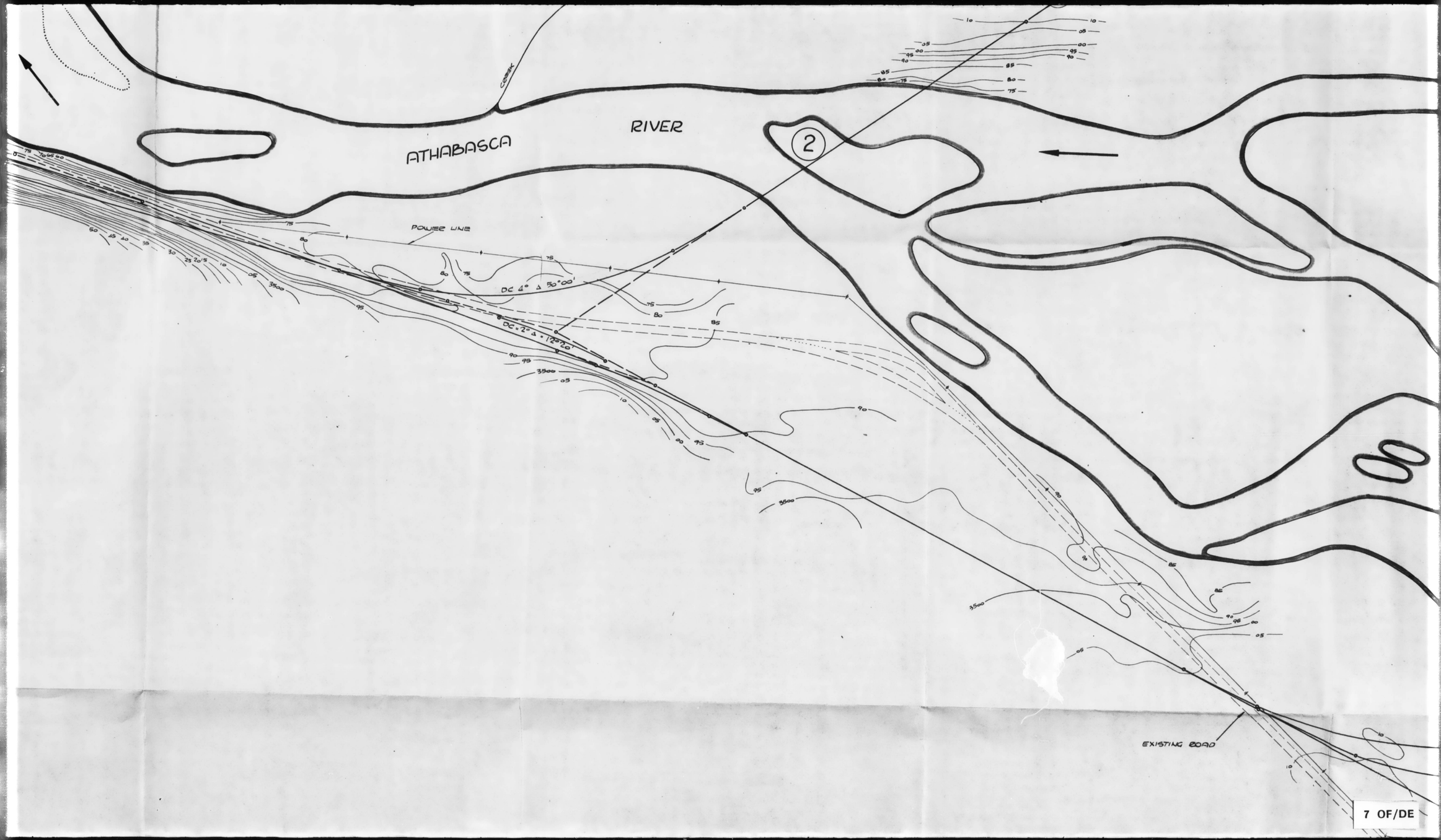
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

POSSIBLE RIVER CROSSINGS
ATHABASCA RIVER, MI. 138-141 B.J.HWY.
JASPER NATIONAL PARK

SCALE: HOR 1" = 200' CONT. INT. = 5'

DRAWN BY ... BK. P.S. | DATE | DESIGN

6 OF/DE


ATHABASCA
RIVER
2
POWER LINE
DC 4° Δ 50°00'
DC 2° Δ 12°20'
EXISTING ROAD

DC. 3°

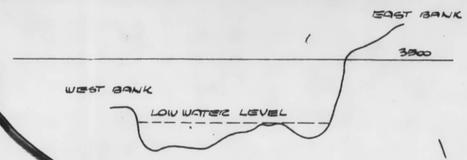
Δ = 23° 32'

DC. 3° Δ = 30° 00'

DC. 3° Δ = 38° 34'

NO. 3 RIVER CROSSING PROFILE

SCALE : HOR. 1" = 200' VERT. 1" = 20'
FEB. 8 TH. 1960



NOTE:

MAJORITY OF SMALL ISLANDS ARE SUBMERGED DURING HIGH WATER.

GRAVEL

GRAVEL

GRAVEL BAR

3

(1)

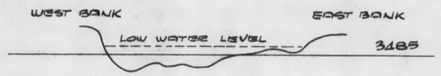
4

(2)

EXISTING ROAD

DC = 3° Δ = 72° 00'

DC = 4° Δ 83° 27'



NO. 4 RIVER CROSSING PROFILE

SCALE : HOR. 1" = 200' VERT. 1" = 20'
FEBR. 17 TH. 1960

8 OF/DE

DC. 3° Δ = 50° 20'

DC. 3° Δ = 38° 34'

DC. 3° Δ = 50°

NOTE:
MAJORITY OF SMALL ISLANDS ARE SUBMERGED DURING HIGH WATER.

GRAVEL

GRAVEL BAR

GRAVEL

GRAVEL BAR

GRAVEL BAR

NORTH

5

RIVER

CREEK

NOTE:
THIS CHANNEL OPEN DURING EXTREMELY HIGH WATER ONLY.

WEST BANK

ISLAND

EAST BANK

3,300.0

LOW WATER LEVEL

NO. 5 RIVER CROSSING PROFILE

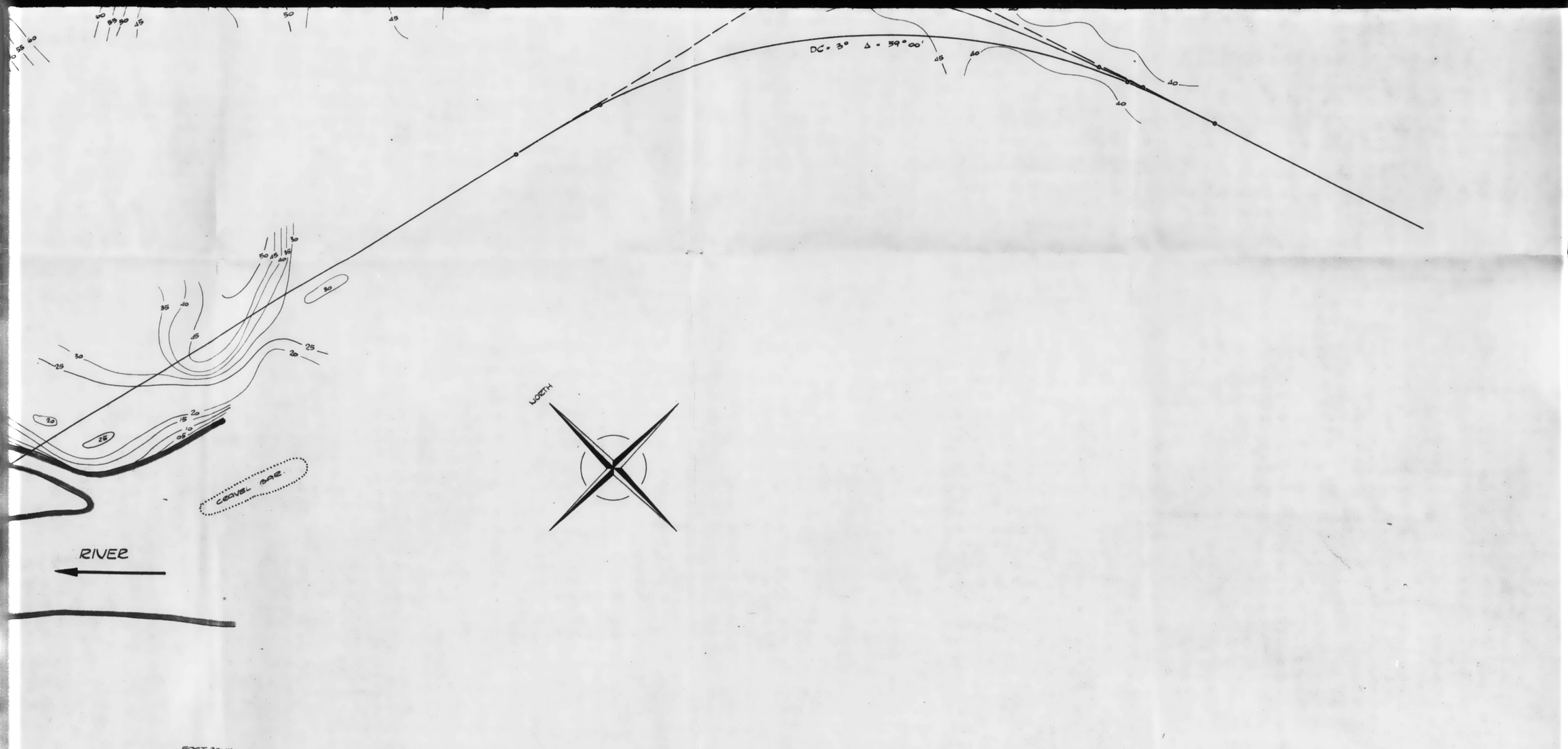
SCALE: HOR.: 1" = 200' VERT.: 1" = 20'
MARCH 18th. 1960

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

POSSIBLE RIVER CROSSINGS
ATHABASCA RIVER, MI. 138 - 141 B.J. HWY.
JASPER NATIONAL PARK

9 OF/DE

SCALE: HOR. 1" = 200' CONT. INT. = 5'



DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

POSSIBLE RIVER CROSSINGS
ATHABASCA RIVER, MI. 138 - 141 B.J. HWY.
JASPER NATIONAL PARK

SCALE: HOR 1" = 200' CONT. INT. = 5'

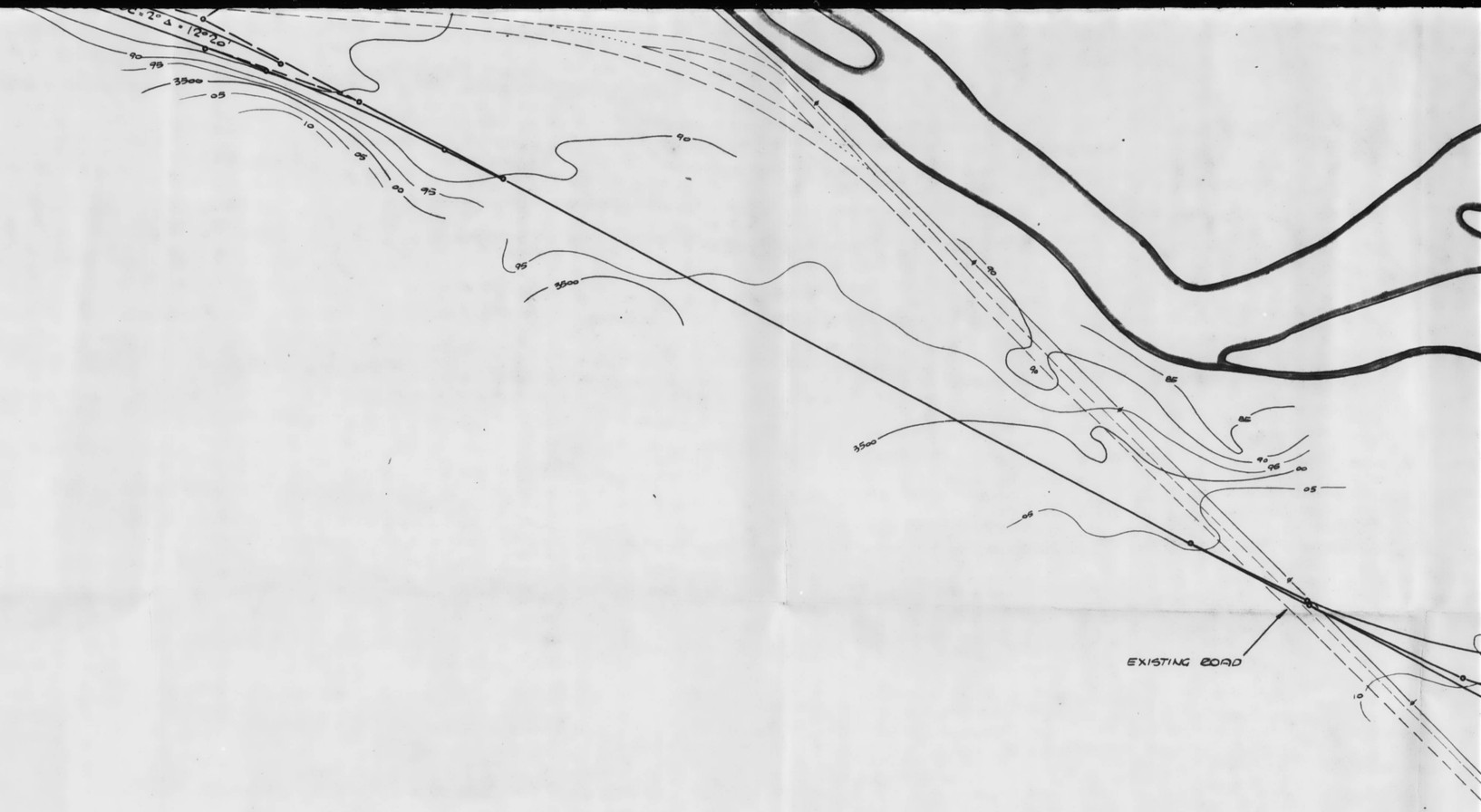
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

POSSIBLE RIVER CROSSINGS
ATHABASCA RIVER, MI. 138-141 B.J.HWY.
JASPER NATIONAL PARK

SCALE: HOR. 1" = 200' CONT. INT. = 5'

DRAWN BY RK. R.S. CHECKED BY M.Z. TRACED BY P.F. SUP. ENG.	DATE FEB. 26 1960	DESIGN CONSTRUCTION
ORIGIN		APPROVED CHIEF DATE:
REVISIONS		FILE NO.

11 OF/DE



12 OF/DE

NOTE:
MAJORITY OF SMALL ISLANDS ARE SUBMERGED DURING HIGH WATER.

GRAVEL

GRAVEL

GRAVEL BAR

WEST BANK — EAST BANK

LOW WATER LEVEL — 3185

No. 4 RIVER CROSSING PROFILE
SCALE : HOR.: 1" = 200' VERT.: 1" = 20'
FEBR. 17th, 1960

EXISTING ROAD

DC = 3° Δ = 72°00'

DC = 4° Δ 83°27'

POWER LINE

DC = 3°00' = 60°28'

NOTE:
POWER LINE FOLLOWS ROAD WHEN NOT SHOWN.

13 OF/DE

NOTE:

MAJORITY OF SMALL ISLANDS ARE SUBMERGED DURING HIGH WATER.

GRAVEL

GRAVEL BAR

GRAVEL

GRAVEL BAR

GRAVEL BAR

5

RIVER

NOTE:

THIS CHANNEL OPEN DURING EXTREMELY HIGH WATER ONLY.

CREEK

BANK

3185

WEST BANK

ISLAND

3,300.0

LOW WATER LEVEL

EAST BANK

NO 5 RIVER CROSSING PROFILE

SCALE: HOR.: 1" = 200' VERT.: 1" = 20'

MARCH 8th, 1960

NOTE

FOR FIELD USE ONLY.

NO 1 = '02'
NO 2 = '03'
NO 3 = 'NK1'
NO 4 = 'NK3'
NO 5 = 'NK2'

LINE FOLLOWS ROAD NOT SHOWN.

NORTH

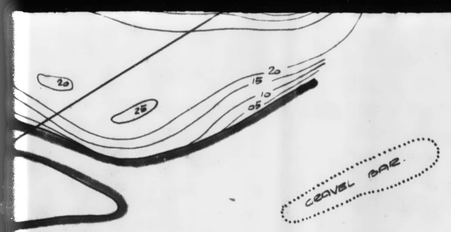
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

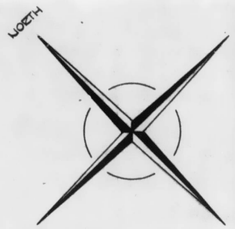
POSSIBLE RIVER CROSSINGS
ATHABASCA RIVER, MI. 138-141 B.J. HW
JASPER NATIONAL PARK

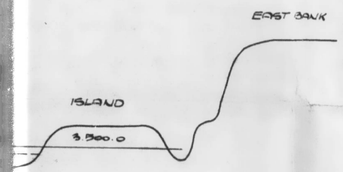
SCALE: HOR. 1" = 200' CONT. INT

DRAWN BY RK. R.S.	DATE FEB. 26 1960	DESIGN	
CHECKED BY M.Z.		CONSTRUCTION	
TRACED BY P.F.		APPROVED	
SUP. ENG.		CHIEF	
ORIGIN		DATE:	
REVISIONS		FILE	

14 OF/DE

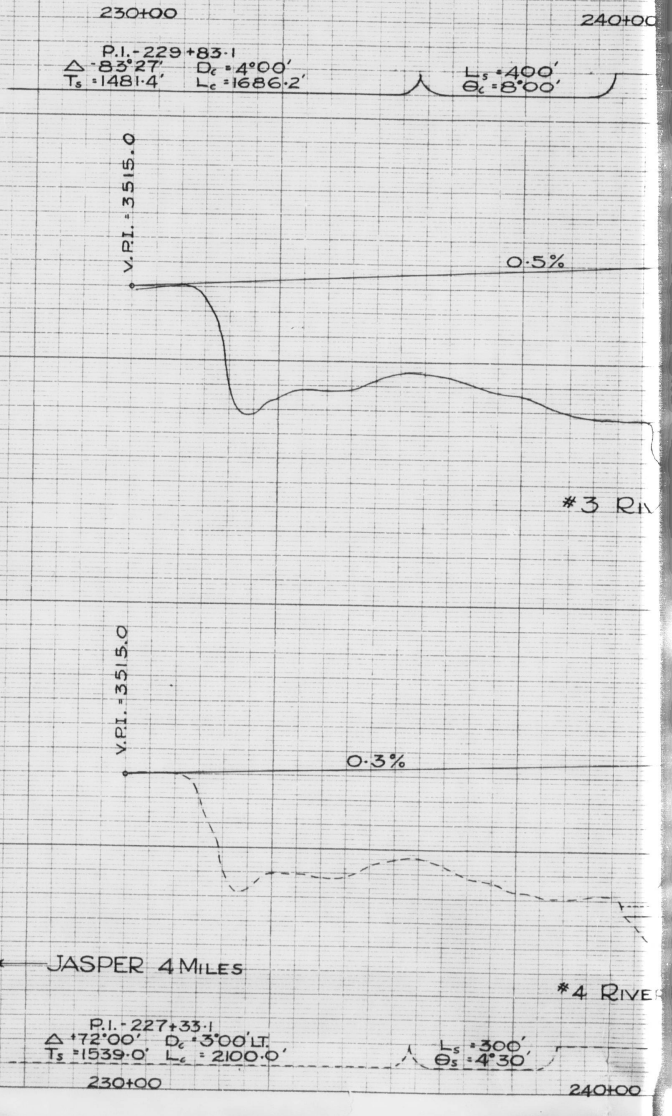






DEPARTMENT OF PUBLIC WORKS DEVELOPMENT ENGINEERING BRANCH HIGHWAYS DIVISION		
POSSIBLE RIVER CROSSINGS **ATHABASCA RIVER, MI. 138 - 141 B.J. HWY.** JASPER NATIONAL PARK		
SCALE: HOR. 1" = 200'		CONT. INT. = 5'
DRAWN BY RK. R.S. CHECKED BY M.Z. TRACED BY P.F. SUP. ENG.	DATE FEB. 26 1960	DESIGN CONSTRUCTION
ORIGIN		APPROVED CHIEF DATE:
REVISIONS		FILE NO:

NOTE:
FOR FIELD USE ONLY.
NO 1 = '02'
NO 2 = '03'
NO 3 = 'NK1'
NO 4 = 'NK3'
NO 5 = 'NK2'



PROFILE

RIVER CROSSINGS
MILE 4 B-J HIGHWAY
SCALE: HOR. 1"=200'
VERT. 1"=20'

NOTE: TO BE READ IN
CONJUNCTION WITH
POSSIBLE RIVER CROSSINGS
ATHABASCA RIVER MI. 138-141 B-J HWY.
JASPER NATIONAL PARK

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pt 1
Parks Canada
Parcs Canada
National Archives of Canada
Archives nationales du Canada

230+00

240+00

740+00

P.I. - 229+83.1
Δ = 83°27' D_c = 4°00'
T_s = 1481.4' L_c = 1686.2'

L_s = 400'
θ_s = 8°00'

NK 1' 244+91.2

"O" - 748+43.1

LVC = 200'
V.P.I. 3523.75

CHAINAGE EQUATION
244+91.2
748+43.1

NK "O"

3550

V.P.I. = 3515.0

0.5%

1.3%

3500

ATHABASCA RIVER

MAXIMUM HIGH WATER

WATER LINE FEB. 8, 1960

MILE 139

#3 RIVER CROSSING

V.P.I. - 3520.2
L.V.C = 200

3550

V.P.I. = 3515.0

0.3%

1.3%

3500

ATHABASCA RIVER

MAXIMUM HIGH WATER

WATER LINE FEB. 17, 1960

JASPER 4 MILES

#4 RIVER CROSSING

P.I. - 227+33.1
Δ = 72°00' D_c = 3°00' LT.
T_s = 1539.0' L_c = 2100.0'

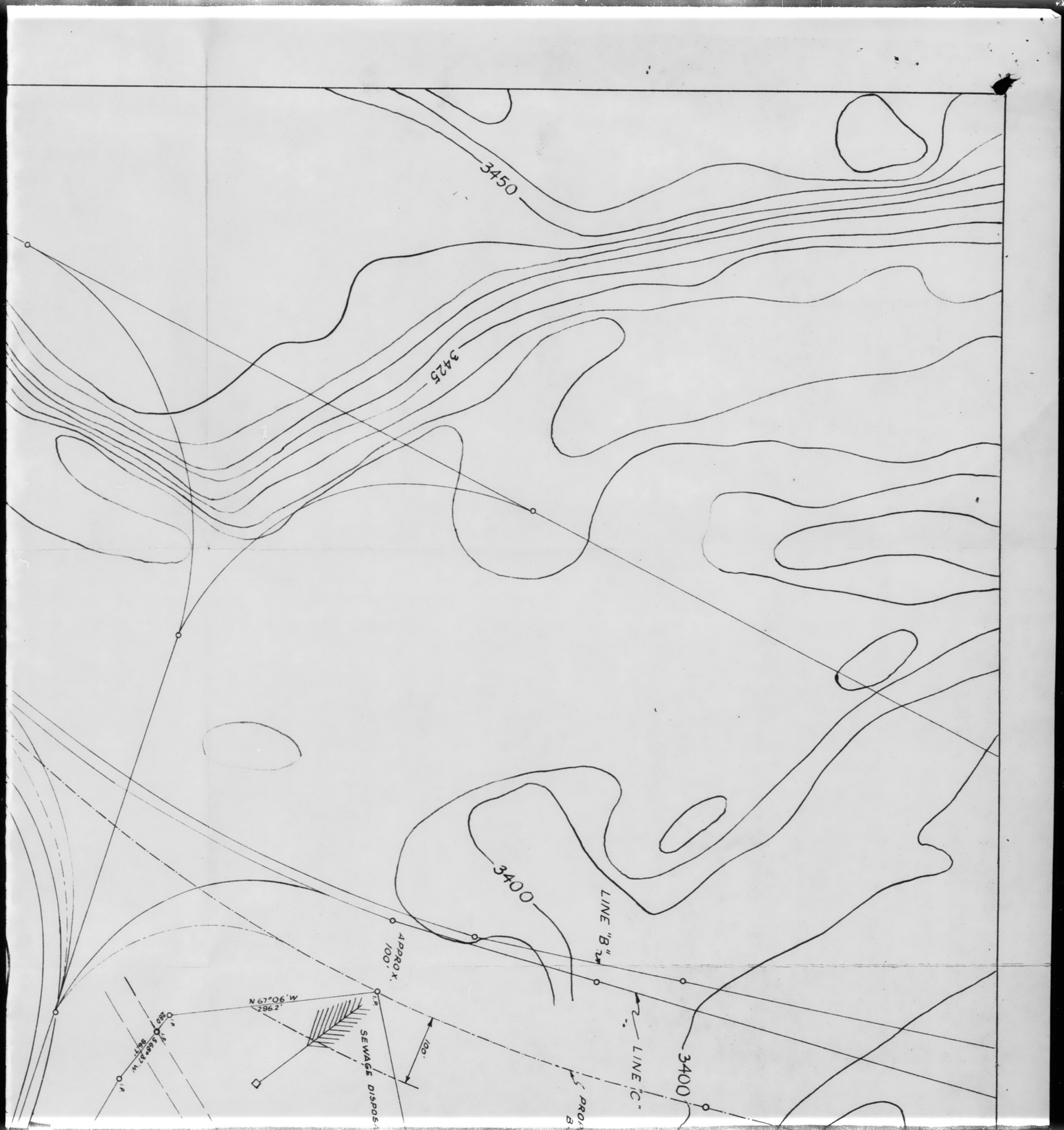
L_s = 300'
θ_s = 4°30'

230+00

240+00

250+00

BRITISH WYDE



Parks Canada
Parcs Canada

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pt 1

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Archives nationales du Canada

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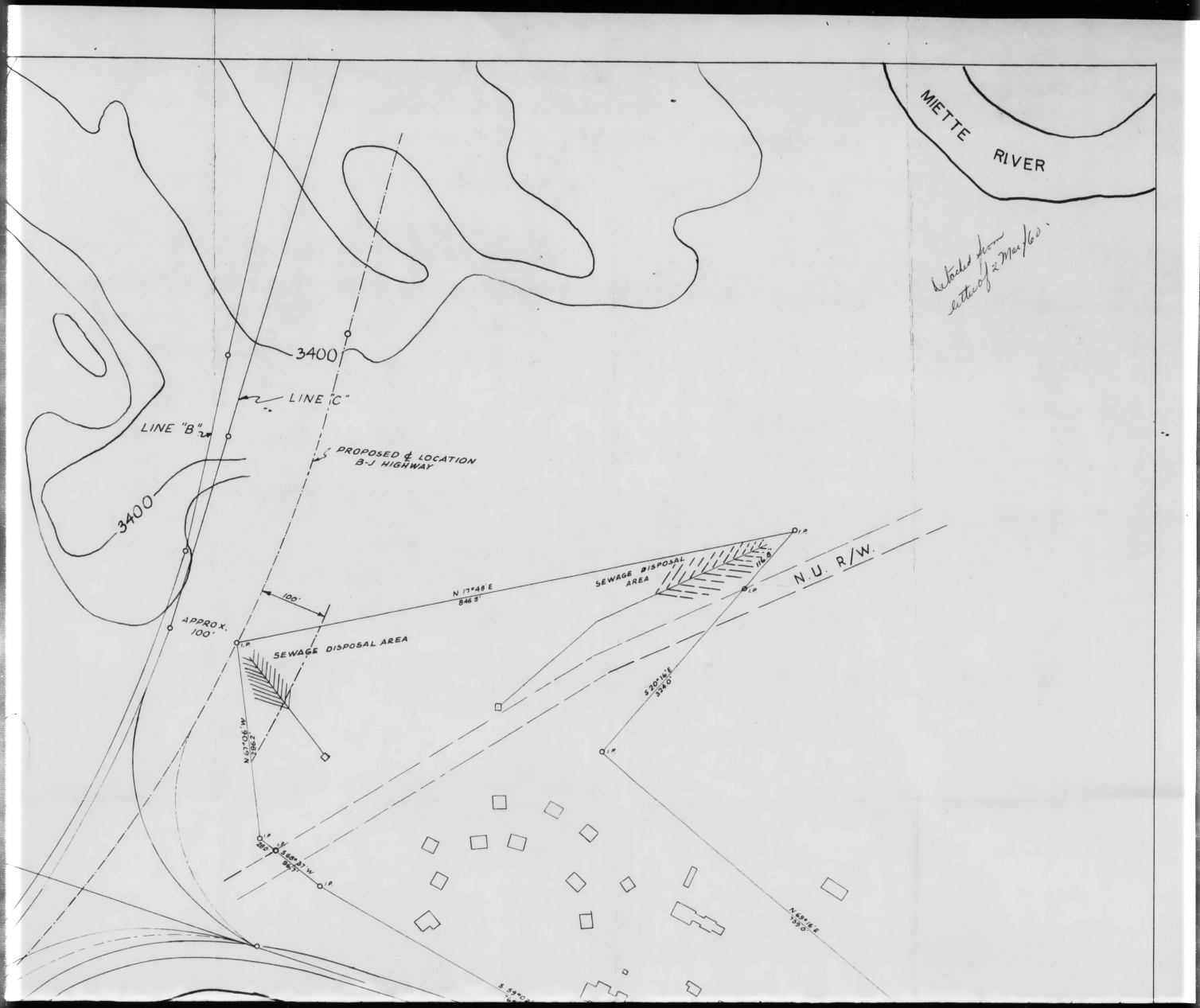
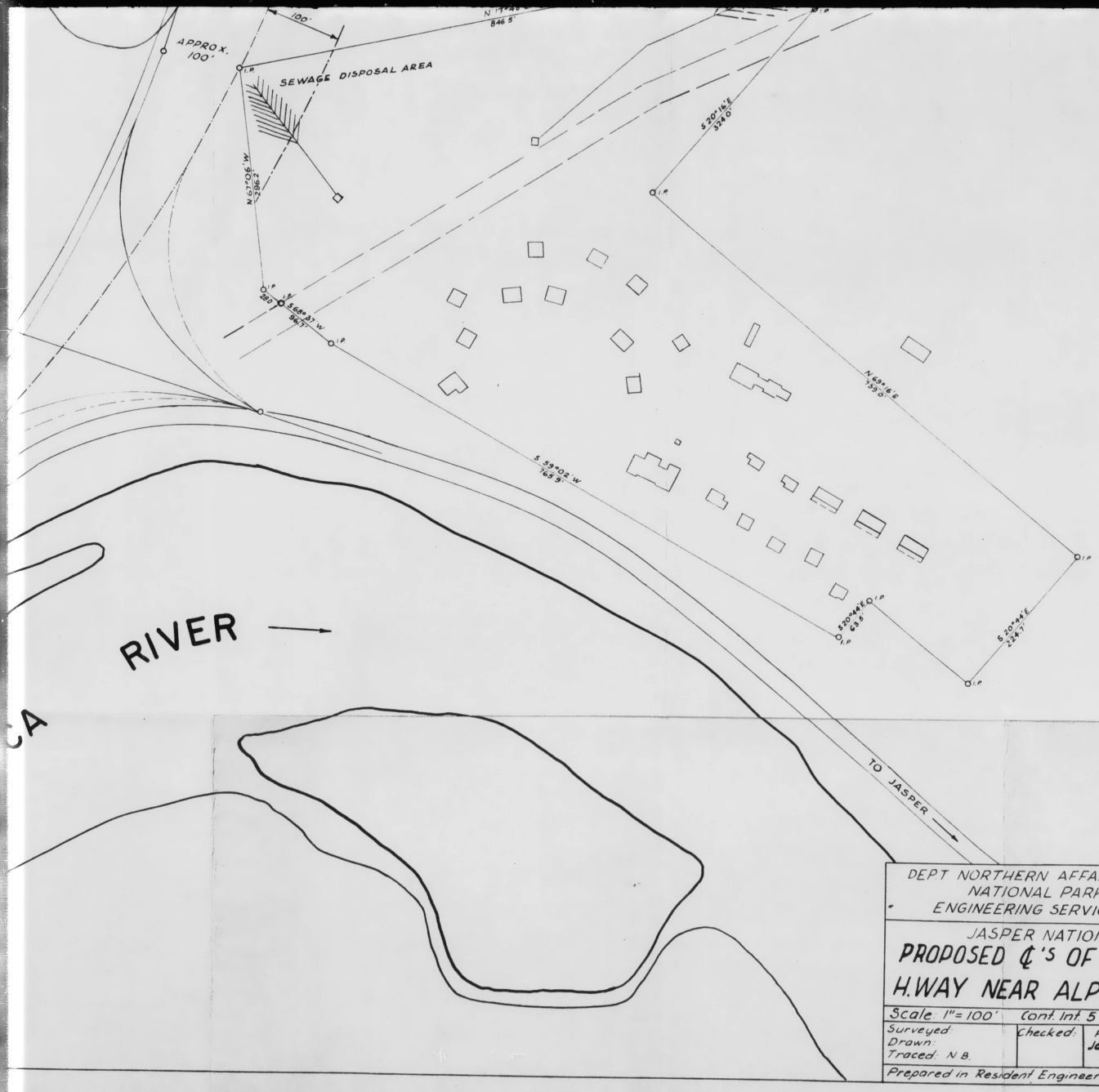


Detached from letter of 2 Mar/60.


3425
APPROX. 100'
100'
N 17°48' E
846.8'
I.P.
SEWAGE DISPOSAL AREA
N 43°06' W
396.2'
I.P.
282'
I.P.
S 68°37' W
96.7'
I.P.
S 59°02' W
743.9'
ATHABASCA RIVER
BANFF - JASPER HWAY

3 OF/DE



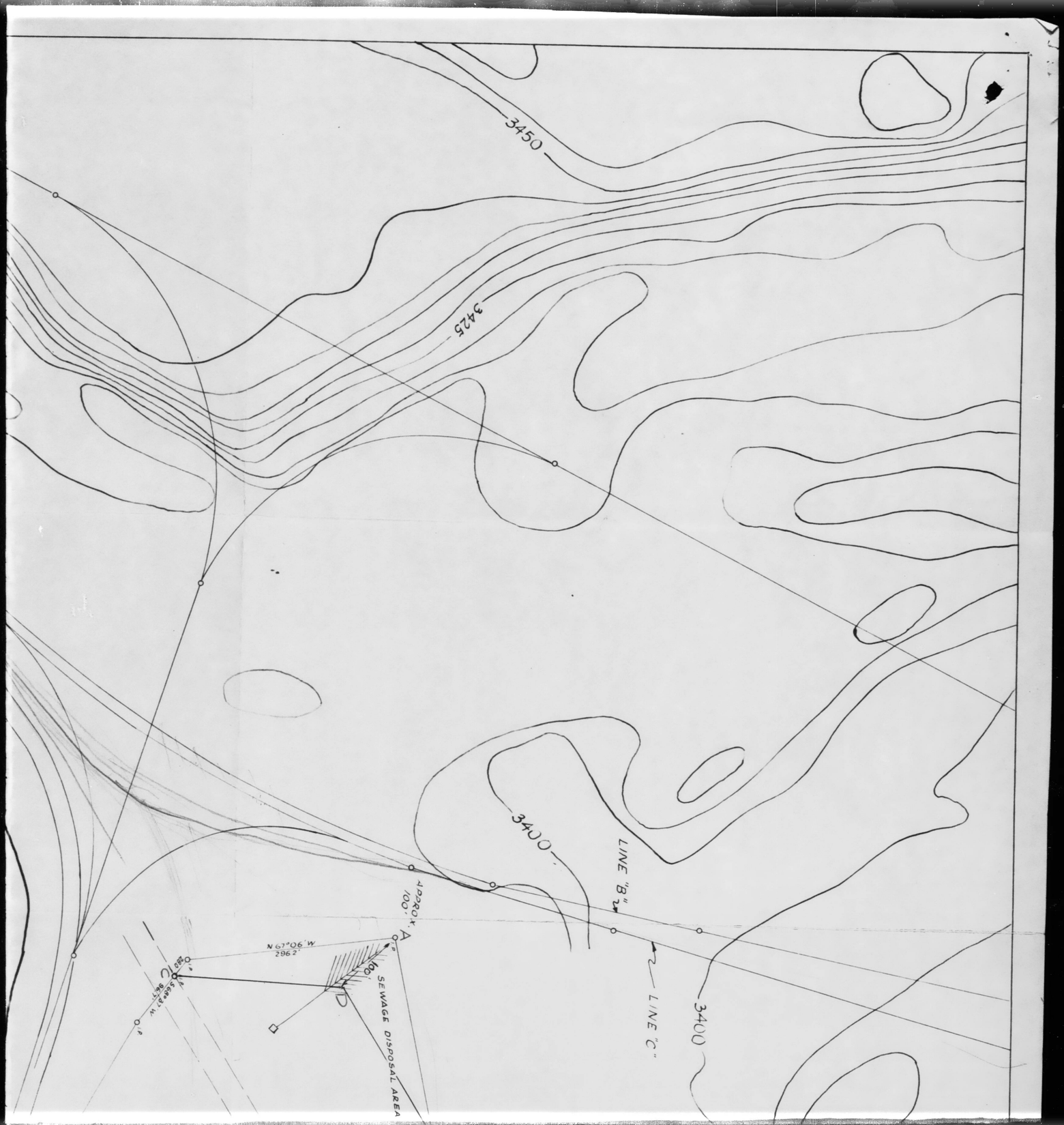
DEPT NORTHERN AFFAIRS & NAT. RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

JASPER NATIONAL PARK

PROPOSED ℄'S OF BANFF-JASPER H.WAY NEAR ALPINE VILLAGE

Scale: 1"=100' Cont. Int. 5'				Date: Jan. 11, 1960
Surveyed: Drawn: Traced: N.B.	Checked:	File Jasper	File	Sheet 1/1

Prepared in Resident Engineer's Office, Jasper, Alta.



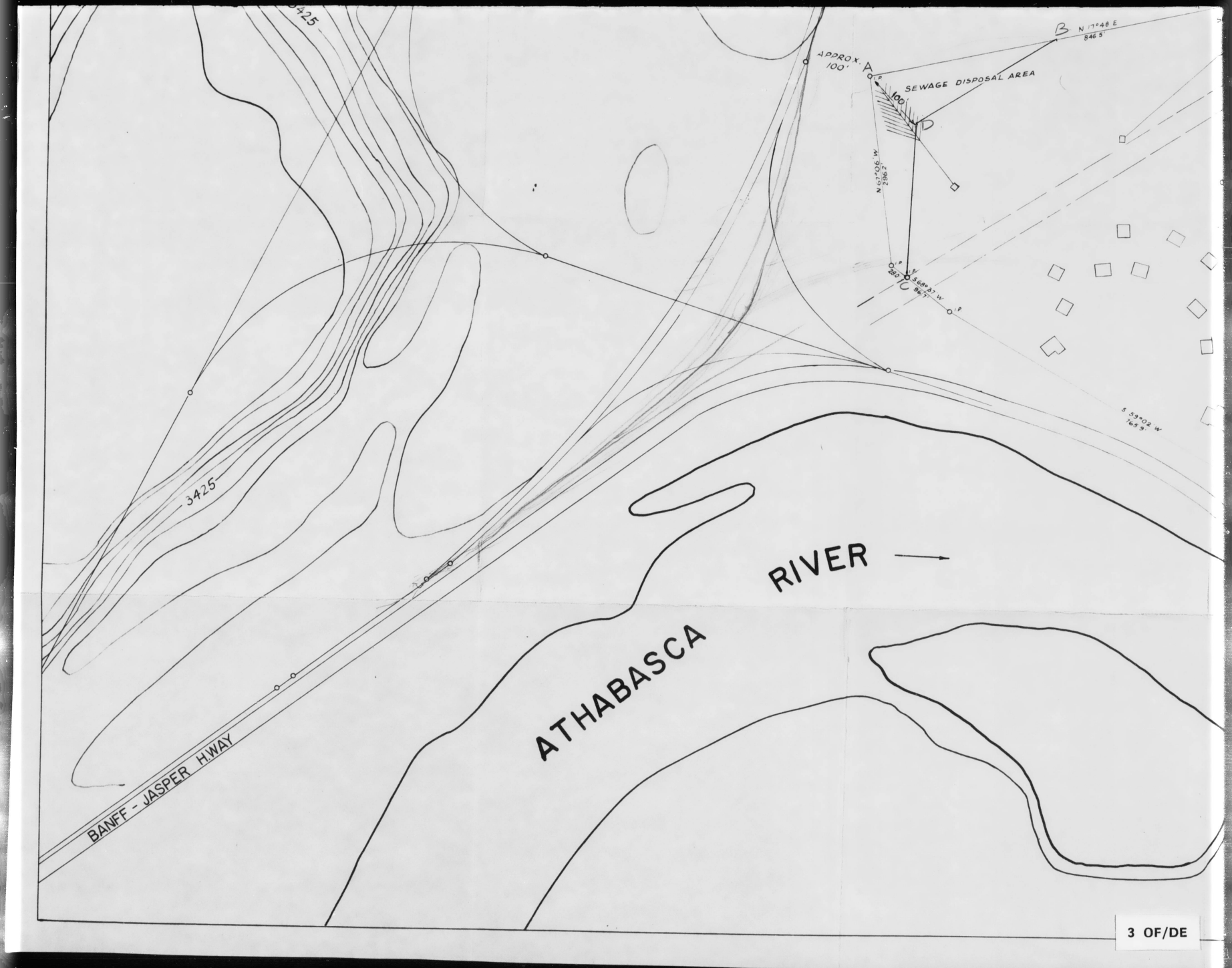
Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 1

National Archives of Canada
Archives nationales du Canada

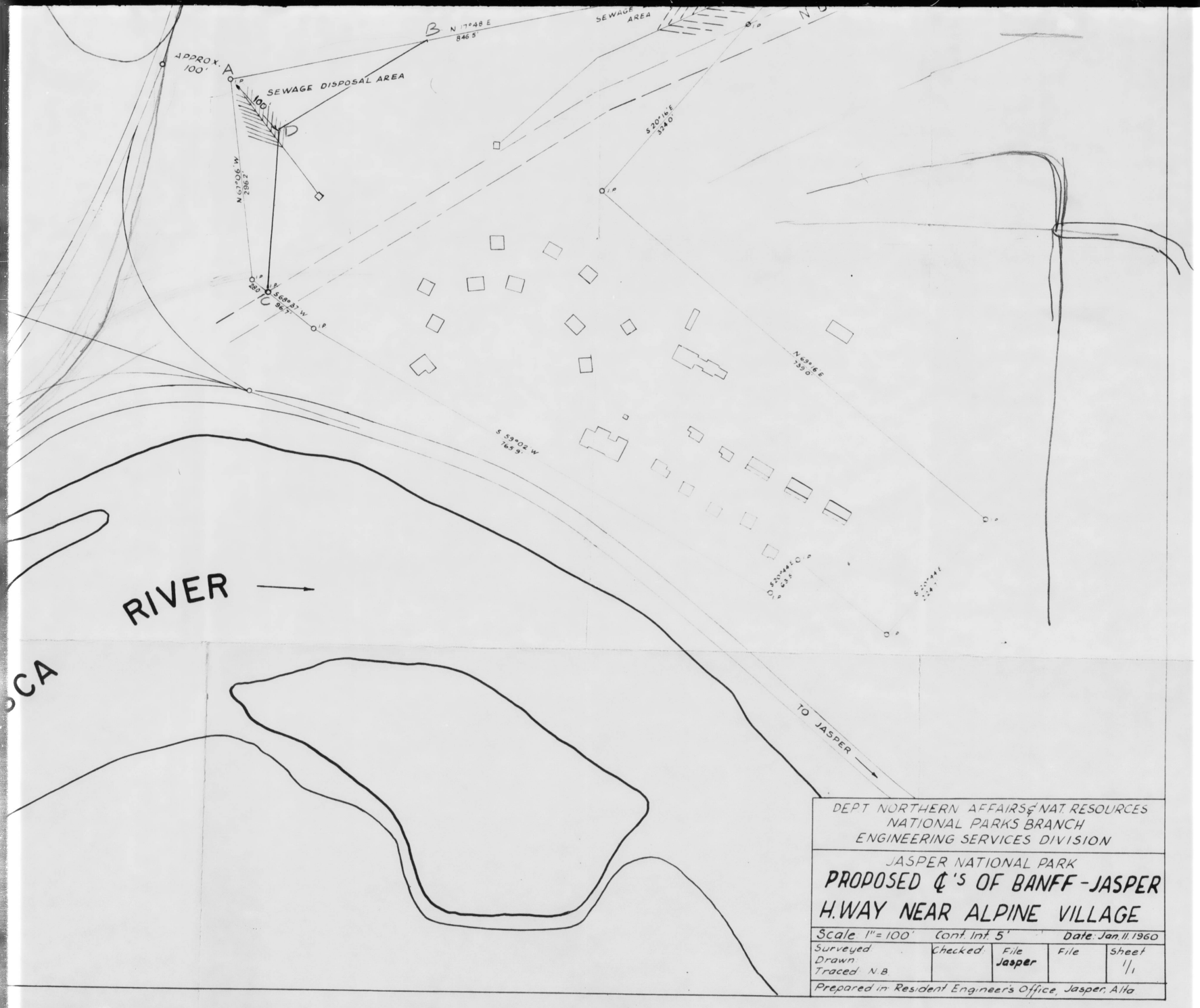
000393


detached from letter d. 12 Ja
MIETTE RIVER
3400
LINE "C"
LINE "B"
3400
APPROX. 100'
A
B
N 17°48 E
846.5'
SEWAGE DISPOSAL AREA
SEWAGE DISPOSAL AREA
116.8'
N U R/W
100'
D
N 67°06' W
296.2'
S 20°16' E
324.0'
280'
C
S 68°37' W
96.7'
N 69°16' E
739.0'
S 59°02' W
765.9'



3425
APPROX. 100'
A
B
N 17°48 E
846.5'
SEWAGE DISPOSAL AREA
100'
D
N 67°06' W
296.2'
280'
C
S 68°87' W
96.7'
S 59°02' W
765.9'
3425
ATHABASCA RIVER
BANFF - JASPER H.WAY

3 OF/DE



DEPT NORTHERN AFFAIRS & NAT. RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

JASPER NATIONAL PARK

PROPOSED ℄'S OF BANFF-JASPER H.WAY NEAR ALPINE VILLAGE

Scale 1" = 100' Cont. Int. 5' Date: Jan. 11. 1960

Surveyed	Checked	File	File	Sheet
Drawn		Jasper		1/1
Traced N.B				

Prepared in Resident Engineer's Office, Jasper, Alta

MORA

OFFICE OF THE CHIEF
ENGINEERING AND CONSTRUCTION SERVICE

J60-23

E. & C. 4—500 pads—12-49

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File/dossier J60-23
pt 1

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Mr. Scott

You may be interested
Bob Higgs from DPW passed
this on to me

[illegible]

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File/dossier J60-23
pt 1

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pt 1

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pt 1

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000400


JASPER NATIONAL PARK
ATHABASCA RIVER
THE WHISTLERS 8085
Whistlers Creek
Jasper Bungalow Camp
Jasper Auto Camp
Jasper Park Lodge
Old Fort Point
Twin Lakes
Cabin Lake
Marjorie L
Wynd
Hibernia L
Mina Lake
Riley L
Cottonwood Creek
Patricia Lake
Pyramid Lake
Pyramid Creek
Kerrone L
Trefoil Lakes
Mildred L
Beauvert L
Annette Lake
Ocshe L
Edith L
YMCA Camp
Fish Hatchery
Maligne Canyon
Tekarra
Wabasso Lakes
Prairie
Jasper Bungalow Camp
Bungalow Camp
Bungalow Camp
Bungalow Camp
Auto Camp
Bungalow Camp
Bungalow Camp
Bungalow

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File/dossier J60-2 Plans (1)

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Archives nationales du Canada

000401 A

SUMMARY SHEET

TRAFFIC COUNT
EAST OF JASPER

August 20, 1958 to Aug. 26, 1958.

TIME	Aug. 20 Wed.	Aug.21 Thurs.	Aug.22 Fri.	Aug.23 Sat.	Aug.24 Sun.	Aug.25 Mon.	Aug.26 Tues.	TOTALS
12 - 1 A.M.	09	14	05	24	37	11	05	105
1 - 2	04	06	08	12	15	09	01	55
2 - 3	03	01	10	11	10	04	02	41
3 - 4	01	02	01	02	10	03	01	20
4 - 5	01	00	01	01	06	06	01	16
5 - 6	02	03	04	02	04	03	00	18
6 - 7	07	05	09	09	08	09	02	49
7 - 8	28	19	31	31	27	27	11	174
8 - 9	61	61	49	39	34	36	50	330
9 - 10	78	87	62	65	67	57	64	480
10 - 11	74	65	79	68	102	70	89	547
11 - 12A.M.	76	64	70	62	99	75	77	523
12 - 1 P.M.	60	53	59	82	90	43	67	454
1 - 2	70	57	74	73	109	73	87	543
2 - 3	85	83	64	93	124	61	87	597
3 - 4	82	72	83	93	139	89	89	647
4 - 5	87	90	96	102	172	80	100	727
5 - 6	85	67	92	92	123	82	90	631
6 - 7	60	61	80	100	125	72	95	593
7 - 8	58	82	71	92	137	51	61	552
8 - 9	65	64	68	75	81	36	56	445
9 - 10	41	47	38	93	56	33	35	343
10 - 11	20	21	40	30	36	23	19	189
11 - 12P.M.	17	10	26	23	13	21	22	132
TOTALS	1074	1034	1120	1274	1624	974	1111	8211

Note: Traffic Counter Location 1 Mile East of Pyramid Creek on Jasper - Edmonton Highway.

Tues. P.M. Count is for August 19th.

A
000402
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Archives nationales du Canada

SUMMARY SHEET

TRAFFIC COUNT
EAST OF JASPER

August 20, 1958 to Aug. 26, 1958.

TIME	Aug. 20 Wed.	Aug. 21 Thurs.	Aug. 22 Fri.	Aug. 23 Sat.	Aug. 24 Sun.	Aug. 25 Mon.	Aug. 26 Tues.	TOTALS TWO-WAY
12 - 1 A.M.	09	14	05	24	37	11	05	105
1 - 2	[illegible]	06	08	12	15	09	01	55
2 - 3	03	01	10	11	10	04	02	41
3 - 4	01	02	01	02	10	03	01	20
4 - 5	01	00	01	01	06	06	01	16
5 - 6	02	03	04	02	04	03	00	18
6 - 7	07	05	09	09	08	09	02	49
7 - 8	28	[illegible]	31	31	27	27	11	174
8 - 9	[illegible]	61	49	39	34	36	50	330
9 - 10	78	87	62	65	67	57	64	480
10 - 11	74	65	79	68	102	70	89	547
11 - 12A.M.	76	64	70	62	99	75	77	523
12 - 1 P.M.	60	53	59	82	90	43	67	454
1 - 2	70	57	74	73	109	73	87	543
2 - 3	85	83	64	93	124	61	87	597
3 - 4	82	72	83	93	139	89	89	647
4 - 5	87	90	96	102	172	80	100	727
5 - 6	85	67	92	92	123	82	90	631
6 - 7	60	61	80	100	125	72	95	593
7 - 8	58	82	71	92	137	51	61	552
8 - 9	65	64	68	75	81	36	56	445
9 - 10	41	47	38	93	56	33	35	343
10 - 11	20	21	40	30	36	23	19	189
11 - 12P.M.	17	10	26	23	13	21	22	132
TOTALS	1074	1034	1120	1274	1624	974	1111	8211

Note: Traffic Counter Location 1 Mile East of Pyramid Creek on Jasper - Edmonton Highway.

Tues. P.M. Count is for August 19th.

National Archives of Canada
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SUMMARY SHEET

TRAFFIC COUNTER
EAST OF JASPER

Aug. 28, 1959 to Sept. 3, 1959.

TIME	Aug. 28 Fri.	Aug.29 Sat.	Aug.30 Sun.	Aug.31 Mon.	Sept.1 Tues.	Sept.2 Wed.	Sept.3 Thurs.	TOTALS.
12 - 1 A.M.	16	20	27	08	03	05	08	87
1 - 2	09	06	12	05	05	02	03	42
2 - 3	02	03	05	04	01	02	04	21
3 - 4	04	03	10	03	02	00	00	22
4 - 5	01	01	00	01	03	01	01	08
5 - 6	07	01	03	05	03	02	01	22
6 - 7	03	03	04	17	06	03	06	42
7 - 8	14	12	06	23	15	29	26	125
8 - 9	31	20	28	33	28	40	37	217
9 - 10	33	32	60	50	39	48	40	302
10 - 11	49	58	58	38	42	54	45	344
11 - 12 A.M.	55	47	70	48	49	42	35	346
12 - 1 P.M.	57	59	74	39	38	46	58	371
1 - 2	50	70	72	49	48	55	73	417
2 - 3	56	82	104	42	50	47	54	435
3 - 4	55	77	106	43	54	60	69	464
4 - 5	49	78	86	50	48	42	49	402
5 - 6	47	63	75	42	34	38	47	346
6 - 7	62	47	87	39	36	35	45	351
7 - 8	40	66	69	42	32	34	38	321
8 - 9	40	52	38	27	20	19	39	235
9 - 10	28	27	31	14	14	14	24	152
10 - 11	30	11	20	09	03	05	09	87
11 - 12 P.M.	19	25	11	13	07	12	17	104
TOTALS	757	863	1056	644	580	635	728	5263

Traffic Counter Location ½ Mile south of Pyramid Creek, on Jasper-Edmonton Route.

Note: Thurs. P.M. Figures are for August 27, 1959.

Sept. 3rd P.M. Figures were: 12 - 1P.M. - 42
1 - 2 - 34
2 - 3 - 58
3 - 4 - 49

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SUMMARY SHEET

TRAFFIC COUNT
EAST OF JASPER

Aug. 28, 1959 to Sept. 3, 1959.

TIME	Aug. 28 Fri.	Aug.29 Sat.	Aug.30 Sun.	Aug.31 Mon.	Sept.1 Tues.	Sept.2 Wed.	Sept.3 Thurs.	TOTALS Two-WAY
12 - 1 A.M.	16	20	27	08	03	05	08	87
1 - 2	09	06	12	05	05	02	03	42
2 - 3	02	03	05	04	01	02	04	21
3 - 4	04	03	10	03	02	00	00	22
4 - 5	01	01	00	01	03	01	01	08
5 - 6	07	01	03	05	03	02	01	22
6 - 7	03	03	04	17	06	03	06	42
7 - 8	14	12	06	23	15	29	26	125
8 - 9	31	20	28	33	28	40	37	217
9 - 10	33	32	60	50	39	48	40	302
10 - 11	49	58	58	38	42	54	45	344
11 - 12 A.M.	55	47	70	48	49	42	35	346
12 - 1 P.M.	57	59	74	39	38	46	58	371
1 - 2	50	70	72	49	48	55	73	417
2 - 3	56	82	104	42	50	47	54	435
3 - 4	55	77	106	43	54	60	69	464
4 - 5	49	78	86	50	48	42	49	402
5 - 6	47	63	75	42	34	38	47	346
6 - 7	62	47	87	39	36	35	45	351
7 - 8	40	66	69	42	32	34	38	321
8 - 9	40	52	38	27	20	19	39	235
9 - 10	28	27	31	14	14	14	24	152
10 - 11	30	11	20	09	03	05	09	87
11 - 12 P.M.	19	25	11	13	07	12	17	104
TOTALS	757	863	1056	644	580	635	728	5263

Traffic Counter Location ½ Mile south of Pyramid Creek, on Jasper-Edmonton Route.

Note: Thurs. P.M. Figures are for August 27, 1959.

Sept. 3rd P.M. Figures were: 12 - 1 P.M. - 42
1 - 2 - 34
2 - 3 - 58
3 - 4 - 49

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SUMMARY SHEET

TRAFFIC COUNT
SOUTH OF JASPER

August 20, 1958 to Aug. 26, 1958.

TIME	Aug.20 Wed.	Aug.21 Thurs.	Aug.22 Fri.	Aug.23 Sat.	Aug.24 Sun.	Aug.25 Mon.	Aug.26 Tues.	TOTALS
12 - 1 A.M.	14	16	12	14	25	14	11	100
1 - 2	07	02	10	13	15	05	07	59
2 - 3	05	01	11	06	15	03	06	47
3 - 4	01	01	02	02	03	02	03	14
4 - 5	01	00	00	03	04	01	00	09
5 - 6	02	02	03	05	04	04	00	20
6 - 7	12	18	20	15	04	09	07	85
7 - 8	21	43	33	44	27	42	45	255
8 - 9	116	92	82	68	83	61	66	668
9 - 10	131	114	97	134	152	92	79	699
10 - 11	121	116	76	98	114	84	00	609
11 - 12 A.M.	115	113	108	99	125	90	00	650
12 - 1 P.M.	87	94	94	93	97	66	00	531
1 - 2	100	117	81	89	109	81	88	665
2 - 3	103	93	101	108	145	79	117	746
3 - 4	116	126	111	100	133	81	114	781
4 - 5	135	141	128	123	145	96	141	909
5 - 6	150	140	133	102	122	108	122	877
6 - 7	92	98	94	104	125	84	101	698
7 - 8	98	100	95	118	117	85	113	726
8 - 9	128	114	92	108	95	73	102	712
9 - 10	70	69	64	65	41	40	57	406
10 - 11	19	25	38	37	30	15	31	195
11 - 12 P.M.	21	14	20	13	13	15	11	107
TOTALS	1665	1643	1505	1561	1743	1230	1221	10,568

Note: Traffic Counter Location South End of Miette Bridge on Banff-Jasper Highway.

Tues. P.M. Count is for August 19th, [illegible].

Tues. Aug. 26th, 10 A.M to 1 P.M Counter evidently out of order.

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SUMMARY SHEET

TRAFFIC COUNT
SOUTH OF JASPER

August 20, 1958 to Aug. 26, 1958.

Time	Aug.20 Wed.	Aug.21 Thurs.	Aug.22 Fri.	Aug.23 Sat.	Aug.24 Sun.	Aug.25 Mon.	Aug.26 Tues.	TOTAL TWO-WAY
12 - 1 A.M.	14	16	12	14	25	14	15	100
1 - 2	07	02	10	13	15	05	07	59
2 - 3	05	08	11	06	15	03	06	47
3 - 4	01	01	02	02	03	02	03	14
4 - 5	01	00	00	03	04	01	00	09
5 - 6	02	02	03	05	04	04	00	20
6 - 7	12	18	20	15	04	09	07	85
7 - 8	21	43	33	44	27	42	45	255
8 - 9	116	92	82	68	83	61	66	668
9 - 10	131	114	97	134	152	92	79	699
10 - 11	121	116	76	98	114	84	00	609
11 - 12 A.M.	115	113	108	99	125	90	00	650
12 - 1 P.M.	87	94	94	93	97	66	00	531
1 - 2	100	117	81	89	109	81	88	665
2 - 3	103	93	101	108	145	79	117	746
3 - 4	116	126	111	100	133	81	114	781
4 - 5	135	141	128	123	145	96	141	909
5 - 6	150	140	133	102	122	108	122	877
6 - 7	92	98	94	104	125	84	101	698
7 - 8	98	100	95	118	117	85	113	726
8 - 9	128	114	92	108	95	73	102	712
9 - 10	70	69	64	65	41	40	57	406
10 - 11	19	25	38	37	30	15	31	195
11 - 12 P.M.	21	14	20	13	13	15	11	107
TOTALS	1665	1643	1505	1561	1743	1230	1221	10,568

Note: Traffic Counter Location South End of Mette Bridge on Banff-Jasper Highway.

Tues. P.M. Count is for August 19th, [illegible].

Tues. Aug. 26th, 10 A.M to 1 P.M Counter evidently out of order.

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SUMMARY SHEET

TRAFFIC COUNT
SOUTH OF JASPER

August 27, 1959 to Sept. 2/59

Time	Aug.27 Thurs.	Aug.28 Fri.	Aug.29 Sat.	Aug.30 Sun.	Aug.31 Mon.	Sept.1 Tues.	Sept.2 Wed.	Total
12 - 1 A.M.	05	05	04	09	02	02	03	30
1 - 2	07	04	04	08	00	01	07	31
2 - 3	03	00	01	03	01	16	00	24
3 - 4	00	03	01	05	00	01	03	13
4 - 5	01	02	00	02	01	00	00	06
5 - 6	00	00	00	02	00	01	01	04
6 - 7	03	02	02	02	01	03	01	14
7 - 8	21	10	14	05	12	10	09	81
8 - 9	34	31	14	17	19	23	24	162
9 - 10	46	40	36	39	30	30	31	252
10 - 11	68	50	47	54	35	39	27	380
11 - 12 A.M.	58	46	53	40	26	37	42	302
12 - 1 P.M.	48	35	37	48	25	31	29	248
1 - 2	56	41	45	54	17	44	35	292
2 - 3	56	56	55	49	38	31	25	310
3 - 4	62	51	65	54	40	31	22	325
4 - 5	65	54	71	59	39	41	40	369
5 - 6	54	54	64	51	43	44	49	359
6 - 7	47	42	52	52	31	21	35	280
7 - 8	27	27	43	36	27	21	22	203
8 - 9	21	23	28	28	22	23	14	159
9 - 10	10	16	15	24	17	08	12	102
10 - 11	11	08	11	13	09	06	04	62
11 - 12 P.M.	08	08	08	04	03	01	05	37
TOTALS	706	608	670	658	438	465	440	3985

Note: Traffic Counter Location on B.J. Highway just south of Becker's Bungalow Camp

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SUMMARY SHEET

TRAFFIC COUNT
SOUTH OF JASPER

August 27, 1959 to Sept. 2/59

Hour	Aug.27 Thurs.	Aug.28 Fri.	Aug.29 Sat.	Aug.30 Sun.	Aug.31 Mon.	Sept.1 Tues.	Sept.2 Wed.	TOTAL TWO-WAY
12 - 1 A.M.	05	05	04	09	02	02	03	30
1 - 2	07	04	04	08	00	01	07	31
2 - 3	03	00	01	03	01	16	00	24
3 - 4	00	03	01	05	00	01	03	13
4 - 5	01	02	00	02	01	00	00	06
5 - 6	00	00	00	02	00	01	01	04
6 - 7	03	02	02	02	01	03	01	14
7 - 8	22	10	14	05	12	10	09	81
8 - 9	34	31	14	17	19	23	24	162
9 - 10	46	40	36	39	30	30	31	252
10 - 11	68	50	47	54	35	39	27	320
11 - 12 A.M.	58	46	53	40	26	37	42	302
12 - 1 P.M.	48	35	37	48	25	31	29	248
1 - 2	56	44	45	54	17	44	35	295
2 - 3	56	56	55	49	38	31	25	310
3 - 4	62	51	65	54	40	31	22	325
4 - 5	65	54	71	59	39	41	40	369
5 - 6	54	54	64	51	43	44	49	359
6 - 7	47	42	52	52	31	21	35	280
7 - 8	27	27	43	36	27	21	22	203
8 - 9	21	23	28	28	22	23	14	159
9 - 10	10	16	15	24	17	08	12	102
10 - 11	11	08	11	13	09	06	04	62
11 - 12 P.M.	08	08	08	04	03	01	05	37
TOTALS	706	608	670	658	438	465	440	3985

Notes: Traffic Counter Located on-on H.J. Highway just south of Beckey's Bungalow Camp

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J.60-23 Plans

DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

CONTRACT AND SPECIFICATIONS

FOR

Grading Culverts, Base Course and Road Mix

Mile 82.3 to Mile 85.8

Banff-Jasper Highway

CONTRACT NO. 11/59/BJ

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 11/59/BJ

GRADING CULVERTS, BASE COURSE AND ROAD MIX

MILE 82.3 TO Mile 85.8

BANFF-JASPER HIGHWAY

Instructions to Bidders

(1) Pages 2, 3, 5(c), 10 inclusive must be duly executed.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

CONTRACT
AND
SPECIFICATIONS

FOR

Grading Culverts, Base Course and Road Mix

Mile 82.3 to Mile 85.8

Banff-Jasper Highway

CONTRACT NO. 11/59/BJ

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 11/59/BJ

GRADING CULVERTS, BASE COURSE AND ROAD MIX

MILE 82.3 TO Mile 85.8

BANFF-JASPER HIGHWAY

Instructions to Bidders

(1) Pages 2, 3, 5(c), 10 inclusive must be duly executed.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 11/59/BJ

FOR: Grading, Culverts, Base Course and Road Mix
Mile 82.3 to Mile 85.8

LOCATION: Banff-Jasper Highway

The Undersigned, hereby offer to the Honourable the Minister of Public Works, to furnish all necessary machinery, tools, apparatus, and other means of construction, do all the work, furnish all the material except as otherwise specified and, for the prices named in the attached itemized Bid Schedule, to complete the work herein described in strict accordance with the plans, profiles and specifications therefor and such other special provisions and supplemental specifications listed in the Schedule of Plans and Specifications which are provided by the Department for the performance of this work.

The Undersigned, hereby certify that (I, we) have visited and examined the site of the proposed work or have caused it to be visited and examined by a competent person on (my, our) behalf and have made all enquiries relative to the amount of work and value of the materials and plant required for this work.

The Undersigned, understands that the quantities shown on the Bid Schedule are to be considered as approximate only and the Department reserves the right of increasing or diminishing any or all of the items. However, the bids will be compared on the basis of estimated quantities of work to be done as given on the attached Bid Schedule.

The Undersigned herewith enclose:

(a) a security deposit equal to 10% of the tender, or $25,000 plus 5% of the amount by which the tender exceeds $250,000, in one or more of the following forms:

(i) a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act, payable to the Receiver General of Canada;

(ii) Government of Canada bonds payable to bearer, with unmatured coupons attached if coupon bonds;

(iii) Bonds issued by Canadian National Railways or its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada and payable to bearer, with unmatured coupons attached if coupon bonds.

OR

(b) a bid bond in the form attached equal to at least 10% of the tender.

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The Undersigned understands that before a contract is awarded, the successful tenderer must furnish either a security deposit as described in (a) above, or a Performance Bond and a Labour and Material Payment Bond in the forms attached, each bond being equal to 50% of the tender. A successful tenderer, who has furnished a Security Deposit with the tender and substitutes a Performance Bond and a Labour and Material Payment Bond upon award of the contract, will have the Security Deposit returned. Bid Bonds, Performance Bonds, and Labour and Material Payment Bonds must be issued by a surety company approved by the Department of Insurance. A list of approximately 100 approved companies may be obtained from any office of the Department of Public Works.

Envelopes containing this tender are to be endorsed:

"Tenders for Contract 11/59/BJ "

and addressed to the Secretary of the Department of Public Works, Ottawa.

The signature(s) of the person(s) tendering must be in their respective handwriting.

In the case of partnerships, the signature, post office address and occupation of each partner must be given.

By my/our signature hereunder, I/we hereby identify this as the tender for Contract 11/59/BJ executed by me/us and bearing date the Twelfth day of May 1959.

WITNESS J.A. Maloney
10515 - 78th Avenue, Edmonton.

SIGNATURE Square M. Construction Limited.
Per F. G. Missiaen. Sec. Treas.

ADDRESS J.A. Maloney
10515 - 78th Avenue, Edmonton.

ADDRESS Coleman Collieries Limited
W.J. Missiaen. Director.
Box 4456
Edmonton, Alberta.

Joint Tender

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BID BOND

No. $

KNOW ALL MEN BY THESE PRESENTS, that

as Principal, hereinafter called Principal, and

as Surety, hereinafter called Surety, are held and firmly bound unto

as Obligee, hereinafter called Obligee, in the full and just sum of

Dollars ($),
lawful money of Canada, for the payment of which sum, well and truly, to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED, SEALED AND DATED this day of 19 .

WHEREAS, the Principal has submitted a written tender to the Obligee, dated the day of 19 for

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall have the said tender accepted within sixty days from a closing date of the tender call and shall enter into a contract with the Obligee and furnish a Performance Bond and a Labour and Material Payment Bond each in the amount of 50% of the contract and satisfactory to the Obligee, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety shall not be (a) liable for a greater sum than the specified penalty of this bond nor (b) liable for a greater sum than the difference between the amount of the Principal's tender and the amount of the tender that is accepted by the Obligee nor (c) subject to any suit or action unless such suit or action is instituted and process therefore served upon the Surety at its Head Office in Canada, within twelve months from the date of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact, the day and year first above written.

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PERFORMANCE BOND

No. $

KNOW ALL MEN BY THESE PRESENTS, That

as Principal, hereinafter called the Principal, and

as Surety, hereinafter called the Surety, are held and firmly bound unto

as Obligee, hereinafter called the Obligee, in the full and just sum of

Dollars ($),
lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED, SEALED AND DELIVERED this day of A.D. 19 .

WHEREAS, the Principal

in accordance with the plans and specifications submitted therefore which are made part and parcel of this obligation.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall well and faithfully observe and perform all the obligations of the said Contract on the part of the Principal to be observed and performed, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety shall not be liable for a greater sum than the specified penalty of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact, the day and year first above written.

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LABOUR AND MATERIAL PAYMENT BOND

$

Note: This bond is issued simultaneously with another bond in favour of the Obligee conditioned for the full and faithful performance of the Contract.

KNOW ALL MEN BY THESE PRESENTS, That

as Principal, hereinafter called Principal, and

as Surety, hereinafter called Surety, are held and firmly bound unto

as Obligee, hereinafter called Obligee, for the use and benefit of claimants as hereinbelow defined, in the amount of

Dollars ($),
lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED THIS day of A.D. 19 .

WHEREAS, the Principal

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labour and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

(1) A claimant is defined as one having a direct contract with the Principal for labour, material, or both, used or reasonably required for use in the performance of the contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract.

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(2) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labour was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon.

(3) No suit or action shall be commenced hereunder by any claimant,

(a) Unless claimant shall have given written notice to the Principal and the Surety above-named, within ninety (90) days after such claimant did or performed the last of the work or labour, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labour was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province or other part of Canada in which the aforesaid project is located.

(b) After the expiration of one (1) year following the date on which Principal ceased work on said Contract including work performed under the guarantees provided in the Contract.

(c) Other than in a court of competent jurisdiction in the Province or District in which the project, or any part thereof, is situated and not elsewhere.

(4) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement , whether or not claim for the amount of such lien be presented under and against this bond.

(5) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact, the day and year first above written.

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Schedule of Documents, Plans and Specifications

Provided by the Department

for

Tender Submission

Contract No. 11/59/BJ

1. Information to Bidders — Page 4 - 4 (c)
2. Bid Schedule — Page 5 - 5 (c)
3. Construction Programme and Equipment Statement — Page 6 - 6 (a)
4. Equipment Rental Rates Alberta National Parks
5. Statement of Experience — Page 8
6. Employment of Sub-Contractors — Page 9
7. Indenture
8. Labour Conditions
9. Standard Plans and Specifications

   (a) General Specifications

Division	Section
(i) General Conditions	1 - 10 incl.
(ii) Earthwork	1, 2, 3, 4, 5, 6A, 7
(iii) Base Course	2
(iv) Pavements - Road Mix	5
(vi) Incidental Construction	1, 2, 3, 13

   (b) Standard Plans

   Nos. 1, 3, 5, 6, 7, 8, 9
   C-1, C-2, C-3, C-4, C-5.

10. Supplemental Specifications

    Structural Plate Pipe, Pipe-Arch and Arch Culverts

11. Plans and Profile

    (1) Line Diagram, Mile 82.3 to 85.8
    (2) Location Plan, Mile 82.3 to 85.8
    (3) Profile, Mile 82.3 to 85.8

By my/our signature hereunder, I/we hereby identify this as the Schedule of Plans and Specifications provided by the Department of Public Works for the performance of the work under and forming part of this Contract No. 11/59/BJ, executed by me/us and bearing date

the Twelfth day May 1959

WITNESS J.A. Maloney
10515 - 78 Avenue, Edm.

ADDRESS J.A. Maloney
10515 - 78 Avenue, Edm.

Square M. Construction Limited.
SIGNATURE F.G. Missiaen, Sec.Treas.
Coleman Collieries Limited.
ADDRESS Per: W.J. Missiaen, Director
Box 4456,
Edmonton, Alberta

Joint Tender

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INFORMATION TO BIDDERS
FOR
CONTRACT NO. 11/59/BJ

1. DESCRIPTION

This contract consists of grading, supplying and installing pipe culverts and placing base course and bituminous road-mix on the Banff-Jasper Highway, (from Mile 82.3 to Mile 85.8), Jasper National Park.

2. COMPLETION DATE

31 October, 1960.

3. NEAREST RAILWAY SIDING

Jasper Alberta - approximately 61 miles from the north end of the contract.

4. NEAREST POST OFFICE

Jasper, Alberta.

5. REMOVAL OF CONTRACTOR'S EQUIPMENT

On termination of the contract all machinery, equipment, stores and all other items which may be the property of the Contractor or in his charge shall be removed forthwith from the confines of the National Park.

6. CONSTRUCTION CAMP

The contractor shall obtain the approval of the Engineer or his representative regarding construction camp locations before any clearing or occupancy is attampted. The contractor shall conform to all Provincial and Park regulations relative to camp operation and accommodation.

7. MAINTENANCE OF TRAFFIC

The attention of the Contractor is directed to Articles 1.4.7, 1.7.6, and 1.7.14 inclusive of the General Specifications and the Standard Drawings Nos. 5 and 6 with respect to the maintenance of traffic and public convenience and safety. These provisions will be strictly enforced to ensure a high standard of traffic control and sign posting.

Construction on the existing highway and approaches thereto will not be allowed during July and August.

7(a) DETOURS

All detours shall be located within the cleared right-of-way limits.

8. SNOW PLOUGHING

No winter maintenance of the Banff-Jasper Highway is carried out by the Government of Canada. Any arrangements made by the contractor to keep the road open shall be at his own expense and the method of snow removal shall require the approval of the Engineer.

9. PROJECT SIGN BOARDS

The contractor shall, at his own expense, provide and erect project sign boards at both ends of the contract at locations

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approved by the Engineer. The sign boards shall be appropriately lettered in accordance with Standard Plan No. 8.

SPECIAL PROVISIONS

10. EQUIPMENT RENTALS

All equipment or vehicles engaged at hourly rates shall be equiped with approved devices to register the hours of operation, the costs of such devices to be included in the rental rates. Payment for the rental of such equipment or vehicles will be computed on the basis of actual operating time on the work as approved by the engineer.

All tank wagons employed to haul water for compaction shall be equipped with gauges to register the quantity of water hauled and distributed.

11. COMPACTION EQUIPMENT

The following additional compaction equipment is to be added to the four types specified in Article 2.4.3(h) of the Standard Specifications and will be read into the said specifications as paragraphs 5 and 6:

(5) Vibratory Type Compactor weighing 12 to 15 tons.

(6) Grid Type Roller weighing at least 15 tons when fully loaded.

The attention of the contractor is directed to Articles 2.4.3(h) and 2.4.5(b). Under these specifications the contractor shall furnish compaction units, each complete with motive power. Subject to the prior approval of the Engineer, the contractor may place additional units in tandem. Payment for such additional units will be at rates approved by the Engineer.

12. PROFILE GRADE

Notwithstanding any information given in Standard Plans, profile grade shall be considered as the top of the final pavement.

13. INTERCEPTOR DITCHES

Interceptor ditches shall be constructed as directed by the Engineer, and shall be paid for as Channel Excavation in accordance with Division 2, Section 5 of the Standard Specifications.

14. SELECT GRANULAR BORROW

The top of subgrade in rock cuts and rock embankments shall be fine graded with select granular material placed to a depth of approximately 12 inches. Select granular material shall consist of gravel, talus rock, disintegrated granite, sand or other granular materials which have a physical structure not affected by water or the elements and shall conform to the following gradation requirements:

U.S. Sieve No.	Percentage Passing
3"	100
1"	60 - 100
No. 4	25 - 100
No. 10	15 - 85
No. 40	5 - 50
No. 200	0 - 8

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Approximately 25,000 cubic yards of select granular material are included in the estimated quantity of 225,000 cubic yards of Borrow Excavation shown in the Bid Schedule.

15. ROCK EMBANKMENT

Article 2.4.3(d) of the General Specifications notwithstanding, layer construction shall commence as soon as such construction is, in the opinion of the Engineer, practicable.

16. SUPPLY OF CULVERT MATERIALS AND UNDERDRAINS

Articles 6.3.2 and 6.3.5(a) of the General Specifications notwithstanding the Contractor shall supply all pipe culverts complete with necessary coupling bands. All pipe culverts shall be plain galvanized corrugated metal and shall conform to the requirements of the General Specifications, Article 6.3.2. The Contractor shall supply only the sizes, lengths and gauges as specified in writing by the Engineer. Payment for supply will be made at the contract unit prices per lineal foot upon delivery at the site of installation.

17. REMOVAL OF OLD CULVERTS

Although not shown on the plan or profile, there is approximately 300 lineal feet of old culverts to be salvaged from the existing road and stockpiled, as directed by the Engineer.

No extra payment will be made for the removal and salvaging of old culverts, except that the excavation required to uncover such culverts will be paid for as "Excavation Common" in accordance with Article 2.2.5(a) of the Standard Specifications.

18. SOURCE OF AGGREGATE

Known sources suitable for the production of Base Course and Road Mix Aggregates are located adjacent to the highway at the following points:

Base Course Class 1 - Mile 82.3 and 86.0
Road Mix - Mile 86.0

19. ROAD MIX

The road mix shall have a compacted thickness of approximately 2 inches and shall have the following widths:

Rock Cut Sections - 28 feet
Rock Embankment Sections - 32 feet
Remaining Sections - 42 feet

Bituminous material for the road mix shall be emulsified asphaltic material, Grade SS-1, and shall conform to the Canadian Government Specifications Board, specifications for emulsified Asphalts 16-GP-2.

Articles 4.5.5(a) and 4.5.5(b) of the General Specifications notwithstanding, the contract unit price for Road Mix Aggregate shall include producing, delivering to the road and windrowing.

The contractor shall so plan and prosecute the work that completed roadmixing operations shall be kept within one mile of the main subgrade construction at all times.

20. FORCE ACCOUNT

A sum of $15,000. is included in the Bid Schedule for benching slopes and cleaning-up slides. This sum will be added to the costs of the other items in arriving at the total tender amount. Extra work orders will be issued by the Engineer for

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the work as required and payment will be made only for work so completed. Payment will be made in accordance with Article 1.9.3 of the General Conditions of the Contract.

21. VEHICLES FOR THE USE OF THE ENGINEER

The contractor shall supply two ½-ton Panel Trucks and two ½-ton Pick-up Trucks of the personnel carrying type.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION
BID SCHEDULE

CONTRACT NO. 11/59/BJ

Item. No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
1.	2.1.5	Clearing, at One Hundred Dollars per acre	5	100	00	500	00
2.	2.1.5	Grubbing, at Fifty Dollars per acre	50	50	00	2,500	00
3.	2.2.5(a)	Excavation, Common, at Twenty-seven cents per cu. yd.	170,000		27	45,900	00
4.	2.2.5(a)	Excavation, Rock, at One Dollar and Twenty-Nine Cents per cu. yd.	560,000	1	29	722,400	00
5.	Info. to Bidders Para. 14 2.3.5.	Borrow Excavation, at Twenty-Nine Cents per cu. yd.	225,000		29	65,250	00
6.	3.2.5.(f) 2.4.5(b)	Compaction (pneumatic tired roller), at Six Dollars & Sixty Cents per hour	2,000	6	60	13,200	00
7.	Info. to Bidders Para. 11	Compaction (Grid Roller) weighing at least 15 tons, at Eleven Dollars per hour	2,000	11	00	22,000	00
8.	Info. to Bidders Para. 11	Compaction (Vibratory Type) Weighing 12 to 15 tons, at Thirteen Dollars per hour	4,000	13	00	52,000	00
9.	2.4.5(c) 3.2.5.(e)	Water for Compaction, at Three Dollars per 1000 gal unit	2,000	3	00	6,000	00
10.	2.7.5.	Overhaul (1000 feet free), at Ten Cents per cu. yd. mile	500,000		10	50,000	00
11.	Info. to Bidders Para. 13	Channel Excavation, Common, at Fifty Cents per cu. yd.	500		50	250	00

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION
BID SCHEDULE

CONTRACT NO. 11/59/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
12.	Info. to Bidders Para. 13	Channel Excavation, Rock, at Two Dollars & Fifty Cents per cu. yd.	100	2	50	250	00
13.	2.6A.5	Excavation for Structures, Common, at Ninety Cents per cu. yd.	1,000		90	900	00
14.	2.6A.5	Excavation for Structures, Rock, at Two Dollars & Fifty Cents per cu. yd.	500	2	50	1,250	00
15.	Info. to Bidders Para. 16	Supply & delivery of Pipe Culverts 24" diam. 14 gauge, at Four Dollars & Ninety-Four Cents per lin. ft.	100	4	94	494	00
		30" diam. 12 gauge, at Eight Dollars & Four Cents per lin. ft.	100	8	04	804	00
		36" diam. 10 gauge, at Twelve Dollars & Fifteen Cents per lin. ft.	3,000	12	15	36,450	00
		48" diam. 8 gauge, at Twenty-One Dollars & Sixty-Three Cents per lin. ft.	120	21	63	2,595	60
16.	6.3.5(b)	Installation of Pipe Culverts 24" diam. at One Dollar & Fifty Cents per lin. ft.	100	1	50	150	00
		30" diam. at Two Dollars per lin. ft.	100	2	00	200	00
		36" diam., at One Dollar & Ninety Cents per lin. ft.	3,000	1	90	5,700	00
		48" diam., at Three Dollars & Fifty Cents. per lin. ft.	120	3	50	420	00

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CONTRACT NO. 11/59/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
17.	Supp. Spec.	Supply, delivery & Installation Structural Plate Pipe & Pipe Arches					
		(1) Mile 84.1 TANGLE CREEK 12'10" x 8'4" Pipe Arch 7 gauge INVERT LENGTH = 80 feet Bevelled Ends @ 2:1 slope, at					
		One Hundred and Three Dollars and Fifty Cents per lin. ft.	80	103	50	8,280	00
18.	6.1.5.	Random Riprap, at Two Dollars per cu. yd.	200	2	00	400	00
19.	6.2.5.	Hand-Placed Riprap, at Eight Dollars per cu. yd.	400	8	00	3,200	00
20.	3.2.5(a)	Base Course (Class 1), at One Dollar & Twenty-Five Cents per ton	15,000	1	25	18,750	00
21.	3.2.5(b)	Hauling Base Course (Class 1), at Twenty Cents per ton-mile	22,000		20	4,400	00
22.	4.5.5(a) Info. to Bidders Para. 19	Road Mix Eighty-Eight Cents per ton	11,000		88	9,680	00
23.	4.5.5(c)	Asphaltic Material - SS 1, at Twenty-Five Cents per gallon	110,000		25	27,500	00
24.	4.5.5(d)	Mixing and Placing Road Mix, at Twelve Cents per sq. yd.	62,000		12	7,440	00
25.	3.2.5(a)	Stripping of Borrow Areas, at Twenty-Two Cents per cu. yd.	1,000		22	220	00

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BID SCHEDULE

CONTRACT NO. 11/59/B_J

Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Prices		Total Amount	
26.	Info. to Bidders Para. 20	Work by Force Account _____ As specified by the Engineer	As ordered by the Engineer			15,000	00
27.	Info. to Bidders. Para. 21 6.13.5	Supply ½ ton panel & ½ ton Pick-up Trucks for use of Engineer, at Two Hundred Dollars per vehicle per month.	72	200	00	14,400	00

TOTAL $1,138,483.60

TOTAL WRITTEN IN WORDS ONE MILLION ONE HUNDRED THIRTY EIGHT THOUSAND FOUR HUNDRED AND EIGHTY THREE DOLLARS AND SIXTY CENTS.

NOTE 1

Name and Address of Culvert Pipe Suppliers:

Armco Drainage & Metal Products of Canada Ltd.,
Edmonton, Alberta.

Name and Address of Structural Plate Culvert Material Suppliers:

Armco Drainage & Metal Products of Canada Ltd.,
Edmonton, Alberta.

Name and Address of Asphaltic Material Suppliers:

Excelsior Oil Refineries Ltd.,
Edmonton, Alberta.

NOTE 2

If other than Canadian Materials are to be used, list below the item and country of origin:

NOTE 3 IMPORTANT

The tenderer or the person or persons duly authorized to sign on his behalf, must initial and date each and every change, correction, alteration or erasure contained in these completed tender documents.

CONTRACTOR'S SIGNATURE Square M. Construction Limited, Per: F.G. Missiaen, Sec-Treas
Coleman Collieries Limited, Per: W.J. Missiaen, Director

DATED May 12/59

JOINT TENDER

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CONSTRUCTION PROGRAM AND EQUIPMENT STATEMENT

The Contractor shall in the spaces provided hereunder furnish a detailed outline of the construction program to be followed and a list of the plant and equipment available, if required, for the satisfactory prosecution of the work within the time limit specified in "Information to Bidders". The Department reserves the right to inspect all equipment listed prior to the award of a contract.

CONSTRUCTION PROGRAM

1. Start work at North End, stripping, drilling & blasting.
2. Build grade where it will not interfere with existing road until September 1st.
3. Where alignment is on existing road drill rock so as to have rock ready for mucking after September 1st.
4. After September 1st start blasting and mucking North & South End.

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EQUIPMENT STATEMENT

Description of Unit	Capacity, etc.	Condition	Age	Present Location
1-Compressor	210 C.F.M.	New		Edmonton
2 " "	600 C.F.M.	"		"
2-Airtrack Drills		"		"
1-Bulldozer	D7	Good	1 yr.	Golden
1- " "	D8	"	New	Coleman
1 Bulldozer/Ripper	D9	New		Edmonton
3-Motorscrapers	14-18 cu.yd.	Good	2 yrs.	"
2 Tractors	D8	"	2 yrs.	Golden
2-Scrapers	18-25 cu.yd.	"	1 yr.	"
1-Shovel	1 1/2 cu. yd.	"	5 yrs.	Coleman
1- "	2 1/2 cu. yd.	"	5 yrs.	"
1-Dragline/Backhoe	3/4 cu. yd.	"	3 yrs.	Edmonton
6-Rear Dumps	15 ton	"	1-5	"

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EQUIPMENT RENTAL RATES
ALBERTA NATIONAL PARKS

In the event that Extra and Force Account work is required under the contract, the following equipment rental rates which are maximum and shall include operators' wages, fuel, lubricants and repairs, except where Equipment Only is specified, may be used by the Department in determining and settling such accounts.

	HOURLY RENTAL RATE
AIR COMPRESSOR	
DIESEL	
185 cfm.	4.50
210 cfm.	5.50
365 cfm.	7.50
600 cfm.	11.50
GASOLINE	
105 cfm.	2.50
125 cfm.	3.00
210 cfm.	4.80
365 cfm.	7.30
600 cfm.	10.50
AIR TOOLS AND ACCESSORIES (EQUIPMENT ONLY)	
Air hose or pipe, line oilers and couplers per 50 ft.	.15
Clay digger 22 lbs.	.25
Jackhammer 48 lbs.	.40
Jackhammer 60 lbs.	.40
Paving breaker 55 lbs.	.35
Paving breaker 80 lbs.	.40
Wagon Drill Model DR 34	1.35
MIXERS	
3½ "S" Tilt Type	2.00
6 & 7 "S" Non-Tilt	2.75
11 "S" Non-Tilt Power Loader	3.40
14 "S" Non-Tilt Power Loader	3.70
16 "S" Non-Tilt Power Loader	4.00
VIBRATORS	
2 H.P. Gas Driven, 12' Flexible Shaft	1.60
6 H.P. Gas, 21' Flexible Shafting	2.20
EUCLID EQUIPMENT	
91 F.D. Reardump 10 c.y. or 15 tons	16.00
31 T.D. Reardump 14.8 c.y. or 22 tons	20.00
36 T.D. 45-46-53 Reardump 14.8 c.y. or 22 tons	21.00
4 F.FD. Reardump 20.0 c.y. or 34 tons	30.00
70 FDT-71 FDT-89W. Bottom Dump 13 c.y. or 20 tons	17.00
POWER GRADERS	
(Grader Blades to be included under "All Found")	
Gradall	18.50
80 to 90 h.p.	12.60
90 to 100 h.p.	14.00

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	DAILY RENTAL RATE
SCRAPERS (EQUIPMENT ONLY)	
6 to 8 cu. yds.	30.00
8 to 11 cu. yds.	40.00
12 to 15 cu. yds.	42.00
14 to 18 cu. yds.	65.00
25 cu. yds.	85.00

	HOURLY RENTAL RATE
SCRAPERS SELF-PROPELLED	
D Tournapull E9 and Scraper 8 c.y. 9 tons 122 h.p.	15.00
C Tournapull and Scraper 14.7 cu. yds. 22 tons 206 h.p.	19.00
B Tournapull and Scraper 23 cu. yds. 294 h.p.	27.00
2T55-2S55, 10-13 cu. yds. 165 h.p.	20.00
2T75-2S75, 15-20 cu. yds. 262 h.p.	25.00
TH 200, 15 cu. yds. 176 h.p.	19.50
TH 0142, 14-18 cu. yds. 225 h.p.	24.00
DW 21, 25 cu. yds. 300 h.p.	26.00
GRADALL with Remote Controll	16.00

SHOVELS

N.B. The Lessor will provide all Maintenance, Operator, Fuel, and Grease, Cables, Shovel Teeth, Welding Repairs to Dippers and Crawlers. Padmen not included.

3/8 Yard	9.00
½ Yard	11.00
3/4 Yard	14.00
1 Yard	19.00
1½ Yard	25.00
1-3/4 Yard	30.00
2 Yard	33.00
2½ Yard	36.00
3 Yard	40.00
3½ Yard	52.00
5½ Yard	94.00

TRACTORS "BARE"

N.B. The Lessor will build up Crawlers on "All Found" Rates.

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	HOURLY RENTAL RATES
TRACTORS "BARE"-Cont'd	
Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	7.75
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	8.20
1956	
D6, 66 h.p. TD 14A 78 h.p. HD 11B, 85 h.p.	10.00
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	9.50
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 13A, 124 h.p.	10.25
1956	
D7, 81 h.p. TD 18, 103 h.p. RD 16A, 141 h.p.	12.60
Prior to 1948	
D8 130 h.p.	11.25
1948 to 1953	
D8, 130 h.p.	13.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, 104 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 20, 175 h.p.	12.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	15.00
1956	
D9 286 h.p.	23.00

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	HOURLY RENTAL RATE
TRACTORS WITH BLADE	
Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 11B, 66 h.p.	8.70
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	10.00
1956	
D6, 75 h.p. TD 14A, 66 h.p. HD 11B, 85 h.p.	12.00
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 15A, 124 h.p.	11.10
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	12.25
1956	
D7, 102 h.p. TD 18A, 103 h.p. HD 16A, 125 h.p.	15.25
Prior to 1948	
D8, 130 h.p.	13.00
1948 to 1953	
D8, 130 h.p.	15.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, AC 204 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 19, 175 h.p.	14.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	16.50
1956	
D9, 230 h.p.	26.50

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	HOURLY RENTAL RATE
TRUCKS	
½ Ton Light Delivery	2.50
3/4 " " "	2.75
1 " " "	3.00
½ " Panel	3.00
3/4 " "	3.25
1 " Flat Deck	3.00
1½ " " "	3.25
2 " " "	4.00
3 " " "	4.50
4 " " "	5.00
5 " " "	6.50
2 " Dump	4.50
3 " "	5.00
4 " "	6.00
5 " "	7.00
6 " "	8.00
8 " "	10.50
10 " "	13.00
12 " "	15.00
14 " "	17.00
16 " (4 Wheel Tandem) (Includes use of Winch)	20.00
LOW-BOY TRAILER AND TRUCK	
5 Ton	7.00
10 "	10.00
15 "	13.00
20 "	16.00
25 "	19.00
30 "	24.00
40 "	30.00
PILE DRIVER	
Steam Power	9.00
Gasoline Power	8.00
FRONT END LOADERS	
No. 933 Traxcavator 50 h.p.	8.50
1 1/3 H.D. 60, 45 h.p.	10.00
No. 955 Traxcavator, 70 h.p.	11.00
No. 6 " ,100 h.p.	14.00
2½ c.y. H.D. 116, 75 h.p.	15.00
DUMPTOR	
Koehring 60, 6 c.y.	14.50

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STATEMENT OF EXPERIENCE

The following statment outlines the experience of the company on work allied with the work outlined in this tender and the plans and specifications relative thereto. The date and place of work, as well as the agency for whom the work was undertaken, should be clearly stated. Contractors who have successfully tendered on work for the Development Engineering Branch need not complete this form.

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EMPLOYMENT OF SUB-CONTRACTORS

It is (my,our) intention to employ the following sub-contractors whom (I, we) believe, after investigation to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (me, us).

	Name and Address of Sub-Contractors	Description of Work to be Done by Sub-Contractors
1.	Shaw Construction Co. Ltd., Midnapore, Alta.	Items. 20-21-22-23-24
2.		
3.		
4.		

It is agreed that (I, we) shall not sub-contract with any other individual or organization or for any other work without the consent of the Minister of Public Works.

JOINT TENDER

Square M. Construction Limited
Per: F.G. Missiaen, Sec.-Treas.

Contractor's Signature Coleman Collieries Limited
Per: W. J. Missiaen, Director.

DATED May 12, 1959.

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NOTICE TO TENDERER

THE FOLLOWING INFORMATION IS REQUIRED FOR DEPARTMENTAL USE

PLEASE PRINT CLEARLY

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1 - LIMITED COMPANY

If this tender is made by a limited company, then the full name of the company should be accurately PRINTED in the space provided for that purpose and its corporate seal, if any, affixed where indicated.

NAME OF COMPANY	SEAL
Square M. Construction Limited	Company Seal
Coleman Collieries Limited	Company Seal

JOINT TENDER

2 - PARTNERSHIP

If this tender is made by a partnership, then the firm name or the business name should be accurately PRINTED in the space provided and the name or names of the partners should be PRINTED where indicated.

NAME OF PARTNERSHIP	LIST OF PARTNERS

3 - SOLE PROPRIETORSHIP

If this tender is made by an individual carrying on business under a name other than his own, then his business name should be PRINTED in the space provided and the name of the sole proprietor should be printed where indicated. In the event that the sole proprietor carried on business in his own name, he should merely PRINT his name where indicated

BUSINESS NAME	NAME OF SOLE PROPRIETOR

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This Indenture, MADE IN DUPLICATE

this day of

one thousand nine hundred and

BETWEEN

hereinafter called "the Contractor," of the first part;

And HER MAJESTY THE QUEEN, in the right of Canada represented by the Minister of Public Works of Canada, of the second part.

WHEREAS the party of the first part for the consideration hereinafter mentioned has agreed with the party of the second part to do, furnish and perform the works, materials, matters and things required to be done, furnished and performed, in the manner hereinafter described, in connection with the following work or works namely:— Work to be done.

Now this indenture witnesseth that the said parties hereto hereby covenant, promise and agree each with the other, as follows:—

1. In this contract the following words shall, unless the context requires a different meaning, have the following meanings, respectively, that is to say:— Interpretation.

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"Contractor" or other words relative thereto, or of like import, shall mean and include, irrespective of sex or number, the party or parties of the first part as above designated or described, jointly and severally, and their and each of their executors, administrators, curators, successors, or assigns.

"Her Majesty," or other words relative thereto, or of like import, shall mean and include the reigning Sovereign or the successors or assigns of the Sovereign.

"Minister" shall mean the person holding the position or acting in the capacity of the Minister of Public Works and shall include the person holding the position or acting in the capacity of the Deputy Minister of Public Works.

"Engineer" shall mean the Chief Engineer or Chief Architect, as the case may be, of the Department of Public Works of Canada, having control over the work, and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer or Chief Architect, and all instructions or directions, or certificates given, or decisions made by any one acting for the Chief Engineer or the Chief Architect, shall be subject to the approval of the Chief Engineer or the Chief Architect, and may be cancelled, altered, modified and changed as the Chief Engineer or Chief Architect may seem fit: Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer or the Chief Architect in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or the Chief Architect, or by any one acting for such Chief Engineer or Chief Architect, shall be subject to the approval of or modification or cancellation by the Minister.

"Work or works" shall mean the whole of the work, materials, matters and things required to be done, furnished and performed by the Contractor, as above described, under this contract.

2. All the covenants and agreements in this contract binding on and all the provisions in this contract inuring to the benefit of the Contractor shall, respectively, be binding on and inure to the benefit of the executors, administrators, curators, successors and assigns of the Contractor and all the covenants and agreements in this contract binding upon and all the provisions in this contract inuring to the benefit of Her Majesty shall, respectively, be binding upon and inure to the benefit of the successors and assigns of Her Majesty.

3. The Contractor shall at his own expense (except as in this contract otherwise specifically provided) provide all and every kind of labour, superintendence, services, tools, implements, machinery, plant, materials, articles and things necessary for the due execution and completion of all and every the works set out or referred to in the specification hereto annexed, and in any special specification referred to therein and set out or referred to in the plans and drawings prepared and to be prepared for the purposes of the work, and shall forthwith commence the works and diligently execute and fully complete the respective portions thereof, and shall deliver the works complete in every particular to Her Majesty on or before the date or dates following, viz:— **Provision by contractor for completion of work.**

Time shall be deemed to be material and of the essence of this contract. **Time for completion.**

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4. The works shall be constructed by the Contractor, and under his personal supervision, of the best materials of their several kinds and finished in the best and most workmanlike manner and in the manner required by and in strict conformity with this contract, the said specifications and special specifications, and the plans and drawings relating thereto, and the working or detail drawings which may from time to time be furnished (which said specifications, and special specifications, plans and drawings are hereby declared to be part of this contract), and to the complete satisfaction of the Engineer. **Quality.** **Plans and specifications part of contract.**

5. The work shall be commenced, carried on and prosecuted to completion by the Contractor in all its several parts in such manner and at such points and places as the Engineer shall from time to time direct, and to his satisfaction, but always according to the provisions of this contract, and if no direction is given by the Engineer, in a careful, prompt, and workmanlike manner. **Execution of work directed by Engineer.**

6. The several parts of this contract shall be taken together to explain each other and to make the whole consistent; and, if it is found that anything has been omitted or misstated which is necessary for the proper performance or completion of any part of the work the Contractor shall, at his own expense, execute the same as though it had been inserted and properly described, and the correction of any such omission or error shall not be deemed to be an addition to or deviation from the works herein described. **Construction of contract.**

7. The Engineer may, in writing, at any time before the final acceptance of the works, order any additional work or materials or things not covered by the contract to be done or provided, or the whole or any portion of the works to be dispensed with, or any changes to be made which he may deem expedient in or in respect of the works hereby contracted for, or the plans, dimensions, character, quantity, quality, description, location or position of the works or any portion or portions thereof or in any materials or things connected therewith or used or intended to be used therein or in any other thing connected therewith or used or intended to be used therein or in any other thing connected with the works, whether or not the effect of such orders is to increase or diminish the work to be done or the materials or things to be provided or the cost of doing or providing the same, and the Engineer may in such order, or from time to time as he may see fit, specify the time or times within which each order shall, in whole or in part, be complied with. The Contractor shall comply with every such order of the Engineer. The decision of the Engineer as to whether the compliance with such order increases or diminishes the work to be done or the materials or things to be provided, or the cost of doing or providing the same and as to the amount to be paid or deducted, as the case may be, in respect thereof, shall be final. As a condition precedent to the right of the Contractor to payment in respect of any such order of the Engineer the Contractor shall obtain and produce the order, in writing, of the Engineer and a certificate in writing, of the Engineer showing compliance with such order and fixing the amount to be paid or deducted in respect thereof. **Extra work.** **How treated.** **Engineer's order and decision.**

8. All the clauses of this contract shall apply to any changes, additions, deviations, or additional work, so ordered by the Engineer, in like manner and to the same extent as to the works contracted for. **Covenants herein apply to extra work.**

9. If any change or deviation in or omission from the works be made by which the amount of work to be done shall be decreased, or if the whole or any portion of the works be dispensed with, no compensation shall be claimable by the Contractor for any loss of anticipated profits in respect thereof. **No claim for anticipated profits.**

10. The Engineer shall be the sole judge of the work and material, in respect of both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intention of this contract and as to the meaning or interpretation of the plans, drawings and specifications, shall be final, and no work under this contract shall be deemed to have been performed nor materials nor things provided so as to entitle the Contractor to payment therefor unless and until the Engineer is satisfied therewith, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor. **Engineer sole judge of work and materials.**

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11. The work shall, in every particular, be under and subject to the control and supervision of the Engineer; and all orders, directions or instructions at any time given by the Engineer with respect thereto, or concerning the conduct thereof, shall by the Contractor promptly and efficiently be obeyed, performed and complied with to the satisfaction of the Engineer. **Work subject to control of Engineer.**

12. The description or descriptions of the work and materials or any portion or portions of the works set out or referred to in or covered by any item or items for which a price or prices are given in this contract include not only the particular kinds of materials mentioned in the said item or items but also all and every kind of work, labour, tools, plant, materials, equipment, articles and things, whatsoever necessary for the full execution, completion and delivery, ready for use, of such respective portions of the works, in accordance with the plans, drawings and specifications, to the satisfaction of the Engineer. The said price or prices shall cover not only the particular descriptions of work and materials mentioned herein or in the specifications or plans but also all and every kind of work, labour, tools, plant, material, equipment, articles and things whatsoever necessary for the full execution, completion and delilvery, ready for use, of the entire work as herein contracted for, to the satisfaction of the Engineer. In case of dispute as to what work, labour, tools, plant, material, equipment, articles and things are so included or covered the decision of the Engineer shall be final and conclusive with respect thereto. **Descriptions of work. What items include.** **Price, what it covers.**

13. A competent foreman shall be kept on the ground by the Contractor during all working hours to receive the orders of the Engineer. Such foreman shall be considered as the lawful representative of the Contractor and shall have full power to carry out all requisitions and instructions of the said Engineer, but this clause shall not relieve the Contractor from the duty of personally superintending the work. **Foreman of the works.**

14. Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twenty-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance by the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor. **Defective work or material.** **Engineer may order removal or re-execution.** **Non-compliance by Contractor.**

15. All machinery, tools, plant, materials, equipment, articles and things whatsoever provided by the Contractor or by the Engineer under the provisions of sections 14 and 16 for the works, and not rejected under the provisions of section 14, shall from the time of their being so provided become and, until the final completion of the said work, be the property of Her Majesty for the purposes of the said works, and the same shall on no account be taken away, used, or disposed of, except for the purposes of the said works, without the consent in writing of the Engineer. Her Majesty shall not, however, be answerable for any loss or damage whatsoever which may at any time happen to such machinery, tools, plant, materials, equipment, articles or things. Upon the completion of the works and upon payment by the Contractor of all such moneys, loss, costs and damages, if any, as shall be due from the Contractor to Her Majesty, or chargeable against the Contractor under this contract, such of the said machinery, tools, plant, materials, equipment, articles and things as shall not have been used and converted in the works or disposed of by Her Majesty under powers conferred in this contract, shall be delivered up to the Contractor in such condition as they may then be in. **Contractor's machinery, plant, etc.** **Becomes property of H.M. until completion of work.**

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Insufficient workmen, plant, etc.

16. If the Engineer shall at any time consider the number of workmen, horses, quantity of machinery, tools, plant or equipment, or of proper materials, articles or things, employed or provided by the Contractor on or for the said works to be insufficient for the advancement of such works or any part thereof towards completion within the time limited in respect thereof, or that the works are, or some part thereof, is not being carried on with due diligence, then the Engineer may, in writing, order the Contractor to employ or provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may think necessary, and in case the Contractor shall not within three days, or such other longer period as may be fixed by any such order, in all respects comply therewith the Engineer may employ and provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as he may think proper and may pay such additional workmen such wages, and for such additional horses, machinery, tools, plant, equipment, materials, articles and things, any such prices as he may think proper, and all such amounts so paid shall, on demand, be repaid to Her Majesty by the Contractor, or the same may be retained or deducted from any sum that may then or thereafter be or become due from Her Majesty to the Contractor. The Contractor shall employ the additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things so provided and employed by the Engineer in the diligent advancement of the works; the workmen and horses so provided shall, however, be thereafter subject to discharge by the Contractor, but only with the consent and approval of the Engineer.

Work not proceeding with due diligence.

Engineer may provide additional equipment, etc., at Contractor's expense.

Repayment by Contractor.

Work not comprised in contract.

17. Her Majesty may, at any time, and without payment therefor, send and employ on, in and about the works other contractors and workmen, with such horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may deem necessary to do any work not comprised in this contract, and the Contractor shall afford to them all reasonable facilities, to the satisfaction of the Engineer, for doing such work, the work of the Contractor being interfered with as little as the Engineer may deem practicable.

The taking of possession of the whole or any part of the works of the Contractor for such purpose shall not be deemed an acceptance by or on behalf of Her Majesty of the whole or any portion of the works comprised in this contract.

18. That whenever and so often as it may be necessary for the Contractor to co-operate with other contractors on this work, the Contractor shall diligently and under the directions of the Engineer perform all such works as shall be requisite and proper on the part of the Contractor herein for such co-operation and for securing and placing in proper position the portion necessary herein and hereby contracted to be constructed and erected for the proposed work in a proper and secure mode, and to prevent the possibility of any accident therefrom, without any extra charge therefor, and shall be bound in all things to conform to the direction of the Minister or the Engineer touching such co-operation and work.

Default or delay by Contractor.

Notice by Engineer.

Minister may take work out of Contractor's hands.

19. In case the Contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the Engineer, the Engineer may give a general notice to the Contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the Engineer to the Contractor or should the Contractor make default in the completion of the works, or any portion thereof within the time limited with respect thereto in or under this contract, or should the Contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the Contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the Contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the Contractor of the works, and no objection or claim shall be raised or made by

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the Contractor by reason or on account of the ultimate cost of the works so taken over for any reason proving greater than, in the opinion of the Contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired, possessed or provided by the Contractor for the purposes of the work, or by the Engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the Contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the Contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Damages arising from non-completion.

20. Whenever in this contract power or authority is given to Her Majesty, the Minister, the Engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the Contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the Contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to further proceed with the execution of the works.

Power to take action on default of Contractor.

Provided always that after the expiration of the time limited for the completion of the works the Minister shall be sole judge as to what additional time, if any, may be allowed to the Contractor for such completion, and his decision as to the reasonableness or sufficiency thereof for the purpose of completion shall be final and binding upon the Contractor.

Minister sole judge of reasonableness of extension of time for completion.

21. The Contractor shall be at the risk of and shall bear all loss or damage whatsoever, from whatsoever cause arising, which may occur to the works or any part thereof, until the same be finally accepted by the Minister, and if any such loss or damage occur before such final acceptance the Contractor shall immediately, at his own expense, repair, restore and re-execute the work so damaged so that the whole works, or the respective portions thereof, shall be completed within the time limited for completion thereof and any delay occasioned by the Contractor to the other contractors on the work or any interference by the Contractor with the operation which may be a cause of delay or damage shall be rectified at the cost and the claim for damage or delay (if any) shall be at the charge of the Contractor.

Damages to work in progress, Contractor assumes risk.

22. The Contractor shall, during the period of one year after the date of the final certificate of the completion of the work, at the sole cost of the Contractor, and to the satisfaction of the Engineer, rectify any defects in the works caused by faulty workmanship or materials of which he shall have received notice from the Engineer. The Contractor shall be responsible for and shall reimburse Her Majesty with respect to any loss or damage sustained by Her Majesty and shall save harmless and indemnify Her Majesty from and against all claims, demands or actions based upon or arising out of the negligence of the Contractor, his officers, servants or agents during the rectification of the said defects. This clause shall not in anyway affect the rights of Her Majesty under any other agreement, deed or bond pursuant to which the works or any portion thereof are guaranteed free of defects or are to be repaired or replaced by the Contractor or any other person.

23. The Contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever, occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the Contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement, and to prevent the interruption of or any danger or menace to

Damages to persons or property.

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the traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the Contractor shall indemnify and save harmless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable to any such damage, injury or infringement. Contractor assumes liabilities.

24. The Contractor shall, upon the completion of the works, remove all temporary structures and clear away all rubbish and surplus and waste materials remaining on or about the works and place the premises in a neat and tidy condition, satisfactory to the Engineer. Contractor to clean premises on completion.

25. The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions. Precautions as to fire.

26. The Contractor shall insure buildings, structures and materials in accordance with the provisions of the specification in respect thereto.

27. The Contractor shall not assign or sublet this contract without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any moneys due to any sub-contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for. Assignments.

28. Pursuant to the provisions of the Statute in such case made and provided, no Member of the House of Commons of Canada shall be admitted to any share or part of this contract or to any benefit to arise therefrom. Members of H. of C. not to benefit.

29. The Contractor shall not allow any public ceremony in connection with the work without having previously obtained the written permission of the Minister. No public ceremony.

30. No work whatever shall at any time or place be carried on during Sunday and the Contractor shall take all necessary steps for preventing any foreman or agent or men from working or employing others on that day. No work on Sunday.

31. The Contractor shall promptly pay for all labour, services and materials in or about the construction of the works, and all payments for such purposes shall be made by the Contractor at least as often as payments are made to the Contractor by Her Majesty under this contract, and in the event of failure by the Contractor at any time so to do, or if any sum due for labour of any foreman or workman, or for hire of horses, teams or carts upon or in respect of the works or any part thereof remains in arrear or unpaid, or if there be at any time found to exist any claims against the Contractor, or any sub-contractor, for labour, teams, tools, plant, equipment, materials, articles or things employed, hired or supplied upon or for the works or any part thereof, or if the Minister has reason to believe that any such payments, sums or claims will not be promptly made or paid, the Minister may, in addition to or in lieu of exercising any powers conferred by the Fair Wages Clause, at his option, retain out of any moneys due or to become due to the Contractor from Her Majesty such amount or amounts as the Minister may deem sufficient to satisfy the same, or pay the Contractor the moneys due him in instalments, giving him from time Payment by Contractor for labour, etc. Power to retain money on default of Contractor paying for labour, etc.

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to time such sums as the Minister or the Engineer deems sufficient to meet such payments, sums or claims or any of them, and witholding the balance until the same are satisfied, or may pay all or any of such payments, sums or claims, rendering to the Contractor the balance due him after deducting the payments so made. The Contractor shall be stopped from denying the accuracy and correctness of any and all payments so made by the Minister.

Books etc., of Contractor open for inspection.

The Contractor's pay-rolls, time-books, books of account, invoices and statements shall at all times be open for inspection and extract by the Engineer and any authorized representative of the Minister, or either of them, who shall be assisted in every possible way by the Contractor, to enable the Engineer and such representative to ascertain, as far as possible, the exact payment, sums or claims so due and remaining unpaid by the Contractor.

Work to be free from all encumbrances.

32. Before making any payment on any progress or final estimate the Minister may require the Contractor to satisfy the Engineer, or other authorized representative of Her Majesty, that all work performed and material supplied and all structures built for which payment is being made are free and clear from all lawful claims or liens under any law of labour, workmanship, materials or otherwise; the Contractor shall indemnify and hold harmless Her Majesty from and against any and all kinds of claims or liens accruing from labour and services performed and material furnished, or otherwise, and any of the same in or about the works.

Sanitation.

33. The Contractor shall comply with and the works shall be carried on subject to all regulations made by any lawful authority and applicable to said works and all orders given by the Engineer with respect to sanitation or preservation of health on the work. The Contractor shall, at his own expense, make adequate arrangements, to the satisfaction of the Engineer, for the medical and sanitary supervision of all his employees.

Engineer's stakes or other marks not to be removed.

34. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes, buoys and other marks placed on or about the said works by the Engineer or his assistants and shall furnish the necessary assistance to correct or replace any stake, buoy or mark which through any cause may have been removed or destroyed.

Notice; how given.

35. Any notice, order, direction or other communication given to the Contractor under any of the provisions of this contract shall be sufficiently given if delivered to the Contractor personally, or to his foreman, or left at the Contractor's office, or mailed at any post office to the Contractor or foreman, addressed to the address mentioned in this contract, or to the Contractor's last known place of business or residence. Every such notice, order, direction or communication shall be sufficient which expresses in general language and without detail the matters required or communicated, or which follows the general language of the section or sections of this contract under which it is given, and no objection shall be taken to the form thereof.

Payment by Her Majesty.

36. Her Majesty, in consideration of the premises, and subject to the performance and observation on the part of the Contractor of all the covenants, provisos and conditions in this contract contained, will pay to the Contractor for and in respect of the works in manner hereinafter stated, viz:—

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And for any work or additional work done or materials or things provided, under the written orders of the Engineer, for which no price or prices are named herein, Her Majesty, in consideration and subject as aforesaid, will pay to the Contractor the actual and reasonable cost as determined by the Engineer of such work, materials and things, with an additional ten per cent thereon for the use of tools, Contractor's plant, superintendence and profits. **Payment for additional work.**

37. The quantities (if any) given are approximate only and no claim shall be made by the Contractor against Her Majesty on account of any excess or deficiency, absolute or relative, in the same. **Approximate quantities.**

38. The said price or prices shall be accepted by the Contractor as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not included in the items hereinabove mentioned, and also for all loss or damage arising out of the nature of the works or the action of the weather, tides, elements, or any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the works, and for all expenses incurred by or in connection with the works, and for all works, and for all expenses incurred by or in consequence of any delay or suspension or discontinuance of the work as herein specified, and for well and faithfully completing the works as in this contract provided. **Prices to be accepted as full compensation.**

39. Cash payments equal to about ninety per cent of the value of the work done approximately estimated from progress measurements and computed at the price or prices agreed upon or determined under the provisions of this contract will be made to the Contractor monthly, if practicable, on the written certificate of the Engineer stating that the work for or on account of which the certificate is granted has been done, and stating the value of such work completed as above mentioned; and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent or any part thereof. The remaining ten per cent shall be retained till the final completion of the whole work to the satisfaction of the Engineer and will be paid within two months after such completion. The written certificate of the said Engineer certifying to the final completion of the said works to his satisfaction shall be a condition precedent to the right of the Contractor to receive or to be paid the remaining ten per cent or any part thereof. **Progress payments.** **Ninety per cent. Ten per cent retained until completed.**

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40. Provided always that where in the opinion of the Engineer the work done is not sufficiently finished or is not of sufficient value to justify payment at the price or prices agreed upon or determined under the provisions of this contract, the Engineer may, for the purpose of such payment, disregard the price or prices agreed upon or determined and may estimate the proportionate value payable in respect of such work and issue a certificate accordingly; in which case the Contractor shall only be entitled to receive ninety per cent of such estimated proportionate value as stated in such certificate and shall not be paid the ninety per cent of the price or prices agreed upon or determined under the provisions of this contract until such time as the Engineer, by reason of the performance of additional work, shall certify that the Contractor is entitled thereto. **Engineer in certifying values for progress payments may disregard price-list.**

41. It is intended that every allowance to which the Contractor is fairly entitled will be embraced in the Engineer's monthly certificate, but should the Contractor at any time have claims of any description which he considers are not included in the progress certificates such claims must be made in writing to the Engineer within thirty days after the date of the delivery to him of the certificate from which he considers the items of such claims to have been omitted, but in no case beyond the period of sixty days from the date of the practical completion of that portion of the work to which such claims apply. And in default of the presentation of such claims within the time or times so limited the Minister may treat such claims as absolutely barred. **Full prices when obtainable. Claims under progress certificate.** **Limitation of time for presentation of claims.**

42. The Contractor in presenting claims of the kind referred to in the last preceding clause must accompany them with satisfactory evidence of their accuracy and the reason why he thinks they should be allowed. **Claims evidence of accuracy.**

43. The progress measurements and progress certificates shall not in any respect be taken as binding upon the Engineer, or as final measurements or as fixing final amounts; they are to be subject to the revision of the Engineer in making up his final certificate and they shall not in any respect be taken as an acceptance of the work or as a release of the Contractor from responsibility in respect thereof. **Progress measurements and certificates not binding.**

44. The Contractor shall not have nor make any claim or demand nor bring any action or suit or petition against Her Majesty for any damage which may be sustained by reason of any delay or delays from whatever cause arising in the progress of the work. **Delays.**

45. It is distinctly declared that no implied contract of any kind whatsoever by or on behalf of Her Majesty shall arise or be implied from anything in this contract contained, or from any position or situation of the parties at any time, it being clearly understood and agreed that the express contracts, covenants and agreements herein contained and made by Her Majesty are and shall be the only contracts, covenants and agreements upon which any rights against Her Majesty are to be founded.

46. Should the amount voted by Parliament and applicable towards payment for the work hereby contracted for be at any time expended previous to the completion of the works the Minister or the Engineer may give the Contractor written notice to that effect. And, upon receiving such notice, the Contractor may, if he thinks fit, stop the work, but in any case shall not be entitled to any payment for work done beyond the amount voted and applicable as aforesaid unless and until the necessary funds shall have been voted by Parliament in that behalf. And in no event shall the Contractor have or make any claim on Her Majesty for any damages or compensation by reason of the suspension of payment, or by reason of any delay or loss caused by the stoppage of work. And in the event of the Contractor electing to proceed or proceeding with such work after such notice and before additional funds are voted, no action of the Engineer or of any other person on behalf of Her Majesty in giving orders, directions or instructions or otherwise acting with respect to such work shall be taken or considered as in any manner improving the rights of the Contractor or as waiving in any particular any of the provisions of this section. **Parliamentary appropriations exhausted.** **Contractor proceeds at own risk.**

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Minister may suspend work.

47. The Minister may, from time to time and for such period as he may deem expedient, delay or suspend, in whole or in part operations under this contract, either upon the whole of the works or at any particular point or points. Should any such delay or suspension, or the stoppage of the works under the last preceding clause of this contract, or should any delay caused by any circumstance which, in the opinion of the Engineer is beyond the control of or not the fault of the Contractor, unreasonably limit the time for the completion of the works within the time specified by this contract, the Minister, as often as the case occurs, shall allow such additional time as to him may seem sufficient in the extension of such time for completion; but no such delay, suspension or stoppage shall vitiate or void this contract or any part thereof, or any security or obligation for the performance thereof, nor shall the Contractor be entitled to make any claim for damages by reason thereof. Upon the termination of such delay, suspension or stoppage, or upon the removal of the cause thereof, or upon the Contractor receiving notice from the Minister or Engineer requiring him to resume the work, he shall at once resume operations and diligently carry on the same.

No compensation to contractor for delay.

Liquors.

48. The Contractor shall not bring nor permit to be brought anywhere on or, as far as the Contractor can prevent the same, near the works any spirituous or intoxicating liquor; and if any person employed on the works be in the opinion of the Engineer intemperate, disorderly, incompetent, wilfully negligent or dishonest in the performance of his duties, he shall on the direction of the Engineer be forthwith discharged and the Contractor shall not employ or permit to remain on the work any person who shall have been discharged for any or all of said causes.

Orders by Engineer's agent.

49. All orders, directions, instructions or notices to be given or issued by the Engineer under and pursuant to any section in this contract may be given or issued by a duly and expressly authorized agent or agents of the Engineer.

Extension of time.

50. Any extension of time that may be granted to the Contractor shall be so granted and accepted without prejudice to any rights of Her Majesty whatsoever, under this contract, and no assent thereto on the part of the Contractor shall be necessary.

Security deposit.

51. The Contractor hereby and herewith deposits with and delivers to Her Majesty as security for the due fulfilment of his contract the sum of

upon the express understanding that the same shall be held and retained by Her Majesty as security for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this contract contained, on the part of the Contractor to be observed, performed and complied with. Provided always and it is understood and agreed that the Contractor assumes the risk and must bear any loss in respect of the security deposited as aforesaid occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid.

52. If at any time hereafter the said Contractor should make default under the said contract, or if Her Majesty acting under the powers reserved in the said contract shall determine that the said works or any portion thereof remaining to be done should be taken out of the hands of the Contractor and be completed in any other manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay any salaries or wages or any accounts

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for materials due by the said Contractor for work done or materials supplied by any person in connection with the said work, Her Majesty may, in either case, dispose of said security and of the interest which may have accrued thereon for the carrying out of the construction and completion of the work of the contract, or for paying any salaries or wages for work done, or any accounts for materials supplied for the said works that may be left unpaid by the said Contractor.

Repayment of security deposit.

53. Upon the due and faithful performance, observance and fulfilment by the Contractor of all and every the terms, provisions, covenants, agreements, conditions and reservations hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Contractor shall be entitled to be repaid or to receive again the money so deposited, together with so much interest upon such money as Her Majesty may, during her retention or possession of the same actually receive by reason thereof; it being, however, understood that Her Majesty shall not be under any obligation to cause the said money to be placed at interest, or to earn, or to endeavour to earn, interest thereon.

Interest on security deposit.

54. In the event of any breach, default, or non-performance being made or suffered by the Contractor in or in respect of any of the terms or conditions, covenants, provisos, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said money and interest thereon so delivered to or deposited with Her Majesty, or by her received in respect thereof shall, by the Contractor, be forfeited absolutely to Her Majesty.

Forfeit of security.

55. No condoning, excusing, or overlooking by Her Majesty or any person acting on her behalf, on previous occasions of breaches or defaults similar to that for which any action is taken or power exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken to operate as a waiver of any provision of this contract, nor to defeat or prejudice in any way the right of Her Majesty hereunder.

Waiver negatived. Contractor to investigate every condition of work before execution of contract.

56. This contract is made and entered into by the Contractor and Her Majesty on the distinct understanding that the Contractor has, before execution, investigated and satisfied himself of everything and of every condition affecting the works to be executed and the labour and material to be provided, and that the execution of this contract by the Contractor is founded and based upon his own examination, knowledge, information and judgment, and not upon any statement, representation, or information made or given, or upon any information derived from any quantities, dimensions, tests, specifications, plans, maps or profiles made, given or furnished by Her Majesty or any of Her officers, employees or agents; and that any such statement, representation or information, if so made, given or furnished, was made, given or furnished merely for the general information of bidders and is not anywise warranted or guaranteed by or on behalf of Her Majesty; and that no extra allowance will be made to the Contractor by Her Majesty and the Contractor will make no claim against Her Majesty for any loss or damage sustained in consequence of or by reason of any such statement, representation or information being incorrect or inaccurate, or on account of unforeseen difficulties of any kind.

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57. In the event of any inconsistency between the provisions of this contract and the provisions of the specifications forming part hereof the provisions of the contract shall prevail. Inconsistency between contract and specifications.

IN WITNESS whereof the respective parties hereto have executed these presents on the day, month and year first above written.

Signed, sealed and delivered by the Contractor in the presence of:

Deputy Minister of Public Works

Signed, sealed and delivered by Her Majesty, in manner aforesaid, in the presence of:

.....
Secretary.

EDMOND CLOUTIER, C.M.G., O.A., D.S.P., Queen's Printer and Controller of Stationery, Ottawa, 1954.

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No.....

Date.....19

PUBLIC WORKS — CANADA

Articles of Agreement entered into between

AND

Her Majesty the Queen, represented by the Minister of Public Works of Canada.

For

Amount:

Date of Completion:

File No.

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Our Ref. P.W.D. 11817

DEPARTMENT OF LABOUR

OTTAWA, CANADA

LABOUR CONDITIONS

The following schedule of labour conditions is applicable to the work of grading, culverts, base course material - Mile 82.3 to Mile 85.8 Banff-Jasper Highway

AT Banff National Park, Alberta.

to be undertaken for the Department of PUBLIC WORKS

Classifications, Wages and Hours.

(1) All persons in the employ of the contractor, subcontractor, or any other person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour.

Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week and nothing herein contained shall prevent the Minister of Labour from requiring hours of labour less than 44 per week where by current practice, collective agreement, or provincial legislation or regulation, such shorter hours are applicable in the area in which the contract is being performed.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Compressor operators	$ 1.75
Drill runners	1.75
Firemen	1.65
Grader operators	1.85
Labourers	1.65
Oilers (construction equipment)	1.65
Operators (draglines, cranes, shovels, etc.)	2.15
Powdermen	1.70
Roller operators	1.70
Tractor operators (large)	1.85
Tractor operators (small)	1.70
Truck drivers	1.65
Watchmen	1.00
Welders & burners (acetylene or electric)	1.90

(See next page)

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LABOUR CONDITIONS (Cont'd)

MINISTER OF LABOUR TO DETERMINE OVERTIME RATES AND PROPER CLASSIFICATIONS

(2) Where there are special circumstances which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what are the current or fair and reasonable rates of wages for overtime, and what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision. In case the Contractor shall fail so to do, or fail at any time to pay to any employee or employees for any services performed or for any hours of labour wages according to the rates set forth in the schedule or fixed therefor by the Minister of Labour hereunder regarding overtime and classification, the Minister of Labour may authorize and direct the Minister of the Contracting Department to pay any such wages at the rates so fixed and to deduct the amount thereof from any moneys owing by the Government to the Contractor and any such payment shall for all purposes as between the Contractor and the Government be deemed and taken to be payment to the Contractor, and the Contractor shall be bound in every particular by any such authority, direction and payment as aforesaid.

SCHEDULE TO BE POSTED

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

CONTRACTOR TO KEEP RECORDS WHICH ARE TO BE OPEN FOR INSPECTION

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

DEPARTMENTAL REQUIREMENTS BEFORE PAYMENTS MADE TO CONTRACTOR

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

Department of Public Works of Canada
DPW 116 (Reprint Sept. 58)

AUTHORITY TO PAY WAGES IN EVENT OF DEFAULT BY CONTRACTOR

(6) All cases of default in the payment of wages to employees by the Contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

CONDITIONS OF SUBCONTRACTING

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contractor shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

WORKMEN TO BE RESIDENTS OF CANADA

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The Contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DIVISION 1

GENERAL CONDITIONS OF THE CONTRACT

Section	
1	Definitions and Terms
2	Bidding Requirements and Conditions
3	Award and Execution of Contract
4	Scope of Work
5	Control of Work
6	Control of Materials
7	Legal Relations and Responsibility to Public
8	Prosecution and Progress
9	Measurement and Payment
10	Wages and Conditions of Employment

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GENERAL CONDITIONS OF THE CONTRACT

SECTION 1. DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:-

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.R.	Association of American Railroads
A.A.S.H.O.	American Association of State Highway Officials
A.R.E.A.	American Railway Engineering Association
A.S.C.E.	American Society of Civil Engineers
A.S.T.M.	American Society for Testing Materials
A.W.W.A.	American Water Works Association
C.S.A.	Canadian Standards Association
H.R.B.	Highway Research Board
Public Roads	Bureau of Public Roads, Department of Commerce
S.A.E.	Society of Automotive Engineers

Access Connection - Any roadway facility by means of which vehicles can enter or leave an arterial highway. Included are intersections at grade, private driveways, and ramps or separate lanes connecting with cross streets or frontage roads.

Advertisement - The advertisement for tenders for all work or materials on which bids are to be accepted.

Arterial Highway - A general term denoting a highway primarily for through traffic, usually on a continuous route.

Auxiliary Lane - The portion of the roadway adjoining the travelled way for parking, speed-change, or for other purposes supplementary to through traffic movement.

Award - The decision of the department to accept the tender of the lowest responsible bidder for the work, subject to the execution and approval of a satisfactory contract therefor and bond to secure the performance thereof and to such other conditions as may be specified or otherwise required by law.

Bidder - An individual, firm or corporation formally submitting a tender for the work contemplated, or any portion thereof, acting directly or through a duly authorized representative.

Bridge - A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the centre of roadway of more than 20 feet between under-copings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening.

Length - The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end ofthe bridge floor; but in no case less than the total clear opening of the structure.

Roadway Width - The clear width measured at right angles to the longitudinal centreline of the bridge between the bottom of curbs or guard timbers or in the case of multiple height curbs, between the bottoms of the lower risers.

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Calendar Day - Every day shown on the calendar, Sundays and holidays included.

Channel - A natural or artificial water course.

Contract - The written agreement executed between the Department and the the successful bidder, covering the performance of the work and the furnishing of labour and materials, by which the contractor is bound to perform the work and furnish the labour and materials, and by which the Department is obligated to compensate him therefor at the mutually established and accepted rate or price.

The contract shall include the invitation for bids, instructions to bidders, tender, contract form and contract bond, these specifications, supplemental specifications, all general or special provisions, general and detailed plans, and notice to proceed, also any written change orders and agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

Contract Period - The period from the specified date of commencing work to the date that the specified number of working days or calendar days, as the case may be, has elapsed, both dates inclusive, or from the specified date of commencing work to the specified date of completion, both dates inclusive, as specified in the contract.

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment, and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

Contractor - The party of the second part to the contract; the individual firm or corporation undertaking the execution of the work under the terms of the contract and acting directly or through his, their or its agents or employees.

Contract Time or Completion Date - The number of working or calendar days shown in the proposal indicating the time allowed for the completion of the work contemplated in the contract.

In case a calendar date of completion is shown in the proposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

Control of Access - The condition where the right of owners or occupants of abutting land or other persons to access, light, air or view in connection with a highway is fully or partially controlled by public authority.

Full control of access means that the authority to control access is exercised to give preference to through traffic by providing access connections with selected public roads only and by prohibiting crossings at grade or direct private driveway connections.

Partial control of access means that the authority to control access is exercised to give preference to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossings at grade and some private driveway connections.

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Culvert - Any structure not classified as a bridge which provides an opening under any roadway.

Department - Shall mean the Federal Department of Public Works of Canada.

Divided Highway - A highway with separated roadways for traffic in opposite directions.

Drainage Ditch - An artificially constructed open depression constructed for the purpose of carrying off surface water.

Employee - Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control or receives compensation from the Contractor or Subcontractor.

Engineer - Shall mean the Chief Engineer of the Development Engineering Branch of the Department of Public Works of Canada, having control over the work and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any one acting from the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Equipment - All machinery, equipment and livestock, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

Extra Work - Additional construction items which are not included in the original contract.

Extra Work Order - A special order authorizing the performance of extra work and the furnishing of materials involved in extra work. Such extra work may be performed at agreed prices or on a force account basis.

Highway, Street or Road - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Highway Separation - Any structure carrying highway traffic over or under another highway or street.

Inspector - The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

Instruction to Bidders - Form prepared and furnished by the Department, for the information of bidders submitting tenders, which specifies the provisions, requirements, and instructions pertaining to the method, manner and time of submitting bids and approximate quantities of materials required.

Invitation for Bids - The advertisement for tenders for all work or materials on which bids are required. Such advertisement will indicate with reasonable accuracy the quantity and location of the work to be done or the character and quantity of the material to be furnished and the time and place of the opening of tenders.

Laboratory - The Testing Laboratory of the Department or any other testing laboratory which may be designated by the Engineer.

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Materials - Any substances specified for use in the construction of the project and its appurtenances.

Median - The portion of a divided highway separating the travelled ways for traffic in opposite directions.

Median Lane - A speed-change lane within the median to accommodate left-turning vehicles.

Minor Structure - Any structure not classed as a bridge or a culvert. It shall include catch basins, inlets, manholes, retaining walls, steps, buildings, fences and other miscellaneous items.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified in the tender form.

Profile Grade - The trace of a vertical plane intersecting the top surface of the proposed subgrade along the longitudinal centreline of the roadbed. Profile grade means either elevation or gradient of such trace according to the context.

Project - The specific section of the highway together with all appurtenances and construction to be performed thereon under the contract.

Railway-Highway Separation -Any structure carrying highway traffic over or under the tracks of any railway.

Ramp - A connecting roadway between two intersecting highways at a highway separation.

Right-of-Way - The land secured and reserved to the public for highway purposes.

Road - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Roadbed - The graded portion of a highway, usually considered as the area between the intersections of top and side slopes, upon which the base course, surface course, shoulders and median are constructed.

Roadside - A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered roadside.

Roadside Development - Those items necessary to the complete highway which provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers; such suitable planting and other improvements as may increase the effectiveness and enhance the appearance of the highway.

Roadway - The portion of the highway within limits of construction.

Shoulder - The portion of the roadway contiguous with the travelled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

Sidewalk - That portion of the roadway primarily constructed for the use of pedestrians.

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Skew or Skew Angle - The acute angle formed by the intersection of a line normal to the centre line of the roadway with a line parallel to the face of the abutments, or in the case of culverts with the centre line of the culverts.

Special Provisions - Special directions, provisions, or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications. Special provisions shall prevail over specifications and supplemental specifications whenever in conflict therewith and over all plans. They set forth the final contractual intent as to the matter involved.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Speed-Change Lane - An auxiliary lane, including tapered areas, primarily for the acceleration or deceleration of vehicles entering or leaving the through traffic lanes.

Street - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Structures - Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, endwalls, buildings, sewers, service pipes, underdrains, foundation drains and other features which may be encountered in the work and not otherwise classed herein.

Subcontractor - Any individual, firm or corporation to whom the contractor, with the written consent of the Department, sublets any part of the contract.

Sub-Base - Materials placed immediately below the subgrade to give it the required stability.

Subgrade - The portion of the roadbed prepared as a foundation for the base and surface courses.

Substructure - All of that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, except as noted above for substructure.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

Supplemental Agreement - A written agreement made and entered into by and between the Contractor and the Department covering work not otherwise provided for, revisions in or amendments to the terms of the contract, or conditions specifically prescribed in the specifications as requiring supplemental agreements. Such supplemental agreement becomes a part of the contract when approved and properly executed.

Supplemental Specifications - Specifications adopted subsequent to the publication of this book. They generally involve new construction items or substantial changes in the approved specifications. Supplemental specifications shall prevail over those published in this book whenever in conflict therewith.

Tender - An offer of the bidder, submitted on the prescribed tender form, to perform the work and to furnish the labour and materials at the prices quoted by the bidder.

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Tender Form - The approved form on which the Department requires formal bids to be prepared and submitted for the work.

Through Street or Through Highway - Every highway or portion thereof at the entrance to which vehicular traffic from intersecting highways is required by law to stop before entering or crossing the same and when stop signs are erected.

Titles (or Headings) - The titles or headings of the sections and articles herein are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.

Township, Town or District - A subdivision of the county used to designate or identify the location of the proposed work.

Traffic Lane - The portion of a travelled way for the movement of a single line of vehicles.

Travelled Way - The portion of the roadway for the movement of vehicles exclusive of shoulders and auxiliary lanes.

Trench - An excavation made for the purpose of installing or removing pipes, drains, catch basins, etc., and which is later refilled.

Work - Work shall be understood to mean the furnishing of all labour, materials, equipment, and other incidentals necessary or convenient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract.

Working Drawings - Stress sheets, shop drawings, erection plans, false-work plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2. BIDDING REQUIREMENTS AND CONDITIONS

1.2.1 Notice to Contractors

The Contractor will be notified of proposed work in accordance with Departmental practice.

1.2.2. Qualifications of Bidders

The bidder will be required to show that he is capable of performing the class of work contemplated and shall submit with the tender on questionnaire forms supplied by the Department:-

(a) A Declaration of Equipment giving a description of the various units, their capacity, condition, age and present location that the bidder will definitely assign to the project being tendered on for its duration.

(b) A statement of his experience in performing work of the type or character for which his bid is submitted.

The bidder may be required to submit such additional evidence of his qualifications as may be deemed necessary by the Department.

1.2.3. Contents of Tender Forms.

The bidder will be furnished by the Department, upon request, with a tender form. This form will state the location and description of the contemplated construction and will show the approximate estimate of the various quantities and kinds of work to be performed or materials to be furnished, with a schedule of items of which unit bid prices are invited. It will state the time in which the work must be completed, the amount of the security required with the tender and the date, time and place of the opening of tenders. The form will also include any special provisions or requirements which vary from or are not contained in the standard specifications.

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All papers bound with or attached to the tender form are necessary parts thereof and must not be detached or altered.

All plans, specifications and other documents, designated in the tender form, will be considered a part of the tender whether attached or not.

The bidder will be required to deposit with the department the sum stated in the notice to contractors for each copy of tender form and plans.

1.2.4. Interpretation of Quantities in Bid Schedule

The quantities appearing in the prepared bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the contract, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased, diminished, or omitted as hereinafter provided without in any way invalidating the unit prices bid.

1.2.5. Examination of Plans, Specifications, Special Provisions, and Site of Work

The bidder is required to examine carefully the site of the proposed work, the tender, plans, specifications, special provisions, and contract forms before submitting a tender. It is mutually agreed that submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the plans, specifications, supplemental specifications, special provisions, and contract.

1.2.6 Preparation of Tender

The bidder shall submit his tender upon the blank forms furnished by the department. The bidder shall specify a unit price, in both words and figures, for each pay item for which a quantity is given, and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, and the total amount of the tender obtained by adding the amounts of the several items.

All words and figures shall be in ink. In case of a discrepancy between the prices written in words and those written in figures, the written words shall govern.

The bidder's tender shall be signed with ink by the individual, by one or more members of the partnership, or by one or more of the officers of the corporation submitting it. If the tender is made by an individual his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the proposal must show the name of the province under the laws of which the corporation was chartered and the names, titles, and business addresses of the president, vice president, secretary and treasurer.

1.2.7. Irregular Tenders

Tenders shall be considered irregular and may be rejected for the following reasons:-

(a) If the tender form furnished by the department is not used or is altered.

(b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the tender incomplete, indefinite, or ambiguous as to its meaning.

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(c) If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

(d) If the unit prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values.

(e) If they fail to contain a unit price for every pay item indicated.

1.2.8 Security

Each tender must be accompanied by a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act payable to the order of the RECEIVER GENERAL OF CANADA equal to ten per cent of the amount of the tender or, where the tender exceeds $250,000., $25,000. plus five per cent of the amount by which the amount of the tender exceeds $250,000., in accordance with the Government Contracts Regulations now in force, or Bearer Bonds, with unmatured coupons attached, of the Government of Canada or of the Canadian National Railway Company and its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada.

1.2.9 Interest

Tenderers are notified that they must make their own arrangements with their bankers as to the payment of interest, if any, on the amount of the certified cheque accompanying their tender. The Government of Canada will not pay interest on said cheque pending the awarding of the contract, nor be responsible for the payment of interest under any arrangements made by the tenderers. The cheque of the tenderer to whom the contract has been awarded will forthwith be deposited in the Department of Finance and interest on the amount thereof at the prevailing rate of interest under the regulations governing deposits in Post Office Savings Banks will be allowed.

1.2.10 Delivery of Tenders

Each tender must when possible be submitted in a special envelope furnished by the Department and the blank spaces on the envelope must be filled in correctly so as to clearly indicate its contents. When an envelope other than the special one furnished by the Department is used it must be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail the sealed tender must be addressed to the Department at the address and in care of the official in whose office the bids are to be received. All tenders shall be filed prior to the time and at the place specified in the notice to contractors. Tenders received after the time for opening of bids will be returned to the bidder unopened.

1.2.11 Withdrawal or Revision of Tenders

A bidder may, without prejudice to himself, withdraw a tender after it has been deposited with the Department, provided the request for such withdrawal is received by the Department, in writing or by telegram, before the time set for opening tenders. The bidder may then submit a revised tender provided it is received prior to the time set for opening tenders.

1.2.12 Opening of Tenders

Tenders will be opened at the time and place indicated in the notice to contractors.

1.2.13 Material Guaranty

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture

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of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

SECTION 3. AWARD AND EXECUTION OF CONTRACT

1.3.1. Consideration of Tenders

After the tenders are opened and read, they will be compared on the basis of the summation of the products of the approximate quantities shown in the bid schedule by the unit bid prices. In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern.

The right is reserved to reject any or all tenders, to waive technicalities, to advertise for new tenders or to proceed to do the work otherwise, if in the judgment of the awarding authority the best interests of Canada will be promoted thereby.

1.3.2. Award of Contract

The successful bidder will be notified, by letter mailed to the address shown on his tender, that his bid has been accepted and that he has been awarded the contract. The Contractors Security deposit (Article 1.2.8) will be forfeited if the tenderer declines to enter into a contract when called upon to do so, or if he, as a contractor, fails to complete the contract.

1.3.3. Return of Tender Security

All tender securities will be returned except that of the successful bidder, which will be retained until the contract has been successfully completed and accepted.

1.3.4. Execution of Contract

The Contractor who submitted the successful bid will be required to sign a contract similar to the indenture exhibited at the same time as the plans and specifications.

1.3.5. Failure to Execute Contract

If the tenderer declines to enter into a contract when called upon to do so, his security deposit will be forfeited.

SECTION 4. SCOPE OF WORK

1.4.1. Intent of Contract

The intent of the contract is to prescribe a complete work or improvement which the contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract. The contractor shall perform all work in accordance with the lines, grades, typical cross-sections, dimensions, and other data shown on the plans or as modified by written orders, including the furnishing of any materials so stipulated in the specifications, all implements, machinery, equipment, tools, supplies, transportation, labour, and all other things necessary to the satisfactory prosecution and completion of the project.

1.4.2. Special Work

Should any construction or conditions which are not covered by the plans or these specifications be anticipated, special provisions for such work will be prepared by the engineer, stated on or attached to the tender form, and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications or supplements thereto, the special provisions shall govern.

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1.4.3. Alterations of Plans or of Character of Work

The Engineer shall have the power and right to make from time to time and at any time, additions to or deductions from the dimensions shown on the drawings or specified herein and to add to, omit, change, modify, cancel or alter the works,and materials herein specified, or shown on the drawings without rendering void or in any way vitiating the contract. The value or cost of such additions, deductions, omissions, modifications, or alterations, shall be determined in accordance with the rates or prices stated in his tender, which prices are assumed, and will be taken to cover the cost of materials and workmanship measured in the work, or as specified herein, and to include the cost and expense of all plant, labour, machinery, tools, temporary works, cartage, freight, patterns, moulds, superintendence and profit; but the Contractor is not to make any change or alteration in the works or in the dimensions and character of the materials to be used without the consent and permission, in writing, of the Engineer. In case such permission is not obtained, unless the Contractor can show good and sufficient reason for his action, payment for such works will be refused.

1.4.4. Meaning of Terms, etc.

Alterations, deductions, omissions, modifications, or deviations are to be understood as applying to decided variations in the plans or designs, such as a decrease in width, an increase in depth, the substitution of one class of material for another, the addition of works neither shown nor described, etc., and for these or similar matters alone, will any sum be allowed to the Contractor, or deducted from the contract, and then only upon the written order of the Engineer. All other alterations, etc., consequent upon a better disposal of materials, an improved mode of construction adopted, repairs required, and such like, as long as the costliness of the materials, workmanship, etc., are of a trifling nature, which shall be judged of by the Engineer, shall be deemed to be included in the contract, and for such no extra sum or amount will, under any consideration, be allowed to the Contractor.

1.4.5. Extra Work

The Contractor shall perform unforeseen work, for which there is no price included in the contract and such extra work shall be performed in accordance with the specifications and as directed in writing by the Engineer before such extra work is started.

1.4.6. Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

1.4.7. Maintenance of Traffic

The Contractor shall at all time carry on the work in a manner that will create the least interference with traffic, consistent with the faithful performance of the work. He shall not close any portion of the highway nor divert traffic outside the limits of the highway except by written order of the Engineer.

He shall construct and maintain at his own expense a safe road for traffic in every case where traffic is maintained within the limits of the highway or carried on detours arranged for through private property. He shall also, at his own expense, make the necessary arrangements for detours through private property and such detours shall be deemed to be a part of the work under this contract.

Notwithstanding anything herein contained the Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the contract.

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1.4.8. Temporary Structures

In bridge contracts, the contractor will not be required to construct or maintain temporary structures unless the construction and maintenance of such structures are stipulated in the contract or ordered as extra work by the engineer.

Plans for temporary structures and procedure for moving existing structures to temporary location, when not provided by the engineer, shall be subject to his approval.

1.4.9. Removal and Disposal of Structures and Obstructions

All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, including any existing drain or culvert pipes, which the engineer may order salvaged shall be carefully removed and shall become the property of the department.

Payment for this work shall be made under the pay items identified for such work in the tender, except when the work is of minor consequence it shall be considered as incidental to and included in other items.

1.4.10 Rights In and Use of Materials Found on the Work

The contractor, with the approval of the engineer, may use in the proposed construction such stone, gravel, sand, or other material suitable in the opinion of the engineer, as may be found in the excavation and will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills, approaches, or otherwise. No charge for the materials so used will be made against the contractor. The contractor shall not excavate or remove any material from within the highway location which is not within the excavation, as indicated by the slope and grade lines, without written authorization from the engineer.

Unless otherwise provided, the material from any existing old structure may be used temporarily by the contractor in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the engineer.

1.4.11. Final Cleaning Up

At his own expense and under the direction of the engineer, the contractor shall remove all obstructions and shall clear the works and the grounds occupied by him from all refuse and rubbish and leave them in a neat and clean condition.

SECTION 5. CONTROL OF THE WORK

1.5.1 Authority of the Engineer

All work shall be done under the supervision of the engineer and performed to his satisfaction. He shall decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the contract on the part of the contractor; all disputes and mutual rights between contractors; and all questions as to compensation. His decision shall be final and he shall have executive authority to enforce and make effective such decisions and orders as the contractor fails to carry out promptly.

1.5.2. Plans

Plans, consisting of general drawings and showing such details is

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are necessary to give a comprehensive idea of the construction contemplated, will be furnished by the department. Roadway plans will show alignment, profile grade, typical cross sections of improvements, and general cross sections.

1.5.3. Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions, and adjustments shown on the approved plans, except as modified by written orders by the engineer. The crown or rise of the finished surfaces of the roadway, from the curb or side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves or at other places, where deemed necessary, the contractor will be required to widen, superelevate and spiral the roadway according to department standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the engineer in writing.

1.5.4. Coordination of Plans, Specifications, Supplemental Specifications, and Special Provisions.

These specifications, the supplemental specifications, the plans, special provisions, and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complimentary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

1.5.5. Cooperation by Contractor

The contractor will be supplied with a minimum of two sets of approved plans, specifications and contract assemblies including special provisions, one set of which the contractor shall keep available on the work at all times.

The contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the engineer, his inspectors, and other contractors in every way possible.

The contractor shall at all times have on the work, as his agent, a competent superintendent or foreman capable of reading and thoroughly understanding the plans and specifications, thoroughly experienced in the type of work being performed, who shall receive instructions from the engineer or his authorized representatives. The superintendent shall have full authority to execute the orders or directions of the engineer without delay, and to promptly supply such materials, equipment, tools, labour and incidentals as may be required. Such superintendence shall be furnished irrespective of the amount of work sublet.

1.5.6. Cooperation with Utilities

It shall be the department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenaces within the limits of the proposed construction are to be moved by the owners under agreement with

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the department except as otherwise provided for in the special provisions or as noted on the plans.

It is understood and agreed that the contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

1.5.7. Cooperation between Contractors

The department reserves the right at any time to contract for and perform other or additional work on or near the work covered by any contract.

When separate contracts are let within the limits of any one project, each contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors. Contractors working on the same project shall cooperate with each other and in case of dispute the engineer shall be the referee and his decision shall be final and binding on all.

Each contractor involved shall assume all liability, financial or otherwise, in connection with his contract and shall protect and save harmless the department from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced by him because of the presence and operations of other contractors working within the limits of the same project and he shall assume all responsibility for all work not completed or accepted because of the presence and operations of the other contractors.

The contractor shall as far as possible arrange his work and shall place and dispose of the materials being used so as not to interfere with the operations of the other contractors within the limits of the same project. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

1.5.8. Construction Stakes, Lines and Grades

The engineers will set construction stakes establishing lines, slopes, and continuous profile-grade in road work, and centreline and bench marks for bridge work, culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the contractor with all necessary information relating to lines, slopes, and grades. These stakes and marks shall constitute the field control by and in accordance with which the contractor shall govern and execute the work.

The contractor shall be held responsible for the preservation of all stakes and marks, and if any of the construction stakes or marks have been carelessly or willfully destroyed or disturbed by the contractor, the cost of replacing them shall be charged against him and shall be deducted from the payment for the work.

1.5.9. Authority and Duties of Inspector

Inspectors, employed by the department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The inspector is not authorized to alter or waive the provisions of these specifications.

An inspector is placed on the work to keep the engineer informed as to the progress of the work and the manner in which it is being done; also to call the contractor's attention to any nonconformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and

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specifications, or to act as foreman for the Contractor. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

1.5.10 Inspection of Work

All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

1.5.11 Removal of Defective and Unauthorized Work

All work and materials which do not conform to the requirements of the contract shall be considered as defective work.

Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist prior to acceptance of final payment for work, shall be removed immediately and replaced by work and materials which shall conform to the specifications or shall be remedied otherwise in an acceptable manner authorized by the Engineer. This clause shall have full effect regardless of the fact that the defective work may have been done or the defective materials used with the full knowledge of the Inspector. The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

No work shall be done without lines and grades having been given by the Engineer. Any work which may be done by the Contractor prior to approval of contract, work done contrary to or regardless of the instructions of the Engineer, work done beyond the lines shown on the plans, or as given, except as herein specified, or any extra work done without authority will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer, made under the provisions of this article, the Engineer shall have authority to cause defective work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs from any monies due or to become due the Contractor.

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1.5.12 Load Restrictions

The Department may indicate in the contract load restrictions on any road or structure within the vicinity of the project.

1.5.13 Maintenance During Construction

The Contractor shall maintain the work during construction and until the work is finally accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in satisfactory condition at all times.

All cost of maintenance work during construction and before the work is finally accepted shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

In the event that the Contractor's work is ordered shut-down for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract has been declared in default.

1.5.14 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Article 1.5.13 above, will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

1.5.15 Final Construction Inspection (With Maintenance Period)

Whenever a final maintenance period is included as part of the contract and after all the items of work have been satisfactorily completed, the Engineer shall make a final inspection as stipulated in Article 1.5.17 but in lieu of final acceptance the project will be placed on final maintenance period. The final maintenance period shall begin on the date of final construction inspection.

1.5.16 Final Maintenance Period

The Contractor will be required to maintain the project in first-class condition for the stipulated period after the final construction inspection.

Since the final maintenance period is part of the contract, compensation for all maintenance during construction and during the final maintenance period shall be included in the contract unit prices bid on the pay items of the work, and no additional payment will be made for such maintenance as provisions and stipulations set forth in Articles 1.5.13 and 1.5.14 apply to this final maintenance period.

1.5.17 Final Acceptance

Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

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Upon due notice from the contractor of presumptive completion of the entire project, the Engineer shall make a semifinal inspection and if at such semifinal inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

If, however, at any semifinal inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the contractor the necessary instructions as to replacement of material and performance or reperformance of work necessary and prerequisite to final completion and acceptance, and the contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or reperformance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

1.5.18 - Claims for Adjustment and Disputes

In any case where the contractor deems that extra compensation is due him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra, as defined herein, the contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given, and the Engineer is not afforded proper facilities by the contractor for keeping strict account of actual cost as defined for force account, then the contractor hereby agrees to waive the claim for such extra compensation. Such notice by the contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. In case the claim, after consideration by the Engineer, is found to be just, it shall be allowed and paid as an extra as provided herein for force account work. Nothing in this article shall be construed as establishing any claim contrary to the terms of Article 1.4.3.

Section 6. CONTROL OF MATERIAL

1.6.1A - Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. Tenderers shall state in their tender the country of origin of items where such items originate in countries other than Canada. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

1.6.1 - Source of Supply and Quality Requirements

The materials supplied by the contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the contractor shall furnish materials from other approved sources.

1.6.2 - Designated Local Material Sources

Possible sources of local materials may be designated on the plans and described in the special provisions. The quality of material in such deposits will be acceptable in general, but the contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications, and whether blending with other materials will be necessary.

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It shall be understood that it is not feasible to ascertain from samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

When material deposits are not designated the contractor shall provide sources of material acceptable to the Engineer.

The department will acquire and make available to the contractor the right to take materials from these sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads.

If the contractor desires to use material from sources other than those designated, he shall make a written request to the Engineer to do so. The Engineer may, if he deems it practical and desirable, authorize the use of such sources. The use of material from other than designated sources will not be permitted until representative samples taken by the Engineer have been approved and written authority issued for the use thereof. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

1.6.3. - Plant Inspection

If the volume of the work, construction progress, and other considerations warrant, the Engineer may undertake the inspection of materials at the source. It is understood, however, that no obligation is assumed to inspect materials in that manner.

Plant inspection will be undertaken only upon condition that:-

(a) The cooperation and assistance of the contractor and the producer with whom he has contracted for materials is assured.

(b) The representative of the Engineer shall have full entry at all times to such parts of the plant as may concern the manufacture or production of the materials being furnished.

(c) When required by the Engineer, the material producer shall furnish an approved weatherproof building for the use of the inspector, such building to be located conveniently near the plant and independent of any building used by the material producer, and shall conform to the requirements of Article 1.6.5. - Field Laboratory.

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(d) It is understood that the department reserves the right to retest all materials which have been tested and accepted at the source of supply after the same have been delivered and to reject all materials which, when retested, do not meet the requirements of these specifications.

1.6.4. Samples, Tests, Cited Specifications

All materials before being incorporated in the work shall be inspected, tested and approved by the engineer, and any work in which such materials are used without prior test and approval or written permission of the engineer, shall be considered as defective and unauthorized and will not be paid for. Tests will be made by and at the expense of the department unless otherwise noted in these specifications, in accordance with the most recent standard or tentative standard methods of AASHO, ASTM or CSA which are current on the date of advertisement for bids. If a particular standard is not cited in the specification, it is understood the current standard of the CSA will apply. Samples shall be taken by a representative of the department. All materials being used are subject to inspection, test or rejection at any time during the preparation and use.

1.6.5 Field Laboratory

Wherever indicated in the contract the contractor shall provide an inspector's shelter or field laboratory, consisting of a suitable building in which to house and use the equipment necessary to carry on the required tests. This building shall be used exclusively for testing purposes by the engineer or inspector. It shall be maintained dust - and watertight, have satisfactory lighting and heating equipment, and be not less than 10 feet wide, 12 feet long and 7 feet high, floored, contain not less than two glazed windows and a workbench with necessary drawers. The windows and door shall be provided with locks. The building shall be so located that the contractor's plant shall be in full view from the workbench. When available, electrical connections shall be provided.

1.6.6. Delivery and Storage of Materials

Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. CSA standard practice shall govern the storage of materials unless otherwise provided.

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1.6.7 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

1.6.8. Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

1.6.9. Materials Inspection

In order to expedite the inspection and testing of materials the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources or supply.

1.6.10. Department Furnished Material

The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

Material furnished by the Department will be delivered or made available to the Contractor at the points specified in the special provisions.

The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returnedto the supplier which are surplus to contract requirements for any cause whatsoever.

SECTION 7, LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1.7.1. Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

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1.7.2. Permits, Licenses and Taxes

The contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

1.7.3. Patented Devices, Materials, and Processes

If the contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Department; if no such agreement is made or filed as noted, the contractor and the surety shall indemnify and save harmless, the Department, any affected railroad or railway company, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the Department, any costs, expenses, and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

1.7.4. Restoration of Surfaces Opened by Permit

The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time is hereby expressly reserved by the Department for the proper authorities of the municipality in which the work is done and the contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department, and the contractor shall not allow any person or persons to make an opening unless a duly authorized permit of the Department is presented. The engineer may authorize the contractor to allow parties bearing such permits to make openings in the highway. The contractor, shall, when ordered by the engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work shall be paid for as extra work, as provided in these specifications, and shall be subject to the same conditions as original work performed.

1.7.5. Health and Sanitary Provisions

This contract is made subject to the Public Works (Health) Act (R.S.C. 1927 Chapter 91), and the contractor will be required to conform to regulations made or to be made by the Governor General in Council respecting the accommodation, medical treatment and sanitary protection of working men employed upon the works.

1.7.6. Public Convenience and Safety

The contractor shall at all times so conduct his work as to ensure the least possible obstruction to traffic. The safety and convenience of the general public and the residents along the highway and the protection of persons and property shall be provided for by the contractor as specified under Article 1.4.7, Maintaining Traffic.

1.7.7. Railway - Highway Separation

In case the contractor is required to haul materials across the tracks of any railway, or elects to do so, he should make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing.

All work to be performed by the contractor in the construction of railway-highway separation structures on the railroad right-of-way shall be done in a manner satisfactory to the engineer of the railway company and shall be performed at such times and in such manner as not to unnecessarily interfere with the movement of trains or traffic upon the track.

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of the railway company. The contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property. The contractor will further be required to carry such public liability and property damage insurance as may be stipulated elsewhere in these specifications or in the special provisions.

1.7.8. Impeding Navigation.

In all matters connected with the prosecution of the works, the transportation or delivery of materials of any kind required for them, and in making arrangements for these purposes, the contractor must be governed by the laws and rules of navigation and the interpretation put upon them by the Officer entrusted to enforce them, and he must use every precaution to guard against interrupting, impeding or in any way interfering with the navigation, as he will be held strictly and legally liable for all damage, loss or detention that any vessel may sustain from any of his acts, whether such may result from a desire to prosecute the works or any other cause.

1.7.9. Barricades and Warning Signs

The contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

The contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished.

1.7.10. Use of Explosives.

When the use of explosives is necessary for the prosecution of the work, the contractor shall exercise the utmost care not to endanger life or property. The contractor shall be responsible for any and all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner, in compliance with local laws and ordinances, and all such storage places shall be marked clearly "DANGEROUS - EXPLOSIVES". Where no local laws or ordinances apply, storage shall be provided satisfactory to the engineer and in general not closer than 1,000 feet from the road or from any building or camping area.

The contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the contractor of responsibility for any damage resulting from his blasting operations.

1.7.11. Protection and Restoration of Property and Landscape

The contractor shall be responsible for the preservation of all public and private property, crops, trees, monuments, highway signs and markers, fences, etc., along and adjacent to the highway, and

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shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precaution to prevent damage to pipes, conduits, and other underground structures, to poles, wires, cables and other overhead structures, whether shown on the plans or not, shall protect carefully from disturbance or damage all land monuments and property marks until the engineer has witnessed or otherwise referenced their location and shall not remove them until directed. The contractor shall not willfully or maliciously injure or destroy trees or shrubs, and he shall not remove or cut them without proper authority.

He shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing said work, or at any time due to defective work or materials, and said responsibility shall not be relaased until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof on the part of the contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

1.7.12. Forest Protection

In carrying out work within or adjacent to Forests, the contractor shall comply with all of the regulations of the Provincial or Federal Forestry Department, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests, and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep all the areas in an orderly condition, dispose of all refuse, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the forest protection agency.

The contractor shall take all reasonable precaution to prevent and suppress forest fires and shall require his employees and subcontractors, both independently and at the request of forest officials, to do all reasonably within their power to prevent and suppress and to assist in preventing and suppressing forest fires and to make every possible effort to notify a forest official at the earliest possible moment of the location and extent of any fire seen by them and to extinguish the same if nearby and practicable.

1.7.13. Responsibility for Damage Claims

The contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement, and to prevent the interruption of or any damage or menace to traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the contractor shall indemnify and save harless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable

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to any damage, injury or infrigement.

1.7.14 Insurance

In addition to any other forms of insurance or bonds required under the terms of the contract the Contractor shall carry Builders Risk Insurance endorsed to cover loss or damage by flood and such other risks as may be specified by the Engineer on all contracts for structures.

1.7.15 Opening Sections of Project to Traffic

At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract; provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor in the manner provided hereinafter in Article 1.9.3. Any damage to the highway that may occur on such section not attributable to traffic shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

1.7.16 Contractor's Responsibility for Work

Until final acceptance of the work by the Engineer, as evidenced in writing, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements, or from any other cause, whether arising from the execution or from the nonexecution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, of the public enemy or of governmental authorities.

In case of suspension of work from any cause whatever, the Contractor shall be responsible for all materials, and shall properly store them, if necessary, and shall provide suitable drainage of the roadway and erect necessary temporary structures at his expense. He shall properly and continuously maintain, during such period of suspension of work, in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under his contract, and shall take adequate precautions to protect and establish new tree growth and other important vegetative growth against injury.

1.7.17 Contractor's Responsibility for Utility Property and Services

At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangments necessary for the protection thereof have been made.

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The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication of rearrangement or work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority. He shall co-operate with the said authority in the restoration of service as promptly as possible. In no case shall interruption to water service be allowed to exist outside of working hours. Fire hydrants shall be kept accessible to the Fire Department at all times and no materials shall be kept or stock-piled within 15 feet of any fire hydrant.

1.7.18 Furnishing Right-of-Way

The Department will be responsible for the securing of all necessary rights-of-way in advance of construction.

1.7.19 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-Contractor, or caused in whole or in part by an act or omission of the Contractor, any Sub-Contractor, or any officer, servant or agent of the Contractor or of any Sub-Contractor whether or not such act or omission was negligent.

SECTION 8 PROSECUTION AND PROGRESS

1.8.1 Subletting of Contract

The Contractor shall not assign or sublet this contract without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any monies due to any Sub-Contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for.

1.8.2 Prosecution of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized. The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

Should the prosecution of the work for any reason by discontinued, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

1.8.3 Limitation of Operations

The Contractor shall conduct the work at all times in such a manner and in such sequence as will insure the least interference with traffic. He shall have due regard to the location of detours

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and to the provisions for handling traffic. He shall not open up work to the prejudice of work already started, and the engineer may require the contractor to finish a section on which work is in progress before work is started on any additional section.

1.8.4. Character of Workman, Methods and Equipment.

The contractor shall at all times employ sufficient labour and equipment for prosecuting the several clases of work to full completion in the manner and time required by these specifications.

All workmen must have sufficient skill and experience to perform properly the work assigned to them. All workmen engaged in special work or skilled work, shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

All equipment which is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent propety, or other highways will result from its use. The engineer may order the removal and require replacement of any unsatisfactory equipment.

Any foreman or workman employed by the contractor or by an subcontractor who, in the opinion of the engineer or his authorized representative, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the engineer, be removed forthwith by the contractor or subcontractor, employing such foreman or workman, and shall not be employed again in any portion of the work without the approval of the engineer.

Should the contractor fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosectuion of the work, the engineer may withhold all estimates which are or may become due, or may suspend the work until such orders are complied with.

1.8.5. Temporary Suspension of Work

The engineer shall have the authority to suspend the work wholly or in part by written order, for such period as he may deem necessary due to unsuitable weather, to conditions considered unfavourable for the suitable prosecution of the work, or to failure on the part of the contractor to correct condtions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

1.8.6. Extension of Time

Provided always that after the expiration of the time limited for the completion of the work the Minister shall be sole judge as to what additional time, if any, may be allowed to the contractor for such completion, and his decision as to the reasonableness or sufficiency thereof for the purpose of completion shall be final and binding upon the contractor.

1.8.7. Default and Annulment of Contract

In case the contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the engineer, the engineer may give a general notice to the contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the engineer to the contractor or should the contractor make default in the completion of works, or any portion

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thereof within the time limited with respect thereto in or under this contract, or should the contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required. or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the contractor of the works, and no objection or claim shall be raised or made by the contractor by reason or on account of the ultimate cost of the works so taken over for any reason proving greater than in the opinion of the contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant, and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired possessed or provided by the contractor for the purposes of the work, or by the engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment(at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Whenever in this contract power or authority is given to Her Majesty, the Minister, the engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the contractor being permitted to further proceed with the execution of the works.

1.8.8. Termination of Contractor's Responsibility

The contract will be considered complete when all work has been finished, the final inspection made by the engineer, and the project accepted by the department. The contractor's responsibility shall then cease, except as set forth elsewhere in the contract.

SECTION 9. MEASUREMENT AND PAYMENT

1.9.1. Measurement of Quantities

All work completed under the contract shall be measured by the engineer according to British standard measure.

All longitudinal and transverse measurements for areas will be measured horizontally.

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Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

In computing volumes of excavation, embankment and borrow, the average end area method will be used.

All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the engineer directs, and each truck shall bear a plainly legible identification mark.

All materials for which measurement are obtained by the cubic yard, "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

When requested by the contractor and approved by the engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the contractor before such method of measurement of pay quantities will be approved by the engineer.

Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the contractor.

Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

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Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions made some other method of measurement desirable.

1.9.2. Scope of Payment

The prices mentioned by the contractor in his tender are to be taken as those upon which he agrees to be paid for all the works embraced in his specification and accompanying plans, and also for all additional quantities which may be required for the proper execution of the contract. The prices will be held to be rigidly inclusive, and to cover all failures, accidents, contingencies, plant, labour and materials and all damage that may happen or occur to the works, or any portion of them, or to the plant or tools, provided and employed, arising from the action of the elements, whether from gales, storms, flood, ice, fire or any other cause whatever, up to the completion of the works and their final acceptance by the department excepting in such cases of damage to the works, or any portion of them, caused by uncontrollable action of nature against which it would have been impossible to guard.

The amount of the tender shall include all sales taxes in force or applicable at the time. In the event of a reduction in such sales taxes being legally authorized between the date set for the reception of tenders and the completion of the works, the benefit derived from such reduction shall accrue and be payable to the department, and an amount covering such reduction will accordingly be deducted from the sum or sums payable to the contractor under the original agreement.

No claims for extras will be entertained by the department on account of unforeseen difficulties in the carrying out of the works herein specified.

1.9.3. Extra and Force Account Work

Extra work performed in accordance with the requirements and provisions of Article 1.4.5. shall be paid for at the unit prices or lump sum stipulated in a supplemental agreement, or in lieu of such agreement, the department may require the contractor to do such work on a force account basis, to be compensated in the following manner:

(a) Labour

For all labour and teams and foremen in direct charge of the specific operations, the contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labour, teams and foremen are actually engaged in such work, to which cost shall be added an amount equal to 10 percent of the sum thereof.

(b) Bond, Insurance and Tax

For property damage, liability, and workmen's compensation insurance premiums and unemployment insurance contributions on the force account work, the contractor shall receive the actual cost, to which no percentage shall be added. The contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and tax.

(c) Materials

For materials accepted by the engineer, and used, the contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost shall be added an amount equal to 10 per cent of the sum thereof.

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(d) Equipment

For any machinery or special equipment, (other than small tools) including fuel, lubricants, and repairs the use of which has been authorized by the engineer, the contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum no percentage shall be added.

(e) Superintendence

No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(f) Compensation

The compensation as set forth above shall be received by the contractor as payment in full for extra work done on a force account basis. At the end of each day the contractor's representative and the Inspector shall compare records of the cost of work done as ordered on a force account basis.

(g) Statements

No payment will be made for work performed on a force account basis until the contractor shall furnish to the engineer duplicate itemized statments of the cost of such force account work detailed as to the following:-

(1) Name, classification, date, daily hours, total hours, rate, and extension for such labourer, foreman and team.

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(3) Quantities of materials, prices and extensions.

(4) Transportation on materials.

(5) Cost of property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions. Such statements shall be accompanied and supported by original receipted invoices for all materials used and transportation charges, provided that, if materials used on the force account work are not specifically purchased for such work but are taken from the contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the contractor certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the contractor.

1.9.4. Omitted Items

Should any items contained in the tender be found unnecessary for the proper completion of the work contracted, the engineer may, upon written order to the contractor, eliminate such items from the contract, and such action shall in no way invalidate the contract and no allowance will be made for items so eliminated in making final payment to the contractor except for such actual work as may have been done and materials actually purchased prior to notification of the elimination of the items.

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1.9.5. Progress Payments

Payments will be made each month as the work progresses. The payments will be based upon progress estimates prepared by the engineer of the value of the work performed and materials completed in place in accordance with the contract and for materials delivered in accordance with Article 1.9.6. of these specifications. From the total of the amount so ascertained will be deducted an amount equivalent to 10 percent of the whole, which 10 percent will be retained by the department until after completion of the entire contract in an acceptable manner and the balance, or an amount equivalent to 90 percent of the whole, less all previous payments, shall be certified for payment.

No such progress estimate or payment shall be required to be made when, in the judgment of the engineer, the work is not proceeding in accordance with the provisions of the contract, or when in his judgment the total value of the work done since the last progress estimate amounts to less than $500.00.

1.9.6. Payment for Material Delivered on Project

Partial payments will be made to the extent of 50 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the department, or leased by the contractor and transferred to the department providing such is done to the satisfaction of the engineer. If requested to do so, the contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

No payment shall be made upon fuels, supplies, form lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

1.9.7. Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the engineer as provided in Article 1.5.17 and subject to the terms of Article 1.8.8, the engineer shall prepare the final estimate of the quantities of the various classes of work performed, and after the approval of such final estimate by the Minister, there shall be paid to the contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

All progress estimates and payments shall be subject to correction in the final estimate and payment.

SECTION 10. WAGES AND CONDITIONS OF EMPLOYMENT

1.10.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) by the contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by subcontract.

1.10.2. Labour Conditions

The contractor's attention is directed particularly to the provisions and requirements of the Province's workmen's compensation act and to statutes regulating the hours of employment on public work.

In addition to the Provincial laws restricting the hours of labour, and minimum wage rates, the contractor shall abide by the labour conditions.

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of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

1.10.3 Employment of Canadian Labour

In engaging labour for the work contemplated by this contract, as far as practicable and consistent with reasonable efficiency and economy, only Canadian Labour shall be used and first consideration shall be given to the employment of available and competent workmen who are most in need and are resident in the district in which the works are to be performed. Preference is to be given to veterans of the Armed Forces of Canada and to married men and single men with dependents.

1.10.4 Records

The Contractor shall maintain and keep available for inspection by the Minister, a record of the names and addresses of ex-servicemen employed on this work, together with a record of the steps taken to implement this requirement.

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DIVISION 2

EARTHWORK

Section	
1	Clearing and Grubbing
2	Roadway Excavation
3	Borrow Excavation
4	Embankment Construction
5	Channel Excavation
6	Excavation for Structures
7	Overhaul

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SECTION 1 - CLEARING AND GRUBBING

(1954)

2.1.1. DESCRIPTION:

This item shall consist of the complete removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans as well as any other areas which may be designated by the Engineer.

2.1.2. MATERIALS:

No Materials are involved.

2.1.3. METHODS OF CONSTRUCTION:

(a) Clearing:

Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush, windfalls and other fallen timber, stumps and rubbish except such trees and shrubs as may be designated for preservation by the Engineer. Such designated trees and shrubs shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, all trees, roots and existing stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging and off the right-of-way, shall be removed.

Clearing shall be completed at least one-half mile in advance of grading operations.

(b) Salvage:

All merchantible timber not required for constructional purposes shall be cut and trimmed in suitable lengths, as designated by the Engineer and neatly piled at convenient points for removal.

(c) Grubbing:

Grubbing shall include the excavation and complete removal and disposal of all roots and stumps to a minimum depth of eighteen (18) inches below the profile ground line. Submerged logs, corduroy, and similar objectionable matter shall be completely removed.

On areas where grubbing is required as an operation separated from actual grading operations, cross-sectioning will be done after grubbing operations have been completed.

(d) Disposal:

All timber, logs, trees, stumps, brush and other rubbish shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

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2.1.4. METHOD OF MEASUREMENT:

The area to be paid for under this item shall be the number of acres, and fractions thereof, of land actually cleared and/or grubbed in accordance with these specifications and completed to the satisfaction of the Engineer.

2.1.5. BASIS OF PAYMENT:

Clearing and grubbing shall be considered as separate items. The acreage, determined as provided above, shall be paid at the contract unit price per acre for clearing and the contract unit price per acre for grubbing, which price and payment shall constitute full compensation for all labour, equipment, tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 2 - ROADWAY EXCAVATION

(APRIL 1958)

2.2.1 DESCRIPTION

(a) This item consists of the removal of all materials from within the right-of-way to the lines and grades indicated on the plans or as staked by the Engineer, and the satisfactory disposal of these materials as hereinafter described.

Roadway Excavation includes:-

(1) Excavation for the preparation and construction of the subgrade of the highway.

(2) Excavation for the formation of embankments (see Specification for Methods of Construction and Compaction of Embankments).

(3) Excavation for the construction of side ditches.

(4) Excavation for construction of permanent access roads and cross-roads, approaches and entrances, and parking areas.

(5) Stripping of cut and embankment areas.

(6) Removing and disposing of muck or other unsuitable material.

(7) Breaking up and satisfactorily removing or incorporating into the embankment as specified, all existing gravel, macadam, bituminous or concrete surfaces.

(8) Excavation for backfilling holes outside the roadway limits and within the right-of-way to correct surface irregularities.

(9) The transportation for the free haul distance of excavated materials.

(10) Trimming and rounding of slopes.

(11) The construction of detours or other suitable provision to accommodate traffic, either pedestrian or vehicular, over or around any part of the roadway upon which work is being performed, as well as supplying and maintaining such signs, barriers, fences, lights and watchmen as the Engineer may consider necessary for the protection of the public.

(12) Maintaining the work outlined under this section in a finished condition until it or any portion thereof, has been accepted as completed by the Engineer.

(b) Classification

Roadway excavation will be classified as follows:-

(1) Excavation, Common

(2) Excavation, Rock

and will include all authorized excavation within the right-of-way, exclusive of that included under Clearing and Grubbing, Channel Excavation and Excavation for Structures.

Excavation, Common, will include the excavation of all materials not hereinafter classified as Excavation, Rock.

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Excavation, Rock, will include the excavation of all boulders more than ½ cubic yard in volume, all stone fences and masonry walls, all concrete or masonry structures, concrete pavements, and all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting.

Excavation, Rock, will not apply to old, plain, or bituminous bound base courses or surface courses of macadam, bituminous pavement, gravel, or broken stone. All such materials will be classified as Excavation, Common.

2.2.2 MATERIALS:

Not applicable.

2.2.3 METHODS OF CONSTRUCTION:

(a) Utilization of Excavated Materials

All suitable materials removed by excavation shall be used, as far as practicable, in the formation of embankments, and elsewhere as directed. During the progress of excavation, material taken from cuts that is deemed suitable for granular sub-base shall be so utilized, if necessary, for this purpose, as directed by the Engineer.

(b) Conserving of Topsoil

The ground surface shall be stripped of all material to the depth and width as directed by the Engineer. Where the material is suitable for topsoiling it shall be stockpiled at locations designated by the Engineer.

(c) Unsuitable Materials

When soft, spongy, or other unsuitable material is encountered in areas on which an embankment is to be constructed, or below the top of the subgrade in cuts, the material shall be removed to the lateral limits and depths specified by the Engineer. The Engineer will specify such lateral limits and depths, station by station. Any material removed in excess of approved limits and depths will not be measured for payment and the Contractor will be required to provide, at his own expense, the material, properly compacted, necessary to replace the excess material which has been excavated.

Where the roadway crosses deposits of peat, muck, muskeg or swamp, the unsuitable material shall be excavated to a firm foundation and to the width indicated on the Standard Plan No. 4 unless otherwise indicated on the Plans and Profiles. In such cases supplementary specifications and plans will be supplied to the Contractor.

(d) Disposal of Materials

Excavated muck and other material to be wasted shall be disposed of as directed by the Engineer. All costs related thereto, except overhaul, will be included in the contract unit prices for the various excavation items.

(e) Construction in Roadway Cuts

See Standard Plan No. S-2 - "Earth Cut".

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After removal of soft, spongy or unsuitable material, as detailed in (c) above, the excavated area shall be back-filled with approved material to the grade indicated by the Engineer.

Where the subgrade is on transition from excavation to embankment the ground slopes at the grade point shall be treated in accordance with the Standard Plan No. S-1 - "Earth Cut and Fill Construction Method at Grade Points".

The area in cuts from inslope to inslope of ditches shall be treated as follows:-

Case 1 - Where no granular sub-base is specified. Remove material to a depth of six (6) inches below subgrade elevation. Scarify the newly exposed surface to a depth of six (6) inches and compact it to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

Case 2 - Where six (6) inches or less of granular sub-base is specified. Remove the material below the sub-base to a depth of six (6) inches. Scarify the newly exposed surface to a depth of six (6) inches and compact it to 95% of maximum density. Replace material previously removed and compact it to 100% of maximum density. Compact granular sub-base to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

Case 3 - Where more than six (6) inches of granular sub-base is specified. Scarify the material below the sub-base to a depth of six (6) inches and compact it to 100% of maximum density. Place granular sub-base in layers not thicker than six (6) inches and compact each layer to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

See Specification Items 2.4.2 (g) and 2.4.3 (h) for Embankment Construction compaction requirements.

(f) Rock Excavation

If, during excavation, material appearing to conform to the classification for Excavation, Rock, is encountered, the Contractor shall notify the Engineer to that effect and shall provide ample opportunity for him to investigate and make such measurements as are necessary to determine the volume of the material in question.

The Contractor must salvage and place in the embankment, in accordance with these Specifications and the standard cross-section sheet, all the material dislodged by blasting.

All rock used in the construction of the embankments shall be reduced in size so as when placed it shall not exceed in vertical dimensions one-third (1/3) of the height of the fill.

In no case shall the spacing of the drill holes exceed the depth of the cut at the point of drilling.

Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the true slope line.

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Where rock is encountered in the excavation of roadway cuts it shall be shattered one foot eight inches (1'-8") below subgrade elevation for the full width of the cut and shattered one (1) foot below the grade of the ditch bottom.

The rock shall be removed to a depth of eight (8) inches below the subgrade elevation. The exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface. The granular sub-base shall be placed in two four (4) inch layers and each layer shall be compacted to 100% of maximum density. See Standard Plan No. S-4 - "Rock Cuts".

In order to obtain uniform shattering, drilling shall be carried out to a plane parallel to, and at a minimum of two feet eight inches (2' - 8") below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified above as two feet eight inches (2'-8") any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both ends of cuts on level gradients, to be point at least three feet eight inches (3'-8") below grade or correspondingly lower if this minimum drilling in the cut has been exceeded. See Standard Plan No. S-6 - "Rock Cut Construction". All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(g) Drainage

Side ditches will mean ditches which are parallel to and have one side adjacent to the roadway. All such ditches shall be constructed where necessary to the depths and widths indicated on the Plans or as ordered by the Engineer.

In cut sections the subgrade and the surface beneath the sub-base shall be crowned, as indicated on the Plans, to permit ready run-off of free water.

(h) Widening Cuts

In the event the Contractor desires to excavate beyond the widths specified in the Plans, in order to provide material for use in embankments, he must first obtain the written approval of the Engineer. The Engineer's approval will be granted only if:-

(1) The materials to be obtained by such widening are suitable for embankment construction, and

(2) Slope requirements of the Plans and Specifications are met.

(i) Rounding and Finishing Slopes

The top surface and side slopes of cuts shall be left in a neat and workmanlike condition and true to the lines and grades shown in the Plans. When boulders are encountered in cut slopes they may be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

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(j) Hauling of Materials

The Contractor shall haul excavated material to any distance specified by the Engineer. Overhaul will be allowed when hauling material beyond the free-haul distances, as specified under Item 2.7.4 "Method of Measurement" in the Specification for "Overhaul".

2.2.4. Method of Measurement

(a) The quantity of Excavation, Common, for which payment will be made, shall be the volume in cubic yards measured in its original position, and computed by the average end area method for materials acceptably excavated. The measurement will include undergrading for removal of soft and spongy material and the authorized stripping of cut and embankment areas.

In cut sections where material is removed and replaced (Case 1 and 2, Item 2.2.3 (e) of this Specification), the volume for which payment will be made shall be considered as the volume contained in a prism having a depth of twelve (12) inches and an area equal to the top area of the replaced material. The measurement will not include the yardage scarified.

Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material due to slides which has to be moved to complete the roadway but only when such slides are not attributable to the carelessness of the Contractor.

(b) Excavation, Rock

The quantity of Excavation Rock for which payment will be made shall be the volume in cubic yards measured in its original position and computed by the average end area method for material acceptably excavated.

At the discretion of the Engineer the quantity of excavation for which payment will be made may also include unavoidable overbreak to an amount not exceeding 10 percent of the volume of the individual rock cut as staked by the Engineer.

All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position in accordance with the average end area method and paid for at the unit price for Excavation, Common.

The measurements will include the volume of boulders more than half a cubic yard each in volume, stone fences, masonry walls, concrete or masonry structures and concrete pavements, the volume measured in place by methods determined by the Engineer.

(c) Overhaul

Overhaul will be measured for payment as stated in Article 2.7.4 - Specification for "Overhaul".

2.2.5 BASIS OF PAYMENT

(a) Payment for Excavation, Common, and Excavation, Rock, will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment will include full compensation for all labour, equipment, tools, explosives, excavation and hauling (except overhaul).

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scarifying in earth cuts, shattering of rock below grade in rock cuts, the formation of embankments, the storing of stripped material for top-soiling, the trimming and finishing of slopes and top surfaces, disposal of surplus or unsuitable materials, maintaining the work until acceptance, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Overhaul

Overhaul will be paid for as stated in the Article 2.7.5 Specification for "Overhaul".

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SECTION 3 - BORROW EXCAVATION

(1954)

2.3.1. DESCRIPTION:

This item shall include the furnishing from approved borrow pits outside the right-of-way, of all materials which are not available from Roadway Excavation and which are required for embankments and for the formation of the subgrade in cuts, together with the excavation, hauling (except overhaul), and placing of all such materials.

2.3.2. MATERIALS:

All materials excavated under this item shall be as specified by the Engineer.

2.3.3. METHODS OF CONSTRUCTION:

(a) Selection and Location:

The Engineer shall locate and the Department will furnish all borrow pits. The Contractor shall notify the Engineer sufficiently in advance of opening any approved borrow pits, so that necessary measurements may be made.

(b) Access Roads:

The Engineer shall locate all necessary access roads and other facilities which may be required for hauling borrow excavation to and over the right-of-way. Any work and materials required for the construction of such access roads, shall be specified by the Engineer and paid for under the contract unit prices for the various items.

(c) Clearing and Grubbing:

Clearing and Grubbing will be measured and paid for as stated in Division 2, Section 1 - "Clearing and Grubbing."

(d) Stripping:

Prior to the removal of borrow for use in an embankment, the borrow pits shall be stripped of all unsuitable material. Where any such material is suitable for top soiling, the Engineer may direct, that it be stock piled in approved locations.

(e) Use of Borrow Excavation:

No materials from Borrow Excavation shall be used until all sources of roadway excavation have been exhausted, except as otherwise approved by the Engineer. If the Contractor places more borrow material than is required causing waste of other excavation, the amount of such waste will not be included for payment.

(f) Final Trimming and Restoration:

All borrow pits shall be neatly trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or stand therein. Upon completion of the hauling, the Contractor shall restore the entire right-of-way and abutting lands, which were disturbed by such operation, to a satisfactory and sightly condition.

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2.3.4. METHOD OF MEASUREMENT:

(a) The quantity of Borrow Excavation for which payment shall be made, shall be the quantity measured in its original position, prior to stripping, and computed by the average end area method for materials acceptably excavated, as hereinabove prescribed.

(b) Overhaul will be measured for payment as stated in Division 2, Section 7 - "Overhaul".

2.3.5. BASIS OF PAYMENT:

(a) Payment for Borrow Excavation shall be made for the quantities as above determined, measured in cubic yards, at the contract unit price for Borrow Excavation, which price shall be full compensation for all labour, equipment, tools, the excavation and hauling (except overhaul), the formation of embankments, the storing of stripped material for top soiling, the disposal of unsuitable materials, the trimming and restoration, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Overhaul:

Overhaul will be paid for as stated in Division 2, Section 7 - "Overhaul".

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SECTION 4 - EMBANKMENT CONSTRUCTION

(1954)

2.4.1 DESCRIPTION:

This item shall include the placing in embankments and cuts of suitable materials obtained from the various shceduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross-sections and dimensions shown on the Plans, staked by the Engineer or indicated in the Specifications.

2.4.2 MATERIALS

Materials used for embankments shall be free from muck, wood brush, roots sod, ashes, rubbish, top soil and any other organic matter that may decay.

The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All materials shall be approved by the Engineer prior to incorporation in embankments.

In the upper portion of embankments and in cuts the sub-base materials shall be a pit-run granular material, approved by the Engineer and placed to the depth indicated on the Plans, or as directed by the Engineer in accordance with the conditions for embankment construction as hereinafter specified. Adjacent to abutments and other structures, where shown on the standard plans, and within the limits there specified, the material shall be granular in nature and approved by the Engineer.

Where filling or backfilling is to be placed under water, approved granular material or rock shall be used.

To the extent that these various embankment materials are available, unless otherwise provided by the Supplementary Specifications, they shall be obtained from Roadway Excavation, Channel Excavation or Excavation for Structures; when additional materials are needed they shall be obtained from Borrow Excavation. Any such materials wasted or otherwise disposed of by the Contractor, shall be replaced with other suitable material at his own expense.

In event that suitable local granular materials are not available for sub-base or porous backfill, the Engineer may require the use of a processed granular sub-base material for embankment construction if such an item is provided in the contract.

2.4.3 METHODS OF CONSTRUCTION

(a) Embankment Foundation:

Embankments shall be formed of suitable materials. The foundation for the embankments shall be prepared by removing the topsoil and sod as specified in Item 2.2.3 (c) of the Specifications (Roadway Excavation), by benching or scarifying existing slopes and compacting the underlying soil before construction of the embankment is begun. If unsuitable material exists in the foundation for the embankment, it shall be removed to a firm bearing strata as shown on the plans or as directed by the Engineer.

When the subgrade elevation of the new embankment is less than two (2) feet above an existing pavement, the existing pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

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(b) Side Hill Construction:

When an embankment is to be constructed on a slope or against an existing embankment, the entire existing surface on which the embankment is to be placed shall be ploughed, benched or broken up in such manner that the new material will bond with the resulting surface. The specific method employed in this operation shall be subject to the approval of the Engineer.

(c) Earth Embankments:

Material shall not be placed while frozen nor shall it be placed on a frozen surface.

The embankment shall be constructed to the cross-section as shown on the Standard Plans accompanying these Specifications. A crown shall be maintained at all times during construction to ensure ready run-off of free water.

The excavation or borrow shall be placed in successive uniform layers across the entire area of the embankment. The thickness of the layer shall be a maximum of six (6) inches before being compacted for material containing soil, gravel, and small stones with less than fifteen (15) per cent by volume of stone larger than four (4) inches in greatest dimension. If the embankment material contains more than fifteen (15) per cent by volume of stone or ledge rock, too large to be compacted in six (6) inch layers, it shall be constructed in layers not to exceed the maximum size of the rock or stone in thickness, but in no case shall the layer exceed two (2) feet. Stone larger than four (4) inches in greatest dimension shall not be placed within one (1) foot of the subgrade elevation.

(d) Rock Embankments:

See Standard Plan No. S-3: "Rock Fills".

In embankments composed principally of material obtained from rock cuts, the requirements for layer construction and mechanical compaction will be waived. In such embankments the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. As soon as practicable, such embankments shall be constructed in layers having a maximum height of five (5) feet. The top of the rock fill shall be eight (8) inches below the subgrade elevation. The top of this rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(e) Granular Sub-Base:

The granular sub-base shall be placed to the thickness indicated on the Plans or as directed by the Engineer. This material shall be spread in uniform layers, not exceeding six (6) inches in thickness, without segregation, over the full width of the embankment and shall be compacted to the required density as hereinafter specified.

(f) Swamp or Muskeg Treatment:

See Standard Plan No. S-7: "Construction through Swamp Areas".

In embankment construction through swamps, muskeg, peat, and other such undesirable materials, it shall be the general policy to excavate these materials for the full width of the embankment and adjacent ditches, and the embankment shall be constructed with approved materials in accordance with

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Article 2.2 herein. However, each case will be considered individually and supplementary plans and specifications indicating the particular method of construction will be supplied the Contractor well in advance of construction if this general policy is altered.

(g) Compaction:

The material shall be spread in layers, as required herein, by bulldozers, scrapers, graders, or other equipment. Each layer shall then be thoroughly rolled by sheepsfoot, pneumatic-tired, or smooth-wheel rollers for the full width of the layer and to the required degree of compaction. Successive layers shall not be placed until the layer under construction has been thoroughly compacted. Whenever the embankment has not received sufficient compaction, the placing of embankment material shall cease and rolling shall be continued until the required degree of compaction is obtained.

The embankment shall be compacted to a minimum dry density of 95% of the maximum dry density in pounds per cubic foot as determined by the A.A.S.H.O. Standard Density Test T99-49, except that the top twelve (12) inches below the subgrade shall be compacted to a dry density of 100% of the Standard Dry Density. However, if the Engineer finds that it is impractical to obtain the specified degree of compaction with the material encountered, he may limit rolling operations as he deems proper and may increase the sub-base thickness to compensate for any anticipated loss in strength of the subgrade.

The Engineer shall specify the type of compaction unit to be used on the different soil types encountered during construction. In general the sheepsfoot roller, shall be used to compact clays, the pneumatic-tired rollers shall be used to compact sands and gravels, and smooth-wheel rollers shall be used to compact slag, rock and coarse gravel. Sheepsfoot rollers and pneumatic-tired rollers may be used in tandem if authorized by the Engineer.

If it is anticipated that operations will cease for three hours or longer, smooth-wheel or pneumatic-tired rollers shall be used to roll the entire embankment working area after it has been properly crowned, shaped and drained.

During rolling operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated by mechanical means, or work shall cease temporarily to bring the material to a proper moisture content. The proper moisture content is approximately the Optimum Moisture Content as determined by the A.A.S.H.O. Standard Density Test T99-49.

(h) Compaction Equipment:

All rollers specified herein for the compaction of materials shall comply with the following minimum requirements:

(1) Sheepsfoot rollers shall consist of metal rollers or drums, the outer surface of which shall be studded with tamping feet not less than seven (7) inches long and having a flat end surface area of not less than five (5) nor more than ten (10) square inches. The roller shall be of such weight that the load upon each square inch of foot surface, when any row of feet is supporting the whole weight of the roller shall be not less than two hundred and fifty (250) pounds per square inch. The roller shall be weighted by sand or liquid or both to obtain the proper pressure on the feet. Proper ports shall be provided in the roller

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drum for adding sand and liquid. The load per tamper foot will be determined by dividing the total weight of the loaded roller by the maximum number of tamper feet in one row parallel to the axis of the roller. The roller shall have a device for keeping the space between the feet from clogging. The tamping roller shall have a dual drum, each unit having a minimum width of four (4) feet, and flexible connections between drums to allow the rollers to fit the contours of the embankment layer. The average speed of the tamping roller shall be three (3) miles per hour and shall not exceed five (5) miles per hour.

(2) Pneumatic-tired rollers shall have a width of not less than five (5) feet and not more than seven (7) feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than five (5) inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than five (5) pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than six (6) tons and that the roller shall develop a minimum of three hundred (300) pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(3) Three wheel power rollers shall not weigh less than ten (10) tons and shall provide a compression on the rear wheels of not less than three hundred and thirty (330) pounds per lineal inch of tire width.

(4) Tandem power rollers shall not weigh less than eight (8) tons and shall provide a compression on the drive roller of not less than two hundred and fifty (250) pounds per lineal inch of tire width.

At least one of the above approved rollers shall be in continuous operation for each one hundred and twenty-five (125) cubic yards or less of embankment material placed per hour. When several embankments, each of small area, are so isolated from one another that one roller cannot compact the areas satisfactorily, additional rollers shall be provided.

Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of Standard units required in the Specifications.

(i) Backfill of Structures:

Granular fill material meeting the approval of the Engineer shall be placed adjacent to bridge abutments, culverts, and other structures within the limits shown on the plans. All material shall be placed in six (6) inch layers and compacted to one hundred (100) per cent of the maximum density as determined by the A.A.S.H.O. Standard Test T99-49. Where the work consists of backfilling box or pipe culverts the granular material shall be placed in layers not exceeding six (6) inches alternately on each side of the culvert. Each layer shall be compacted as specified above so as not to displace the culvert before succeeding layers are deposited.

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(j) Trimming:

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown on the plans and profiles. The subgrade surface must, at all points, be within one (1) inch of the theoretical section indicated on the plans.

2.4.4. METHOD OF MEASUREMENT:

(a) Compaction:

The quantity for which payment shall be made for the operation of compaction equipment shall be the actual number of hours that the particular unit is operated in compacting any materials designated for compaction by the specifications or by the Engineer.

(b) Watering:

The quantity of water to be paid for shall be measured in units of 1000 gallons.

2.4.5. BASIS OF PAYMENT:

(a) Payment for construction of embankment, as above described, including granular fill in sub-base, at abutments, and elsewhere, shall not be made under a specific scheduled item but shall be paid for at the contract unit prices for the various scheduled excavation items.

(b) Payment for compaction shall be made for the number of hours, as above determined, at the contract unit prices for the individual units of compaction equipment, which prices shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(c) Payment for watering shall be made at the contract unit price for the number of 1000 gallon units, which price shall be full compensation for furnishing, hauling, and distributing, and for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 5 - CHANNEL EXCAVATION

(1954)

2.5.1. DESCRIPTION:

This item shall include the excavation required for deepening, widening and relocating water channels, and the construction of ditches other than roadway side ditches, to the lines and grades, and at the locations shown on the Plans or designated and staked by the Engineer.

2.5.2. MATERIALS:

No materials are involved.

2.5.3. METHODS OF CONSTRUCTION:

Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of excess material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.5.4. METHOD OF MEASUREMENT:

The quantity of Channel Excavation for which payment will be made will be the volume, measured in its original position, computed by the method of average end areas, removed within the neat lines of Channel Excavation shown on the Plans or as staked by the Engineer. The material shall be classified as Channel Excavation common, or Channel Excavation rock, in accordance with Item (b), Article 2.2.1 - "Roadway Excavation".

2.5.5. BASIS OF PAYMENT:

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, common, and Channel Excavation, rock, which prices shall be full compensation for excavating the materials, placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, all labour, explosives, equipment, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 6A - EXCAVATION FOR STRUCTURES

(BRIDGES EXCEPTED)

2.6A.1 - Description

This item shall consist of the provision of all labour, materials and equipment necessary to complete the excavation for pipe and box culverts, pipe lines, underdrains, walls, etc. (bridges excepted) at the required locations and as shown or described by, or reasonably inferable, from the Drawings and Specifications, or as ordered in writing by the Engineer.

It shall also include the following:

Clearing and grubbing
Shoring and bracing as necessary
Backfilling
Disposal of surplus materials
Protection
Clean-up

2.6A. 2 - Materials

No materials are involved.

2.6A. 3 - Methods of Construction

(a) Classification

Excavation, Common shall include the excavation of all materials not hereinafter classified as Excavation Rock.

Excavation Rock shall include the excavation of all rock in mass formation and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. It shall include the excavation of boulders more than one third (1/3) cubic yard in volume, concrete or masonry structures, concrete pavements, stone fence and masonry walls. It shall not apply to old, plain or bituminous pavement, gravel or broken stone, and such materials will be classed as Excavation, Common.

(b) Preliminary Measurements

The Contractor shall notify the Engineer a sufficient time in advance of the beginning of excavation for structures, so that cross-sectional elevations and measurements may be taken of the undisturbed ground.

(c) Excavation

(i) Excavation shall include the removal of all material of whatever nature necessary for the construction of the culvert, pipe line, wall, etc.

(ii) Trenches or foundation pits shall be of sufficient size to permit the placing of the full width and length of structure of structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary to secure a satisfactory foundation.

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(iii) When masonry is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation, and excavation to final grade shall not be made until just before the masonry is to be placed, except where the material encountered is found to be unsuitable at the foundation elevation, and a granular backfill is called for by the Engineer.

(iv) Where foundation piles are used, the excavation of each pit shall be completed, when necessary, before the piles are driven. After the driving is completed all loose and displaced material shall be removed, leaving a smooth solid bed to receive the masonry.

(v) Concrete slabs or foundations shall not be poured on soil which has been allowed to dry out appreciably. If soil is exposed to drying for three or more days, it shall be moistened by sprinkling water on it before any concrete is placed. Care shall be exercised in order that no earth is washed down during such sprinkling operation.

(vi) In no case shall concrete be deposited against frozen material. The Contractor shall provide a means of thawing out, and protecting from further frost, any material such as earth, etc., which becomes frozen.

(vii) After such excavation is completed the Contractor shall notify the Engineer and no concrete shall be placed until the Engineer has approved the depth of the excavation and the character of the bearing material.

(d) Culvert Foundation in Embankments

Where pipe culverts are to be placed in trenches excavated in embankments, the excavation of each trench shall be performed after the embankment has been constructed to a plane parallel to the proposed profile grade and to such height above the bottom of the pipe as is shown on the plans or required by the Engineer.

(e) Disposal of Excavated Material

All excavated material, so far as suitable, shall be utilized as backfill or embankment. The surplus material, whether or not temporarily allowed to be placed within the stream area, shall be disposed of finally in such manner as not to obstruct the stream or otherwise impair the efficiency or appearance of the structure. No excavated material shall be deposited at any time so as to endanger the partly finished structure, either by direct pressure or indirectly by overloading banks contiguous to the operation, or other manner.

2.6A. 4 - Method of Measurement

(a) The quantity of Excavation for Structures, either Rock or Common, or both, paid for under this item, will be the number of cubic yards of material, measured in its original position, actually excavated from within the payment limits shown or indicated on the contract plans or called for in the specifications.

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(b) Unless otherwise shown or indicated on the contract plans, payment limits for excavation for pipe lines will be considered as follows:

(i) The bottom surface of a trench which is two (2) feet wider at the bottom than the outside diameter of the pipe.

(ii) The side surfaces of the trench; these surfaces shall have an inclination of 3 vertical to 1 horizontal.

(iii) The subgrade of the roadway when under a cut section, otherwise the ground surface existing at the site prior to beginning the work.

(c) The yardage of any material rehandled shall not be included in the measurement for payment, except that where plans indicate or the Engineer directs the excavation of trenches for culverts after embankment has been placed, the yardage of excavation for such culvert trenches shall be included in the measurement for payment under this item.

(d) The yardage of any material displaced into an excavation by pile driving shall be included in the measurement for payment.

2.6A 5 - Basis of Payment

Payment for Excavation for Structures shall be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for "Excavation for Structures, Common", or "Excavation for Structures, Rock", or both, which price or prices shall be full compensation for all labour, equipment, tools, explosives, excavation, and disposal, within a distance of one thousand (1,000) feet of the excavation, the trimming and restoration of the site of the work, and the disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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SECTION 7 - OVERHAUL

(1954)

2.7.1. DESCRIPTION:

This item shall consist of authorized hauling in excess of the free haul distance of 1000 feet of any material paid for under one of the various classes of excavation, and disposed of as required under the various items prescribed for the disposal of such material.

2.7.2. MATERIALS:

Not applicable.

2.7.3. METHODS OF CONSTRUCTION:

Not applicable.

2.7.4. METHOD OF MEASUREMENT:

The quantity of Overhaul, measured in cubic-yard-miles, to be paid for shall be the product of the volume of the overhauled material, measured in its original position, in cubic yards, by the overhaul distance in miles and fractions thereof.

The overhaul distance shall be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of 1000 feet. The haul distance shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment shall be based on the haul distance measured along the route designated by the Engineer.

In calculating Overhaul for Roadway Excavation, the Mass Diagram method may be used by the Engineer. In this method the limits of free haul will be determined by fixing on the profile two points 1000 feet apart, one on each side of the neutral grade point, selected in such a way that the included quantities of excavation will balance the included quantities of embankment plus the proper allowance for shrinkage or swell. All material within the balance points beyond this limit of 1000 feet will be calculated and payment will be made on the basis of the following method of computation:

All material within the limits of the 1000 feet will be eliminated from further consideration in overhaul computations.

The overhaul distance will be the distance between the centre of gravity of the remaining mass of excavation and the centre of gravity of the resulting embankments, measured in miles or fractions thereof, less 1000 feet free haul.

The amount of overhaul to be paid for shall be obtained by multiplying the overhaul distance in miles by the quantity of the remaining mass of excavation in cubic yards and shall be expressed in units of cubic-yard-miles.

2.7.5. BASIS OF PAYMENT:

Payment for Overhaul shall be made for the quantities as above determined, measured in cubic-yard-miles, at the specified unit price for Overhaul stated in the tender form and/or Contract, which price and payment shall be full compensation for all labour, equipment and tools necessary to complete the hauling operations satisfactorily, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 3

BASE COURSE

Section

1	Granular Sub-base (Class 3)
2	Base Course (Class 1)
3	Granular Sub-base (Class 2)
4	Bituminous Stabilized Base Course
5	Reconditioning of Used Roadbed
6	Road Mixed Sand Asphalt Stabilized Base Course

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DIVISION 3

SECTION 2 - BASE COURSE (CLASS 1)

1956

3.2.1 Description

This item shall consist of a foundation course composed of crushed granular material conforming to the specified gradation, constructed on the prepared sub-grade in accordance with these specifications and in conformity with the lines, grades, and typical cross-sections shown on the plans.

3.2.2 Materials

(a) Granular Material - This material shall consist of broken stone or crushed gravel of approved quality in accordance with Physical Requirements Tables 1 and 2, and it shall be composed of clean, hard, angular particles free from clay lumps, cementation, and organic material. It shall be washed if so directed.

TABLE 1

Physical Requirements for Base Course (Class 1)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	45	45
(b) Crushed fragments, min. % by wt.	-	60
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Method T-104-46	2	20

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

TABLE 2

Physical Requirements - Deleterious Materials

Description	Stone	Gravel
1. Shales	4%	4%
2. Siltstones	1	1
3. Chart	2	2
4. Ochre	1	1
5. Clay ball	1	1
Max. allowable total % by weight of deleterious material	8	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

(b) Gradation - The aggregate shall conform within the limits specified in Table 3 hereunder. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes herein specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

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TABLE 3

Base Course Aggregate (Class 1)

Sieve No.	Percent Passing
3/4"	100%
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

The portion of the base course material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

Materials will be considered unsuitable even though particle sizes are within the limits of the grading sizes herein provided, if particle shapes such as thin and elongated or any other characteristic precludes satisfactory compaction or fails to provide a roadway suitable for traffic.

(c) Source of Supply - The source of supply for the Base Course shall be in accordance with Section 1.6.1 - Source of Supply and Quality Requirements.

(d) Water - The Contractor shall supply, at his own expense, all water required for the construction of the work. The water used shall be reasonably clean and free from substances which might render it unfit for use.

3.2.3 Methods of Construction

(a) Clearing and Grubbing - The clearing and grubbing of borrow pits from which the raw material for the base course is obtained will be carried out as specified in Article 2.1.3 - Clearing and Grubbing, and payment will be made under the items in Article 2.1.5.

(b) Stripping - The pits from which this material is obtained shall be stripped of all overburden, and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

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(c) Access Roads - The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, shall be specified by the Engineer and paid for under the contract unit prices for the various scheduled items.

(d) Blending Aggregates - It shall be permissible to blend or mix two or more materials to meet the gradation requirements of the base course. When two or more materials are blended, they shall be thoroughly mixed by mechanical means so as to achieve uniformity throughout the composite material.

(e) Foundation for Base Course - The base course shall be constructed on the sub-grade which shall be clean, dry, free from frost, snow, and loose or adhering foreign materials and properly finished and compacted at the time the base course is placed thereon. Any damage to the finished sub-grade shall be repaired by the Contractor at his own expense and to the satisfaction of the Engineer, before the next course is placed.

(f) Spreading - The granular material shall be transported without segregation to the job where it shall be deposited on the sub-base by means of a mechanical spreader. The base course shall be placed in layers of not less than three (3) inches in compacted thickness and not greater than six (6) inches in compacted thickness as directed by the Engineer.

(g) Rolling and Compaction - Immediately following spreading and smoothing of each layer, all the material placed shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, or rubber tired rollers, providing they are in accordance with Item 2.4.3 (h) of the "Specification for Embankment Construction." All rolling shall start at the edges and progress towards the centre, such that each succeeding pass will uniformly overlap the previous pass. While rolling progresses, the entire surface of each layer shall be shaped and dressed with a motor grader, having a blade at least twelve (12) feet in length, to maintain a uniformly smooth surface conforming to the required lines and grades

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform.

Each layer shall be compacted to the satisfaction of the Engineer. In the event of controversy, the degree of compaction shall be determined by the current A.A.S.H.O. Method T99-49, and at least 100% of the maximum density as determined by this method will be required. During rolling, the base course shall be reasonably maintained at the optimum moisture content as determined by the above method.

The base course shall not be laid in excess of five hundred (500) lineal feet in advance of rolling.

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(d) Controlling Thickness of Base Course - The Engineer, or his Inspector, shall assume full responsibility for the quantities of granular material to be placed in order to obtain the desired base course thickness.

The Engineer will test the completed surface of each lift with a ten (10) foot straight edge. Any irregularities that exceed one-half (1/2) inch from the template grade for that lift shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Such additional material added shall be paid for at the contract unit price for base course material.

3.2.4 Method of Measurement

(a) The quantity of base course (Class 1) for which payment will be made, shall be the number of tons of base course material, placed, bonded, and accepted in the completed base course.

The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(b) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the base course material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of fines used for blending for which payment shall be made, shall be the number of tons of material actually incorporated in the composite base course material.

(d) The quantity for hauling base course fines, measured in ton-miles, for which payment will be made, shall be the product of the quantity of fines used for blending as determined in Item (c) herein, and the haul distance.

The haul distance shall be the distance, measured in miles, from the borrow pit from which the material was obtained to the plant producing the composite base course material. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(e) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

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(f) The quantity for which payment will be made for the compaction of the base course will be the actual number of hours that the particular unit is operated in compacting the base course in accordance with the specifications or as directed by the Engineer.

(g) The quantity of stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

3.2.5 Basis of Payment

(a) Payment for base course (Class 1) shall be made for the quantities as above determined, measured in tons (2000 lbs.) at the contract unit price for "Base Course", which price and payment will constitute full compensation for all labour, equipment, and tools, and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for hauling base course material shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course", which price and payment will constitute full compensation for all labour, equipment, and tools, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) Payment for fines for blending shall be made for the quantities as above determined, measured in tons, at the contract unit price for "Base Course Fines", which price and payment will constitute full compensation for all labour, equipment, and tools, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(d) Payment for hauling base course fines for blending shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Haul of Base Course Fines", which price and payment will constitute full compensation for all labour, equipment, and tools, necessary to do the work, and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(e) Payment for watering shall be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling, and distributing, and for all labour, equipment, tools, and all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(f) Payment for compaction shall be made for the quantities as above determined, measured in hours for a particular unit, at the contract unit price or prices for "Compaction", which price or prices and payment will constitute full compensation for all labour, equipment, and tools necessary to do the work, and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(g) Payment for stripping of borrow areas shall be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping of Borrow Areas", which price shall be full compensation for all labour, equipment, tools, excavation, and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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Division 4

P A V E M E N T S

Section

1	Bituminous Concrete Payement Type "A"
2	Bituminous Concrete Pavement Type "B"
3	Seal Coat
4	Bituminous Prime Coat
5	Road Mix
6	Crushed Rock Aggregates for Bituminous Concrete Pavement
7	Application of Bituminous Tack Coat
8	Equipment for Stablized Base and Paving Operations
9	

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Division 4

Section 5 - Road Mix

(1956)

4.5.1 Description

This item shall consist of a bituminous surface course of such width and depth as specified in the Information to Bidders, composed of mineral aggregate and bituminous material combined either by travelling plant mix or road mix methods using mechanical mixers, graders and pulverizers. It shall include the supplying, heating, hauling, handling and spraying of the bituminous binder and the supplying, weighing, hauling and placing of aggregate and the handling, spreading, manipulating and mixing of materials and all other work incidental or necessary to the performance of the work under this specification.

4.5.2 Materials

Samples of all materials which are to be used under these specifications shall be submitted to the Department Laboratory or specified agent for testing.

(a) Bituminous Materials

The grade of the bituminous material to be used shall be specified in Information to Bidders and shall conform to the requirements as shown in:-

(i) Section 4.1.2, Table 6, Standard Specifications for rapid curing asphaltic materials.

(ii) Section 4.1.2, Table 7, Standard Specifications for medium curing asphaltic materials.

(iii) Section 4.1.2, Table 8, Standard Specifications for slow curing asphaltic materials.

(iv) Section 4.1.2, Table 9, Standard Specification for emulsified asphalts.

(b) Aggregates

This material shall consist of broken stone or crushed gravel or blended aggregate of approved quality in accordance with physical requirement Tables 1 and 2 (Class 2 aggregate) article 4.1.2 and shall be composed of clean hard durable particles free from clay lumps, cementation and organic material.

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When tested by means of U.S. Standard Square mesh sieves, the aggregate material shall meet the following requirements:

Passing 3/4" square sieve	-	100%
Passing 1/2" " "	-	80 - 100%
Passing No.4 Mesh "	-	40 - 67%
Passing No.10 " "	-	25 - 50%
Passing No.40 " "	-	10 - 25%
Passing No.200 " "	-	3 - 8%

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes herein provided, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

The source of supply for aggregates shall be in accordance with Article 1.6.1, Source of Supply and Quality Requirements.

4.5.3 Methods of Construction

(a) Equipment

(i) General

All equipment used in this work shall be of sufficient capacity and in such mechanical condition as to meet the requirements of the job and to produce work of a satisfactory quality. All equipment shall be approved by the Engineer before work starts,

(ii) Travel Plants

Plants of the travelling type shall be self-propelled and be capable of maintaining a uniform rate of speed while mixing. The plant shall be mounted on wheels or tread equipment of such a type that when loaded to capacity they will not rut nor damage the base. The device for picking up the aggregates from the windrow shall be such that it will take up all loose material and leave the base clean without damage. Plants equipped for drying the aggregate before mixing with bitumen shall be so constructed as to prevent loss of fines or segregation of the aggregate. The equipment for proportioning the bitumen and aggregate material shall accurately measure the specified amounts of material for the mix while the machine is in operation. The plant shall be capable of thoroughly and uniformly combining the aggregate with the bitumen in such a manner that all particles are uniformly coated and also of depositing the mixture on the road surface for further manipulating and spreading.

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(iii) Road Mix Equipment

Sufficient equipment shall be on hand at all times for mixing, spreading and rolling the mixture.

Blade machines shall be tandem drive, self-powered, shall have pneumatic tires and shall be of an approved design that will satisfactorily mix and spread the bituminous mixture.

Mechanical mixing equipment such as pulverizer machines or multiple disc equipment shall be constructed so as to prevent any cutting of the base during mixing operations. Other mixing equipment may be used upon approval of the Engineer.

(iv) Distributors

Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. Spray bars shall have a minimum length of fourteen (14) feet and shall be of the full circulating type. The header bar shall be adjustable to permit varying height above the surface to be treated. The nozzles attached to the bar shall be either of the conical or flat slotted type, except that in spreading asphaltic emulsion, special emulsion nozzles shall be used. The distance centre to centre of the nozzles shall not exceed six (6) inches. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The spray bars shall be controlled by a bootman riding at the rear of the distributor where the operation of all sprays is in full view. Spreading by means of cab-controlled valves will not be permitted. The valves which control the flow from nozzles shall be of a positive acting design so as to provide a uniform unbroken spread of asphalt material on the surface.

The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of asphaltic material being applied and with tachometer of the auxiliary wheel type reading speed in feet per minute. The spreading equipment shall be so designed and articulated that uniform application of asphaltic material, in controlled amounts, may be made ranging from five hundredths (0.05) to one (1.0) gallon per square yard of surface with a range of pressure from twenty-five (25) to seventy-five (75) pounds per square inch. If a spray

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bar extension is used to cover a greater width, it shall be of the full circulating type. The distributor shall be equipped with a hose and nozzle attachment to be used for spotting skipped areas inaccessible to the distributor. The distributor shall also be equipped with pressure gauges and an accurate thermometer for determination of temperature of the asphaltic concrete material. Distributors and booster tanks shall be so maintained at all times as to prevent dripping of free asphaltic material from any part of the equipment.

(v) Rollers

Rollers shall be of the steel wheel type weighing not less than five (5) tons or more than eight (8) tons and capable of reversing without backlash.

(b) General

(i) Preparation of existing road surface

Before starting road mixing operations loose float shall be removed from the surface of the road by means of a heavy blade grader having a wheel base of not less than 10 feet. Width to be conditioned shall be that specified for the pavement plus one foot outside both edges.

(ii) Prime Coating

When required, the conditioned road surface shall be prime coated in accordance with the requirements for bituminous prime coat Division 4, Section 4 of current departmental specifications.

(iii) Application of Aggregate

The aggregate shall be deposited so as to produce a windrow of uniform content. The total content of the windrow cross section shall be determined by the Engineer.

(iv) Mixing Requirements

Immediately prior to applying the bitumen the windrows shall be sampled and tested for moisture content. If the moisture content is more than two (2) percent of the dry weight of the aggregate, the aggregate shall be turned by blades or other approved equipment, until the moisture content is reduced to two (2) percent or less. The aggregate shall then be spread smoothly and uniformly over the road surface ready for the application of bituminous material.

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The bituminous material shall then be applied uniformly by means of an approved pressure distributor with a minimum of 3 applications, each of approximately one-third of the total required amount as determined by the Engineer. The percentage of bituminous material by weight, to be added to the aggregate, shall be between 3½ and 7 percent of the weight of dry aggregate. The bitumen shall be applied uniformly at a temperature determined by the Engineer as appropriate for the material used and the conditions encountered. Immediately behind the distributor shall follow the mixing equipment consisting of some approved type of mechanical mixer and/or blade grader that completes the mixing by passing over the material. The intervals between applications shall be as ordered by the Engineer.

After the last application and partial mixing the entire mass of bitumenized material shall be thoroughly mixed either by blading the treated material from side to side of the road, or by manipulations producing equivalent results until all particles are coated with the bituminous material and the whole mass has a uniform colour. During the mixing care shall be taken to avoid cutting into the underlaying base or contaminating the bituminous mixture with earth or other extraneous matter.

Before it is finally spread, the mixture shall be examined by the Engineer who shall determine whether the mixing is complete, and the bitumen content correct. Should the mixture show an excess, deficiency, or uneven distribution of bituminous material, the unsatisfactory condition shall be corrected by the addition of the required aggregate or bituminous material, and by re-mixing. No spreading shall be done without the authorization of the Engineer. In no circumstances shall spreading be carried out when the base to be covered is wet.

After mixing is completed, the material shall be uniformly spread to the desired grade and cross-section and shall be compacted with steel wheel rollers of approved design. Rolling shall be longitudinal and shall commence at the outer edges of the road, overlapping the shoulders, and progress towards the centre, except that on super elevated curves rolling may progress from the lower to the upper edge. Rolling shall continue until the surface is of uniform texture, true to grade and cross section, and the degree of compaction is at least 95 per cent of the laboratory compacted density.

At the end of a days work, or when work is interrupted by weather conditions, all loose material shall be bladed into a windrow, whether mixing is complete or not, and it shall not be allowed to remain spread on the road over night or until the resumption of work.

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(v) Controlling Thickness of Base

The Engineer, or his inspector, shall assume full responsibility for the quantity of granular material to be placed in order to obtain the desired thickness.

The Engineer will test the completed surface with a ten (10) foot straight edge. Any irregularities that exceed one-half (1/2) inch from the template grade shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Such additional material added shall be paid for at the contract unit price for road mix material.

(vi) Weather Limitations

The spraying and mixing operations shall not be allowed when the air temperature is below 50°F., when the weather is foggy or rainy, or when conditions are otherwise unfavourable in the opinion of the Engineer.

4.5.4 Method of Measurement

(a) The quantity of aggregate for which payment will be made, shall be the number of tons of aggregate material actually placed and accepted on the road.

The weight measurements shall be made by a weighmaster provided by the Department using the scale provided by the contractor. These scales shall be of a suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy at the start of each job and as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the contractor and the test certificate shall be exhibited to the Engineer as required.

(b) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of aggregate materials acceptably placed, and the haul distance. The haul distance shall be the distance measured in miles of fractions thereof, from the plant producing the aggregate to the centre of volume of that material after placing. The haul distance shall be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of asphaltic material for which payment will be made shall be the number of imperial gallons measured at 60°F. actually incorporated into the mixture in accordance with the specifications.

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(d) The quantity for which payment will be made for mixing and placing shall be the number of square yards actually covered in accordance with the specifications.

4.5.5 Basis of Payment

(a) Payment for aggregate material shall be made for the quantities as above determined, measured in tons (2000 lbs.) at the contract unit price for "Aggregate Material", which price and payment will constitute full compensation for all labour, equipment, and tools, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for hauling aggregate material shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Aggregate Materials," which price and payment will constitute full compensation for all labour, equipment, and tools, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) Payment for asphaltic material shall be made for the quantities as above determined measured in Imperial Gallons at 60°F. at the contract unit price for "Asphaltic Material", which price and payment will constitute full compensation for all labour, equipment and tools and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(d) Payment for mixing and placing shall be made for the quantities as above determined measured in square yards at the contract unit price for "Mixing and Placing", which price and payment will constitute full compensation for all labour, equipment, tools necessary for spraying, mixing, placing, rolling and trimming, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 6

INCIDENTAL CONSTRUCTION

Section

1. Random Riprap
2. Hand-Placed Riprap
3. Installation of Culverts
4. Underdrains
5. Asphaltic Membrane
6. Reinforced Concrete Culverts
7. Cement Grout
8. Guide Fence
9. Guide Posts
10. Metal Type Retaining Walls
11. Construction of Flumes
12. Specification of Armour Riprap
13. Vehicles for the Use of the Engineer

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November, 1957

DIVISION 6

SECTION 1 - RANDOM RIPRAP

6.1.1. DESCRIPTION:

This item shall consist of stone riprap for bank protection furnished and constructed at the locations indicated, in accordance with these specifications and in conformity with the lines, grades, and dimensions shown on the plans or required by the Engineer.

6.1.2. MATERIALS:

The stones for the riprap shall be hard, angular, quarry stones of such a quality that they will not readily disintegrate on exposure to water or weathering. Stones shall vary in weight from 20 to 400 pounds each. Not less than 25 percent of the individual stones shall weigh from 200 to 400 pounds each. The source of this material will be approved by the Engineer.

6.1.3. METHODS OF CONSTRUCTION:

Foundation trenches and other necessary excavations shall be excavated by the Contractor and approved by the Engineer before the placing of riprap is begun. The stones shall be handled or dumped into place so as to form the cross sections shown on the plans. Unless changes are ordered by the Engineer, the riprap shall extend from two (2) feet below the bed of a stream to the mean high water line. Stones above a low water line shall form a uniform surface free from humps or depressions and with no excessively large cavaties below, or individual stones projecting above the general surface.

6.1.4. METHOD OF MEASUREMENT:

(a) The quantity of Random Riprap for which payment shall be made, shall be the quantity measured in cubic yards in place, and computed by the average end area method, for materials satisfactorily incorporated in the work.

(b) The quantity of foundation excavation shall be measured as in Article 2.6.4. - Excavation for Structures.

6.1.5. BASIS OF PAYMENT:

(a) Payment for Random Riprap shall be made for the quantities as above determined, measured in cubic yards at the contract unit price per cubic yard for "Random Riprap", which price and payment shall constitute full compensation for excavating, selecting, transporting and placing all stones, backfilling, and for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Payment for foundation excavation shall be made as stated in Article 2.6.5. - Excavation for Structures.

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DIVISION 6

Section 2 (A) HAND-PLACED RIPRAP

(B) GROUTED HAND-PLACED RIPRAP

NOVEMBER, 1956

6.2.1 DESCRIPTION

This item shall consist of constructing hand-placed riprap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.2.2 MATERIAL

The Contractor shall supply all materials.

(a) CEMENT

Cement for mortar shall be Portland Cement conforming to the requirements of the C. S. A. Specification A5-1951.

(b) SAND

Sand for mortar shall conform to the C. S. A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(c) ROCK

Stone for riprap shall be durable field or quarry stone of approved quality, sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects. For wall construction no stone shall be less than 1/2 cubic foot in volume and 75 per cent of the stones shall be at least 1 cubic foot in volume. For gutter construction stones shall be not less than 4 inches and not more than 6 inches in thickness with approximately flat top surfaces with widths of not less than 2 inches and lengths of not less than 6 inches. Spalls shall be supplied to fill open joints.

6.2.3 METHODS OF CONSTRUCTION

EXCAVATION

(A) HAND-PLACED RIPRAP

Where shown on the plans and as directed by the Engineer the contractor shall excavate so as to provide for an adequate granular foundation upon which the bottom of the riprap shall rest and he shall fine grade to a uniform and even surface the whole area to be riprapped. Depressions shall be filled and thoroughly compacted.

(B) GROUTED HAND-PLACED RIPRAP

Excavation shall be performed as for (A) above.

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PLACING

(A) HAND-PLACED RIPRAP

Unless laid to form a flat apron, the riprap shall commence in a trench below the toe of the slope. Stones shall be placed at the locations and to the required dimensions and cross-section shown on the plans and as directed by the Engineer. Stone shall be laid with close broken joints and shall be firmly bedded into the slope and against adjoining stones. The larger stones shall be placed in the lower courses and all shall be thoroughly compacted as construction progresses. Spalls shall be used to fill voids.

(B) GROUTED HAND-PLACED RIPRAP

The placing of the stones shall be as required under (A) above. The space between the stone shall be filled with cement mortar composed of 1 (one) part Portland Cement to 3 (three) parts fine aggregate, and shall be of such consistency that it can be placed with a mason's trowel. Before applying mortar the surfaces of the stones shall be amply wetted. Mortar shall be placed from the bottom to top, and worked with suitable tools to completely fill all voids except that the outer faces of the stones shall be left exposed. Grouted hand-laid riprap shall be cured in accordance with the curing requirements of the C. S. A. Standard Specifications for Concrete and Reinforced Concrete A23-1942 and amendments thereto.

6.2.4 METHOD OF MEASUREMENT

(A) The quantity of Hand-placed Riprap and Grouted Hand-placed Riprap for which payment shall be made shall be the number of cubic yards measured in place and accepted in the completed work.

6.2.5. BASIS OF PAYMENT

(A) Payment for Hand-placed Riprap and for Grouted Hand-placed Riprap shall be made for the quantities as above determined, at the contract price per cubic yards for "Hand-placed Riprap" and "Grouted Hand-placed Riprap" which price and payment shall constitute full compensation for excavating the bed, for trimming and consolidating the foundation as directed, for excavating, selecting and transporting all stones, for placing stones by hand, for backfilling and grouting when required, and for all labour, materials, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 3 - INSTALLATION OF CULVERTS

(1954)

6.3.1. DESCRIPTION:

This item shall consist of preparing bedding for pipe and box culverts, placing them and backfilling to subgrade level after the culverts are installed. All work under this item shall be done in accordance with these specifications and in conformity with the plans or as staked by the Engineer.

6.3.2. MATERIALS:

All Reinforced Concrete Culvert Pipe shall meet the requirements of A.A.S.H.O. Specification M 41-49 or subsequent revisions thereof.

All Corrugated Metal Culvert Pipe shall meet the requirements of A.A.S.H.O. Specification M 36-47 or subsequent revisions thereof.

These pipes will be furnished free by the Department f.o.b. at the nearest approved railway siding.

All materials required for Reinforced Concrete Box Culverts shall meet the requirements set forth under that specification.

The Engineer reserves the right to inspect and test the pipe after its delivery to the work, and if defects are found which make it unserviceable, the pipe may be rejected for use on the project. If these defects are deemed the fault of the Contractor, the pipe shall be replaced by the Department at the expense of the Contractor.

The materials used for bedding and backfilling of culverts shall be granular material selected by the Engineer from one of the various classes of excavation.

6.3.3. METHODS OF CONSTRUCTION:

(a) Trenches:

Where the foundation for the culvert is below the natural ground a trench shall be excavated in which to form the bed and place the culvert. This trench shall have a width of not less than two (2) feet greater than the external diameter of the culvert, unless otherwise authorized due to unsuitable material encountered. Where multiple pipes are laid, they shall be spaced not less than one diameter apart and excavation will be allowed one (1) foot beyond the outside of each pipe as well as between them.

The bedding surface for pipe culverts shall provide a firm foundation of uniform density throughout the entire length of the culvert and shall in general be slightly cambered in the direction parallel with the pipe centre line to correct for expected settlement and ensure tight joints in the lower half of the pipe. Recesses shall be excavated for any bells involved.

The excavation shall be carried out in accordance with Article 2.6.3. of the Specification for "Excavation for Structures."

(b) Bedding:

The culverts shall be bedded in a granular foundation of uniform density and carefully shaped, by means of a template supported at the desired grade, to fit the lower part of the culvert exterior for at least ten (10) percent of its overall height.

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All materials encountered shall be removed below grade and replaced with suitable granular material obtained from one of the various classes of excavation, in such manner as to provide a compacted cushion having a thickness under the culvert of not less than one half (1/2) inch per foot height of fill over the top of the culvert, with a minimum allowable thickness of eight (8) inches.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, unless other special construction methods are called for on the plans, all of such unstable soil under the culvert and for a width of at least one diameter on each side of the culvert shall be removed and replaced with granular material properly compacted to provide adequate support for the culvert.

(c) Installation of Reinforced Concrete Culvert Pipe:

The pipe shall be laid carefully, hubs upgrade, ends fully and closely jointed, and true to lines and grades as given. Proper facilities shall be provided for lowering the sections when they are to be placed in a trench. Each section shall be securely attached to the adjoining sections by the method contemplated for the type of joint used. All joints, unless otherwise specified, shall be filled with stiff mortar composed of one part of portland cement and one and one-half (1-1/2) parts of sand. The cement shall be supplied by the Department and the sand and water shall be approved by the Engineer. The mortar shall be placed so as to form a durable, watertight joint. After each section of pipe is laid and before the succeeding section is laid, the lower portion of the hub shall be plastered thoroughly on the inside with mortar to such depth as to bring the inner surfaces of the abutting pipes flush and even. After the section is laid, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the air and sun with a cover of thoroughly wetted earth or burlap. Any pipe which is not in true alignment or which shows any undue settlement after being laid, or is damaged, shall be taken up and relaid or replaced without extra compensation.

(d) Installation of Corrugated Metal Culvert Pipe:

Every culvert under the highway shall be so laid that the minimum distance from the subgrade to the top of the pipe shall be not less than 1/5 (one-fifth) the diameter of the pipe with a minimum of one (1) foot.

The pipe shall be laid with the separate sections joined firmly together and with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides. Any metal in the joints which is not protected thoroughly by galvanizing shall be coated with a suitable asphaltum paint.

Proper facilities shall be provided for lowering the pipe when it is to be placed in a trench. The pipe shall be laid carefully and true to lines and grades as given. Any pipe which is not in true alignment after being laid, or is damaged, shall be taken up and relaid or replaced without extra compensation.

Pipes of forty-two (42) inch or larger diameter shall be strutted as shown on the plans or in accordance with the manufacturer's recommendations. The struts shall be placed before the embankment is made and shall be removed when removal is ordered by the Engineer.

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(e) Installation of Reinforced Concrete Box Culvert:

After the bed has been constructed and finished as specified in Item (b) of this Article, the forms shall be built thereon, the reinforcing and the concrete masonry placed as shown on the standard plan and as specified in Article 5.1.3. - "Reinforced Concrete Box Culverts".

(f) Backfilling:

After the bedding has been prepared, the culvert installed, and the concrete has aged to the satisfaction of the Engineer, granular material obtained from one of the various scheduled excavation items shall be placed alongside the culvert in layers not exceeding six (6) inches in depth and within the limits shown on the standard plans No. S-8 and S-9. The layers of backfill shall be placed alternately on each side of the culvert so as not to displace it during the operation, and they shall be compacted to one hundred (100) per cent of the dry density obtained by performing the Standard Proctor Compaction test on the material as specified in A.A.S.H.O. Standard Test T 99-49. Each layer, if dry, shall be moistened and then compacted by rolling or by tamping with approved mechanical rammers. Special care shall be taken to compact the fill thoroughly under the haunches of the pipe. This method of filling and compacting shall be continued until the embankment has reached an elevation eight (8) inches above the top of the culvert.

6.3.4. METHOD OF MEASUREMENT:

The quantity for which payment will be made in pipe culvert installation, will be the actual lengths in feet, constructed in accordance with the Plans or as directed by the Engineer measured in place where laid or relaid.

6.3.5. BASIS OF PAYMENT:

(a) Pipe culvert materials will be furnished free by the Department f.o.b. at the nearest approved railway siding. Similarly, all cement and reinforcing steel will be supplied free by the Department. The cost of constructing and installing reinforced concrete box culverts will be paid for as specified in Section 5.1. - Specification for "Reinforced Concrete Box Culverts."

(b) Payment for the installation of pipe culverts of the types and sizes specified, will be made for the length of each type and size as above determined, measured in lineal feet, at the contract unit prices per lineal foot for these items. These prices shall include the transportation from the point of delivery, the laying, assembling, and caulking the pipe complete, all materials, labour, equipment, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) The cost of excavation will be paid for as stated in Article 2.6.5. - - - - - - - - "Excavation for Structures" which price will include the cost of any bracing, sheeting or shoring necessary to retain the walls of the excavation.

(d) The cost of backfill material will be paid for under one of the various scheduled excavation items.

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DIVISION 6,
SECTION 13
VEHICLES FOR THE USE OF THE ENGINEER
13 FEBRUARY, 1959

6.13.1 Description

This item consists of supplying vehicles for the use of the Engineer and his representatives in relation to the work.

6.13.2 Vehicles

(a) Type and Equipment

All vehicles shall be, and be kept, in good running order and equipped with heater, defroster, right and left hand mirrors, permanent type anti-freeze, a spare tire and required licensing and shall be of the type and number specified in the "Information to Bidders."

(b) Delivery and return of vehicles

The vehicles are to be delivered to a location designated by the Engineer, and from the time the vehicles are so delivered, they shall be deemed to be in the possession of the Crown until returned to the Contractor, as hereunder provided.

The Engineer may, at any time or times, return any or all of the vehicles to the Contractor by advising the Contractor's representative in writing that a specified vehicle is not required. From the date of such advice to the contractor's representative the specified vehicle shall be deemed to be in the possession of the contractor until redelivered to the Engineer upon his request.

The Contractor will upon written request from the Engineer redeliver to him any vehicle returned to the contractor as aforesaid.

The Engineer may require the Contractor to furnish vehicles until final measurements have been completed.

6.13.3 Damage and Repairs

All vehicles supplied pursuant to this contract are at the risk of the contractor whether in the possession of the contractor or the Crown, and the Contractor will not make any claim or demand, or bring any action or other legal proceedings against the Crown in respect of damage to any such vehicle, including damage caused by the negligence of an officer or servant of the Crown while acting within the scope of his duties or employment.

All repairs to vehicles supplied under this contract will be performed expeditiously by the contractor.

6.13.4 Method of Measurement

The quantity for which payment will be made shall be the actual months or fractions thereof the vehicles are in the possession of the Crown.

6.13.5 Basis of Payment

Payment will be made for the quantities as above determined at the contract unit prices for "Vehicles for the Use of the Engineer", which prices and payment shall be compensation in full for supplying, repairing and maintaining the vehicles excepting the cost of gas or the lubrication.

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DIVISION 8

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Division 8

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	Trans-Canada	Class of Highway B	C	D	E	F
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Earth Cut	S2	B2-2	C-2	D-2	E-2	F-2
Rock Fill	S3	B2-3	C-3	D-3	E-3	--
Rock Cut	S4	B2-4	C-4	D-4	E-4	--
Rock Cut Construction	S6	B2-5	C-5	D-5		--

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Earth Cut and Fill Construction Method at Grade Points	No. 1
Installation of Reinforced Concrete Box Culvert	No. 2
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Superelevated Section (Class A,B,C,D,E & F Highways)	No. 9
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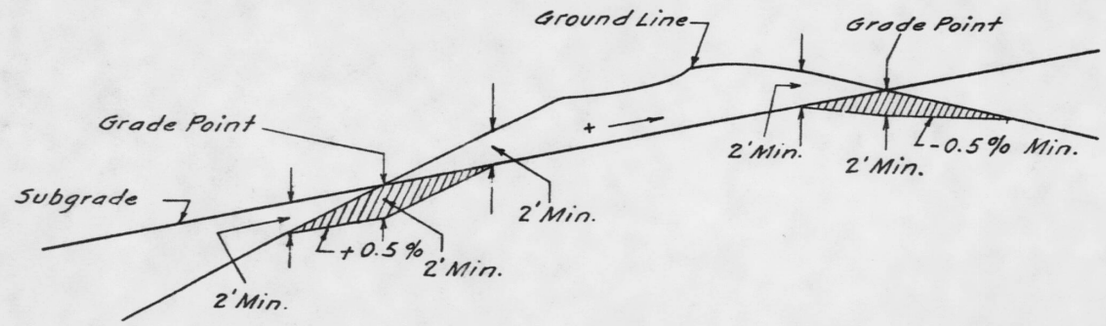

Note: The material shown by the shaded Area shall be removed for full width of Cut and Fill of the Section and replaced with approved material in accordance with Standard Specifications

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT & FILL
CONSTRUCTION METHOD
AT GRADE POINTS
STANDARD PLAN No. 1

DRAWN BY W.J.H. CHECKED BY

APPROVED BY R.A. Campbell
CHIEF 1956

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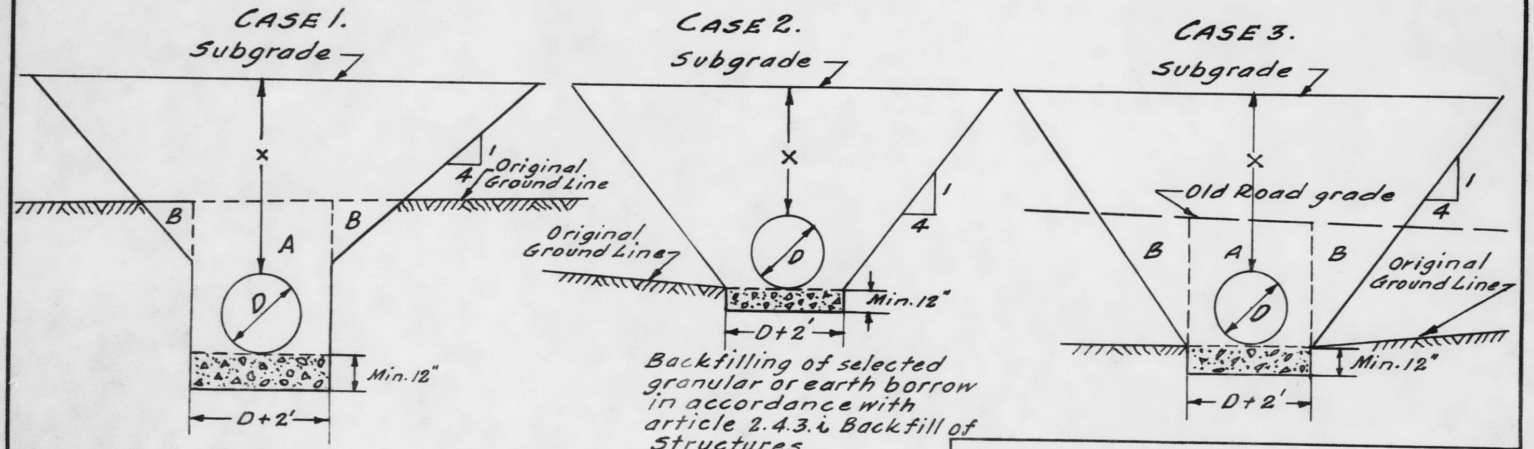

1. When X is less than 6 ft the depth X+D shall be back filled with selected granular borrow.
2. When X is greater than 6 ft. selected granular borrow shall be placed to a height of 3 feet above the top of the pipe culvert and the balance of the fill shall be constructed with select earth borrow
3. Minimum cover X to be 12"
4. Area A- Will be paid for as Excavation for Structures
   Area B- " " " Common Excavation

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

INSTALLATION OF PIPE CULVERTS

STANDARD PLAN Nº 3

DRAWN BY W.J.H. CHECKED BY

APPROVED BY R.A. Campbell
CHIEF
1956

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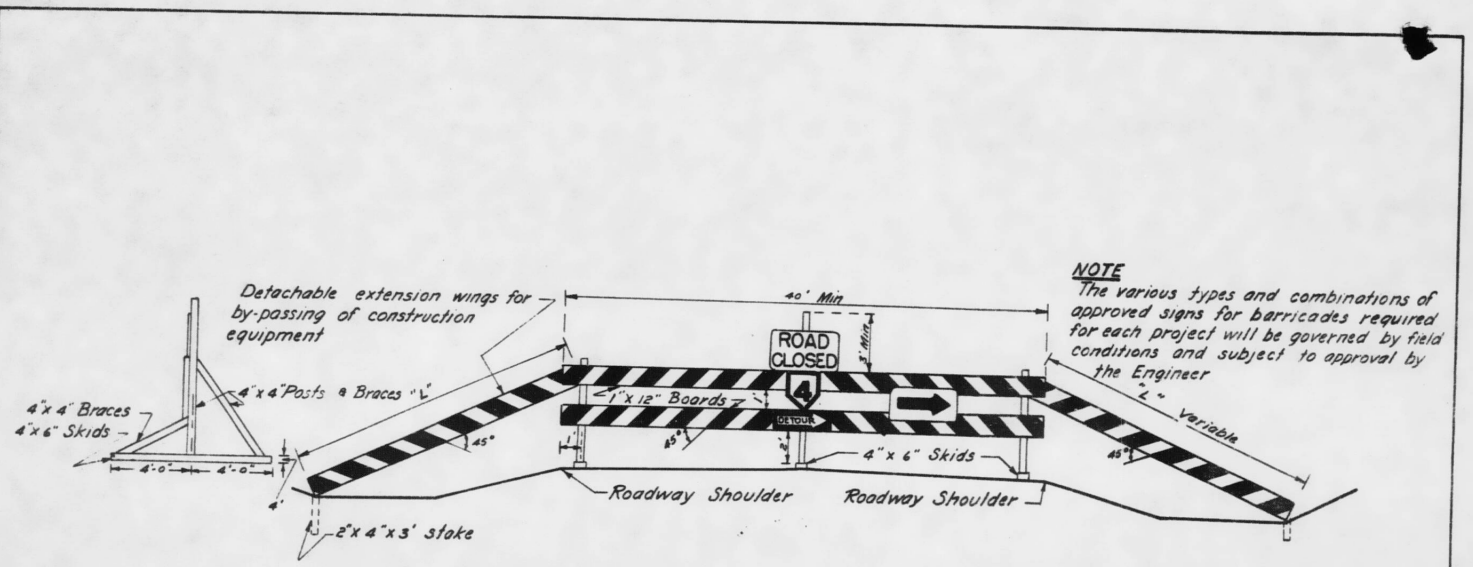

NOTE
The various types and combinations of approved signs for barricades required for each project will be governed by field conditions and subject to approval by the Engineer

All barricades to be 1"x 12" lumber painted 8" inch alternate black and white strips
All skids, braces and posts to be painted white and nailed together with No 20d nails
Bases to be weighted where necessary to provide stability

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE

TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD PLAN No. 5

DRAWN BY R.H. CHECKED BY
APPROVED BY
CHIEF ENGINEER 1956

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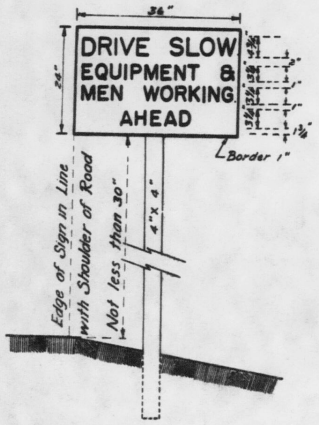

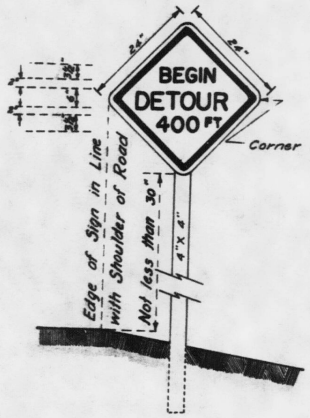

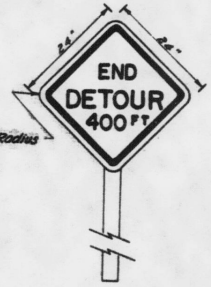

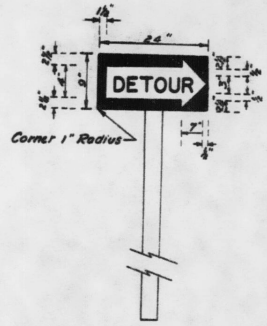

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DEVELOPMENT ENGINEERING BRANCH
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TYPICAL SIGNS

TO BE USED BY CONTRACTOR ON CONSTRUCTION

STANDARD PLAN No 6

DRAWN BY R.H. CHECKED BY

APPROVED BY

CHIEF ENGINEER 1956

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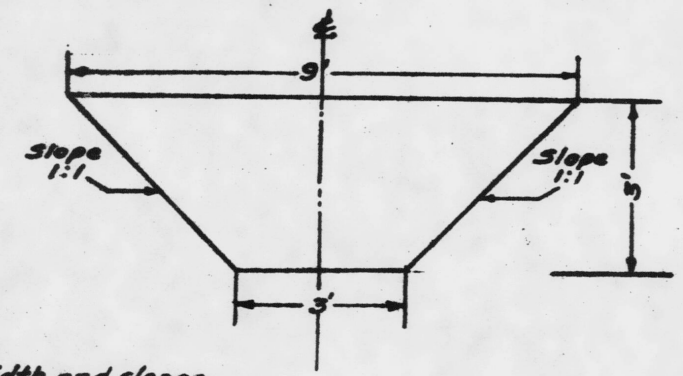

NOTE:
Bottom width and slopes adjusted where necessary to conform with hydraulic and material requirements

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

INTERCEPTOR DITCH

STANDARD PLAN No 7

DRAWN BY M.L.H. CHECKED BY

APPROVED BY _____ CHIEF 1986

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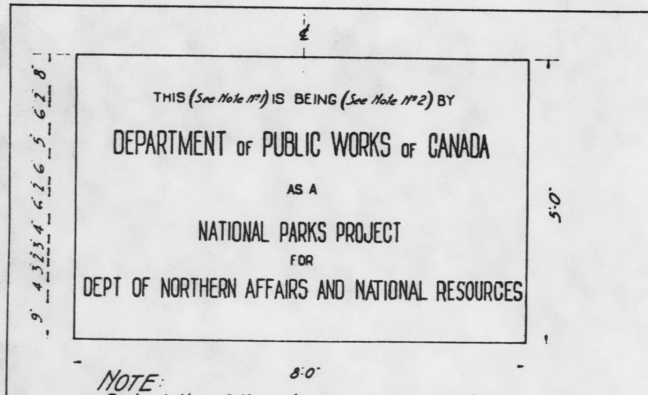
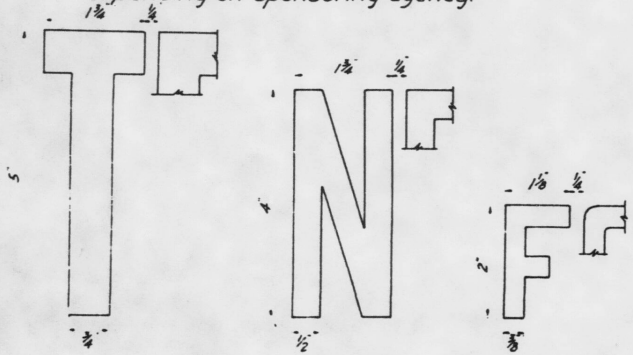
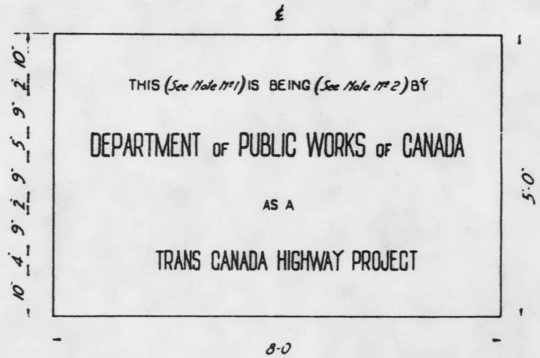


NOTE:
Sub-title of the above sign variable depending on sponsoring agency.



DETAIL OF LETTERS



NOTES

(1) Here insert "Structure" "Highway" etc. as applicable.
(2) Here insert "Erected" "Constructed" etc as applicable.
(3) Colour to be black on white.

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
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PROJECT SIGN BOARD

STANDARD PLAN NO 8

	APPROVED	DATE
DESIGN ENGINEER		1957
CHIEF		

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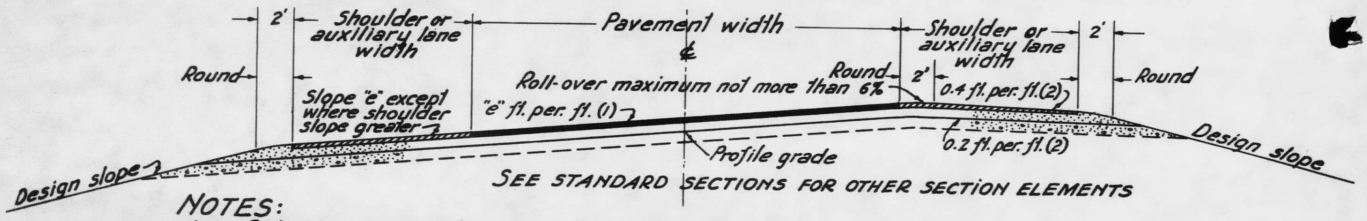
CLASS A, B, C, D, E & F HIGHWAYS



SEE STANDARD SECTIONS FOR OTHER SECTION ELEMENTS

NOTES:

1 "e" Rate of superelevation ft. per ft. = $0.067 \frac{V^2}{R} - F$ (Side friction factor)
"e" Minimum, 0.02 ft. per ft.
"e" Maximum, 0.08 ft. per ft. up to 5° for V 60-70 M.P.H. to 0.08 for 50 M.P.H. down to 0.06 for D's above 6°.
"e" Maximum, 0.06 ft. per ft. above 6° for V 45 M.P.H. and lower V's and for ramps (3)
See 6-D, 6-1 for values of "e" for main highway or table below.

2 Minimum slope 0.02 ft. per ft. to 0.04 ft. per ft. for gravel or bituminous shoulders.

3 Use upper values preferably for ramps, One way ramp pavement and shoulder cross-sloped one way except at junction for warping. Roads with narrow shoulder 4 ft. or less, shall be cross sloped one way eliminating roll-over.

SUPERELEVATION RATE FOR DESIGN SPEED M.P.H.

Ramps ft. Per ft. (3) — Main Highway ft. Per ft.

DEGREE OF CURVE / VELOCITY	20	25	30	35	40	50	60	70
1°30						.020	.022	.025
2°00					.020	.027	.035	.038
3°00					.025	.035	.047	.049
4°00				.02	.035	.050	.066	.076
5°00			.02	.02 - .03	.044	.062	.076	.080
6°00			.02 - .03	.03 - .04	.052	.070	.080	
8°00		.02	.03 - .04	.04 - .05	.058	.076	.080	
13.3	.02	.02 - .03	.03 - .04	.04 - .06	.06	.06 - .08		
18.5	.02 - .03	.02 - .04	.04 - .05	.05 - .06	.06			
25.0	.02 - .04	.03 - .05	.04 - .06	.05 - .06				
38.0	.03 - .04	.03 - .05	.04 - .06					
60.0	.04 - .05	.04 - .06						
	.04 - .06							

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DEVELOPMENT & ENGINEERING BRANCH
HIGHWAYS DIVISION

SUPERELEVATED SECTION
CLASS A, B, C, D, E & F HIGHWAYS
STANDARD PLAN No 9

Drawn by R.E.S Checked by R.a.b.

APPROVED BY [signature]
for Chief 1957

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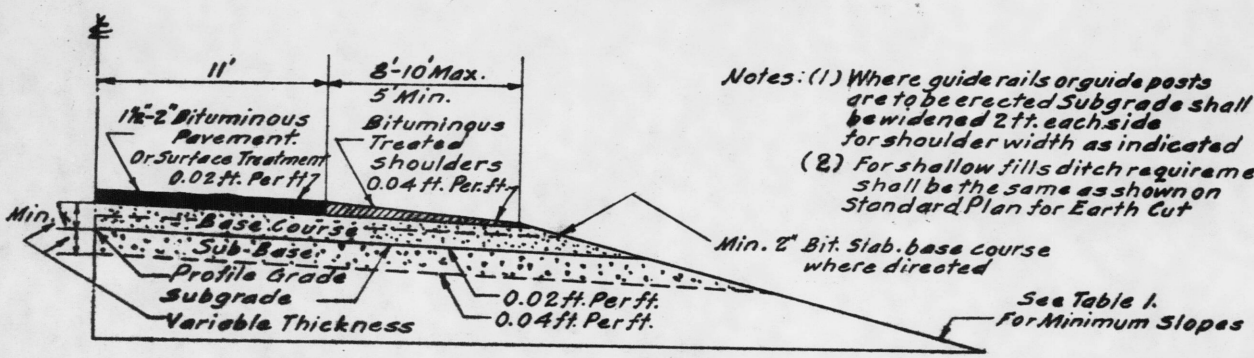
CLASS 'C' HIGHWAY



Notes: (1) Where guide rails or guide posts are to be erected Subgrade shall be widened 2 ft. each side for shoulder width as indicated

(2) For shallow fills ditch requirements shall be the same as shown on Standard Plan for Earth Cut

TABLE. 1			
MINIMUM SLOPES			
	TERRAIN		
Height of Cut or fill	Rolling	Moderately Steep	Steep
0'-4'	4 : 1	3½ : 1	3 : 1
4'-10	3½ : 1	3 : 1	2 : 1
10'-15'	3 : 1	2½ : 1	1½ : 1
15'-20	2 : 1	2 : 1	1½ : 1
Over 20'	2 : 1	1½ : 1	1½ : 1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH FILL

PLAN № C-1

DRAWN BY N.J.H. CHECKED BY [illegible]

APPROVED BY _____ CHIEF 1956

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CLASS 'C' HIGHWAY

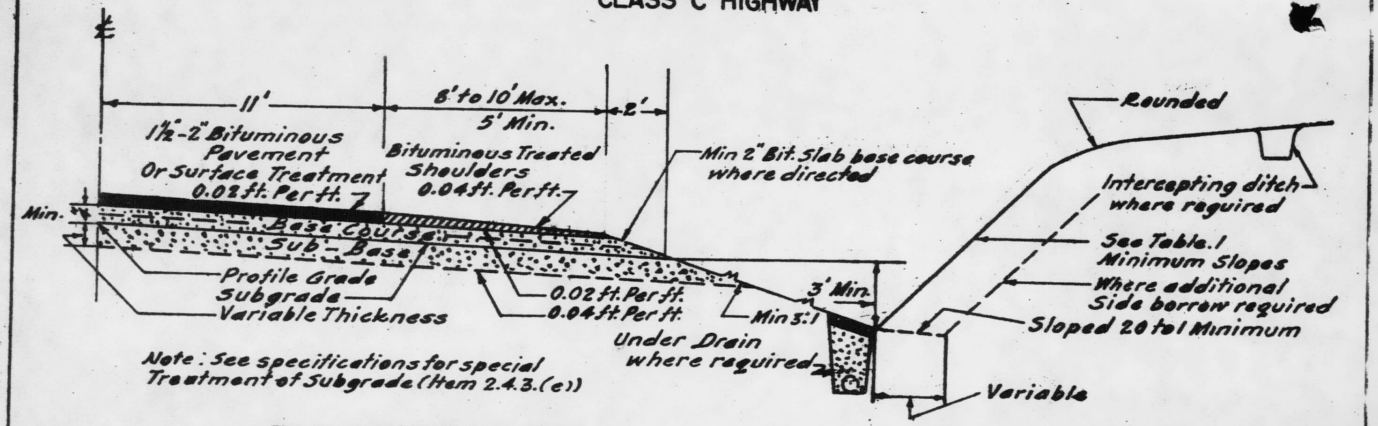

TABLE. 1
MINIMUM SLOPES

Height of Cut or Fill	TERRAIN		
	Rolling	Moderately Steep	Steep
0 4	4 : 1	3½ : 1	3 : 1
4'-10'	3½ : 1	3 : 1	2 : 1
10'-15'	3 : 1	2½ : 1	1½ : 1
15'-20'	2 : 1	2 : 1	1½ : 1
Over 20'	2 : 1	1½ : 1	1½ : 1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT

PLAN No C-2

DRAWN BY _____ CHECKED BY _____

APPROVED BY _____ CHIEF _____ 1964

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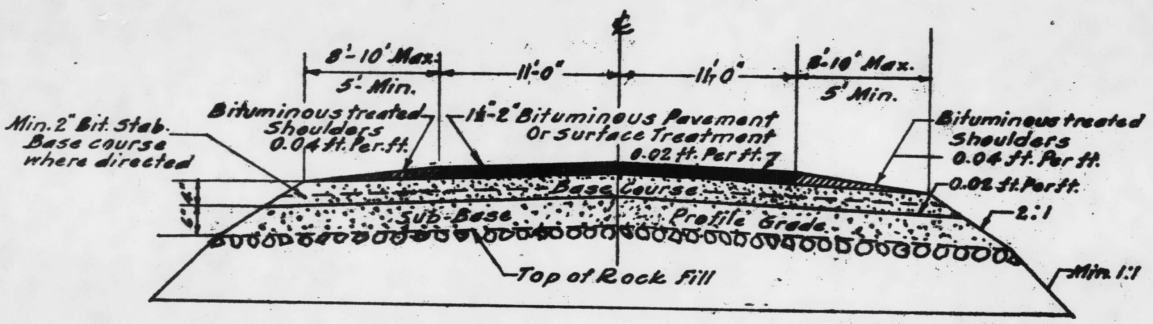

Note: (1) If guide rails etc. are to be erected subgrade shall be widened 2 ft. each side for shoulder width as indicated
(2) Top of rock fill to be chinked with Rock spalls and fines to provide an earth tight surface

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK FILL

PLAN Nº C-3

DRAWN BY [illegible] CHECKED BY [illegible]

APPROVED BY _____ CHIEF 1946

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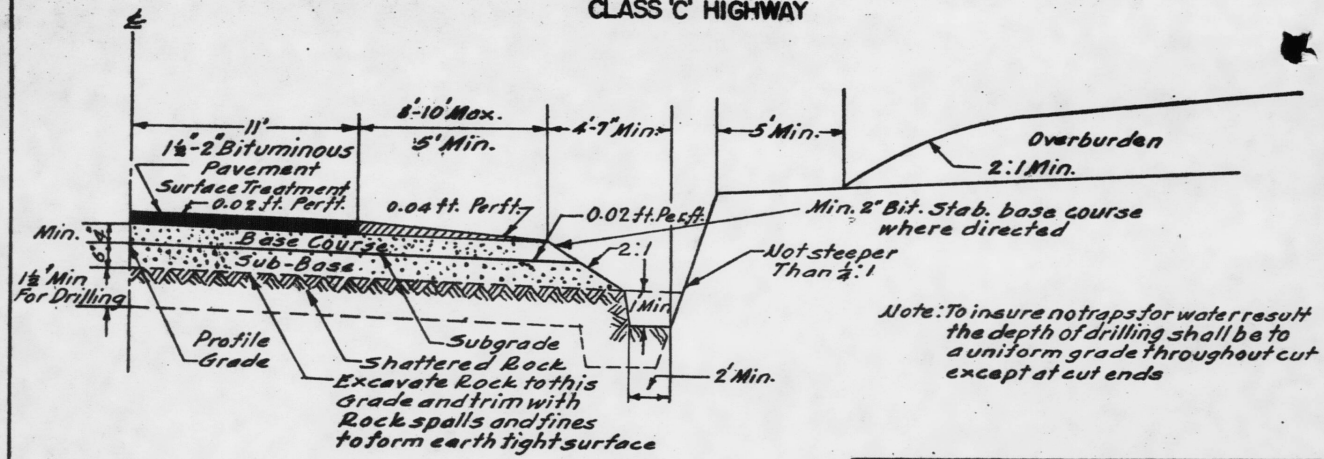
CLASS 'C' HIGHWAY



Note: To insure no traps for water result the depth of drilling shall be to a uniform grade throughout cut except at cut ends

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT

PLAN No C-4

DRAWN BY _____ CHECKED BY _____

APPROVED BY _____ CHIEF _____ 1966

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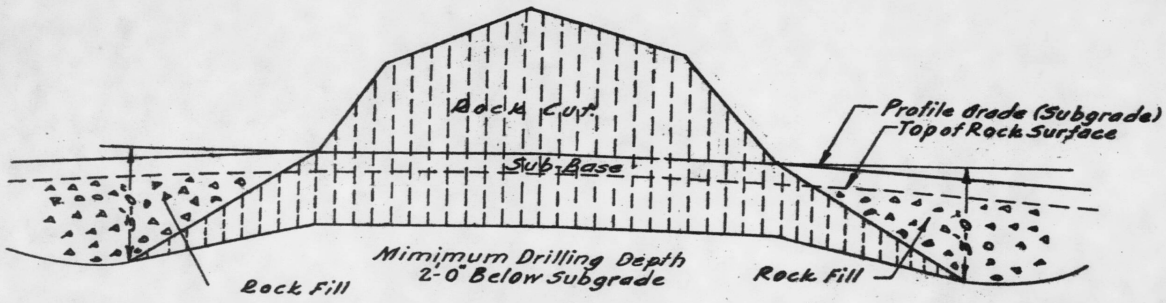
CLASS 'C' HIGHWAY



DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CONSTRUCTION
PLAN NO C-5

DRAWN BY W.L.H. CHECKED BY [illegible]

APPROVED BY _____
CHIEF ENGINEER 1966

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DIVISION "B"

SUPPLEMENTAL SPECIFICATION FOR STRUCTURAL PLATE PIPE, PIPE-ARCH AND ARCH CULVERT

B.1 DESCRIPTION

This item consists of the provision of all materials, labour and equipment required to construct structural plate pipe, pipe-arch and arch culverts, including liners when required, all as designated by the Engineer.

B.2 MATERIALS

All structural plates shall be of galvanized corrugated metal, conforming to the requirements of AASHO Standard Specifications for Highway Bridges - 1953 addition, Division IV, Section 19.

All structural plate culverts, together with all necessary fittings shall be supplied by the Contractor in the gauges and dimensions ordered in writing by the Engineer.

When required, liners for inverts of pipes and pipe-arches, shall be obtained from the same manufacturer and shall be of material not lighter than 12 gauge.

B.3 METHODS OF CONSTRUCTION

Structural plate pipe and pipe-arch culverts shall be erected on beds prepared in accordance with Division 6, Section 3 of the Standard Specifications.

Structural plate arch culverts shall be erected on foundations constructed in accordance with Division 5, Section 3 of the Standard Specifications.

Invert liners will be placed in accordance with the practice recommended by the manufacturer, or as directed by the Engineer. The insertion of fasteners by the use of an approved explosive gun will be permitted. Transverse over-lapping of liner plates is not necessary. Longitudinal overlapping, shall be at least two (2) inches and the centre of any perforation for fasteners, shall be at least one (1) inch from the ends of plates.

B.4 METHODS OF MEASUREMENT

(a) Structural Plate Pipe, Pipe-Arch and Arch Culverts

The quantity for which payment will be made shall be the lineal feet of structural plate pipe, pipe-arch and arch culvert measured along the invert in place and accepted by the Engineer.

(b) Invert Liners

The quantity for which payment will be made shall be the square feet of invert liner measured in place and accepted by the Engineer.

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B.5 BASIS OF PAYMENT

The contract unit price per lineal foot of structural plate pipe, pipe-arch and arch culvert, and the contract unit price per square foot for invert liners will be full compensation for all work herein described to complete structural plate-pipe, pipe-arch and arch culverts, including the supply, transportation and handling of all materials and for all labour, equipment, tools and all works subsidiary and incidental thereto, for which payment is not elsewhere provided.

Payment for excavation will be made as provided for in Article 2.6A.5 of the Standard Specifications relating to Excavation for Structures.

Payment for concrete and reinforcing steel in foundations for arch culverts will be made as provided in Article 5.3.5 of the Standard Specification relating to Concrete Structures - Foundations.

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New File

J 60-23-Plans
attached to letter
dated May 21/59

DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

CONTRACT
AND
SPECIFICATIONS

FOR

GRADING CULVERTS BASE COURSE ROAD MIX

MILE 85.8 to MILE 96.7

BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALBERTA

CONTRACT NO. 9/59/BJ

0005542

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

TRANS HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 9/59/BJ

GRADING CULVERTS BASE COURSE ROAD MIX
MILE 85.8 to MILE 96.7
BANFF-JASPER HIGHWAY
JASPER NATIONAL PARK, ALBERTA

Instructions to Bidders

(1) Pages 2, 3, 5(a), 9 inclusive must be duly executed.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 9/59/BJ

FOR: GRADING CULVERTS BASE COURSE ROAD MIX

LOCATION: MILE 85.8 to MILE 96.7
BANFF-JASPER HIGHWAY
JASPER NATIONAL PARK, ALBERTA.

The Undersigned, hereby offer to the Honourable the Minister of Public Works, to furnish all necessary machinery, tools, apparatus, and other means of construction, do all the work, furnish all the material except as otherwise specified and, for the prices named in the attached itemized Bid Schedule, to complete the work herein described in strict accordance with the plans, profiles and specifications therefor and such other special provisions and supplemental specifications listed in the Schedule of Plans and Specifications which are provided by the Department for the performance of this work.

The Undersigned, hereby certify that (I, we) have visited and examined the site of the proposed work or have caused it to be visited and examined by a competent person on (my, our) behalf and have made all enquiries relative to the amount of work and value of the materials and plant required for this work.

The Undersigned, understands that the quantities shown on the Bid Schedule are to be considered as approximate only and the Department reserves the right of increasing or diminishing any or all of the items. However, the bids will be compared on the basis of estimated quantities of work to be done as given on the attached Bid Schedule.

The Undersigned herewith enclose:

(a) a security deposit equal to 10% of the tender, or $25,000 plus 5% of the amount by which the tender exceeds $250,000, in one or more of the following forms:

(i) a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act, payable to the Receiver General of Canada;

(ii) Government of Canada bonds payable to bearer, with unmatured coupons attached if coupon bonds;

(iii) Bonds issued by Canadian National Railways or its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada and payable to bearer, with unmatured coupons attached if coupon bonds.

OR

(b) a bid bond in the form attached equal to at least 10% of the tender.

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The Undersigned understands that before a contract is awarded, the successful tenderer must furnish either a security deposit as described in (a) above, or a Performance Bond and a Labour and Material Payment Bond in the forms attached, each bond being equal to 50% of the tender. A successful tenderer, who has furnished a Security Deposit with the tender and substitutes a Performance Bond and a Labour and Material Payment Bond upon award of the contract, will have the Security Deposit returned. Bid Bonds, Performance Bonds, and Labour and Material Payment Bonds must be issued by a surety company approved by the Department of Insurance. A list of approximately 100 approved companies may be obtained from any office of the Department of Public Works.

Envelopes containing this tender are to be endorsed:

"Tenders for Contract 9/59/BJ "

and addressed to the Secretary of the Department of Public Works, Ottawa.

The signature(s) of the person(s) tendering must be in their respective handwriting.

In the case of partnerships, the signature, post office address and occupation of each partner must be given.

By my/our signature hereunder, I/we hereby identify this as the tender for Contract 9/59/BJ executed by me/us and bearing date the sixth day of April, 1959.

WITNESS Ada Morehouse

ADDRESS 99 Court Street N.,
Port Arthur, Ontario.

W.C. Arnett & Company Limited.

SIGNATURE W.S. Tomlinson, President

ADDRESS 775 The Queensway
Toronto 14, Ontario.
AND
320 Strathcona Avenue,
KELOWNA, B.C.

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BID BOND

No. $

KNOW ALL MEN BY THESE PRESENTS, that

as Principal, hereinafter called Principal, and

as Surety, hereinafter called Surety, are held and firmly bound unto

as Obligee, hereinafter called Obligee, in the full and just sum of

Dollars ($),
lawful money of Canada, for the payment of which sum, well and truly, to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED, SEALED AND DATED this day of 19 .

WHEREAS, the Principal has submitted a written tender to the Obligee, dated the day of 19 for

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall have the said tender accepted within sixty days from a closing date of the tender call and shall enter into a contract with the Obligee and furnish a Performance Bond and a Labour and Material Payment Bond each in the amount of 50% of the contract and satisfactory to the Obligee, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety shall not be (a) liable for a greater sum than the specified penalty of this bond nor (b) liable for a greater sum than the difference between the amount of the Principal's tender and the amount of the tender that is accepted by the Obligee nor (c) subject to any suit or action unless such suit or action is instituted and process therefore served upon the Surety at its Head Office in Canada, within twelve months from the date of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact, the day and year first above written.

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PERFORMANCE BOND

No. $

KNOW ALL MEN BY THESE PRESENTS, That

as Principal, hereinafter called the Principal, and

as Surety, hereinafter called the Surety, are held and firmly bound unto

as Obligee, hereinafter called the Obligee, in the full and just sum of

Dollars ($),
lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED, SEALED AND DELIVERED this day of A.D. 19 .

WHEREAS, the Principal

in accordance with the plans and specifications submitted therefore which are made part and parcel of this obligation.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall well and faithfully observe and perform all the obligations of the said Contract on the part of the Principal to be observed and performed, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that the Surety shall not be liable for a greater sum than the specified penalty of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact, the day and year first above written.

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LABOUR AND MATERIAL PAYMENT BOND

$

NOTE: This bond is issued simultaneously with another bond in favour of the Obligee conditioned for the full and faithful performance of the Contract.

KNOW ALL MEN BY THESE PRESENTS, That

as Principal, hereinafter called Principal, and

as Surety, hereinafter called Surety, are held and firmly bound unto

as Obligee, hereinafter called Obligee, for the use and benefit of claimants as hereinbelow defined, in the amount of

Dollars ($),
lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

SIGNED AND SEALED THIS day of A.D. 19 .

WHEREAS, the Principal

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labour and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

(1) A claimant is defined as one having a direct contract with the Principal for labour, material, or both, used or reasonably required for use in the performance of the contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract.

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(2) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labour was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon.

(3) No suit or action shall be commenced hereunder by any claimant,

(a) Unless claimant shall have given written notice to the Principal and the Surety above-named, within ninety (90) days after such claimant did or performed the last of the work or labour, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labour was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province or other part of Canada in which the aforesaid project is located.

(b) After the expiration of one (1) year following the date on which Principal ceased work on said Contract including work performed under the guarantees provided in the Contract.

(c) Other than in a court of competent jurisdiction in the Province or District in which the project, or any part thereof, is situated and not elsewhere.

(4) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement , whether or not claim for the amount of such lien be presented under and against this bond.

(5) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

IN TESTIMONY WHEREOF, the Principal has hereto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its Attorney-in-fact, the day and year first above written.

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Schedule of Documents, Plans and Specifications

Provided by the Department

for

Tender Submission

Contract No. 9/59/BJ

1. Information to Bidders — Page 4 - 4 (c)
2. Bid Schedule — Page 5 - 5 (d)
3. Construction Programme and Equipment Statement — Page 6 - 6 (a)
4. Equipment Rental Rates Alberta National Parks
5. Statement of Experience — Page 8
6. Employment of Sub-Contractors — Page 9
7. Indenture
8. Labour Conditions
9. Standard Plans and Specifications

   (a) General Specifications

Division	Section
(i) General Conditions	1 - 10 incl.
(ii) Earthwork	1, 2, 3, 4, 5, 6A, 7
(iii) Base Course	2, 3
(iv) Pavements - Road Mix	5
(vi) Incidental Construction	1, 2, 3, 4

   (b) Standard Plans

   Nos. 1, 3, 4, 5, 6, 7, 8, 9
   C-1, C-2, C-3, C-4, C-5

10. Supplemental Specifications

    Structural Plate Pipe, Pipe-Arch and Arch Culverts.

11. Plan and Profile

    (1) Line Diagram, Mile 85.8 to Mile 96.7
    (2) Location Plan, Mile 85.8 to Mile 96.7
    (3) Profile, Mile 85.8 to Mile 96.7

By my/our signature hereunder, I/we hereby identify this as the Schedule of Plans and Specifications provided by the Department of Public Works for the performance of the work under and forming part of this Contract No. 9/59/BJ executed by me/us and bearing date.

the sixth day of April, 1959.

WITNESS Ada Morehouse

ADDRESS 99 Court Street N., Port Arthur, Ontario.

W. C. Arnett & Company Limited

SIGNATURE W. S. Tomlinson, President

ADDRESS 775 The Queensway, Toronto 14, Ontario.
AND
320 Strathcona Avenue, Kelowna, B.C.

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3 March, 1959.

Department of Public Works
Development Engineering Branch
Highways Division

Addendum No. 1

Contract 9/59/BJ

Information to Bidders
Page 4 Item 17

Surplus Culvert Materials in Storage

Add: "The following asphalt coated culvert material."

Delete: "The following culvert material".

Page 4 Item 19

Sources of Aggregates

Add: "Class 1 Base and Road Mix - Mile 88.1 Grizzly Creek."

Delete: "Class 1 Base and Road Mix - Mile 91.3 Grizzly Creek."

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13 March, 1959.

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ADDENDUM NO. 2
CONTRACT 9/59/BJ

1. Cancel Addendum No. 1 of 3 March, 1959.

2. Information to Bidders

Page 4 Item 19

Sources of Aggregate

Delete	Class 1 Base and Road Mix	Mile 91.3	Grizzly Creek
	Class 2 Sub-base	Mile 91.3	Grizzly Creek
	Class 2 Sub-base	Mile 88	Grizzly Creek
Add	Class 1 Base and Road Mix	Mile 88.1	
	Class 2 Sub-base	Mile 88.1	
	Class 2 Sub-base	Mile 91.3	Grizzly Creek

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3 April, 1959.

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

Addendum No. 3

Contract No. 9/59/BJ

1. Cancel Addenda Number 1, dated 3 March, 1959 and Number 2 dated 15 March, 1959.

2. Information to Bidders

(a) Page 7 Item 14 Surplus Culvert Materials in Storage

Delete: "The following culvert material".

Add: "The following asphalt coated culvert material".

(b) Page 4 Item 19 Sources of Aggregates

Delete:	Class 1 Base and Road Mix	Mile 91.3 Grizzly Creek
	Class 2 Sub-base	Mile 91.3 Grizzly Creek
	Class 2 Sub-base	Mile 88
Add:	Class 1 Base and Road Mix	Mile 88.1
	Class 2 Sub-base	Mile 88.1
	Class 2 Sub-base	Mile 91.3 Grizzly Creek

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INFORMATION TO BIDDERS
FOR
CONTRACT NO. 9/59/BJ

1. DESCRIPTION

This contract consists of grading, installing pipe culverts, and placing base course and bituminous road-mix on the Banff-Jasper Highway, Mile 85.8 to Mile 96.7, Jasper National Park.

2. COMPLETION DATE

31 October, 1960.

3. NEAREST RAILWAY SIDING

Jasper, Alberta - approximately 50 miles from the north end of the contract.

4. NEAREST POST OFFICE

Jasper, Alberta.

5. REMOVAL OF CONTRACTOR'S EQUIPMENT

On termination of the contract, all machinery, equipment, stores and all other items which may be the property of the Contractor or in his charge shall be removed forthwith from the confines of the National Park.

6. CONSTRUCTION CAMP

The Contractor shall obtain the approval of the Engineer or his representative regarding construction camp locations before any clearing or occupancy is attempted. The Contractor shall conform to all Provincial and Park Regulations relative to camp operation and accommodation.

7. MAINTENANCE OF TRAFFIC

The attention of the Contractor is directed to Articles 1.4.7, 1.7.6 to 1.7.14 inclusive of the General Specifications and the Standard Drawings Nos. 5 and 6 with respect to the maintenance of traffic and public convenience and safety. These provisions will be strictly enforced to ensure a high standard of traffic control and sign posting.

8. SNOW PLOUGHING

No winter maintenance of the Banff-Jasper Highway is carried out by the Government of Canada. Any arrangements made by the Contractor to keep the road open shall be at his own expense and shall require the approval of the Engineer.

9. PROJECT SIGN BOARDS

The Contractor shall, at his own expense, provide and erect sign boards at both ends of the contract at locations approved be the Engineer. The sign board shall be appropriately lettered in accordance with Standard Plan No. 8.

SPECIAL PROVISIONS

10. EQUIPMENT RENTALS

All equipment or vehicles engaged at hourly rates shall be equipped with approved devices to register the hours of operation, the costs of such devices to be included in the rental rates. Payment for the rental of such equipment or vehicles will be computed on the basis of the actual

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operating time on the work as approved by the Engineer.

All tank wagons employed to haul water for compaction shall be equipped with gauges to register the quantity of water hauled and distributed.

11. COMPACTION EQUIPMENT

The following additional compaction equipment is to be added to the four types specified in Article 2.4.3(h) of the Standard Specifications and will be read into the said specifications as paragraphs 5 and 6:

(5) Vibratory Type Compactor: weighing 12 to 15 tons.

(6) Grid Type Roller weighing at least 15 tons when fully loaded.

The attention of the Contractor is directed to Articles 2.4.3(h) and 2.4.5(b). Under these specifications the Contractor shall furnish compaction units, each complete with motive power. Subject to the prior approval of the Engineer, the Contractor may place additional units in tandem. Payment for such additional units will be at rates approved by the Engineer.

12. PROFILE GRADE

Notwithstanding any information given in Standard Plans, profile grade shall be considered as the top of the final payment.

13. INTERCEPTOR DITCHES

Interceptor ditches shall be constructed as directed by the Engineer and shall be paid for as Channel Excavation in accordance with Division 2, Section 5 of the Standard Specifications.

14. BORROW EXCAVATION

Approximately 275,000 cubic yards of Borrow Excavation are included in the Bid Schedule Item "Excavation Common". All the provision of Standard Specification, Division 2, Section 3, Borrow Excavation, will apply except that payment will be made in accordance with Article 2.2.5(a) of the General Specifications.

15. EMBANKMENT PROTECTION, MILE 85.8 TO MILE 91.3

Between Mile 85.8 to Mile 91.3, where the embankment is exposed to the Sunwapta River, a portion of the embankment at the toe of slope shall be constructed with rock fill to such heights and widths as directed by the engineer. The material for this rock fill will be obtained from the rock-cut at Mile 88.

An estimated 15,000 cubic yards of rock required for this purpose, together with the necessary Overhaul has been included in the total quantities shown in the Bid Schedule as "Excavation, Rock" and "Overhaul."

The tendered unit prices for "Excavation, Rock", and "Overhaul" shall be compensation in full for excavating rock at Mile 88, hauling and placing rock in the embankment slope, as directed by the Engineer.

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16. RANDOM RIPRAP

The estimated quantity of Random Riprap shown in the Bid Schedule does not include Excavation Rock placed for protection from stream erosion on the section, Mile 85.8 to Mile 91.3 as above described.

17. SURPLUS CULVERT MATERIALS IN STORAGE

The following culvert material will be supplied by the Department and is now in stockpile at Camp Eisenhower (located on the old highway one-half mile east of the junction of the Trans-Canada and Banff-Windermere Highways, approximately 103 miles south of the beginning of the Contract):

30" diameter	-	1,050	lineal feet
36" "	-	194	" "
48" "	-	138	" "

All bands and bolts for the above pipe will be supplied by the Department.

The contract unit bid prices for Installation of Pipe Culverts shall include payment for delivery of the above surplus pipe to culvert sites and installation in accordance with Article 6.3.5 of the General Specifications.

18. SUPPLY OF CULVERT MATERIALS AND UNDERDRAINS

Articles 6.3.2, 6.3.5(a) and 6.4.2 of the General Specifications notwithstanding the Contractor shall supply the remaining pipe culverts and underdrains complete with all necessary coupling bands. All such material supplied shall be plain galvanized corrugated metal and shall conform to the requirements of the General Specifications Articles 6.3.2 and 6.4.2. The quantities shown in the Bid Schedule are approximate and the contractor shall supply only the sizes, lengths and gauges as specified in writing by the Engineer.

Payment for supply will be made at the contract unit prices per lineal foot upon delivery at the site of installation.

19. SOURCES OF AGGREGATE

Known sources suitable for the production of Sub-base, Base Course, and Road Mix Aggregates are located adjacent to the highway at the following points:

Class 1, Base and Road Mix	- Mile 91.3,	Grizzly	Creek
Class 2, Sub-Base	- Mile 91.3,	"	"
Class 2, Sub-Base	- Mile 88	"	"

20. ROADMIX

The roadmixed surfacing shall be 42' wide and have a compacted thickness of approximately 2½". The Contractor shall so plan and prosecute the work that roadmixing operations shall be kept within two miles of the main sub-grade construction at all times.

The MC-2 bituminous material used for the road mix shall be in accordance with Canadian Government Specifications Board Specification 16-GP-1B.

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(Notwithstanding) Articles 4.5.5(a) and 4.5.5(b) of the general specifications, the included unit price for Roadmix aggregate shall include producing, delivering to the road and windrawing.

21 POSSIBLE ADDITIONAL BASE COURSE (CLASS 1) PLACED IN STOCKPILE

In addition to producing the Base Course (Class 1) that will be placed on the road (Bid Schedule Item 16), the Contractor may or may not be required to produce part or all of the 70,000 tons shown in Bid Schedule Item 7 as "Possible Additional Base Course (Class 1 Placed in Stockpile)".

The stockpile will be located adjacent to the pit and shall be constructed as directed by the Engineer. Payment will be made in accordance with the provisions of Division 3, Section 2, except that the contract unit bid price will include the hauling and placing of Base Course Class 1 in stockpile.

22. FORCE ACCOUNT

A sum of $20,000. is included in the Bid Schedule for benching slopes and cleaning-up slides and will be added to the costs of the other items in arriving at the total tender amount.

Extra work orders will be issued by the engineer for the work as required and payment will be made only for work so completed. Payment will be made in accordance with Article 1.9.3 of the General Conditions of the Contract.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

BID SCHEDULE

CONTRACT NO. 9/59/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
1.	2.1.5.	Clearing, at Fifty Dollars per acre	10	50	00	500	00
2.	2.1.5.	Grubbing, at Fifty Dollars per acre	35	50	00	1,750	00
3.	2.2.5(a)	Excavation, Common, at Twenty-five Cents per cu. yd.	840,000		25	210,000	00
4.	2.2.5(a)	Excavation, Rock, at One Dollar and Seventy Cents per cu. yd.	175,000	1	70	297,500	00
5.	2.4.5(b)	Compaction (tamping roller), at Seven Dollars per hour	500	7	00	3,500	00
6.	2.4.5(b) 3.2.5(f) 3.3.5(e)	Compaction (pneumatic tired roller), at Six Dollars per hour	5,000	6	00	30,000	00
7.	Info. to Bidders Para. 11	Compaction (Grid Roller), minimum 15 tons, at Seven Dollars per hour	3,000	7	00	21,000	00
8.	Info. to Bidders Para. 11	Compaction (Vibratory Type) minimum 12 to 15 tons, at Twelve Dollars per hour	2,000	12	00	24,000	00
9.	2.4.5(c) 3.2.5(e) 3.3.5(d)	Water for Compaction, at Four Dollars per 1,000 gal unit	4,500	4	00	18,000	00
10.	Info. to Bidders Para 13 & 2.5.5.	Channel Excavation, Common, at Thirty-five Cents per cu.yd.	40,000		35	14,000	00
11.	2.5.5. Info. to Bidders Para. 13	Channel Excavation, Rock, at Two Dollars and Fifty Cents per cu. yd.	500	2	50	1,250	00

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DEPARTMENT OF PUBLIC WORKS
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HIGHWAYS DIVISION

BID SCHEDULE

CONTRACT NO. 9/59/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
12	2.6(a).5	Excavation for Structures, Common, at One Dollar per cu. yd.	6,000	1	00	6,000	00
13.	2.6(a).5	Excavation for Structures, Rock, at Two Dollars and Fifty Cents per cu. yd.	1,000	2	50	2,500	00
14.	2.7.5.	Overhaul (1000 feet free), at Three Cents per cu. yd. mile	300,000		03	9,000	00
15.	3.2.5(a) 3.3.5(c)	Stripping of Borrow Areas, at Twenty-five Cents per cu. yd.	15,000		25	3,750	00
16.	3.2.5(a)	Base Course (Class 1) - For Road, at Fifty Cents per ton	60,000		50	30,000	00
17.	Info.to Bidders Para.21	Possible Additional Base Course (Class 1) Placed in Stockpile, at Fifty Cents per ton	70,000		50	35,000	00
18.	3.2.5(b)	Hauling Base Course (Class 1), at Twelve Cents per ton-mile	190,000		12	22,800	00
19.	3.3.5(a)	Granular Sub-Base (Class 2) - For Road, at Forty-five Cents per ton	95,000		45	42,750	00
20.	3.3.5(b)	Hauling Sub-Base (Class 2), at Twelve Cents per ton-mile	270,000		12	32,400	00
21.	4.5.5(a) & Info. to Bidders Para.20	Road Mix Aggregate - Producing, delivering to Road and Windrawing, at Eighty Cents per ton	45,000		80	36,000	00

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Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
22.	4.5.5(c)	Asphaltic Material - MC2, at Twenty Cents per gallon	450,000		20	90,000	00
23.	4.5.5(d)	Mixing & Placing Road Mix, at Ten Cents per sq. yd.	270,000		10	27,000	00
24.	6.2.5	Hand-Placed Riprap, at Ten Dollars per cu. yd.	500	10	00	5,000	00
25.	Info. to Bidders Para. 16	Random Riprap, at Two Dollars per cu. yd.	500	2	00	1,000	00
26.	Info. to Bidders Para. 18	Supply & Delivery of Pipe Culverts 18" diam. 16 gauge, at Three Dollars Forty Cents per lin. ft.	1,000	3	40	3,400	00
		24" diam. 14 gauge, at Five Dollars per lin. ft.	2,800	5	00	14,000	00
		36" diam. 12 gauge, at Ten Dollars per lin. ft.	2,506	10	00	25,060	00
		48" diam. 12 gauge, at Fourteen Dollars per lin. ft.	362	14	00	5,068	00
		60" diam. 10 gaugue, at Twenty-three Dollars and Fifty Cents per lin. ft.	85	23	50	1,997	50

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BID SHCEDULE

CONTRACT NO. 9/59/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
27.	6.3.5(b)& Info. to Bidders Para. 17	Installation of Pipe Culverts (1) 18" diam., at One Dollar and Fifty Cents per lin. ft.	1,000	1	50	1,500	00
		(2) 24" diam., at Two Dollars per lin.ft.	2,800	2	00	5,600	00
		(3) 30" diam., at Three Dollars per lin. ft.	1,050	3	00	3,150	00
		(4) 36" diam., at Three Dollars per lin. ft.	2,700	3	00	8,100	00
		(5) 48" diam., at Five Dollars per lin. ft.	500	5	00	2,500	00
		(6) 60" diam., at Ten Dollars per lin. ft.	85	10	00	850	00
28.	Info. to Bidders Para. 18	Supply & Delivery 8" diam. Underdrains, 16 gauge, at Two Dollars per lin. ft.	1,000	2	00	2,000	00
29.	6.4.5(a)	Installation of 8" diam. underdrains, at One Dollar per lin. ft.	1,000	1	00	1,000	00
30.	Supp. Spec.	Supply, Delivery & Installation - Structural Plate Pipes & Pipe Arches					
		(1) Mile 89.1 Beauty Creek Twin 12'10" x 8'4" pipe arches 7 gauge square ends, 2@100 ft. each, at One Hundred and Fifteen Dollars per lin. ft.	200	115	00	23,000	00
		(2) Mile 91.3 Grizzly Creek 15'-0" diam. 5 gauge, square ends, at One Hundred and Seventy-five Dollars per lin. ft.	100	175	00	17,500	00
		(3) Mile 96.1 Jonas Creek 12'-10" x 8'4" pipe arch, 7 gauge square ends, at One Hundred and Fifteen Dollars per lin. ft.	100	115	00	11,500	00

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Item No.	Specification Item	Pay Names with Unit Prices Written In Words	Estimated Quantity	Unit Bid Price		Total Amount	
31	Info. to Bidders Para. 22	Work by Force Account Twenty-thousand dollars as specified by the engineer.				20,000	00

TOTAL.....1,110,925.50

TOTAL WRITTEN IN WORDS One Million, One Hundred and Ten Thousand,
Nine Hundred and Twenty-five Dollars and Fifty Cents.

NOTE 1

If other than Canadian Materials are to be used, list below the item and country of origin.

NOTE 2 IMPORTANT

The tenderer or the person or persons duly authorized to sign on his behalf must initial and date each and every change, correction, alteration or erasure contained in these completed tender documents.

CONTRACTOR'S SIGNATURE W.C. Arnett & Company Limited.
W. S. Tomlinson, President.

DATED 6th day of April, 1959.

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CONSTRUCTION PROGRAM AND EQUIPMENT STATEMENT

The Contractor shall in the spaces provided hereunder furnish a detailed outline of the construction program to be followed and a list of the plant and equipment available, if required, for the satisfactory prosecution of the work within the time limit specified in "Information to Bidders". The Department reserves the right to inspect all equipment listed prior to the award of a contract.

CONSTRUCTION PROGRAM

1. On being notified of award, camp construction will be started immediately and equipment moved to the site.
2. Grading operations will be started as soon as weather conditions are favourable. Those areas involving traffic problems will be worked during "off-season" for tourists.
3. A detailed program will be worked out with the Resident Engineer so as to carry out the work in the most efficient manner, cause the minimum of inconvenience to the travelling public, and to complete the project on the date required.

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EQUIPMENT STATEMENT

Description of Unit	Capacity, etc.	Condition	Age	Present Location
1 Lima Rock Shovel 1 N-W Rock Shovel	2⅛ c.y. 2½ c.y.	Good Good	New 1948 New 1950	Mile 41 B-J Hwy. Rosedale, B.C.
1 N-W Shovel/Dragline	¾ c.y.	Good	New 1950	Mile 41, B-J Hwy.
2 Euclid Twin Engine Motor Scraper	24 c.y.	Good	New 1957	Mile 41, B-J Hwy.
2 Cat #80 Scraper 2 Cat Tractor/Dozer	18 c.y. D-8	Good Good	New 1950 New 1957	Mile 41, B-J Hwy. Mile 41, B-J Hwy.
3 Cat Tractor/Dozer 2 Cat Tractor/Dozer	D-8 D-7	Good Good	New 1956 New 1952	Rose dale B.C. Mile 41, B-J Hwy.
1 A.C. Tractor/Dozer 2 A.C. Tractor/Dozer	Hd-20 HD-9	Good Good	New 1954 New 1954	Mile 41, B-J Hwy. Mile 41, B-J Hwy.
5 Euclid Rear Dump 7 Euclid Rear Dump	15 ton 15 ton	Good Good	New 1950 New 1950	Mile 41, B-J Hwy. Rosedale, B.C.
6 Euclid Bottom-Dump	25 ton	Good	New 1950	Rosedale, B.C.
2 G-D Compressor	500 cfm	Good	New 1951	Mile 41, B-J Hwy.
2 Thor Wagon Drill		Good	New 1957	Mile 41, B-J Hwy.
10 Copco Jackhammer		Good	New 1956	Mile 41, B-J Hwy.
1 Hyster Grid Roller	15 ton	Good	New 1957	Mile 41, B-J Hwy
2 American Sheepsfoot	48"	Good	New 1957	Mile 41, B-J Hwy.
2 Wobbly Roller	6-7	Good	New 1954	Rosedale, B.C.
1 Vibratory Roller		-	To be purchased	
1 Pulvi-Mixer		-	To be purchased	
2 Cat. Tractor	DW-10	Good	New 1950	Mile 41, B-J Hwy.
1 DW-10 - Athey Wagon	2500 gal.	Good	New 1950	Mile 41, B-J Hwy.
1 Universal Crusher	Tandem	Good	New 1950	Rosedale, B.C.
2 Adams Grader	500	Good	New 1955	Mile 41, B-J Hwy.
Miscellaneous trucks, heavy tools, camp equipment, etc.				Mile 41, B-J Hwy.

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EQUIPMENT RENTAL RATES
ALBERTA NATIONAL PARKS

In the event that Extra and Force Account work is required under the contract, the following equipment rental rates which are maximum and shall include operators' wages, fuel, lubricants and repairs, except where Equipment Only is specified, may be used by the Department in determining and settling such accounts.

	HOURLY RENTAL RATE
AIR COMPRESSOR	
DIESEL	
185 cfm.	4.50
210 cfm.	5.50
365 cfm.	7.50
600 cfm.	11.50
GASOLINE	
105 cfm.	2.50
125 cfm.	3.00
210 cfm.	4.80
365 cfm.	7.30
600 cfm.	10.50
AIR TOOLS AND ACCESSORIES (EQUIPMENT ONLY)	
Air hose or pipe, line oilers and couplers per 50 ft.	.15
Clay digger 22 lbs.	.25
Jackhammer 48 lbs.	.40
Jackhammer 60 lbs.	.40
Paving breaker 55 lbs.	.35
Paving breaker 80 lbs.	.40
Wagon Drill Model DR 34	1.35
MIXERS	
3½ "S" Tilt Type	2.00
6 & 7 "S" Non-Tilt	2.75
11 "S" Non-Tilt Power Loader	3.40
14 "S" Non-Tilt Power Loader	3.70
16 "S" Non-Tilt Power Loader	4.00
VIBRATORS	
2 H.P. Gas Driven, 12' Flexible Shaft	1.60
6 H.P. Gas, 21' Flexible Shafting	2.20
EUCLID EQUIPMENT	
91 F.D. Reardump 10 c.y. or 15 tons	16.00
31 T.D. Reardump 14.8 c.y. or 22 tons	20.00
36 T.D. 45-46-53 Reardump 14.8 c.y. or 22 tons	21.00
4 F.FD. Reardump 20.0 c.y. or 34 tons	30.00
70 FDT-71 FDT-89W. Bottom Dump 13 c.y. or 20 tons	17.00
POWER GRADERS	
(Grader Blades to be included under "All Found")	
Gradall	18.50
80 to 90 h.p.	12.60
90 to 100 h.p.	14.00

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	HOURLY RENTAL RATES
TRACTORS "BARE"-Cont'd	
Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	7.75
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	8.20
1956	
D6, 66 h.p. TD 14A 78 h.p. HD 11B, 85 h.p.	10.00
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	9.50
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 13A, 124 h.p.	10.25
1956	
D7, 81 h.p. TD 18, 103 h.p. RD 16A, 141 h.p.	12.60
Prior to 1948	
D8 130 h.p.	11.25
1948 to 1953	
D8, 130 h.p.	13.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, 104 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 20, 175 h.p.	12.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	15.00
1956	
D9 286 h.p.	23.00

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	HOURLY RENTAL RATE
TRUCKS	
½ Ton Light Delivery	2.50
3/4 " " "	2.75
1 " " "	3.00
½ " Panel	3.00
3/4 " "	3.25
1 " Flat Deck	3.00
1½ " " "	3.25
2 " " "	4.00
3 " " "	4.50
4 " " "	5.00
5 " " "	6.50
2 " Dump	4.50
3 " "	5.00
4 " "	6.00
5 " "	7.00
6 " "	8.00
8 " "	10.50
10 " "	13.00
12 " "	15.00
14 " "	17.00
16 " (4 Wheel Tandem) (Includes use of Winch)	20.00
LOW-BOY TRAILER AND TRUCK	
5 Ton	7.00
10 "	10.00
15 "	13.00
20 "	16.00
25 "	19.00
30 "	24.00
40 "	30.00
PILE DRIVER	
Steam Power	9.00
Gasoline Power	8.00
FRONT END LOADERS	
No. 933 Traxcavator 50 h.p.	8.50
1 1/3 H.D. 60, 45 h.p.	10.00
No. 955 Traxcavator, 70 h.p.	11.00
No. 6 " ,100 h.p.	14.00
2¼ c.y. H.D. 116, 75 h.p.	15.00
DUMPTOR	
Koehring 60, 6 c.y.	14.50

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STATEMENT OF EXPERIENCE

The following statment outlines the experience of the company on work allied with the work outlined in this tender and the plans and specifications relative thereto. The date and place of work, as well as the agency for whom the work was undertaken, should be clearly stated. Contractors who have successfully tendered on work for the Development Engineering Branch need not complete this form.

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EMPLOYMENT OF SUB-CONTRACTORS

It is (my,our) intention to employ the following sub-contractors whom (I, we) believe, after investigation to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (me, us).

	Name and Address of Sub-Contractors	Description of Work to be Done by Sub-Contractors
1.		
2.	N I L	
3.		
4.		

It is agreed that (I, we) shall not sub-contract with any other individual or organization or for any other work without the consent of the Minister of Public Works.

W. C. Arnett & Company Limited
Contractor's Signature W. S. Tomlinson, President

DATED April 6th, 1959.

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NOTICE TO TENDERER

THE FOLLOWING INFORMATION IS REQUIRED FOR DEPARTMENTAL USE

PLEASE PRINT CLEARLY

---

1 - LIMITED COMPANY

If this tender is made by a limited company, then the full name of the company should be accurately PRINTED in the space provided for that purpose and its corporate seal, if any, affixed where indicated.

NAME OF COMPANY	SEAL
W. C. ARNETT & COMPANY LIMITED	COMPANY SEAL

2 - PARTNERSHIP

If this tender is made by a partnership, then the firm name or the business name should be accurately PRINTED in the space provided and the name or names of the partners should be PRINTED where indicated.

NAME OF PARTNERSHIP	LIST OF PARTNERS

3 - SOLE PROPRIETORSHIP

If this tender is made by an individual carrying on business under a name other than his own, then his business name should be PRINTED in the space provided and the name of the sole proprietor should be printed where indicated. In the event that the sole proprietor carried on business in his own name, he should merely PRINT his name where indicated

BUSINESS NAME	NAME OF SOLE PROPRIETOR

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This Indenture, MADE IN DUPLICATE

this day of

one thousand nine hundred and

BETWEEN

hereinafter called "the Contractor," of the first part;

And HER MAJESTY THE QUEEN, in the right of Canada represented by the Minister of Public Works of Canada, of the second part.

WHEREAS the party of the first part for the consideration hereinafter mentioned has agreed with the party of the second part to do, furnish and perform the works, materials, matters and things required to be done, furnished and performed, in the manner hereinafter described, in connection with the following work or works namely:— Work to be done.

Now this indenture witnesseth that the said parties hereto hereby covenant, promise and agree each with the other, as follows:—

1. In this contract the following words shall, unless the context requires a different meaning, have the following meanings, respectively, that is to say:— Interpretation.

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"Contractor" or other words relative thereto, or of like import, shall mean and include, irrespective of sex or number, the party or parties of the first part as above designated or described, jointly and severally, and their and each of their executors, administrators, curators, successors, or assigns.

"Her Majesty," or other words relative thereto, or of like import, shall mean and include the reigning Sovereign or the successors or assigns of the Sovereign.

"Minister" shall mean the person holding the position or acting in the capacity of the Minister of Public Works and shall include the person holding the position or acting in the capacity of the Deputy Minister of Public Works.

"Engineer" shall mean the Chief Engineer or Chief Architect, as the case may be, of the Department of Public Works of Canada, having control over the work, and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer or Chief Architect, and all instructions or directions, or certificates given, or decisions made by any one acting for the Chief Engineer or the Chief Architect, shall be subject to the approval of the Chief Engineer or the Chief Architect, and may be cancelled, altered, modified and changed as the Chief Engineer or Chief Architect may seem fit: Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer or the Chief Architect in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or the Chief Architect, or by any one acting for such Chief Engineer or Chief Architect, shall be subject to the approval of or modification or cancellation by the Minister.

"Work or works" shall mean the whole of the work, materials, matters and things required to be done, furnished and performed by the Contractor, as above described, under this contract.

2. All the covenants and agreements in this contract binding on and all the provisions in this contract inuring to the benefit of the Contractor shall, respectively, be binding on and inure to the benefit of the executors, administrators, curators, successors and assigns of the Contractor and all the covenants and agreements in this contract binding upon and all the provisions in this contract inuring to the benefit of Her Majesty shall, respectively, be binding upon and inure to the benefit of the successors and assigns of Her Majesty.

Provision by contractor for completion of work.

3. The Contractor shall at his own expense (except as in this contract otherwise specifically provided) provide all and every kind of labour, superintendence, services, tools, implements, machinery, plant, materials, articles and things necessary for the due execution and completion of all and every the works set out or referred to in the specification hereto annexed, and in any special specification referred to therein and set out or referred to in the plans and drawings prepared and to be prepared for the purposes of the work, and shall forthwith commence the works and diligently execute and fully complete the respective portions thereof, and shall deliver the works complete in every particular to Her Majesty on or before the date or dates following, viz:—

Time for completion.

Time shall be deemed to be material and of the essence of this contract.

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4. The works shall be constructed by the Contractor, and under his personal supervision, of the best materials of their several kinds and finished in the best and most workmanlike manner and in the manner required by and in strict conformity with this contract, the said specifications and special specifications, and the plans and drawings relating thereto, and the working or detail drawings which may from time to time be furnished (which said specifications, and special specifications, plans and drawings are hereby declared to be part of this contract), and to the complete satisfaction of the Engineer. **Quality.** **Plans and specifications part of contract.**

5. The work shall be commenced, carried on and prosecuted to completion by the Contractor in all its several parts in such manner and at such points and places as the Engineer shall from time to time direct, and to his satisfaction, but always according to the provisions of this contract, and if no direction is given by the Engineer, in a careful, prompt, and workmanlike manner. **Execution of work directed by Engineer.**

6. The several parts of this contract shall be taken together to explain each other and to make the whole consistent; and, if it is found that anything has been omitted or misstated which is necessary for the proper performance or completion of any part of the work the Contractor shall, at his own expense, execute the same as though it had been inserted and properly described, and the correction of any such omission or error shall not be deemed to be an addition to or deviation from the works herein described. **Construction of contract.**

7. The Engineer may, in writing, at any time before the final acceptance of the works, order any additional work or materials or things not covered by the contract to be done or provided, or the whole or any portion of the works to be dispensed with, or any changes to be made which he may deem expedient in or in respect of the works hereby contracted for, or the plans, dimensions, character, quantity, quality, description, location or position of the works or any portion or portions thereof or in any materials or things connected therewith or used or intended to be used therein or in any other thing connected therewith or used or intended to be used therein or in any other thing connected with the works, whether or not the effect of such orders is to increase or diminish the work to be done or the materials or things to be provided or the cost of doing or providing the same, and the Engineer may in such order, or from time to time as he may see fit, specify the time or times within which each order shall, in whole or in part, be complied with. The Contractor shall comply with every such order of the Engineer. The decision of the Engineer as to whether the compliance with such order increases or diminishes the work to be done or the materials or things to be provided, or the cost of doing or providing the same and as to the amount to be paid or deducted, as the case may be, in respect thereof, shall be final. As a condition precedent to the right of the Contractor to payment in respect of any such order of the Engineer the Contractor shall obtain and produce the order, in writing, of the Engineer and a certificate in writing, of the Engineer showing compliance with such order and fixing the amount to be paid or deducted in respect thereof. **Extra work.** **How treated.** **Engineer's order and decision.**

8. All the clauses of this contract shall apply to any changes, additions, deviations, or additional work, so ordered by the Engineer, in like manner and to the same extent as to the works contracted for. **Covenants herein apply to extra work.**

9. If any change or deviation in or omission from the works be made by which the amount of work to be done shall be decreased, or if the whole or any portion of the works be dispensed with, no compensation shall be claimable by the Contractor for any loss of anticipated profits in respect thereof. **No claim for anticipated profits.**

10. The Engineer shall be the sole judge of the work and material, in respect of both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intention of this contract and as to the meaning or interpretation of the plans, drawings and specifications, shall be final, and no work under this contract shall be deemed to have been performed nor materials nor things provided so as to entitle the Contractor to payment therefor unless and until the Engineer is satisfied therewith, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor. **Engineer sole judge of work and materials.**

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Work subject to control of Engineer.

11. The work shall, in every particular, be under and subject to the control and supervision of the Engineer; and all orders, directions or instructions at any time given by the Engineer with respect thereto, or concerning the conduct thereof, shall by the Contractor promptly and efficiently be obeyed, performed and complied with to the satisfaction of the Engineer.

Descriptions of work. What items include.

12. The description or descriptions of the work and materials or any portion or portions of the works set out or referred to in or covered by any item or items for which a price or prices are given in this contract include not only the particular kinds of materials mentioned in the said item or items but also all and every kind of work, labour, tools, plant, materials, equipment, articles and things, whatsoever necessary for the full execution, completion and delivery, ready for use, of such respective portions of the works, in accordance with the plans, drawings and specifications, to the satisfaction of the Engineer. The said price or prices shall cover not only the particular descriptions of work and materials mentioned herein or in the specifications or plans but also all and every kind of work, labour, tools, plant, material, equipment, articles and things whatsoever necessary for the full execution, completion and delilvery, ready for use, of the entire work as herein contracted for, to the satisfaction of the Engineer. In case of dispute as to what work, labour, tools, plant, material, equipment, articles and things are so included or covered the decision of the Engineer shall be final and conclusive with respect thereto.

Price, what it covers.

Foreman of the works.

13. A competent foreman shall be kept on the ground by the Contractor during all working hours to receive the orders of the Engineer. Such foreman shall be considered as the lawful representative of the Contractor and shall have full power to carry out all requisitions and instructions of the said Engineer, but this clause shall not relieve the Contractor from the duty of personally superintending the work.

Defective work or material.

14. Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twenty-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance by the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor.

Engineer may order removal or re-execution.

Non-compliance by Contractor.

Contractor's machinery, plant, etc.

15. All machinery, tools, plant, materials, equipment, articles and things whatsoever provided by the Contractor or by the Engineer under the provisions of sections 14 and 16 for the works, and not rejected under the provisions of section 14, shall from the time of their being so provided become and, until the final completion of the said work, be the property of Her Majesty for the purposes of the said works, and the same shall on no account be taken away, used, or disposed of, except for the purposes of the said works, without the consent in writing of the Engineer. Her Majesty shall not, however, be answerable for any loss or damage whatsoever which may at any time happen to such machinery, tools, plant, materials, equipment, articles or things. Upon the completion of the works and upon payment by the Contractor of all such moneys, loss, costs and damages, if any, as shall be due from the Contractor to Her Majesty, or chargeable against the Contractor under this contract, such of the said machinery, tools, plant, materials, equipment, articles and things as shall not have been used and converted in the works or disposed of by Her Majesty under powers conferred in this contract, shall be delivered up to the Contractor in such condition as they may then be in.

Becomes property of H.M. until completion of work.

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16. If the Engineer shall at any time consider the number of workmen, horses, quantity of machinery, tools, plant or equipment, or of proper materials, articles or things, employed or provided by the Contractor on or for the said works to be insufficient for the advancement of such works or any part thereof towards completion within the time limited in respect thereof, or that the works are, or some part thereof, is not being carried on with due diligence, then the Engineer may, in writing, order the Contractor to employ or provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may think necessary, and in case the Contractor shall not within three days, or such other longer period as may be fixed by any such order, in all respects comply therewith the Engineer may employ and provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as he may think proper and may pay such additional workmen such wages, and for such additional horses, machinery, tools, plant, equipment, materials, articles and things, any such prices as he may think proper, and all such amounts so paid shall, on demand, be repaid to Her Majesty by the Contractor, or the same may be retained or deducted from any sum that may then or thereafter be or become due from Her Majesty to the Contractor. The Contractor shall employ the additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things so provided and employed by the Engineer in the diligent advancement of the works; the workmen and horses so provided shall, however, be thereafter subject to discharge by the Contractor, but only with the consent and approval of the Engineer.

Insufficient workmen, plant, etc.

Work not proceeding with due diligence.

Engineer may provide additional equipment, etc., at Contractor's expense.

Repayment by Contractor.

17. Her Majesty may, at any time, and without payment therefor, send and employ on, in and about the works other contractors and workmen, with such horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may deem necessary to do any work not comprised in this contract, and the Contractor shall afford to them all reasonable facilities, to the satisfaction of the Engineer, for doing such work, the work of the Contractor being interfered with as little as the Engineer may deem practicable.

Work not comprised in contract.

The taking of possession of the whole or any part of the works of the Contractor for such purpose shall not be deemed an acceptance by or on behalf of Her Majesty of the whole or any portion of the works comprised in this contract.

18. That whenever and so often as it may be necessary for the Contractor to co-operate with other contractors on this work, the Contractor shall diligently and under the directions of the Engineer perform all such works as shall be requisite and proper on the part of the Contractor herein for such co-operation and for securing and placing in proper position the portion necessary herein and hereby contracted to be constructed and erected for the proposed work in a proper and secure mode, and to prevent the possibility of any accident therefrom, without any extra charge therefor, and shall be bound in all things to conform to the direction of the Minister or the Engineer touching such co-operation and work.

19. In case the Contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the Engineer, the Engineer may give a general notice to the Contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the Engineer to the Contractor or should the Contractor make default in the completion of the works, or any portion thereof within the time limited with respect thereto in or under this contract, or should the Contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the Contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the Contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the Contractor of the works, and no objection or claim shall be raised or made by

Default or delay by Contractor.

Notice by Engineer.

Minister may take work out of Contractor's hands.

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the Contractor by reason or on account of the ultimate cost of the works so taken over for any reason proving greater than, in the opinion of the Contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired, possessed or provided by the Contractor for the purposes of the work, or by the Engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the Contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the Contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Damages arising from non-completion.

20. Whenever in this contract power or authority is given to Her Majesty, the Minister, the Engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the Contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the Contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to further proceed with the execution of the works.

Power to take action on default of Contractor.

Provided always that after the expiration of the time limited for the completion of the works the Minister shall be sole judge as to what additional time, if any, may be allowed to the Contractor for such completion, and his decision as to the reasonableness or sufficiency thereof for the purpose of completion shall be final and binding upon the Contractor.

Minister sole judge of reasonableness of extension of time for completion.

21. The Contractor shall be at the risk of and shall bear all loss or damage whatsoever, from whatsoever cause arising, which may occur to the works or any part thereof, until the same be finally accepted by the Minister, and if any such loss or damage occur before such final acceptance the Contractor shall immediately, at his own expense, repair, restore and re-execute the work so damaged so that the whole works, or the respective portions thereof, shall be completed within the time limited for completion thereof and any delay occasioned by the Contractor to the other contractors on the work or any interference by the Contractor with the operation which may be a cause of delay or damage shall be rectified at the cost and the claim for damage or delay (if any) shall be at the charge of the Contractor.

Damages to work in progress, Contractor assumes risk.

22. The Contractor shall, during the period of one year after the date of the final certificate of the completion of the work, at the sole cost of the Contractor, and to the satisfaction of the Engineer, rectify any defects in the works caused by faulty workmanship or materials of which he shall have received notice from the Engineer. The Contractor shall be responsible for and shall reimburse Her Majesty with respect to any loss or damage sustained by Her Majesty and shall save harmless and indemnify Her Majesty from and against all claims, demands or actions based upon or arising out of the negligence of the Contractor, his officers, servants or agents during the rectification of the said defects. This clause shall not in anyway affect the rights of Her Majesty under any other agreement, deed or bond pursuant to which the works or any portion thereof are guaranteed free of defects or are to be repaired or replaced by the Contractor or any other person.

23. The Contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever, occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the Contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement, and to prevent the interruption of or any danger or menace to

Damages to persons or property.

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the traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the Contractor shall indemnify and save harmless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable to any such damage, injury or infringement. Contractor assumes liabilities.

24. The Contractor shall, upon the completion of the works, remove all temporary structures and clear away all rubbish and surplus and waste materials remaining on or about the works and place the premises in a neat and tidy condition, satisfactory to the Engineer. Contractor to clean premises on completion.

25. The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions. Precautions as to fire.

26. The Contractor shall insure buildings, structures and materials in accordance with the provisions of the specification in respect thereto.

27. The Contractor shall not assign or sublet this contract without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any moneys due to any sub-contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for. Assignments.

28. Pursuant to the provisions of the Statute in such case made and provided, no Member of the House of Commons of Canada shall be admitted to any share or part of this contract or to any benefit to arise therefrom. Members of H. of C. not to benefit.

29. The Contractor shall not allow any public ceremony in connection with the work without having previously obtained the written permission of the Minister. No public ceremony.

30. No work whatever shall at any time or place be carried on during Sunday and the Contractor shall take all necessary steps for preventing any foreman or agent or men from working or employing others on that day. No work on Sunday.

31. The Contractor shall promptly pay for all labour, services and materials in or about the construction of the works, and all payments for such purposes shall be made by the Contractor at least as often as payments are made to the Contractor by Her Majesty under this contract, and in the event of failure by the Contractor at any time so to do, or if any sum due for labour of any foreman or workman, or for hire of horses, teams or carts upon or in respect of the works or any part thereof remains in arrear or unpaid, or if there be at any time found to exist any claims against the Contractor, or any sub-contractor, for labour, teams, tools, plant, equipment, materials, articles or things employed, hired or supplied upon or for the works or any part thereof, or if the Minister has reason to believe that any such payments, sums or claims will not be promptly made or paid, the Minister may, in addition to or in lieu of exercising any powers conferred by the Fair Wages Clause, at his option, retain out of any moneys due or to become due to the Contractor from Her Majesty such amount or amounts as the Minister may deem sufficient to satisfy the same, or pay the Contractor the moneys due him in instalments, giving him from time Payment by Contractor for labour, etc. Power to retain money on default of Contractor paying for labour, etc.

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to time such sums as the Minister or the Engineer deems sufficient to meet such payments, sums or claims or any of them, and witholding the balance until the same are satisfied, or may pay all or any of such payments, sums or claims, rendering to the Contractor the balance due him after deducting the payments so made. The Contractor shall be stopped from denying the accuracy and correctness of any and all payments so made by the Minister.

Books etc., of Contractor open for inspection.

The Contractor's pay-rolls, time-books, books of account, invoices and statements shall at all times be open for inspection and extract by the Engineer and any authorized representative of the Minister, or either of them, who shall be assisted in every possible way by the Contractor, to enable the Engineer and such representative to ascertain, as far as possible, the exact payment, sums or claims so due and remaining unpaid by the Contractor.

Work to be free from all encumbrances.

32. Before making any payment on any progress or final estimate the Minister may require the Contractor to satisfy the Engineer, or other authorized representative of Her Majesty, that all work performed and material supplied and all structures built for which payment is being made are free and clear from all lawful claims or liens under any law of labour, workmanship, materials or otherwise; the Contractor shall indemnify and hold harmless Her Majesty from and against any and all kinds of claims or liens accruing from labour and services performed and material furnished, or otherwise, and any of the same in or about the works.

Sanitation.

33. The Contractor shall comply with and the works shall be carried on subject to all regulations made by any lawful authority and applicable to said works and all orders given by the Engineer with respect to sanitation or preservation of health on the work. The Contractor shall, at his own expense, make adequate arrangements, to the satisfaction of the Engineer, for the medical and sanitary supervision of all his employees.

Engineer's stakes or other marks not to be removed.

34. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes, buoys and other marks placed on or about the said works by the Engineer or his assistants and shall furnish the necessary assistance to correct or replace any stake, buoy or mark which through any cause may have been removed or destroyed.

Notice; how given.

35. Any notice, order, direction or other communication given to the Contractor under any of the provisions of this contract shall be sufficiently given if delivered to the Contractor personally, or to his foreman, or left at the Contractor's office, or mailed at any post office to the Contractor or foreman, addressed to the address mentioned in this contract, or to the Contractor's last known place of business or residence. Every such notice, order, direction or communication shall be sufficient which expresses in general language and without detail the matters required or communicated, or which follows the general language of the section or sections of this contract under which it is given, and no objection shall be taken to the form thereof.

Payment by Her Majesty.

36. Her Majesty, in consideration of the premises, and subject to the performance and observation on the part of the Contractor of all the covenants, provisos and conditions in this contract contained, will pay to the Contractor for and in respect of the works in manner hereinafter stated, viz:—

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And for any work or additional work done or materials or things provided, under the written orders of the Engineer, for which no price or prices are named herein, Her Majesty, in consideration and subject as aforesaid, will pay to the Contractor the actual and reasonable cost as determined by the Engineer of such work, materials and things, with an additional ten per cent thereon for the use of tools, Contractor's plant, superintendence and profits. Payment for additional work.

37. The quantities (if any) given are approximate only and no claim shall be made by the Contractor against Her Majesty on account of any excess or deficiency, absolute or relative, in the same. Approximate quantities.

38. The said price or prices shall be accepted by the Contractor as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not included in the items hereinabove mentioned, and also for all loss or damage arising out of the nature of the works or the action of the weather, tides, elements, or any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the works, and for all expenses incurred by or in connection with the works, and for all works, and for all expenses incurred by or in consequence of any delay or suspension or discontinuance of the work as herein specified, and for well and faithfully completing the works as in this contract provided. Prices to be accepted as full compensation.

39. Cash payments equal to about ninety per cent of the value of the work done approximately estimated from progress measurements and computed at the price or prices agreed upon or determined under the provisions of this contract will be made to the Contractor monthly, if practicable, on the written certificate of the Engineer stating that the work for or on account of which the certificate is granted has been done, and stating the value of such work completed as above mentioned; and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent or any part thereof. The remaining ten per cent shall be retained till the final completion of the whole work to the satisfaction of the Engineer and will be paid within two months after such completion. The written certificate of the said Engineer certifying to the final completion of the said works to his satisfaction shall be a condition precedent to the right of the Contractor to receive or to be paid the remaining ten per cent or any part thereof. Progress payments. Ninety per cent. Ten per cent retained until completed.

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Engineer in certifying values for progress payments may disregard price-list.

40. Provided always that where in the opinion of the Engineer the work done is not sufficiently finished or is not of sufficient value to justify payment at the price or prices agreed upon or determined under the provisions of this contract, the Engineer may, for the purpose of such payment, disregard the price or prices agreed upon or determined and may estimate the proportionate value payable in respect of such work and issue a certificate accordingly; in which case the Contractor shall only be entitled to receive ninety per cent of such estimated proportionate value as stated in such certificate and shall not be paid the ninety per cent of the price or prices agreed upon or determined under the provisions of this contract until such time as the Engineer, by reason of the performance of additional work, shall certify that the Contractor is entitled thereto.

Full prices when obtainable. Claims under progress certificate.

41. It is intended that every allowance to which the Contractor is fairly entitled will be embraced in the Engineer's monthly certificate, but should the Contractor at any time have claims of any description which he considers are not included in the progress certificates such claims must be made in writing to the Engineer within thirty days after the date of the delivery to him of the certificate from which he considers the items of such claims to have been omitted, but in no case beyond the period of sixty days from the date of the practical completion of that portion of the work to which such claims apply. And in default of the presentation of such claims within the time or times so limited the Minister may treat such claims as absolutely barred.

Limitation of time for presentation of claims.

Claims evidence of accuracy.

42. The Contractor in presenting claims of the kind referred to in the last preceding clause must accompany them with satisfactory evidence of their accuracy and the reason why he thinks they should be allowed.

Progress measurements and certificates not binding.

43. The progress measurements and progress certificates shall not in any respect be taken as binding upon the Engineer, or as final measurements or as fixing final amounts; they are to be subject to the revision of the Engineer in making up his final certificate and they shall not in any respect be taken as an acceptance of the work or as a release of the Contractor from responsibility in respect thereof.

Delays.

44. The Contractor shall not have nor make any claim or demand nor bring any action or suit or petition against Her Majesty for any damage which may be sustained by reason of any delay or delays from whatever cause arising in the progress of the work.

45. It is distinctly declared that no implied contract of any kind whatsoever by or on behalf of Her Majesty shall arise or be implied from anything in this contract contained, or from any position or situation of the parties at any time, it being clearly understood and agreed that the express contracts, covenants and agreements herein contained and made by Her Majesty are and shall be the only contracts, covenants and agreements upon which any rights against Her Majesty are to be founded.

Parliamentary appropriations exhausted.

Contractor proceeds at own risk.

46. Should the amount voted by Parliament and applicable towards payment for the work hereby contracted for be at any time expended previous to the completion of the works the Minister or the Engineer may give the Contractor written notice to that effect. And, upon receiving such notice, the Contractor may, if he thinks fit, stop the work, but in any case shall not be entitled to any payment for work done beyond the amount voted and applicable as aforesaid unless and until the necessary funds shall have been voted by Parliament in that behalf. And in no event shall the Contractor have or make any claim on Her Majesty for any damages or compensation by reason of the suspension of payment, or by reason of any delay or loss caused by the stoppage of work. And in the event of the Contractor electing to proceed or proceeding with such work after such notice and before additional funds are voted, no action of the Engineer or of any other person on behalf of Her Majesty in giving orders, directions or instructions or otherwise acting with respect to such work shall be taken or considered as in any manner improving the rights of the Contractor or as waiving in any particular any of the provisions of this section.

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47. The Minister may, from time to time and for such period as he may deem expedient, delay or suspend, in whole or in part operations under this contract, either upon the whole of the works or at any particular point or points. Should any such delay or suspension, or the stoppage of the works under the last preceding clause of this contract, or should any delay caused by any circumstance which, in the opinion of the Engineer is beyond the control of or not the fault of the Contractor, unreasonably limit the time for the completion of the works within the time specified by this contract, the Minister, as often as the case occurs, shall allow such additional time as to him may seem sufficient in the extension of such time for completion; but no such delay, suspension or stoppage shall vitiate or void this contract or any part thereof, or any security or obligation for the performance thereof, nor shall the Contractor be entitled to make any claim for damages by reason thereof. Upon the termination of such delay, suspension or stoppage, or upon the removal of the cause thereof, or upon the Contractor receiving notice from the Minister or Engineer requiring him to resume the work, he shall at once resume operations and diligently carry on the same.

Minister may suspend work.

No compensation to contractor for delay.

48. The Contractor shall not bring nor permit to be brought anywhere on or, as far as the Contractor can prevent the same, near the works any spirituous or intoxicating liquor; and if any person employed on the works be in the opinion of the Engineer intemperate, disorderly, incompetent, wilfully negligent or dishonest in the performance of his duties, he shall on the direction of the Engineer be forthwith discharged and the Contractor shall not employ or permit to remain on the work any person who shall have been discharged for any or all of said causes.

Liquors.

49. All orders, directions, instructions or notices to be given or issued by the Engineer under and pursuant to any section in this contract may be given or issued by a duly and expressly authorized agent or agents of the Engineer.

Orders by Engineer's agent.

50. Any extension of time that may be granted to the Contractor shall be so granted and accepted without prejudice to any rights of Her Majesty whatsoever, under this contract, and no assent thereto on the part of the Contractor shall be necessary.

Extension of time.

51. The Contractor hereby and herewith deposits with and delivers to Her Majesty as security for the due fulfilment of his contract the sum of

Security deposit.

upon the express understanding that the same shall be held and retained by Her Majesty as security for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this contract contained, on the part of the Contractor to be observed, performed and complied with. Provided always and it is understood and agreed that the Contractor assumes the risk and must bear any loss in respect of the security deposited as aforesaid occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid.

52. If at any time hereafter the said Contractor should make default under the said contract, or if Her Majesty acting under the powers reserved in the said contract shall determine that the said works or any portion thereof remaining to be done should be taken out of the hands of the Contractor and be completed in any other manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay any salaries or wages or any accounts

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for materials due by the said Contractor for work done or materials supplied by any person in connection with the said work, Her Majesty may, in either case, dispose of said security and of the interest which may have accrued thereon for the carrying out of the construction and completion of the work of the contract, or for paying any salaries or wages for work done, or any accounts for materials supplied for the said works that may be left unpaid by the said Contractor.

Repayment of security deposit.

53. Upon the due and faithful performance, observance and fulfilment by the Contractor of all and every the terms, provisions, covenants, agreements, conditions and reservations hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Contractor shall be entitled to be repaid or to receive again the money so deposited, together with so much interest upon such money as Her Majesty may, during her retention or possession of the same actually receive by reason thereof; it being, however, understood that Her Majesty shall not be under any obligation to cause the said money to be placed at interest, or to earn, or to endeavour to earn, interest thereon.

Interest on security deposit.

54. In the event of any breach, default, or non-performance being made or suffered by the Contractor in or in respect of any of the terms or conditions, covenants, provisos, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said money and interest thereon so delivered to or deposited with Her Majesty, or by her received in respect thereof shall, by the Contractor, be forfeited absolutely to Her Majesty.

Forfeit of security.

55. No condoning, excusing, or overlooking by Her Majesty or any person acting on her behalf, on previous occasions of breaches or defaults similar to that for which any action is taken or power exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken to operate as a waiver of any provision of this contract, nor to defeat or prejudice in any way the right of Her Majesty hereunder.

Waiver negatived. Contractor to investigate every condition of work before execution of contract.

56. This contract is made and entered into by the Contractor and Her Majesty on the distinct understanding that the Contractor has, before execution, investigated and satisfied himself of everything and of every condition affecting the works to be executed and the labour and material to be provided, and that the execution of this contract by the Contractor is founded and based upon his own examination, knowledge, information and judgment, and not upon any statement, representation, or information made or given, or upon any information derived from any quantities, dimensions, tests, specifications, plans, maps or profiles made, given or furnished by Her Majesty or any of Her officers, employees or agents; and that any such statement, representation or information, if so made, given or furnished, was made, given or furnished merely for the general information of bidders and is not anywise warranted or guaranteed by or on behalf of Her Majesty; and that no extra allowance will be made to the Contractor by Her Majesty and the Contractor will make no claim against Her Majesty for any loss or damage sustained in consequence of or by reason of any such statement, representation or information being incorrect or inaccurate, or on account of unforeseen difficulties of any kind.

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57. In the event of any inconsistency between the provisions of this contract and the provisions of the specifications forming part hereof the provisions of the contract shall prevail. Inconsistency between contract and specification.

In Witness whereof the respective parties hereto have executed these presents on the day, month and year first above written.

Signed, sealed and delivered by the Contractor in the presence of:

Deputy Minister of Public Works

Signed, sealed and delivered by Her Majesty, in manner aforesaid, in the presence of:

.....
Secretary.

Edmond Cloutier, C.M.G., O.A., D.S.P., Queen's Printer and Controller of Stationery, Ottawa, 1954.

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No.....

Date.....19

PUBLIC WORKS — CANADA

Articles of Agreement entered into between

AND

Her Majesty the Queen, represented by the Minister of Public Works of Canada.

For

Amount:

Date of Completion:

File No.

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Our Ref. P.W.D. 11757

DEPARTMENT OF LABOUR

OTTAWA, CANADA

LABOUR CONDITIONS

The following schedule of labour conditions is applicable to the work of

grading, culverts, base course and road mix, Mile 85.8 to 96.7 - Banff-Jasper Highway
In Jasper Park, Alta.

to be undertaken for the Department of PUBLIC WORKS

Classifications, Wages and Hours.

(1) All persons in the employ of the contractor, subcontractor, or any other person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour.

Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week and nothing herein contained shall prevent the Minister of Labour from requiring hours of labour less than 44 per week where by current practice, collective agreement, or provincial legislation or regulation, such shorter hours are applicable in the area in which the contract is being performed.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Compressor operators	$ 1.75
Drill runners	1.75
Firemen	1.65
Grader operators	1.85
Labourers	1.65
Oilers (construction equipment)	1.65
Operators (draglines, cranes, shovels, etc.)	2.15
Powdermen	1.70
Roller operators	1.70
Tractor operators (large)	1.85
Tractor operators (small)	1.70
Truck drivers	1.65
Watchmen	1.00
Welders & burners (acetylene or electric)	1.90

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LABOUR CONDITIONS (Cont'd)

MINISTER OF LABOUR TO DETERMINE OVERTIME RATES AND PROPER CLASSIFICATIONS

(2) Where there are special circumstances which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what are the current or fair and reasonable rates of wages for overtime, and what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision. In case the Contractor shall fail so to do, or fail at any time to pay to any employee or employees for any services performed or for any hours of labour wages according to the rates set forth in the schedule or fixed therefor by the Minister of Labour hereunder regarding overtime and classification, the Minister of Labour may authorize and direct the Minister of the Contracting Department to pay any such wages at the rates so fixed and to deduct the amount thereof from any moneys owing by the Government to the Contractor and any such payment shall for all purposes as between the Contractor and the Government be deemed and taken to be payment to the Contractor, and the Contractor shall be bound in every particular by any such authority, direction and payment as aforesaid.

SCHEDULE TO BE POSTED

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

CONTRACTOR TO KEEP RECORDS WHICH ARE TO BE OPEN FOR INSPECTION

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

DEPARTMENTAL REQUIREMENTS BEFORE PAYMENTS MADE TO CONTRACTOR

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

AUTHORITY TO PAY WAGES IN EVENT OF DEFAULT BY CONTRACTOR

(6) All cases of default in the payment of wages to employees by the Contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

CONDITIONS OF SUBCONTRACTING

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contractor shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

WORKMEN TO BE RESIDENTS OF CANADA

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The Contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

Department of Public Works of Canada
DPW 116 (Reprint Sept. 58)

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DIVISION 1

GENERAL CONDITIONS OF THE CONTRACT

Section	
1	Definitions and Terms
2	Bidding Requirements and Conditions
3	Award and Execution of Contract
4	Scope of Work
5	Control of Work
6	Control of Materials
7	Legal Relations and Responsibility to Public
8	Prosecution and Progress
9	Measurement and Payment
10	Wages and Conditions of Employment

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GENERAL CONDITIONS OF THE CONTRACT

SECTION 1. DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:-

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.R.	Association of American Railroads
A.A.S.H.O.	American Association of State Highway Officials
A.R.E.A.	American Railway Engineering Association
A.S.C.E.	American Society of Civil Engineers
A.S.T.M.	American Society for Testing Materials
A.W.W.A.	American Water Works Association
C.S.A.	Canadian Standards Association
H.R.B.	Highway Research Board
Public Roads	Bureau of Public Roads, Department of Commerce
S.A.E.	Society of Automotive Engineers

Access Connection - Any roadway facility by means of which vehicles can enter or leave an arterial highway. Included are intersections at grade, private driveways, and ramps or separate lanes connecting with cross streets or frontage roads.

Advertisement - The advertisement for tenders for all work or materials on which bids are to be accepted.

Arterial Highway - A general term denoting a highway primarily for through traffic, usually on a continuous route.

Auxiliary Lane - The portion of the roadway adjoining the travelled way for parking, speed-change, or for other purposes supplementary to through traffic movement.

Award - The decision of the department to accept the tender of the lowest responsible bidder for the work, subject to the execution and approval of a satisfactory contract therefor and bond to secure the performance thereof and to such other conditions as may be specified or otherwise required by law.

Bidder - An individual, firm or corporation formally submitting a tender for the work contemplated, or any portion thereof, acting directly or through a duly authorized representative.

Bridge - A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the centre of roadway of more than 20 feet between under-copings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening.

Length - The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end ofthe bridge floor; but in no case less than the total clear opening of the structure.

Roadway Width - The clear width measured at right angles to the longitudinal centreline of the bridge between the bottom of curbs or guard timbers or in the case of multiple height curbs, between the bottoms of the lower risers.

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Calendar Day - Every day shown on the calendar, Sundays and holidays included.

Channel - A natural or artificial water course.

Contract - The written agreement executed between the Department and the the successful bidder, covering the performance of the work and the furnishing of labour and materials, by which the contractor is bound to perform the work and furnish the labour and materials, and by which the Department is obligated to compensate him therefor at the mutually established and accepted rate or price.

The contract shall include the invitation for bids, instructions to bidders, tender, contract form and contract bond, these specifications, supplemental specifications, all general or special provisions, general and detailed plans, and notice to proceed, also any written change orders and agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

Contract Period - The period from the specified date of commencing work to the date that the specified number of working days or calendar days, as the case may be, has elapsed, both dates inclusive, or from the specified date of commencing work to the specified date of completion, both dates inclusive, as specified in the contract.

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment, and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

Contractor - The party of the second part to the contract; the individual firm or corporation undertaking the execution of the work under the terms of the contract and acting directly or through his, their or its agents or employees.

Contract Time or Completion Date - The number of working or calendar days shown in the proposal indicating the time allowed for the completion of the work contemplated in the contract.

In case a calendar date of completion is shown in the proposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

Control of Access - The condition where the right of owners or occupants of abutting land or other persons to access, light, air or view in connection with a highway is fully or partially controlled by public authority.

Full control of access means that the authority to control access is exercised to give preference to through traffic by providing access connections with selected public roads only and by prohibiting crossings at grade or direct private driveway connections.

Partial control of access means that the authority to control access is exercised to give preference to through traffic to a degree that, in addition to access connections with selected public roads, there may be some crossings at grade and some private driveway connections.

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Culvert - Any structure not classified as a bridge which provides an opening under any roadway.

Department - Shall mean the Federal Department of Public Works of Canada.

Divided Highway - A highway with separated roadways for traffic in opposite directions.

Drainage Ditch - An artificially constructed open depression constructed for the purpose of carrying off surface water.

Employee - Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control or receives compensation from the Contractor or Subcontractor.

Engineer - Shall mean the Chief Engineer of the Development Engineering Branch of the Department of Public Works of Canada, having control over the work and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any one acting from the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Equipment - All machinery, equipment and livestock, together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

Extra Work - Additional construction items which are not included in the original contract.

Extra Work Order - A special order authorizing the performance of extra work and the furnishing of materials involved in extra work. Such extra work may be performed at agreed prices or on a force account basis.

Highway, Street or Road - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Highway Separation - Any structure carrying highway traffic over or under another highway or street.

Inspector - The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

Instruction to Bidders - Form prepared and furnished by the Department, for the information of bidders submitting tenders, which specifies the provisions, requirements, and instructions pertaining to the method, manner and time of submitting bids and approximate quantities of materials required.

Invitation for Bids - The advertisement for tenders for all work or materials on which bids are required. Such advertisement will indicate with reasonable accuracy the quantity and location of the work to be done or the character and quantity of the material to be furnished and the time and place of the opening of tenders.

Laboratory - The Testing Laboratory of the Department or any other testing laboratory which may be designated by the Engineer.

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Materials - Any substances specified for use in the construction of the project and its appurtenances.

Median - The portion of a divided highway separating the travelled ways for traffic in opposite directions.

Median Lane - A speed-change lane within the median to accommodate left-turning vehicles.

Minor Structure - Any structure not classed as a bridge or a culvert. It shall include catch basins, inlets, manholes, retaining walls, steps, buildings, fences and other miscellaneous items.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified in the tender form.

Profile Grade - The trace of a vertical plane intersecting the top surface of the proposed subgrade along the longitudinal centreline of the roadbed. Profile grade means either elevation or gradient of such trace according to the context.

Project - The specific section of the highway together with all appurtenances and construction to be performed thereon under the contract.

Railway-Highway Separation -Any structure carrying highway traffic over or under the tracks of any railway.

Ramp - A connecting roadway between two intersecting highways at a highway separation.

Right-of-Way - The land secured and reserved to the public for highway purposes.

Road - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Roadbed - The graded portion of a highway, usually considered as the area between the intersections of top and side slopes, upon which the base course, surface course, shoulders and median are constructed.

Roadside - A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered roadside.

Roadside Development - Those items necessary to the complete highway which provide for the preservation of landscape materials and features; the rehabilitation and protection against erosion of all areas disturbed by construction through seeding, sodding, mulching and the placing of other ground covers; such suitable planting and other improvements as may increase the effectiveness and enhance the appearance of the highway.

Roadway - The portion of the highway within limits of construction.

Shoulder - The portion of the roadway contiguous with the travelled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

Sidewalk - That portion of the roadway primarily constructed for the use of pedestrians.

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Skew or Skew Angle - The acute angle formed by the intersection of a line normal to the centre line of the roadway with a line parallel to the face of the abutments, or in the case of culverts with the centre line of the culverts.

Special Provisions - Special directions, provisions, or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications. Special provisions shall prevail over specifications and supplemental specifications whenever in conflict therewith and over all plans. They set forth the final contractual intent as to the matter involved.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Speed-Change Lane - An auxiliary lane, including tapered areas, primarily for the acceleration or deceleration of vehicles entering or leaving the through traffic lanes.

Street - A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Structures - Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, endwalls, buildings, sewers, service pipes, underdrains, foundation drains and other features which may be encountered in the work and not otherwise classed herein.

Subcontractor - Any individual, firm or corporation to whom the contractor, with the written consent of the Department, sublets any part of the contract.

Sub-Base - Materials placed immediately below the subgrade to give it the required stability.

Subgrade - The portion of the roadbed prepared as a foundation for the base and surface courses.

Substructure - All of that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, except as noted above for substructure.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

Supplemental Agreement - A written agreement made and entered into by and between the Contractor and the Department covering work not otherwise provided for, revisions in or amendments to the terms of the contract, or conditions specifically prescribed in the specifications as requiring supplemental agreements. Such supplemental agreement becomes a part of the contract when approved and properly executed.

Supplemental Specifications - Specifications adopted subsequent to the publication of this book. They generally involve new construction items or substantial changes in the approved specifications. Supplemental specifications shall prevail over those published in this book whenever in conflict therewith.

Tender - An offer of the bidder, submitted on the prescribed tender form, to perform the work and to furnish the labour and materials at the prices quoted by the bidder.

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Tender Form - The approved form on which the Department requires formal bids to be prepared and submitted for the work.

Through Street or Through Highway - Every highway or portion thereof at the entrance to which vehicular traffic from intersecting highways is required by law to stop before entering or crossing the same and when stop signs are erected.

Titles (or Headings) - The titles or headings of the sections and articles herein are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.

Township, Town or District - A subdivision of the county used to designate or identify the location of the proposed work.

Traffic Lane - The portion of a travelled way for the movement of a single line of vehicles.

Travelled Way - The portion of the roadway for the movement of vehicles exclusive of shoulders and auxiliary lanes.

Trench - An excavation made for the purpose of installing or removing pipes, drains, catch basins, etc., and which is later refilled.

Work - Work shall be understood to mean the furnishing of all labour, materials, equipment, and other incidentals necessary or convenient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract.

Working Drawings - Stress sheets, shop drawings, erection plans, false-work plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2. BIDDING REQUIREMENTS AND CONDITIONS

1.2.1 Notice to Contractors

The Contractor will be notified of proposed work in accordance with Departmental practice.

1.2.2. Qualifications of Bidders

The bidder will be required to show that he is capable of performing the class of work contemplated and shall submit with the tender on questionnaire forms supplied by the Department:-

(a) A Declaration of Equipment giving a description of the various units, their capacity, condition, age and present location that the bidder will definitely assign to the project being tendered on for its duration.

(b) A statement of his experience in performing work of the type or character for which his bid is submitted.

The bidder may be required to submit such additional evidence of his qualifications as may be deemed necessary by the Department.

1.2.3. Contents of Tender Forms.

The bidder will be furnished by the Department, upon request, with a tender form. This form will state the location and description of the contemplated construction and will show the approximate estimate of the various quantities and kinds of work to be performed or materials to be furnished, with a schedule of items of which unit bid prices are invited. It will state the time in which the work must be completed, the amount of the security required with the tender and the date, time and place of the opening of tenders. The form will also include any special provisions or requirements which vary from or are not contained in the standard specifications.

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All papers bound with or attached to the tender form are necessary parts thereof and must not be detached or altered.

All plans, specifications and other documents, designated in the tender form, will be considered a part of the tender whether attached or not.

The bidder will be required to deposit with the department the sum stated in the notice to contractors for each copy of tender form and plans.

1.2.4. Interpretation of Quantities in Bid Schedule

The quantities appearing in the prepared bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the contract, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased, diminished, or omitted as hereinafter provided without in any way invalidating the unit prices bid.

1.2.5. Examination of Plans, Specifications, Special Provisions, and Site of Work

The bidder is required to examine carefully the site of the proposed work, the tender, plans, specifications, special provisions, and contract forms before submitting a tender. It is mutually agreed that submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the plans, specifications, supplemental specifications, special provisions, and contract.

1.2.6 Preparation of Tender

The bidder shall submit his tender upon the blank forms furnished by the department. The bidder shall specify a unit price, in both words and figures, for each pay item for which a quantity is given, and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, and the total amount of the tender obtained by adding the amounts of the several items.

All words and figures shall be in ink. In case of a discrepancy between the prices written in words and those written in figures, the written words shall govern.

The bidder's tender shall be signed with ink by the individual, by one or more members of the partnership, or by one or more of the officers of the corporation submitting it. If the tender is made by an individual his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the proposal must show the name of the province under the laws of which the corporation was chartered and the names, titles, and business addresses of the president, vice president, secretary and treasurer.

1.2.7. Irregular Tenders

Tenders shall be considered irregular and may be rejected for the following reasons:-

(a) If the tender form furnished by the department is not used or is altered.

(b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the tender incomplete, indefinite, or ambiguous as to its meaning.

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(c) If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

(d) If the unit prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values.

(e) If they fail to contain a unit price for every pay item indicated.

1.2.8 Security

Each tender must be accompanied by a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act payable to the order of the RECEIVER GENERAL OF CANADA equal to ten per cent of the amount of the tender or, where the tender exceeds $250,000., $25,000. plus five per cent of the amount by which the amount of the tender exceeds $250,000., in accordance with the Government Contracts Regulations now in force, or Bearer Bonds, with unmatured coupons attached, of the Government of Canada or of the Canadian National Railway Company and its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada.

1.2.9 Interest

Tenderers are notified that they must make their own arrangements with their bankers as to the payment of interest, if any, on the amount of the certified cheque accompanying their tender. The Government of Canada will not pay interest on said cheque pending the awarding of the contract, nor be responsible for the payment of interest under any arrangements made by the tenderers. The cheque of the tenderer to whom the contract has been awarded will forthwith be deposited in the Department of Finance and interest on the amount thereof at the prevailing rate of interest under the regulations governing deposits in Post Office Savings Banks will be allowed.

1.2.10 Delivery of Tenders

Each tender must when possible be submitted in a special envelope furnished by the Department and the blank spaces on the envelope must be filled in correctly so as to clearly indicate its contents. When an envelope other than the special one furnished by the Department is used it must be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail the sealed tender must be addressed to the Department at the address and in care of the official in whose office the bids are to be received. All tenders shall be filed prior to the time and at the place specified in the notice to contractors. Tenders received after the time for opening of bids will be returned to the bidder unopened.

1.2.11 Withdrawal or Revision of Tenders

A bidder may, without prejudice to himself, withdraw a tender after it has been deposited with the Department, provided the request for such withdrawal is received by the Department, in writing or by telegram, before the time set for opening tenders. The bidder may then submit a revised tender provided it is received prior to the time set for opening tenders.

1.2.12 Opening of Tenders

Tenders will be opened at the time and place indicated in the notice to contractors.

1.2.13 Material Guaranty

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture

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of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

SECTION 3. AWARD AND EXECUTION OF CONTRACT

1.3.1. Consideration of Tenders

After the tenders are opened and read, they will be compared on the basis of the summation of the products of the approximate quantities shown in the bid schedule by the unit bid prices. In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern.

The right is reserved to reject any or all tenders, to waive technicalities, to advertise for new tenders or to proceed to do the work otherwise, if in the judgment of the awarding authority the best interests of Canada will be promoted thereby.

1.3.2. Award of Contract

The successful bidder will be notified, by letter mailed to the address shown on his tender, that his bid has been accepted and that he has been awarded the contract. The Contractors Security deposit (Article 1.2.8) will be forfeited if the tenderer declines to enter into a contract when called upon to do so, or if he, as a contractor, fails to complete the contract.

1.3.3. Return of Tender Security

All tender securities will be returned except that of the successful bidder, which will be retained until the contract has been successfully completed and accepted.

1.3.4. Execution of Contract

The Contractor who submitted the successful bid will be required to sign a contract similar to the indenture exhibited at the same time as the plans and specifications.

1.3.5. Failure to Execute Contract

If the tenderer declines to enter into a contract when called upon to do so, his security deposit will be forfeited.

SECTION 4. SCOPE OF WORK

1.4.1. Intent of Contract

The intent of the contract is to prescribe a complete work or improvement which the contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract. The contractor shall perform all work in accordance with the lines, grades, typical cross-sections, dimensions, and other data shown on the plans or as modified by written orders, including the furnishing of any materials so stipulated in the specifications, all implements, machinery, equipment, tools, supplies, transportation, labour, and all other things necessary to the satisfactory prosecution and completion of the project.

1.4.2. Special Work

Should any construction or conditions which are not covered by the plans or these specifications be anticipated, special provisions for such work will be prepared by the engineer, stated on or attached to the tender form, and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications or supplements thereto, the special provisions shall govern.

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1.4.3. Alterations of Plans or of Character of Work

The Engineer shall have the power and right to make from time to time and at any time, additions to or deductions from the dimensions shown on the drawings or specified herein and to add to, omit, change, modify, cancel or alter the works, and materials herein specified, or shown on the drawings without rendering void or in any way vitiating the contract. The value or cost of such additions, deductions, omissions, modifications, or alterations, shall be determined in accordance with the rates or prices stated in his tender, which prices are assumed, and will be taken to cover the cost of materials and workmanship measured in the work, or as specified herein, and to include the cost and expense of all plant, labour, machinery, tools, temporary works, cartage, freight, patterns, moulds, superintendence and profit; but the Contractor is not to make any change or alteration in the works or in the dimensions and character of the materials to be used without the consent and permission, in writing, of the Engineer. In case such permission is not obtained, unless the Contractor can show good and sufficient reason for his action, payment for such works will be refused.

1.4.4. Meaning of Terms, etc.

Alterations, deductions, omissions, modifications, or deviations are to be understood as applying to decided variations in the plans or designs, such as a decrease in width, an increase in depth, the substitution of one class of material for another, the addition of works neither shown nor described, etc., and for these or similar matters alone, will any sum be allowed to the Contractor, or deducted from the contract, and then only upon the written order of the Engineer. All other alterations, etc., consequent upon a better disposal of materials, an improved mode of construction adopted, repairs required, and such like, as long as the costliness of the materials, workmanship, etc., are of a trifling nature, which shall be judged of by the Engineer, shall be deemed to be included in the contract, and for such no extra sum or amount will, under any consideration, be allowed to the Contractor.

1.4.5. Extra Work

The Contractor shall perform unforeseen work, for which there is no price included in the contract and such extra work shall be performed in accordance with the specifications and as directed in writing by the Engineer before such extra work is started.

1.4.6. Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

1.4.7. Maintenance of Traffic

The Contractor shall at all time carry on the work in a manner that will create the least interference with traffic, consistent with the faithful performance of the work. He shall not close any portion of the highway nor divert traffic outside the limits of the highway except by written order of the Engineer.

He shall construct and maintain at his own expense a safe road for traffic in every case where traffic is maintained within the limits of the highway or carried on detours arranged for through private property. He shall also, at his own expense, make the necessary arrangements for detours through private property and such detours shall be deemed to be a part of the work under this contract.

Notwithstanding anything herein contained the Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the contract.

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1.4.8. Temporary Structures

In bridge contracts, the contractor will not be required to construct or maintain temporary structures unless the construction and maintenance of such structures are stipulated in the contract or ordered as extra work by the engineer.

Plans for temporary structures and procedure for moving existing structures to temporary location, when not provided by the engineer, shall be subject to his approval.

1.4.9. Removal and Disposal of Structures and Obstructions

All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, including any existing drain or culvert pipes, which the engineer may order salvaged shall be carefully removed and shall become the property of the department.

Payment for this work shall be made under the pay items identified for such work in the tender, except when the work is of minor consequence it shall be considered as incidental to and included in other items.

1.4.10 Rights In and Use of Materials Found on the Work

The contractor, with the approval of the engineer, may use in the proposed construction such stone, gravel, sand, or other material suitable in the opinion of the engineer, as may be found in the excavation and will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills, approaches, or otherwise. No charge for the materials so used will be made against the contractor. The contractor shall not excavate or remove any material from within the highway location which is not within the excavation, as indicated by the slope and grade lines, without written authorization from the engineer.

Unless otherwise provided, the material from any existing old structure may be used temporarily by the contractor in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the engineer.

1.4.11. Final Cleaning Up

At his own expense and under the direction of the engineer, the contractor shall remove all obstructions and shall clear the works and the grounds occupied by him from all refuse and rubbish and leave them in a neat and clean condition.

SECTION 5. CONTROL OF THE WORK

1.5.1 Authority of the Engineer

All work shall be done under the supervision of the engineer and performed to his satisfaction. He shall decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the contract on the part of the contractor; all disputes and mutual rights between contractors; and all questions as to compensation. His decision shall be final and he shall have executive authority to enforce and make effective such decisions and orders as the contractor fails to carry out promptly.

1.5.2. Plans

Plans, consisting of general drawings and showing such details is

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are necessary to give a comprehensive idea of the construction contemplated, will be furnished by the department. Roadway plans will show alignment, profile grade, typical cross sections of improvements, and general cross sections.

1.5.3. Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions, and adjustments shown on the approved plans, except as modified by written orders by the engineer. The crown or rise of the finished surfaces of the roadway, from the curb or side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves or at other places, where deemed necessary, the contractor will be required to widen, superelevate and spiral the roadway according to department standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the engineer in writing.

1.5.4. Coordination of Plans, Specifications, Supplemental Specifications, and Special Provisions.

These specifications, the supplemental specifications, the plans, special provisions, and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complimentary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

1.5.5. Cooperation by Contractor

The contractor will be supplied with a minimum of two sets of approved plans, specifications and contract assemblies including special provisions, one set of which the contractor shall keep available on the work at all times.

The contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the engineer, his inspectors, and other contractors in every way possible.

The contractor shall at all times have on the work, as his agent, a competent superintendent or foreman capable of reading and thoroughly understanding the plans and specifications, thoroughly experienced in the type of work being performed, who shall receive instructions from the engineer or his authorized representatives. The superintendent shall have full authority to execute the orders or directions of the engineer without delay, and to promptly supply such materials, equipment, tools, labour and incidentals as may be required. Such superintendence shall be furnished irrespective of the amount of work sublet.

1.5.6. Cooperation with Utilities

It shall be the department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners under agreement with

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the department except as otherwise provided for in the special provisions or as noted on the plans.

It is understood and agreed that the contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

1.5.7. Cooperation between Contractors

The department reserves the right at any time to contract for and perform other or additional work on or near the work covered by any contract.

When separate contracts are let within the limits of any one project, each contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors. Contractors working on the same project shall cooperate with each other and in case of dispute the engineer shall be the referee and his decision shall be final and binding on all.

Each contractor involved shall assume all liability, financial or otherwise, in connection with his contract and shall protect and save harmless the department from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced by him because of the presence and operations of other contractors working within the limits of the same project and he shall assume all responsibility for all work not completed or accepted because of the presence and operations of the other contractors.

The contractor shall as far as possible arrange his work and shall place and dispose of the materials being used so as not to interfere with the operations of the other contractors within the limits of the same project. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

1.5.8. Construction Stakes, Lines and Grades

The engineers will set construction stakes establishing lines, slopes, and continuous profile-grade in road work, and centreline and bench marks for bridge work, culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the contractor with all necessary information relating to lines, slopes, and grades. These stakes and marks shall constitute the field control by and in accordance with which the contractor shall govern and execute the work.

The contractor shall be held responsible for the preservation of all stakes and marks, and if any of the construction stakes or marks have been carelessly or willfully destroyed or disturbed by the contractor, the cost of replacing them shall be charged against him and shall be deducted from the payment for the work.

1.5.9. Authority and Duties of Inspector

Inspectors, employed by the department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The inspector is not authorized to alter or waive the provisions of these specifications.

An inspector is placed on the work to keep the engineer informed as to the progress of the work and the manner in which it is being done; also to call the contractor's attention to any nonconformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and

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specifications, or to act as foreman for the Contractor. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

1.5.10 Inspection of Work:

All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

1.5.11 Removal of Defective and Unauthorized Work

All work and materials which do not conform to the requirements of the contract shall be considered as defective work.

Any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist prior to acceptance of final payment for work, shall be removed immediately and replaced by work and materials which shall conform to the specifications or shall be remedied otherwise in an acceptable manner authorized by the Engineer. This clause shall have full effect regardless of the fact that the defective work may have been done or the defective materials used with the full knowledge of the Inspector. The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

No work shall be done without lines and grades having been given by the Engineer. Any work which may be done by the Contractor prior to approval of contract, work done contrary to or regardless of the instructions of the Engineer, work done beyond the lines shown on the plans, or as given, except as herein specified, or any extra work done without authority will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer, made under the provisions of this article, the Engineer shall have authority to cause defective work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs from any monies due or to become due the Contractor.

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1.5.12 Load Restrictions

The Department may indicate in the contract load restrictions on any road or structure within the vicinity of the project.

1.5.13 Maintenance During Construction

The Contractor shall maintain the work during construction and until the work is finally accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in satisfactory condition at all times.

All cost of maintenance work during construction and before the work is finally accepted shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

In the event that the Contractor's work is ordered shut-down for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract has been declared in default.

1.5.14 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Article 1.5.13 above, will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

1.5.15 Final Construction Inspection (With Maintenance Period)

Whenever a final maintenance period is included as part of the contract and after all the items of work have been satisfactorily completed, the Engineer shall make a final inspection as stipulated in Article 1.5.17 but in lieu of final acceptance the project will be placed on final maintenance period. The final maintenance period shall begin on the date of final construction inspection.

1.5.16 Final Maintenance Period

The Contractor will be required to maintain the project in first-class condition for the stipulated period after the final construction inspection.

Since the final maintenance period is part of the contract, compensation for all maintenance during construction and during the final maintenance period shall be included in the contract unit prices bid on the pay items of the work, and no additional payment will be made for such maintenance as provisions and stipulations set forth in Articles 1.5.13 and 1.5.14 apply to this final maintenance period.

1.5.17 Final Acceptance

Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

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Upon due notice from the contractor of presumptive completion of the entire project, the Engineer shall make a semifinal inspection and if at such semifinal inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

If, however, at any semifinal inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the contractor the necessary instructions as to replacement of material and performance or reperformance of work necessary and prerequisite to final completion and acceptance, and the contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or reperformance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

1.5.18 - Claims for Adjustment and Disputes

In any case where the contractor deems that extra compensation is due him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra, as defined herein, the contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given, and the Engineer is not afforded proper facilities by the contractor for keeping strict account of actual cost as defined for force account, then the contractor hereby agrees to waive the claim for such extra compensation. Such notice by the contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. In case the claim, after consideration by the Engineer, is found to be just, it shall be allowed and paid as an extra as provided herein for force account work. Nothing in this article shall be construed as establishing any claim contrary to the terms of Article 1.4.3.

Section 6. CONTROL OF MATERIAL

1.6.1A - Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. Tenderers shall state in their tender the country of origin of items where such items originate in countries other than Canada. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

1.6.1 - Source of Supply and Quality Requirements

The materials supplied by the contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the contractor shall furnish materials from other approved sources.

1.6.2 - Designated Local Material Sources

Possible sources of local materials may be designated on the plans and described in the special provisions. The quality of material in such deposits will be acceptable in general, but the contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications, and whether blending with other materials will be necessary.

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It shall be understood that it is not feasible to ascertain from samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

When material deposits are not designated the contractor shall provide sources of material acceptable to the Engineer.

The department will acquire and make available to the contractor the right to take materials from these sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads.

If the contractor desires to use material from sources other than those designated, he shall make a written request to the Engineer to do so. The Engineer may, if he deems it practical and desirable, authorize the use of such sources. The use of material from other than designated sources will not be permitted until representative samples taken by the Engineer have been approved and written authority issued for the use thereof. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

1.6.3. - Plant Inspection

If the volume of the work, construction progress, and other considerations warrant, the Engineer may undertake the inspection of materials at the source. It is understood, however, that no obligation is assumed to inspect materials in that manner.

Plant inspection will be undertaken only upon condition that:-

(a) The cooperation and assistance of the contractor and the producer with whom he has contracted for materials is assured.

(b) The representative of the Engineer shall have full entry at all times to such parts of the plant as may concern the manufacture or production of the materials being furnished.

(c) When required by the Engineer, the material producer shall furnish an approved weatherproof building for the use of the inspector, such building to be located conveniently near the plant and independent of any building used by the material producer, and shall conform to the requirements of Article 1.6.5. - Field Laboratory.

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(d) It is understood that the department reserves the right to retest all materials which have been tested and accepted at the source of supply after the same have been delivered and to reject all materials which, when retested, do not meet the requirements of these specifications.

1.6.4. Samples, Tests, Cited Specifications

All materials before being incorporated in the work shall be inspected, tested and approved by the engineer, and any work in which such materials are used without prior test and approval or written permission of the engineer, shall be considered as defective and unauthorized and will not be paid for. Tests will be made by and at the expense of the department unless otherwise noted in these specifications, in accordance with the most recent standard or tentative standard methods of AASHO, ASTM or CSA which are current on the date of advertisement for bids. If a particular standard is not cited in the specification, it is understood the current standard of the CSA will apply. Samples shall be taken by a representative of the department. All materials being used are subject to inspection, test or rejection at any time during the preparation and use.

1.6.5 Field Laboratory

Wherever indicated in the contract the contractor shall provide an inspector's shelter or field laboratory, consisting of a suitable building in which to house and use the equipment necessary to carry on the required tests. This building shall be used exclusively for testing purposes by the engineer or inspector. It shall be maintained dust - and watertight, have satisfactory lighting and heating equipment, and be not less than 10 feet wide, 12 feet long and 7 feet high, floored, contain not less than two glazed windows and a workbench with necessary drawers. The windows and door shall be provided with locks. The building shall be so located that the contractor's plant shall be in full view from the workbench. When available, electrical connections shall be provided.

1.6.6. Delivery and Storage of Materials

Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. CSA standard practices shall govern the storage of materials unless otherwise provided.

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1.6.7 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

1.6.8. Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

1.6.9. Materials Inspection

In order to expedite the inspection and testing of materials the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources or supply.

1.6.10. Department Furnished Material

The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

Material furnished by the Department will be delivered or made available to the Contractor at the points specified in the special provisions.

The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returnedto the supplier which are surplus to contract requirements for any cause whatsoever.

SECTION 7, LEGAL RELATIONS AND RESPONSIBLIITY TO PUBLIC

1.7.1. Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the vblation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

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1.7.2. Permits, Licenses and Taxes

The contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

1.7.3. Patented Devices, Materials, and Processes

If the contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Department; if no such agreement is made or filed as noted, the contractor and the surety shall indemnify and save harmless, the Department, any affected railroad or railway company, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the Department, any costs, expenses, and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

1.7.4. Restoration of Surfaces Opened by Permit

The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time is hereby expressly reserved by the Department for the proper authorities of the municipality in which the work is done and the contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department, and the contractor shall not allow any person or persons to make an opening unless a duly authorized permit of the Department is presented. The engineer may authorize the contractor to allow parties bearing such permits to make openings in the highway. The contractor, shall, when ordered by the engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work shall be paid for as extra work, as provided in these specifications, and shall be subject to the same conditions as original work performed.

1.7.5. Health and Sanitary Provisions

This contract is made subject to the Public Works (Health) Act (R.S.C. 1927 Chapter 91), and the contractor will be required to conform to regulations made or to be made by the Governor General in Council respecting the accommodation, medical treatment and sanitary protection of working men employed upon the works.

1.7.6. Public Convenience and Safety

The contractor shall at all times so conduct his work as to ensure the least possible obstruction to traffic. The safety and convenience of the general public and the residents along the highway and the protection of persons and property shall be provided for by the contractor as specified under Article 1.4.7, Maintaining Traffic.

1.7.7. Railway - Highway Separation

In case the contractor is required to haul materials across the tracks of any railway, or elects to do so, he should make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing.

All work to be performed by the contractor in the construction of railway-highway separation structures on the railroad right-of-way shall be done in a manner satisfactory to the engineer of the railway company and shall be performed at such times and in such manner as not to unnecessarily interfere with the movement of trains or traffic upon the track.

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of the railway company. The contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property. The contractor will further be required to carry such public liability and property damage insurance as may be stipulated elsewhere in these specifications or in the special provisions.

1.7.8. Impeding Navigation.

In all matters connected with the prosecution of the works, the transportation or delivery of materials of any kind required for them, and in making arrangements for these purposes, the contractor must be governed by the laws and rules of navigation and the interpretation put upon them by the Officer entrusted to enforce them, and he must use every precaution to guard against interrupting, impeding or in any way interfering with the navigation, as he will be held strictly and legally liable for all damage, loss or detention that any vessel may sustain from any of his acts, whether such may result from a desire to prosecute the works or any other cause.

1.7.9. Barricades and Warning Signs

The contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

The contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished.

1.7.10. Use of Explosives.

When the use of explosives is necessary for the prosecution of the work, the contractor shall exercise the utmost care not to endanger life or property. The contractor shall be responsible for any and all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner, in compliance with local laws and ordinances, and all such storage places shall be marked clearly "DANGEROUS - EXPLOSIVES". Where no local laws or ordinances apply, storage shall be provided satisfactory to the engineer and in general not closer than 1,000 feet from the road or from any building or camping area.

The contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the contractor of responsibility for any damage resulting from his blasting operations.

1.7.11. Protection and Restoration of Property and Landscape

The contractor shall be responsible for the preservation of all public and private property, crops, trees, monuments, highway signs and markers, fences, etc., along and adjacent to the highway, and

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shall use every precaution necessary to prevent damage or injury thereto. He shall use suitable precaution to prevent damage to pipes, conduits, and other underground structures, to poles, wires, cables and other overhead structures, whether shown on the plans or not, shall protect carefully from disturbance or damage all land monuments and property marks until the engineer has witnessed or otherwise referenced their location and shall not remove them until directed. The contractor shall not willfully or maliciously injure or destroy trees or shrubs, and he shall not remove or cut them without proper authority.

He shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing said work, or at any time due to defective work or materials, and said responsibility shall not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof on the part of the contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

1.7.12. Forest Protection

In carrying out work within or adjacent to Forests, the contractor shall comply with all of the regulations of the Provincial or Federal Forestry Department, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests, and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep all the areas in an orderly condition, dispose of all refuse, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the forest protection agency.

The contractor shall take all reasonable precaution to prevent and suppress forest fires and shall require his employees and subcontractors, both independently and at the request of forest officials, to do all reasonably within their power to prevent and suppress and to assist in preventing and suppressing forest fires and to make every possible effort to notify a forest official at the earliest possible moment of the location and extent of any fire seen by them and to extinguish the same if nearby and practicable.

1.7.13. Responsibility for Damage Claims

The contractor, his agents and all workmen and persons employed by him or under his contrd, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement, and to prevent the interruption of or any damage or menace to traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the contractor shall indemnify and save harless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable

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to any damage, injury or infrigement.

1.7.14 Insurance

In addition to any other forms of insurance or bonds required under the terms of the contract the Contractor shall carry Builders Risk Insurance endorsed to cover loss or damage by flood and such other risks as may be specified by the Engineer on all contracts for structures.

1.7.15 Opening Sections of Project to Traffic

At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract; provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor in the manner provided hereinafter in Article 1.9.3. Any damage to the highway that may occur on such section not attributable to traffic shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

1.7.16 Contractor's Responsibility for Work

Until final acceptance of the work by the Engineer, as evidenced in writing, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements, or from any other cause, whether arising from the execution or from the nonexecution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforesecable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God, of the public enemy or of governmental authorities.

In case of suspension of work from any cause whatever, the Contractor shall be responsible for all materials, and shall properly store them, if necessary, and shall provide suitable drainage of the roadway and erect necessary temporary structures at his expense. He shall properly and continuously maintain, during such period of suspension of work, in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under his contract, and shall take adequate precautions to protect and establish new tree growth and other important vegetative growth against injury.

1.7.17 Contractor's Responsibility for Utility Property and Services

At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until allarrangments necessary for the protection thereof have been made.

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The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication of rearrangement or work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority. He shall co-operate with the said authority in the restoration of service as promptly as possible. In no case shall interruption to water service be allowed to exist outside of working hours. Fire hydrants shall be kept accessible to the Fire Department at all times and no materials shall be kept or stock-piled within 15 feet of any fire hydrant.

1.7.18 Furnishing Right-of-Way

The Department will be responsible for the securing of all necessary rights-of-way in advance of construction.

1.7.19 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-Contractor, or caused in whole or in part by an act or omission of the Contractor, any Sub-Contractor, or any officer, servant or agent of the Contractor or of any Sub-Contractor whether or not such act or omission was negligent.

SECTION 8 PROSECUTION AND PROGRESS

1.8.1 Subletting of Contract

The Contractor shall not assign or sublet this contract without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any monies due to any Sub-Contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for.

1.8.2 Prosecution of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized. The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

Should the prosecution of the work for any reason by discontinued, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

1.8.3 Limitation of Operations

The Contractor shall conduct the work at all times in such a manner and in such sequence as will insure the least interference with traffic. He shall have due regard to the location of detours

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and to the provisions for handling traffic. He shall not open up work to the prejudice of work already started, and the engineer may require the contractor to finish a section on which work is in progress before work is started on any additional section.

1.8.4. Character of Workman, Methods and Equipment.

The contractor shall at all times employ sufficient labour and equipment for prosecuting the several clases of work to full completion in the manner and time required by these specifications.

All workmen must have sufficient skill and experience to perform properly the work assigned to them. All workmen engaged in special work or skilled work, shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

All equipment which is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet the requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent propety, or other highways will result from its use. The engineer may order the removal and require replacement of any unsatisfactory equipment.

Any foreman or workman employed by the contractor or by an sub-contractor who, in the opinion of the engineer or his authorized re-presentative, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the engineer, be removed forthwith by the contractor or subcontractor, employing such foreman or workman, and shall not be employed again in any portion of the work without the approval of the engineer.

Should the contractor fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosectuion of the work, the engineer may withhold all estimates which are or may become due, or may suspend the work until such orders are complied with.

1.8.5. Temporary Suspension of Work

The engineer shall have the authority to suspend the work wholly or in part by written order, for such period as he may deem necessary due to unsuitable weather, to conditions considered unfavourable for the suitable prosecution of the work, or to failure on the part of the contractor to correct condtions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

1.8.6. Extension of Time

Provided always that after the expiration of the time limited for the completion of the work the Minister shall be sole judge as to what additional time, if any, may be allowed to the contractor for such completion, and his decision as to the reasonableness or sufficiency thereof for the purpose of completion shall be final and binding upon the contractor.

1.8.7. Default and Annulment of Contract

In case the contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the engineer, the engineer may give a general notice to the contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the engineer to the contractor or should the contractor make default in the completion of works, or any portion

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thereof within the time limited with respect thereto in or under this contract, or should the contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the contractor of the works, and no objection or claim shall be raised or made by the contractor by reason or on account of the ultimate cost of the works so taken over for any reason proving greater than in the opinion of the contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant, and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or effecting real estate or personal property, acquired possessed or provided by the contractor for the purposes of the work, or by the engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Whenever in this contract power or authority is given to Her Majesty, the Minister, the engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the contractor being permitted to further proceed with the execution of the works.

1.8.8. Termination of Contractor's Responsibility

The contract will be considered complete when all work has been finished, the final inspection made by the engineer, and the project accepted by the department. The contractor's responsibility shall then cease, except as set forth elsewhere in the contract.

SECTION 9. MEASUREMENT AND PAYMENT

1.9.1. Measurement of Quantities

All work completed under the contract shall be measured by the engineer according to British standard measure.

All longitudinal and transverse measurements for areas will be measured horizontally.

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Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

In computing volumes of excavation, embankment and borrow, the average end area method will be used.

All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the engineer directs, and each truck shall bear a plainly legible identification mark.

All materials for which measurement are obtained by the cubic yard, "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

When requested by the contractor and approved by the engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the contractor before such method of measurement of pay quantities will be approved by the engineer.

Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the contractor.

Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

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Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions made some other method of measurement desirable.

1.9.2. Scope of Payment

The prices mentioned by the contractor in his tender are to be taken as those upon which he agrees to be paid for all the works embraced in his specification and accompanying plans, and also for all additional quantities which may be required for the proper execution of the contract. The prices will be held to be rigidly inclusive, and to cover all failures, accidents, contingencies, plant, labour and materials and all damage that may happen or occur to the works, or any portion of them, or to the plant or tools, provided and employed, arising from the action of the elements, whether from gales, storms, flood, ice, fire or any other cause whatever, up to the completion of the works and their final acceptance by the department excepting in such cases of damage to the works, or any portion of them, caused by uncontrollable action of nature against which it would have been impossible to guard.

The amount of the tender shall include all sales taxes in force or applicable at the time. In the event of a reduction in such sales taxes being legally authorized between the date set for the reception of tenders and the completion of the works, the benefit derived from such reduction shall accrue and be payable to the department, and an amount covering such reduction will accordingly be deducted from the sum or sums payable to the contractor under the original agreement.

No claims for extras will be entertained by the department on account of unforeseen difficulties in the carrying out of the works herein specified.

1.9.3. Extra and Force Account Work

Extra work performed in accordance with the requirements and provisions of Article 1.4.5. shall be paid for at the unit prices or lump sum stipulated in a supplemental agreement, or in lieu of such agreement, the department may require the contractor to do such work on a force account basis, to be compensated in the following manner:

(a) Labour

For all labour and teams and foremen in direct charge of the specific operations, the contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labour, teams and foremen are actually engaged in such work, to which cost shall be added an amount equal to 10 percent of the sum thereof.

(b) Bond, Insurance and Tax

For property damage, liability, and workmen's compensation insurance premiums and unemployment insurance contributions on the force account work, the contractor shall receive the actual cost, to which no percentage shall be added. The contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and tax.

(c) Materials

For materials accepted by the engineer, and used, the contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost shall be added an amount equal to 10 per cent of the sum thereof.

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(d) Equipment

For any machinery or special equipment, (other than small tools) including fuel, lubricants, and repairs the use of which has been authorized by the engineer, the contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum no percentage shall be added.

(e) Superintendence

No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(f) Compensation

The compensation as set forth above shall be received by the contractor as payment in full for extra work done on a force account basis. At the end of each day the contractor's representative and the Inspector shall compare records of the cost of work done as ordered on a force account basis.

(g) Statements

No payment will be made for work performed on a force account basis until the contractor shall furnish to the engineer duplicate itemized statments of the cost of such force account work detailed as to the following:-

(1) Name, classification, date, daily hours, total hours, rate, and extension for such labourer, foreman and team.

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(3) Quantities of materials, prices and extensions.

(4) Transportation on materials.

(5) Cost of property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions. Such statements shall be accompanied and supported by original receipted invoices for all materials used and transportation charges, provided that, if materials used on the force account work are not specifically purchased for such work but are taken from the contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the contractor certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the contractor.

1.9.4. Omitted Items

Should any items contained in the tender be found unnecessary for the proper completion of the work contracted, the engineer may, upon written order to the contractor, eliminate such items from the contract, and such action shall in no way invalidate the contract and no allowance will be made for items so eliminated in making final payment to the contractor except for such actual work as may have been done and materials actually purchased prior to notification of the elimination of the items.

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1.9.5. Progress Payments

Payments will be made each month as the work progresses. The payments will be based upon progress estimates prepared by the engineer of the value of the work performed and materials completed in place in accordance with the contract and for materials delivered in accordance with Article 1.9.6. of these specifications. From the total of the amount so ascertained will be deducted an amount equivalent to 10 percent of the whole, which 10 percent will be retained by the department until after completion of the entire contract in an acceptable manner and the balance, or an amount equivalent to 90 percent of the whole, less all previous payments, shall be certified for payment.

No such progress estimate or payment shall be required to be made when, in the judgment of the engineer, the work is not proceeding in accordance with the provisions of the contract, or when in his judgment the total value of the work done since the last progress estimate amounts to less than $500.00.

1.9.6. Payment for Material Delivered on Project

Partial payments will be made to the extent of 50 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the department, or leased by the contractor and transferred to the department providing such is done to the satisfaction of the engineer. If requested to do so, the contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

No payment shall be made upon fuels, supplies, form lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

1.9.7. Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the engineer as provided in Article 1.5.17 and subject to the terms of Article 1.8.8, the engineer shall prepare the final estimate of the quantities of the various classes of work performed, and after the approval of such final estimate by the Minister, there shall be paid to the contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

All progress estimates and payments shall be subject to correction in the final estimate and payment.

SECTION 10. WAGES AND CONDITIONS OF EMPLOYMENT

1.10.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) by the contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by subcontract.

1.10.2. Labour Conditions

The contractor's attention is directed particularly to the provisions and requirements of the Province's workmen's compensation act and to statutes regulating the hours of employment on public work.

In addition to the Provincial laws restricting the hours of labour, and minimum wage rates, the contractor shall abide by the labour conditions.

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of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

1.10.3 Employment of Canadian Labour

In engaging labour for the work contemplated by this contract, as far as practicable and consistent with reasonable efficiency and economy, only Canadian Labour shall be used and first consideration shall be given to the employment of available and competent workmen who are most in need and are resident in the district in which the works are to be performed. Preference is to be given to veterans of the Armed Forces of Canada and to married men and single men with dependents.

1.10.4 Records

The Contractor shall maintain and keep available for inspection by the Minister, a record of the names and addresses of ex-servicemen employed on this work, together with a record of the steps taken to implement this requirement.

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DIVISION 2

EARTHWORK

Section	
1	Clearing and Grubbing
2	Roadway Excavation
3	Borrow Excavation
4	Embankment Construction
5	Channel Excavation
6	Excavation for Structures
7	Overhaul

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SECTION 1 - CLEARING AND GRUBBING

(1954)

2.1.1. DESCRIPTION:

This item shall consist of the complete removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans as well as any other areas which may be designated by the Engineer.

2.1.2. MATERIALS:

No Materials are involved.

2.1.3. METHODS OF CONSTRUCTION:

(a) Clearing:

Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush, windfalls and other fallen timber, stumps and rubbish except such trees and shrubs as may be designated for preservation by the Engineer. Such designated trees and shrubs shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, all trees, roots and existing stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging and off the right-of-way, shall be removed.

Clearing shall be completed at least one-half mile in advance of grading operations.

(b) Salvage:

All merchantible timber not required for constructional purposes shall be cut and trimmed in suitable lengths, as designated by the Engineer and neatly piled at convenient points for removal.

(c) Grubbing:

Grubbing shall include the excavation and complete removal and disposal of all roots and stumps to a minimum depth of eighteen (18) inches below the profile ground line. Submerged logs, corduroy, and similar objectionable matter shall be completely removed.

On areas where grubbing is required as an operation separated from actual grading operations, cross-sectioning will be done after grubbing operations have been completed.

(d) Disposal:

All timber, logs, trees, stumps, brush and other rubbish shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

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2.1.4. METHOD OF MEASUREMENT:

The area to be paid for under this item shall be the number of acres, and fractions thereof, of land actually cleared and/or grubbed in accordance with these specifications and completed to the satisfaction of the Engineer.

2.1.5. BASIS OF PAYMENT:

Clearing and grubbing shall be considered as separate items. The acreage, determined as provided above, shall be paid at the contract unit price per acre for clearing and the contract unit price per acre for grubbing, which price and payment shall constitute full compensation for all labour, equipment, tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 2 - ROADWAY EXCAVATION

(APRIL 1958)

2.2.1 DESCRIPTION

(a) This item consists of the removal of all materials from within the right-of-way to the lines and grades indicated on the plans or as staked by the Engineer, and the satisfactory disposal of these materials as hereinafter described.

Roadway Excavation includes:-

(1) Excavation for the preparation and construction of the subgrade of the highway.

(2) Excavation for the formation of embankments (see Specification for Methods of Construction and Compaction of Embankments).

(3) Excavation for the construction of side ditches.

(4) Excavation for construction of permanent access roads and cross-roads, approaches and entrances, and parking areas.

(5) Stripping of cut and embankment areas.

(6) Removing and disposing of muck or other unsuitable material.

(7) Breaking up and satisfactorily removing or incorporating into the embankment as specified, all existing gravel, macadam, bituminous or concrete surfaces.

(8) Excavation for backfilling holes outside the roadway limits and within the right-of-way to correct surface irregularities.

(9) The transportation for the free haul distance of excavated materials.

(10) Trimming and rounding of slopes.

(11) The construction of detours or other suitable provision to accommodate traffic, either pedestrian or vehicular, over or around any part of the roadway upon which work is being performed, as well as supplying and maintaining such signs, barriers, fences, lights and watchmen as the Engineer may consider necessary for the protection of the public.

(12) Maintaining the work outlined under this section in a finished condition until it or any portion thereof, has been accepted as completed by the Engineer.

(b) Classification

Roadway excavation will be classified as follows:-

(1) Excavation, Common

(2) Excavation, Rock

and will include all authorized excavation within the right-of-way, exclusive of that included under Clearing and Grubbing, Channel Excavation and Excavation for Structures.

Excavation, Common, will include the excavation of all materials not hereinafter classified as Excavation, Rock.

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Excavation, Rock, will include the excavation of all boulders more than ½ cubic yard in volume, all stone fences and masonry walls, all concrete or masonry structures, concrete pavements, and all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting.

Excavation, Rock, will not apply to old, plain, or bituminous bound base courses or surface courses of macadam, bituminous pavement, gravel, or broken stone. All such materials will be classified as Excavation, Common.

2.2.2 MATERIALS:

Not applicable.

2.2.3 METHODS OF CONSTRUCTION:

(a) Utilization of Excavated Materials

All suitable materials removed by excavation shall be used, as far as practicable, in the formation of embankments, and elsewhere as directed. During the progress of excavation, material taken from cuts that is deemed suitable for granular sub-base shall be so utilized, if necessary, for this purpose, as directed by the Engineer.

(b) Conserving of Topsoil

The ground surface shall be stripped of all material to the depth and width as directed by the Engineer. Where the material is suitable for topsoiling it shall be stockpiled at locations designated by the Engineer.

(c) Unsuitable Materials

When soft, spongy, or other unsuitable material is encountered in areas on which an embankment is to be constructed, or below the top of the subgrade in cuts, the material shall be removed to the lateral limits and depths specified by the Engineer. The Engineer will specify such lateral limits and depths, station by station. Any material removed in excess of approved limits and depths will not be measured for payment and the Contractor will be required to provide, at his own expense, the material, properly compacted, necessary to replace the excess material which has been excavated.

Where the roadway crosses deposits of peat, muck, muskeg or swamp, the unsuitable material shall be excavated to a firm foundation and to the width indicated on the Standard Plan No. 4 unless otherwise indicated on the Plans and Profiles. In such cases supplementary specifications and plans will be supplied to the Contractor.

(d) Disposal of Materials

Excavated muck and other material to be wasted shall be disposed of as directed by the Engineer. All costs related thereto, except overhaul, will be included in the contract unit prices for the various excavation items.

(e) Construction in Roadway Cuts

See Standard Plan No. S-2 - "Earth Cut".

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After removal of soft, spongy or unsuitable material, as detailed in (c) above, the excavated area shall be back-filled with approved material to the grade indicated by the Engineer.

Where the subgrade is on transition from excavation to embankment the ground slopes at the grade point shall be treated in accordance with the Standard Plan No. S-1 - "Earth Cut and Fill Construction Method at Grade Points".

The area in cuts from inslope to inslope of ditches shall be treated as follows:-

Case 1 - Where no granular sub-base is specified. Remove material to a depth of six (6) inches below subgrade elevation. Scarify the newly exposed surface to a depth of six (6) inches and compact it to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

Case 2 - Where six (6) inches or less of granular sub-base is specified. Remove the material below the sub-base to a depth of six (6) inches. Scarify the newly exposed surface to a depth of six (6) inches and compact it to 95% of maximum density. Replace material previously removed and compact it to 100% of maximum density. Compact granular sub-base to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

Case 3 - Where more than six (6) inches of granular sub-base is specified. Scarify the material below the sub-base to a depth of six (6) inches and compact it to 100% of maximum density. Place granular sub-base in layers not thicker than six (6) inches and compact each layer to 100% of maximum density. No stones or boulders larger than four (4) inches in diameter shall be left within twelve (12) inches of the subgrade.

See Specification Items 2.4.2 (g) and 2.4.3 (h) for Embankment Construction compaction requirements.

(f) Rock Excavation

If, during excavation, material appearing to conform to the classification for Excavation, Rock, is encountered, the Contractor shall notify the Engineer to that effect and shall provide ample opportunity for him to investigate and make such measurements as are necessary to determine the volume of the material in question.

The Contractor must salvage and place in the embankment, in accordance with these Specifications and the standard cross-section sheet, all the material dislodged by blasting.

All rock used in the construction of the embankments shall be reduced in size so as when placed it shall not exceed in vertical dimensions one-third (1/3) of the height of the fill.

In no case shall the spacing of the drill holes exceed the depth of the cut at the point of drilling.

Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the true slope line.

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Where rock is encountered in the excavation of roadway cuts it shall be shattered one foot eight inches (1'-8") below subgrade elevation for the full width of the cut and shattered one (1) foot below the grade of the ditch bottom.

The rock shall be removed to a depth of eight (8) inches below the subgrade elevation. The exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface. The granular sub-base shall be placed in two four (4) inch layers and each layer shall be compacted to 100% of maximum density. See Standard Plan No. S-4 - "Rock Cuts".

In order to obtain uniform shattering, drilling shall be carried out to a plane parallel to, and at a minimum of two feet eight inches (2' - 8") below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified above as two feet eight inches (2'-8") any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both ends of cuts on level gradients, to be point at least three feet eight inches (3'-8") below grade or correspondingly lower if this minimum drilling in the cut has been exceeded. See Standard Plan No. S-6 - "Rock Cut Construction". All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(g) Drainage

Side ditches will mean ditches which are parallel to and have one side adjacent to the roadway. All such ditches shall be constructed where necessary to the depths and widths indicated on the Plans or as ordered by the Engineer.

In cut sections the subgrade and the surface beneath the sub-base shall be crowned, as indicated on the Plans, to permit ready run-off of free water.

(h) Widening Cuts

In the event the Contractor desires to excavate beyond the widths specified in the Plans, in order to provide material for use in embankments, he must first obtain the written approval of the Engineer. The Engineer's approval will be granted only if:-

(1) The materials to be obtained by such widening are suitable for embankment construction, and

(2) Slope requirements of the Plans and Specifications are met.

(i) Rounding and Finishing Slopes

The top surface and side slopes of cuts shall be left in a neat and workmanlike condition and true to the lines and grades shown in the Plans. When boulders are encountered in cut slopes they may be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

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(j) Hauling of Materials

The Contractor shall haul excavated material to any distance specified by the Engineer. Overhaul will be allowed when hauling material beyond the free-haul distances, as specified under Item 2.7.4 "Method of Measurement" in the Specification for "Overhaul".

2.2.4. Method of Measurement

(a) The quantity of Excavation, Common, for which payment will be made, shall be the volume in cubic yards measured in its original position, and computed by the average end area method for materials acceptably excavated. The measurement will include undergrading for removal of soft and spongy material and the authorized stripping of cut and embankment areas.

In cut sections where material is removed and replaced (Case 1 and 2, Item 2.2.3 (e) of this Specification), the volume for which payment will be made shall be considered as the volume contained in a prism having a depth of twelve (12) inches and an area equal to the top area of the replaced material. The measurement will not include the yardage scarified.

Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material due to slides which has to be moved to complete the roadway but only when such slides are not attributable to the carelessness of the Contractor.

(b) Excavation, Rock

The quantity of Excavation Rock for which payment will be made shall be the volume in cubic yards measured in its original position and computed by the average end area method for material acceptably excavated.

At the discretion of the Engineer the quantity of excavation for which payment will be made may also include unavoidable overbreak to an amount not exceeding 10 percent of the volume of the individual rock cut as staked by the Engineer.

All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position in accordance with the average end area method and paid for at the unit price for Excavation, Common.

The measurements will include the volume of boulders more than half a cubic yard each in volume, stone fences, masonry walls, concrete or masonry structures and concrete pavements, the volume measured in place by methods determined by the Engineer.

(c) Overhaul

Overhaul will be measured for payment as stated in Article 2.7.4 - Specification for "Overhaul".

2.2.5 BASIS OF PAYMENT

(a) Payment for Excavation, Common, and Excavation, Rock, will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment will include full compensation for all labour, equipment, tools, explosives, excavation and hauling (except overhaul).

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scarifying in earth cuts, shattering of rock below grade in rock cuts, the formation of embankments, the storing of stripped material for top-soiling, the trimming and finishing of slopes and top surfaces, disposal of surplus or unsuitable materials, maintaining the work until acceptance, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Overhaul

Overhaul will be paid for as stated in the Article 2.7.5 Specification for "Overhaul".

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SECTION 3 - BORROW EXCAVATION

(1954)

2.3.1. DESCRIPTION:

This item shall include the furnishing from approved borrow pits outside the right-of-way, of all materials which are not available from Roadway Excavation and which are required for embankments and for the formation of the subgrade in cuts, together with the excavation, hauling (except overhaul), and placing of all such materials.

2.3.2. MATERIALS:

All materials excavated under this item shall be as specified by the Engineer.

2.3.3. METHODS OF CONSTRUCTION:

(a) Selection and Location:

The Engineer shall locate and the Department will furnish all borrow pits. The Contractor shall notify the Engineer sufficiently in advance of opening any approved borrow pits, so that necessary measurements may be made.

(b) Access Roads:

The Engineer shall locate all necessary access roads and other facilities which may be required for hauling borrow excavation to and over the right-of-way. Any work and materials required for the construction of such access roads, shall be specified by the Engineer and paid for under the contract unit prices for the various items.

(c) Clearing and Grubbing:

Clearing and Grubbing will be measured and paid for as stated in Division 2, Section 1 - "Clearing and Grubbing."

(d) Stripping:

Prior to the removal of borrow for use in an embankment, the borrow pits shall be stripped of all unsuitable material. Where any such material is suitable for top soiling, the Engineer may direct, that it be stock piled in approved locations.

(e) Use of Borrow Excavation:

No materials from Borrow Excavation shall be used until all sources of roadway excavation have been exhausted, except as otherwise approved by the Engineer. If the Contractor places more borrow material than is required causing waste of other excavation, the amount of such waste will not be included for payment.

(f) Final Trimming and Restoration:

All borrow pits shall be neatly trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or stand therein. Upon completion of the hauling, the Contractor shall restore the entire right-of-way and abutting lands, which were disturbed by such operation, to a satisfactory and sightly condition.

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2.3.4. METHOD OF MEASUREMENT:

(a) The quantity of Borrow Excavation for which payment shall be made, shall be the quantity measured in its original position, prior to stripping, and computed by the average end area method for materials acceptably excavated, as hereinabove prescribed.

(b) Overhaul will be measured for payment as stated in Division 2, Section 7 - "Overhaul".

2.3.5. BASIS OF PAYMENT:

(a) Payment for Borrow Excavation shall be made for the quantities as above determined, measured in cubic yards, at the contract unit price for Borrow Excavation, which price shall be full compensation for all labour, equipment, tools, the excavation and hauling (except overhaul), the formation of embankments, the storing of stripped material for top soiling, the disposal of unsuitable materials, the trimming and restoration, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Overhaul:

Overhaul will be paid for as stated in Division 2, Section 7 - "Overhaul".

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SECTION 4 - EMBANKMENT CONSTRUCTION

(1954)

2.4.1 DESCRIPTION:

This item shall include the placing in embankments and cuts of suitable materials obtained from the various shceduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross-sections and dimensions shown on the Plans, staked by the Engineer or indicated in the Specifications.

2.4.2 MATERIALS

Materials used for embankments shall be free from muck, wood brush, roots sod, ashes, rubbish, top soil and any other organic matter that may decay.

The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All materials shall be approved by the Engineer prior to incorporation in embankments.

In the upper portion of embankments and in cuts the sub-base materials shall be a pit-run granular material, approved by the Engineer and placed to the depth indicated on the Plans, or as directed by the Engineer in accordance with the conditions for embankment construction as hereinafter specified. Adjacent to abutments and other structures, where shown on the standard plans, and within the limits there specified, the material shall be granular in nature and approved by the Engineer.

Where filling or backfilling is to be placed under water, approved granular material or rock shall be used.

To the extent that these various embankment materials are available, unless otherwise provided by the Supplementary Specifications, they shall be obtained from Roadway Excavation, Channel Excavation or Excavation for Structures; when additional materials are needed they shall be obtained from Borrow Excavation. Any such materials wasted or otherwise disposed of by the Contractor, shall be replaced with other suitable material at his own expense.

In event that suitable local granular materials are not available for sub-base or porous backfill, the Engineer may require the use of a processed granular sub-base material for embankment construction if such an item is provided in the contract.

2.4.3 METHODS OF CONSTRUCTION

(a) Embankment Foundation:

Embankments shall be formed of suitable materials. The foundation for the embankments shall be prepared by removing the topsoil and sod as specified in Item 2.2.3 (c) of the Specifications (Roadway Excavation), by benching or scarifying existing slopes and compacting the underlying soil before construction of the embankment is begun. If unsuitable material exists in the foundation for the embankment, it shall be removed to a firm bearing strata as shown on the plans or as directed by the Engineer.

When the subgrade elevation of the new embankment is less than two (2) feet above an existing pavement, the existing pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

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(b) Side Hill Construction:

When an embankment is to be constructed on a slope or against an existing embankment, the entire existing surface on which the embankment is to be placed shall be ploughed, benched or broken up in such manner that the new material will bond with the resulting surface. The specific method employed in this operation shall be subject to the approval of the Engineer.

(c) Earth Embankments:

Material shall not be placed while frozen nor shall it be placed on a frozen surface.

The embankment shall be constructed to the cross-section as shown on the Standard Plans accompanying these Specifications. A crown shall be maintained at all times during construction to ensure ready run-off of free water.

The excavation or borrow shall be placed in successive uniform layers across the entire area of the embankment. The thickness of the layer shall be a maximum of six (6) inches before being compacted for material containing soil, gravel, and small stones with less than fifteen (15) per cent by volume of stone larger than four (4) inches in greatest dimension. If the embankment material contains more than fifteen (15) per cent by volume of stone or ledge rock, too large to be compacted in six (6) inch layers, it shall be constructed in layers not to exceed the maximum size of the rock or stone in thickness, but in no case shall the layer exceed two (2) feet. Stone larger than four (4) inches in greatest dimension shall not be placed within one (1) foot of the subgrade elevation.

(d) Rock Embankments:

See Standard Plan No. S-3: "Rock Fills".

In embankments composed principally of material obtained from rock cuts, the requirements for layer construction and mechanical compaction will be waived. In such embankments the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. As soon as practicable, such embankments shall be constructed in layers having a maximum height of five (5) feet. The top of the rock fill shall be eight (8) inches below the subgrade elevation. The top of this rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(e) Granular Sub-Base:

The granular sub-base shall be placed to the thickness indicated on the Plans or as directed by the Engineer. This material shall be spread in uniform layers, not exceeding six (6) inches in thickness, without segregation, over the full width of the embankment and shall be compacted to the required density as hereinafter specified.

(f) Swamp or Muskeg Treatment:

See Standard Plan No. S-7: "Construction through Swamp Areas".

In embankment construction through swamps, muskeg, peat, and other such undesirable materials, it shall be the general policy to excavate these materials for the full width of the embankment and adjacent ditches, and the embankment shall be constructed with approved materials in accordance with

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Article 2.2 herein. However, each case will be considered individually and supplementary plans and specifications indicating the particular method of construction will be supplied the Contractor well in advance of construction if this general policy is altered.

(g) Compaction:

The material shall be spread in layers, as required herein, by bulldozers, scrapers, graders, or other equipment. Each layer shall then be thoroughly rolled by sheepsfoot, pneumatic-tired, or smooth-wheel rollers for the full width of the layer and to the required degree of compaction. Successive layers shall not be placed until the layer under construction has been thoroughly compacted. Whenever the embankment has not received sufficient compaction, the placing of embankment material shall cease and rolling shall be continued until the required degree of compaction is obtained.

The embankment shall be compacted to a minimum dry density of 95% of the maximum dry density in pounds per cubic foot as determined by the A.A.S.H.O. Standard Density Test T99-49, except that the top twelve (12) inches below the subgrade shall be compacted to a dry density of 100% of the Standard Dry Density. However, if the Engineer finds that it is impractical to obtain the specified degree of compaction with the material encountered, he may limit rolling operations as he deems proper and may increase the sub-base thickness to compensate for any anticipated loss in strength of the subgrade.

The Engineer shall specify the type of compaction unit to be used on the different soil types encountered during construction. In general the sheepsfoot roller, shall be used to compact clays, the pneumatic-tired rollers shall be used to compact sands and gravels, and smooth-wheel rollers shall be used to compact slag, rock and coarse gravel. Sheepsfoot rollers and pneumatic-tired rollers may be used in tandem if authorized by the Engineer.

If it is anticipated that operations will cease for three hours or longer, smooth-wheel or pneumatic-tired rollers shall be used to roll the entire embankment working area after it has been properly crowned, shaped and drained.

During rolling operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated by mechanical means, or work shall cease temporarily to bring the material to a proper moisture content. The proper moisture content is approximately the Optimum Moisture Content as determined by the A.A.S.H.O. Standard Density Test T99-49.

(h) Compaction Equipment:

All rollers specified herein for the compaction of materials shall comply with the following minimum requirements:

(1) Sheepsfoot rollers shall consist of metal rollers or drums, the outer surface of which shall be studded with tamping feet not less than seven (7) inches long and having a flat end surface area of not less than five (5) nor more than ten (10) square inches. The roller shall be of such weight that the load upon each square inch of foot surface, when any row of feet is supporting the whole weight of the roller shall be not less than two hundred and fifty (250) pounds per square inch. The roller shall be weighted by sand or liquid or both to obtain the proper pressure on the feet. Proper ports shall be provided in the roller

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drum for adding sand and liquid. The load per tamper foot will be determined by dividing the total weight of the loaded roller by the maximum number of tamper feet in one row parallel to the axis of the roller. The roller shall have a device for keeping the space between the feet from clogging. The tamping roller shall have a dual drum, each unit having a minimum width of four (4) feet, and flexible connections between drums to allow the rollers to fit the contours of the embankment layer. The average speed of the tamping roller shall be three (3) miles per hour and shall not exceed five (5) miles per hour.

(2) Pneumatic-tired rollers shall have a width of not less than five (5) feet and not more than seven (7) feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than five (5) inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than five (5) pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than six (6) tons and that the roller shall develop a minimum of three hundred (300) pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(3) Three wheel power rollers shall not weigh less than ten (10) tons and shall provide a compression on the rear wheels of not less than three hundred and thirty (330) pounds per lineal inch of tire width.

(4) Tandem power rollers shall not weigh less than eight (8) tons and shall provide a compression on the drive roller of not less than two hundred and fifty (250) pounds per lineal inch of tire width.

At least one of the above approved rollers shall be in continuous operation for each one hundred and twenty-five (125) cubic yards or less of embankment material placed per hour. When several embankments, each of small area, are so isolated from one another that one roller cannot compact the areas satisfactorily, additional rollers shall be provided.

Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of Standard units required in the Specifications.

(i) <u>Backfill of Structures:</u>

Granular fill material meeting the approval of the Engineer shall be placed adjacent to bridge abutments, culverts, and other structures within the limits shown on the plans. All material shall be placed in six (6) inch layers and compacted to one hundred (100) per cent of the maximum density as determined by the A.A.S.H.O. Standard Test T99-49. Where the work consists of backfilling box or pipe culverts the granular material shall be placed in layers not exceeding six (6) inches alternately on each side of the culvert. Each layer shall be compacted as specified above so as not to displace the culvert before succeeding layers are deposited.

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(j) Trimming:

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown on the plans and profiles. The subgrade surface must, at all points, be within one (1) inch of the theoretical section indicated on the plans.

2.4.4. METHOD OF MEASUREMENT:

(a) Compaction:

The quantity for which payment shall be made for the operation of compaction equipment shall be the actual number of hours that the particular unit is operated in compacting any materials designated for compaction by the specifications or by the Engineer.

(b) Watering:

The quantity of water to be paid for shall be measured in units of 1000 gallons.

2.4.5. BASIS OF PAYMENT:

(a) Payment for construction of embankment, as above described, including granular fill in sub-base, at abutments, and elsewhere, shall not be made under a specific scheduled item but shall be paid for at the contract unit prices for the various scheduled excavation items.

(b) Payment for compaction shall be made for the number of hours, as above determined, at the contract unit prices for the individual units of compaction equipment, which prices shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(c) Payment for watering shall be made at the contract unit price for the number of 1000 gallon units, which price shall be full compensation for furnishing, hauling, and distributing, and for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 5 - CHANNEL EXCAVATION

(1954)

2.5.1. DESCRIPTION:

This item shall include the excavation required for deepening, widening and relocating water channels, and the construction of ditches other than roadway side ditches, to the lines and grades, and at the locations shown on the Plans or designated and staked by the Engineer.

2.5.2. MATERIALS:

No materials are involved.

2.5.3. METHODS OF CONSTRUCTION:

Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of excess material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.5.4. METHOD OF MEASUREMENT:

The quantity of Channel Excavation for which payment will be made will be the volume, measured in its original position, computed by the method of average end areas, removed within the neat lines of Channel Excavation shown on the Plans or as staked by the Engineer. The material shall be classified as Channel Excavation common, or Channel Excavation rock, in accordance with Item (b), Article 2.2.1 - "Roadway Excavation".

2.5.5. BASIS OF PAYMENT:

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, common, and Channel Excavation, rock, which prices shall be full compensation for excavating the materials, placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, all labour, explosives, equipment, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 6A - EXCAVATION FOR STRUCTURES

(BRIDGES EXCEPTED)

2.6A.1 - Description

This item shall consist of the provision of all labour, materials and equipment necessary to complete the excavation for pipe and box culverts, pipe lines, underdrains, walls, etc. (bridges excepted) at the required locations and as shown or described by, or reasonably inferable, from the Drawings and Specifications, or as ordered in writing by the Engineer.

It shall also include the following:

Clearing and grubbing
Shoring and bracing as necessary
Backfilling
Disposal of surplus materials
Protection
Clean-up

2.6A. 2 - Materials

No materials are involved.

2.6A. 3 - Methods of Construction

(a) Classification

Excavation, Common shall include the excavation of all materials not hereinafter classified as Excavation Rock.

Excavation Rock shall include the excavation of all rock in mass formation and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. It shall include the excavation of boulders more than one third (1/3) cubic yard in volume, concrete or masonry structures, concrete pavements, stone fence and masonry walls. It shall not apply to old, plain or bituminous pavement, gravel or broken stone, and such materials will be classed as Excavation, Common.

(b) Preliminary Measurements

The Contractor shall notify the Engineer a sufficient time in advance of the beginning of excavation for structures, so that cross-sectional elevations and measurements may be taken of the undisturbed ground.

(c) Excavation

(i) Excavation shall include the removal of all material of whatever nature necessary for the construction of the culvert, pipe line, wall, etc.

(ii) Trenches or foundation pits shall be of sufficient size to permit the placing of the full width and length of structure of structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary to secure a satisfactory foundation.

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(iii) When masonry is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation, and excavation to final grade shall not be made until just before the masonry is to be placed, except where the material encountered is found to be unsuitable at the foundation elevation, and a granular backfill is called for by the Engineer.

(iv) Where foundation piles are used, the excavation of each pit shall be completed, when necessary, before the piles are driven. After the driving is completed all loose and displaced material shall be removed, leaving a smooth solid bed to receive the masonry.

(v) Concrete slabs or foundations shall not be poured on soil which has been allowed to dry out appreciably. If soil is exposed to drying for three or more days, it shall be moistened by sprinkling water on it before any concrete is placed. Care shall be exercised in order that no earth is washed down during such sprinkling operation.

(vi) In no case shall concrete be deposited against frozen material. The Contractor shall provide a means of thawing out, and protecting from further frost, any material such as earth, etc., which becomes frozen.

(vii) After such excavation is completed the Contractor shall notify the Engineer and no concrete shall be placed until the Engineer has approved the depth of the excavation and the character of the bearing material.

(d) Culvert Foundation in Embankments

Where pipe culverts are to be placed in trenches excavated in embankments, the excavation of each trench shall be performed after the embankment has been constructed to a plane parallel to the proposed profile grade and to such height above the bottom of the pipe as is shown on the plans or required by the Engineer.

(e) Disposal of Excavated Material

All excavated material, so far as suitable, shall be utilized as backfill or embankment. The surplus material, whether or not temporarily allowed to be placed within the stream area, shall be disposed of finally in such manner as not to obstruct the stream or otherwise impair the efficiency or appearance of the structure. No excavated material shall be deposited at any time so as to endanger the partly finished structure, either by direct pressure or indirectly by overloading banks contiguous to the operation, or other manner.

2.6A. 4 - Method of Measurement

(a) The quantity of Excavation for Structures, either Rock or Common, or both, paid for under this item, will be the number of cubic yards of material, measured in its original position, actually excavated from within the payment limits shown or indicated on the contract plans or called for in the specifications.

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(b) Unless otherwise shown or indicated on the contract plans, payment limits for excavation for pipe lines will be considered as follows:

(i) The bottom surface of a trench which is two (2) feet wider at the bottom than the outside diameter of the pipe.

(ii) The side surfaces of the trench; these surfaces shall have an inclination of 3 vertical to 1 horizontal.

(iii) The subgrade of the roadway when under a cut section, otherwise the ground surface existing at the site prior to beginning the work.

(c) The yardage of any material rehandled shall not be included in the measurement for payment, except that where plans indicate or the Engineer directs the excavation of trenches for culverts after embankment has been placed, the yardage of excavation for such culvert trenches shall be included in the measurement for payment under this item.

(d) The yardage of any material displaced into an excavation by pile driving shall be included in the measurement for payment.

2.6A 5 - Basis of Payment

Payment for Excavation for Structures shall be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for "Excavation for Structures, Common", or "Excavation for Structures, Rock", or both, which price or prices shall be full compensation for all labour, equipment, tools, explosives, excavation, and disposal, within a distance of one thousand (1,000) feet of the excavation, the trimming and restoration of the site of the work, and the disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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SECTION 7 - OVERHAUL

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2.7.1. DESCRIPTION:

This item shall consist of authorized hauling in excess of the free haul distance of 1000 feet of any material paid for under one of the various classes of excavation, and disposed of as required under the various items prescribed for the disposal of such material.

2.7.2. MATERIALS:

Not applicable.

2.7.3. METHODS OF CONSTRUCTION:

Not applicable.

2.7.4. METHOD OF MEASUREMENT:

The quantity of Overhaul, measured in cubic-yard-miles, to be paid for shall be the product of the volume of the overhauled material, measured in its original position, in cubic yards, by the overhaul distance in miles and fractions thereof.

The overhaul distance shall be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of 1000 feet. The haul distance shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment shall be based on the haul distance measured along the route designated by the Engineer.

In calculating Overhaul for Roadway Excavation, the Mass Diagram method may be used by the Engineer. In this method the limits of free haul will be determined by fixing on the profile two points 1000 feet apart, one on each side of the neutral grade point, selected in such a way that the included quantities of excavation will balance the included quantities of embankment plus the proper allowance for shrinkage or swell. All material within the balance points beyond this limit of 1000 feet will be calculated and payment will be made on the basis of the following method of computation:

All material within the limits of the 1000 feet will be eliminated from further consideration in overhaul computations.

The overhaul distance will be the distance between the centre of gravity of the remaining mass of excavation and the centre of gravity of the resulting embankments, measured in miles or fractions thereof, less 1000 feet free haul.

The amount of overhaul to be paid for shall be obtained by multiplying the overhaul distance in miles by the quantity of the remaining mass of excavation in cubic yards and shall be expressed in units of cubic-yard-miles.

2.7.5. BASIS OF PAYMENT:

Payment for Overhaul shall be made for the quantities as above determined, measured in cubic-yard-miles, at the specified unit price for Overhaul stated in the tender form and/or Contract, which price and payment shall be full compensation for all labour, equipment and tools necessary to complete the hauling operations satisfactorily, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 3

BASE COURSE

Section

1	Granular Sub-base (Class 3)
2	Base Course (Class 1)
3	Granular Sub-base (Class 2)
4	Bituminous Stabilized Base Course
5	Reconditioning of Used Roadbed
6	Road Mixed Sand Asphalt Stabilized Base Course

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DIVISION 3

SECTION 2 - BASE COURSE (CLASS 1)

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3.2.1 Description

This item shall consist of a foundation course composed of crushed granular material conforming to the specified gradation, constructed on the prepared sub-grade in accordance with these specifications and in conformity with the lines, grades, and typical cross-sections shown on the plans.

3.2.2 Materials

(a) Granular Material - This material shall consist of broken stone or crushed gravel of approved quality in accordance with Physical Requirements Tables 1 and 2, and it shall be composed of clean, hard, angular particles free from clay lumps, cementation, and organic material. It shall be washed if so directed.

TABLE 1

Physical Requirements for Base Course (Class 1)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	45	45
(b) Crushed fragments, min. % by wt.	-	60
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Method T-104-46	2	20

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

TABLE 2

Physical Requirements - Deleterious Materials

Description	Stone	Gravel
1. Shales	4%	4%
2. Siltstones	1	1
3. Chart	2	2
4. Ochre	1	1
5. Clay ball	1	1
Max. allowable total % by weight of deleterious material	8	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

(b) Gradation - The aggregate shall conform within the limits specified in Table 3 hereunder. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes herein specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

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TABLE 3

Base Course Aggregate (Class 1)

Sieve No.	Percent Passing
3/4"	100%
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

The portion of the base course material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

Materials will be considered unsuitable even though particle sizes are within the limits of the grading sizes herein provided, if particle shapes such as thin and elongated or any other characteristic precludes satisfactory compaction or fails to provide a roadway suitable for traffic.

(c) Source of Supply - The source of supply for the Base Course shall be in accordance with Section 1.6.1 - Source of Supply and Quality Requirements.

(d) Water - The Contractor shall supply, at his own expense, all water required for the construction of the work. The water used shall be reasonably clean and free from substances which might render it unfit for use.

3.2.3 Methods of Construction

(a) Clearing and Grubbing - The clearing and grubbing of borrow pits from which the raw material for the base course is obtained will be carried out as specified in Article 2.1.3 - Clearing and Grubbing, and payment will be made under the items in Article 2.1.5.

(b) Stripping - The pits from which this material is obtained shall be stripped of all overburden, and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

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(c) Access Roads - The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, shall be specified by the Engineer and paid for under the contract unit prices for the various scheduled items.

(d) Blending Aggregates - It shall be permissible to blend or mix two or more materials to meet the gradation requirements of the base course. When two or more materials are blended, they shall be thoroughly mixed by mechanical means so as to achieve uniformity throughout the composite material.

(e) Foundation for Base Course - The base course shall be constructed on the sub-grade which shall be clean, dry, free from frost, snow, and loose or adhering foreign materials and properly finished and compacted at the time the base course is placed thereon. Any damage to the finished sub-grade shall be repaired by the Contractor at his own expense and to the satisfaction of the Engineer, before the next course is placed.

(f) Spreading - The granular material shall be transported without segregation to the job where it shall be deposited on the sub-base by means of a mechanical spreader. The base course shall be placed in layers of not less than three (3) inches in compacted thickness and not greater than six (6) inches in compacted thickness as directed by the Engineer.

(g) Rolling and Compaction - Immediately following spreading and smoothing of each layer, all the material placed shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, or rubber tired rollers, providing they are in accordance with Item 2.4.3 (h) of the "Specification for Embankment Construction." All rolling shall start at the edges and progress towards the centre, such that each succeeding pass will uniformly overlap the previous pass. While rolling progresses, the entire surface of each layer shall be shaped and dressed with a motor grader, having a blade at least twelve (12) feet in length, to maintain a uniformly smooth surface conforming to the required lines and grades

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at these places and adding or removing material until the surface is smooth and uniform.

Each layer shall be compacted to the satisfaction of the Engineer. In the event of controversy, the degree of compaction shall be determined by the current A.A.S.H.O. Method T99-49, and at least 100% of the maximum density as determined by this method will be required. During rolling, the base course shall be reasonably maintained at the optimum moisture content as determined by the above method.

The base course shall not be laid in excess of five hundred (500) lineal feet in advance of rolling.

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(h) Controlling Thickness of Base Course - The Engineer, or his Inspector, shall assume full responsibility for the quantities of granular material to be placed in order to obtain the desired base course thickness.

The Engineer will test the completed surface of each lift with a ten (10) foot straight edge. Any irregularities that exceed one-half (1/2) inch from the template grade for that lift shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Such additional material added shall be paid for at the contract unit price for base course material.

3.2.4 Method of Measurement

(a) The quantity of base course (Class 1) for which payment will be made, shall be the number of tons of base course material, placed, bonded, and accepted in the completed base course.

The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(b) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the base course material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of fines used for blending for which payment shall be made, shall be the number of tons of material actually incorporated in the composite base course material.

(d) The quantity for hauling base course fines, measured in ton-miles, for which payment will be made, shall be the product of the quantity of fines used for blending as determined in Item (c) herein, and the haul distance.

The haul distance shall be the distance, measured in miles, from the borrow pit from which the material was obtained to the plant producing the composite base course material. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(e) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

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(h) Controlling Thickness of Base Course - The Engineer, or his Inspector, shall assume full responsibility for the quantities of granular material to be placed in order to obtain the desired base course thickness.

The Engineer will test the completed surface of each lift with a ten (10) foot straight edge. Any irregularities that exceed one-half (1/2) inch from the template grade for that lift shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Such additional material added shall be paid for at the contract unit price for base course material.

3.2.4 Method of Measurement

(a) The quantity of base course (Class 1) for which payment will be made, shall be the number of tons of base course material, placed, bonded, and accepted in the completed base course.

The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(b) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the base course material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of fines used for blending for which payment shall be made, shall be the number of tons of material actually incorporated in the composite base course material.

(d) The quantity for hauling base course fines, measured in ton-miles, for which payment will be made, shall be the product of the quantity of fines used for blending as determined in Item (c) herein, and the haul distance.

The haul distance shall be the distance, measured in miles, from the borrow pit from which the material was obtained to the plant producing the composite base course material. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(e) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

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(f) The quantity for which payment will be made for the compaction of the base course will be the actual number of hours that the particular unit is operated in compacting the base course in accordance with the specifications or as directed by the Engineer.

(g) The quantity of stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

3.2.5 Basis of Payment

(a) Payment for base course (Class 1) shall be made for the quantities as above determined, measured in tons (2000 lbs.) at the contract unit price for "Base Course", which price and payment will constitute full compensation for all labour, equipment, and tools, and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for hauling base course material shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course", which price and payment will constitute full compensation for all labour, equipment, and tools, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) Payment for fines for blending shall be made for the quantities as above determined, measured in tons, at the contract unit price for "Base Course Fines", which price and payment will constitute full compensation for all labour, equipment, and tools, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(d) Payment for hauling base course fines for blending shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Haul of Base Course Fines", which price and payment will constitute full compensation for all labour, equipment, and tools, necessary to do the work, and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(e) Payment for watering shall be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling, and distributing, and for all labour, equipment, tools, and all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(f) Payment for compaction shall be made for the quantities as above determined, measured in hours for a particular unit, at the contract unit price or prices for "Compaction", which price or prices and payment will constitute full compensation for all labour, equipment, and tools necessary to do the work, and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(g) Payment for stripping of borrow areas shall be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping of Borrow Areas", which price shall be full compensation for all labour, equipment, tools, excavation, and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 3

SECTION 3 - GRANULAR SUB-BASE (CLASS 2)

(1955)

3.3.1 Description

This item shall consist of the excavating, processing, hauling, and placing of a two (2) inch crushed granular sub-base material of such quality, and in such a manner that it will conform to all the requirements of this specification, the purpose of this material being to reinforce the subgrade where required, and it shall be used only where the Engineer determines that suitable pit run common granular borrow (See Article 2.4.2 - Specification for Embankment Construction) or Granular Sub-base (Class 3) Section 1 of Division 3, are not obtainable for sub-base construction.

3.3.2 Materials

The two-inch crushed granular sub-base (Class 2) material shall be processed from deposits of pit run gravel, talus rock, sand, or other granular materials which have a physical structure not affected by water or the elements. The source of supply shall be in accordance with Section 1.6.1 - Source of Supply and Quality Requirements.

The material shall be crushed to conform to the following gradation requirements in Table 1.

TABLE 1

Sieve No.	Percent Passing
2"	100%
1"	70 - 100
½"	55 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

The acceptability of the final crushed material will be determined by the Engineer. Materials will be considered unsuitable even though particle sizes are within the limits of the grading sizes herein provided, if particle shapes or any other characteristics preclude satisfactory compaction or fail to provide a roadway suitable for traffic.

3.3.3 Methods of Construction

(a) Clearing and Grubbing

The clearing and grubbing of borrow pits from which processed granular sub-base material is obtained will be carried out as specified in Division 2, Section 1, Specifications for Clearing and Grubbing, and payment will be made under that item.

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(b) Stripping

The pits from which this material is obtained shall be stripped of all overburden and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

(c) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, shall be specified by the Engineer and paid for under the contract unit price for the various scheduled items.

(d) Processing

This material shall be processed by crushing and, when necessary to eliminate surplus fines passing the No. 4 sieve, by screening. No fragments greater in size than the maximum specified herein for this class of material shall be permitted. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

It shall be permissible to blend or mix two or more materials to meet the gradation requirements of the base course. However, for each individual material used the fraction passing the No. 40 sieve shall not have a plasticity index greater than six (6), nor a liquid limit greater than 25. Sources of filler material shall be selected by the Engineer and supplied by the Department.

When two or more materials are blended they shall be thoroughly mixed by mechanical means so as to achieve uniformity throughout the composite material.

(e) Placing, Spreading and Compacting

This material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer. The placing, spreading and compacting shall be done in accordance with Articles 2.4.3 (e) and 2.4.3 (g) - Embankment Construction.

(f) Final Trimming and Restoration

All borrow pits shall be neatly trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or stand therein. Upon completion of the hauling, the Contractor shall restore the entire right-of-way and abutting lands, which were disturbed by such operation, to a satisfactory and sightly condition.

3.3.4 Method of Measurement

(a) The quantity of Granular Sub-base (Class 2) for which payment will be made, shall be the number of tons of Granular Sub-base (Class 2), placed, bonded and accepted in the completed sub-base or placed in authorized stockpiles.

The weight measurements shall be made by a Weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work

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and shall be inspected and tested for accuracy as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(b) The quantity of Haul, measured in ton-miles for which payment will be made, shall be the product of the quantity of sub-base material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the Processed Granular Sub-base (Class 2) to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of Stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

(d) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

(e) The quantity for which payment will be made for the compaction of the Base Course will be the actual number of hours that the particular unit is operated in compacting the base course in accordance with the specifications or as directed by the Engineer.

3.3.5 Basis of Payment

(a) Payment for Granular Sub-base (Class 2), shall be made for the quantities as above determined, measured in tons (2000 lbs.) at the contract unit price, which price and payment shall constitute full compensation for processing, placing, spreading and rolling, for cleaning-up of pits, and levelling stockpile sites, and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Payment for hauling Granular Sub-base (Class 2), shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price, which price and payment will constitute full compensation for all labour, equipment and tools, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) Payment for Stripping of borrow areas shall be made for the quantities as above determined, measured in cubic yards, at the contract unit price for Stripping of Borrow Areas, which price shall be full compensation for all labour, equipment, tools, excavation and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(d) Payment for watering shall be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for watering, which price and payment shall be full compensation for furnishing, hauling, and distributing, and for all labour, equipment, tools and all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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(e) Payment for Compaction shall be made for the quantities as above determined, measured in hours for a particular unit, at the contract unit price or prices for compaction, which price or prices and payment will constitute full compensation for all labour, equipment, and tools necessary to do the work, and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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Division 4

PAVEMENTS

Section

1	Bituminous Concrete Pavement Type "A"
2	Bituminous Concrete Pavement Type "B"
3	Seal Coat
4	Bituminous Prime Coat
5	Road Mix
6	Crushed Rock Aggregates for Bituminous Concrete Pavement
7	Application of Bituminous Tack Coat
8	Equipment for Stabilized Base and Paving Operations
9	

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Division 4

Section 5 - Road Mix

(1956)

4.5.1 Description

This item shall consist of a bituminous surface course of such width and depth as specified in the Information to Bidders, composed of mineral aggregate and bituminous material combined either by travelling plant mix or road mix methods using mechanical mixers, graders and pulverizers. It shall include the supplying, heating, hauling, handling and spraying of the bituminous binder and the supplying, weighing, hauling and placing of aggregate and the handling, spreading, manipulating and mixing of materials and all other work incidental or necessary to the performance of the work under this specification.

4.5.2 Materials

Samples of all materials which are to be used under these specifications shall be submitted to the Department Laboratory or specified agent for testing.

(a) Bituminous Materials

The grade of the bituminous material to be used shall be specified in Information to Bidders and shall conform to the requirements as shown in:-

(i) Section 4.1.2, Table 6, Standard Specifications for rapid curing asphaltic materials.

(ii) Section 4.1.2, Table 7, Standard Specifications for medium curing asphaltic materials.

(iii) Section 4.1.2, Table 8, Standard Specifications for slow curing asphaltic materials.

(iv) Section 4.1.2, Table 9, Standard Specification for emulsified asphalts.

(b) Aggregates

This material shall consist of broken stone or crushed gravel or blended aggregate of approved quality in accordance with physical requirement Tables 1 and 2 (Class 2 aggregate) article 4.1.2 and shall be composed of clean hard durable particles free from clay lumps, cementation and organic material.

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When tested by means of U.S. Standard Square mesh sieves, the aggregate material shall meet the following requirements:

Passing 3/4" square sieve	-	100%
Passing 1/2" " "	-	80 - 100%
Passing No.4 Mesh "	-	40 - 67%
Passing No.10 " "	-	25 - 50%
Passing No.40 " "	-	10 - 25%
Passing No.200 " "	-	3 - 8%

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes herein provided, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

The source of supply for aggregates shall be in accordance with Article 1.6.1, Source of Supply and Quality Requirements.

4.5.3 Methods of Construction

(a) Equipment

(i) General

All equipment used in this work shall be of sufficient capacity and in such mechanical condition as to meet the requirements of the job and to produce work of a satisfactory quality. All equipment shall be approved by the Engineer before work starts.

(ii) Travel Plants

Plants of the travelling type shall be self-propelled and be capable of maintaining a uniform rate of speed while mixing. The plant shall be mounted on wheels or tread equipment of such a type that when loaded to capacity they will not rut nor damage the base. The device for picking up the aggregates from the windrow shall be such that it will take up all loose material and leave the base clean without damage. Plants equipped for drying the aggregate before mixing with bitumen shall be so constructed as to prevent loss of fines or segregation of the aggregate. The equipment for proportioning the bitumen and aggregate material shall accurately measure the specified amounts of material for the mix while the machine is in operation. The plant shall be capable of thoroughly and uniformly combining the aggregate with the bitumen in such a manner that all particles are uniformly coated and also of depositing the mixture on the road surface for further manipulating and spreading.

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(iii) Road Mix Equipment

Sufficient equipment shall be on hand at all times for mixing, spreading and rolling the mixture.

Blade machines shall be tandem drive, self-powered, shall have pneumatic tires and shall be of an approved design that will satisfactorily mix and spread the bituminous mixture.

Mechanical mixing equipment such as pulverizer machines or multiple disc equipment shall be constructed so as to prevent any cutting of the base during mixing operations. Other mixing equipment may be used upon approval of the Engineer.

(iv) Distributors

Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. Spray bars shall have a minimum length of fourteen (14) feet and shall be of the full circulating type. The header bar shall be adjustable to permit varying height above the surface to be treated. The nozzles attached to the bar shall be either of the conical or flat slotted type, except that in spreading asphaltic emulsion, special emulsion nozzles shall be used. The distance centre to centre of the nozzles shall not exceed six (6) inches. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The spray bars shall be controlled by a bootman riding at the rear of the distributor where the operation of all sprays is in full view. Spreading by means of cab-controlled valves will not be permitted. The valves which control the flow from nozzles shall be of a positive acting design so as to provide a uniform unbroken spread of asphalt material on the surface.

The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of asphaltic material being applied and with tachometer of the auxiliary wheel type reading speed in feet per minute. The spreading equipment shall be so designed and articulated that uniform application of asphaltic material, in controlled amounts, may be made ranging from five hundredths (0.05) to one (1.0) gallon per square yard of surface with a range of pressure from twenty-five (25) to seventy-five (75) pounds per square inch. If a spray

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bar extension is used to cover a greater width, it shall be of the full circulating type. The distributor shall be equipped with a hose and nozzle attachment to be used for spotting skipped areas inaccessible to the distributor. The distributor shall also be equipped with pressure gauges and an accurate thermometer for determination of temperature of the asphaltic concrete material. Distributors and booster tanks shall be so maintained at all times as to prevent dripping of free asphaltic material from any part of the equipment.

(v) Rollers

Rollers shall be of the steel wheel type weighing not less than five (5) tons or more than eight (8) tons and capable of reversing without backlash.

(b) General

(i) Preparation of existing road surface

Before starting road mixing operations loose float shall be removed from the surface of the road by means of a heavy blade grader having a wheel base of not less than 10 feet. Width to be conditioned shall be that specified for the pavement plus one foot outside both edges.

(ii) Prime Coating

When required, the conditioned road surface shall be prime coated in accordance with the requirements for bituminous prime coat Division 4, Section 4 of current departmental specifications.

(iii) Application of Aggregate

The aggregate shall be deposited so as to produce a windrow of uniform content. The total content of the windrow cross section shall be determined by the Engineer.

(iv) Mixing Requirements

Immediately prior to applying the bitumen the windrows shall be sampled and tested for moisture content. If the moisture content is more than two (2) percent of the dry weight of the aggregate, the aggregate shall be turned by blades or other approved equipment, until the moisture content is reduced to two (2) percent or less. The aggregate shall then be spread smoothly and uniformly over the road surface ready for the application of bituminous material.

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The bituminous material shall then be applied uniformly by means of an approved pressure distributor with a minimum of 3 applications, each of approximately one-third of the total required amount as determined by the Engineer. The percentage of bituminous material by weight, to be added to the aggregate, shall be between 3½ and 7 percent of the weight of dry aggregate. The bitumen shall be applied uniformly at a temperature determined by the Engineer as appropriate for the material used and the conditions encountered. Immediately behind the distributor shall follow the mixing equipment consisting of some approved type of mechanical mixer and/or blade grader that completes the mixing by passing over the material. The intervals between applications shall be as ordered by the Engineer.

After the last application and partial mixing the entire mass of bitumenized material shall be thoroughly mixed either by blading the treated material from side to side of the road, or by manipulations producing equivalent results until all particles are coated with the bituminous material and the whole mass has a uniform colour. During the mixing care shall be taken to avoid cutting into the underlaying base or contaminating the bituminous mixture with earth or other extraneous matter.

Before it is finally spread, the mixture shall be examined by the Engineer who shall determine whether the mixing is complete, and the bitumen content correct. Should the mixture show an excess, deficiency, or uneven distribution of bituminous material, the unsatisfactory condition shall be corrected by the addition of the required aggregate or bituminous material, and by re-mixing. No spreading shall be done without the authorization of the Engineer. In no circumstances shall spreading be carried out when the base to be covered is wet.

After mixing is completed, the material shall be uniformly spread to the desired grade and cross-section and shall be compacted with steel wheel rollers of approved design. Rolling shall be longitudinal and shall commence at the outer edges of the road, overlapping the shoulders, and progress towards the centre, except that on super elevated curves rolling may progress from the lower to the upper edge. Rolling shall continue until the surface is of uniform texture, true to grade and cross section, and the degree of compaction is at least 95 per cent of the laboratory compacted density.

At the end of a days work, or when work is interrupted by weather conditions, all loose material shall be bladed into a windrow, whether mixing is complete or not, and it shall not be allowed to remain spread on the road over night or until the resumption of work.

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(v) Controlling Thickness of Base

The Engineer, or his inspector, shall assume full responsibility for the quantity of granular material to be placed in order to obtain the desired thickness.

The Engineer will test the completed surface with a ten (10) foot straight edge. Any irregularities that exceed one-half (1/2) inch from the template grade shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Such additional material added shall be paid for at the contract unit price for road mix material.

(vi) Weather Limitations

The spraying and mixing operations shall not be allowed when the air temperature is below 50°F., when the weather is foggy or rainy, or when conditions are otherwise unfavourable in the opinion of the Engineer.

4.5.4 Method of Measurement

(a) The quantity of aggregate for which payment will be made, shall be the number of tons of aggregate material actually placed and accepted on the road.

The weight measurements shall be made by a weighmaster provided by the Department using the scale provided by the contractor. These scales shall be of a suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy at the start of each job and as often as may be required by the Engineer.

The cost of inspecting and testing scales shall be borne by the contractor and the test certificate shall be exhibited to the Engineer as required.

(b) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of aggregate materials acceptably placed, and the haul distance. The haul distance shall be the distance measured in miles of fractions thereof, from the plant producing the aggregate to the centre of volume of that material after placing. The haul distance shall be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(c) The quantity of asphaltic material for which payment will be made shall be the number of imperial gallons measured at 60°F. actually incorporated into the mixture in accordance with the specifications.

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(d) The quantity for which payment will be made for mixing and placing shall be the number of square yards actually covered in accordance with the specifications.

4.5.5 Basis of Payment

(a) Payment for aggregate material shall be made for the quantities as above determined, measured in tons (2000 lbs.) at the contract unit price for "Aggregate Material", which price and payment will constitute full compensation for all labour, equipment, and tools, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for hauling aggregate material shall be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Aggregate Materials," which price and payment will constitute full compensation for all labour, equipment, and tools, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) Payment for asphaltic material shall be made for the quantities as above determined measured in Imperial Gallons at 60°F. at the contract unit price for "Asphaltic Material", which price and payment will constitute full compensation for all labour, equipment and tools and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(d) Payment for mixing and placing shall be made for the quantities as above determined measured in square yards at the contract unit price for "Mixing and Placing", which price and payment will constitute full compensation for all labour, equipment, tools necessary for spraying, mixing, placing, rolling and trimming, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 6

INCIDENTAL CONSTRUCTION

Section

1. Random Riprap

2. Hand-Placed Riprap

3. Installation of Culverts

4. Underdrains

5. Asphaltic Membrane

6. Reinforced Concrete Culverts

7. Cement Grout

8. Guide Fence

9. Guide Posts

10. Metal Type Retaining Walls

11. Construction of Flumes

12. Specification of Armour Riprap

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November, 1957

DIVISION 6

SECTION 1 - RANDOM RIPRAP

6.1.1. DESCRIPTION:

This item shall consist of stone riprap for bank protection furnished and constructed at the locations indicated, in accordance with these specifications and in conformity with the lines, grades, and dimensions shown on the plans or required by the Engineer.

6.1.2. MATERIALS:

The stones for the riprap shall be hard, angular, quarry stones of such a quality that they will not readily disintegrate on exposure to water or weathering. Stones shall vary in weight from 20 to 400 pounds each. Not less than 25 percent of the individual stones shall weigh from 200 to 400 pounds each. The source of this material will be approved by the Engineer.

6.1.3. METHODS OF CONSTRUCTION:

Foundation trenches and other necessary excavations shall be excavated by the Contractor and approved by the Engineer before the placing of riprap is begun. The stones shall be handled or dumped into place so as to form the cross sections shown on the plans. Unless changes are ordered by the Engineer, the riprap shall extend from two (2) feet below the bed of a stream to the mean high water line. Stones above a low water line shall form a uniform surface free from humps or depressions and with no excessively large cavaties below, or individual stones projecting above the general surface.

6.1.4. METHOD OF MEASUREMENT:

(a) The quantity of Random Riprap for which payment shall be made, shall be the quantity measured in cubic yards in place, and computed by the average end area method, for materials satisfactorily incorporated in the work.

(b) The quantity of foundation excavation shall be measured as in Article 2.6.4. - Excavation for Structures.

6.1.5. BASIS OF PAYMENT:

(a) Payment for Random Riprap shall be made for the quantities as above determined, measured in cubic yards at the contract unit price per cubic yard for "Random Riprap", which price and payment shall constitute full compensation for excavating, selecting, transporting and placing all stones, backfilling, and for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Payment for foundation excavation shall be made as stated in Article 2.6.5. - Excavation for Structures.

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DIVISION 6

Section 2 (A) HAND-PLACED RIPRAP

(B) GROUTED HAND-PLACED RIPRAP

NOVEMBER, 1956

6.2.1 DESCRIPTION

This item shall consist of constructing hand-placed riprap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.2.2 MATERIAL

The Contractor shall supply all materials.

(a) CEMENT

Cement for mortar shall be Portland Cement conforming to the requirements of the C. S. A. Specification A5-1951.

(b) SAND

Sand for mortar shall conform to the C. S. A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(c) ROCK

Stone for riprap shall be durable field or quarry stone of approved quality, sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects. For wall construction no stone shall be less than 1/2 cubic foot in volume and 75 per cent of the stones shall be at least 1 cubic foot in volume. For gutter construction stones shall be not less than 4 inches and not more than 6 inches in thickness with approximately flat top surfaces with widths of not less than 2 inches and lengths of not less than 6 inches. Spalls shall be supplied to fill open joints.

6.2.3 METHODS OF CONSTRUCTION

EXCAVATION

(A) HAND-PLACED RIPRAP

Where shown on the plans and as directed by the Engineer the contractor shall excavate so as to provide for an adequate granular foundation upon which the bottom of the riprap shall rest and he shall fine grade to a uniform and even surface the whole area to be riprapped. Depressions shall be filled and thoroughly compacted.

(B) GROUTED HAND-PLACED RIPRAP

Excavation shall be performed as for (A) above.

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PLACING

(A) HAND-PLACED RIPRAP

Unless laid to form a flat apron, the riprap shall commence in a trench below the toe of the slope. Stones shall be placed at the locations and to the required dimensions and cross-section shown on the plans and as directed by the Engineer. Stone shall be laid with close broken joints and shall be firmly bedded into the slope and against adjoining stones. The larger stones shall be placed in the lower courses and all shall be thoroughly compacted as construction progresses. Spalls shall be used to fill voids.

(B) GROUTED HAND-PLACED RIPRAP

The placing of the stones shall be as required under (A) above. The space between the stone shall be filled with cement mortar composed of 1 (one) part Portland Cement to 3 (three) parts fine aggregate, and shall be of such consistency that it can be placed with a mason's trowel. Before applying mortar the surfaces of the stones shall be amply wetted. Mortar shall be placed from the bottom to top, and worked with suitable tools to completely fill all voids except that the outer faces of the stones shall be left exposed. Grouted hand-laid riprap shall be cured in accordance with the curing requirements of the C. S. A. Standard Specifications for Concrete and Reinforced Concrete A23-1942 and amendments thereto.

6.2.4 METHOD OF MEASUREMENT

(A) The quantity of Hand-placed Riprap and Grouted Hand-placed Riprap for which payment shall be made shall be the number of cubic yards measured in place and accepted in the completed work.

6.2.5. BASIS OF PAYMENT

(A) Payment for Hand-placed Riprap and for Grouted Hand-placed Riprap shall be made for the quantities as above determined, at the contract price per cubic yards for "Hand-placed Riprap" and "Grouted Hand-placed Riprap" which price and payment shall constitute full compensation for excavating the bed, for trimming and consolidating the foundation as directed, for excavating, selecting and transporting all stones, for placing stones by hand, for backfilling and grouting when required, and for all labour, materials, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 3 - INSTALLATION OF CULVERTS

(1954)

6.3.1. DESCRIPTION:

This item shall consist of preparing bedding for pipe and box culverts, placing them and backfilling to subgrade level after the culverts are installed. All work under this item shall be done in accordance with these specifications and in conformity with the plans or as staked by the Engineer.

6.3.2. MATERIALS:

All Reinforced Concrete Culvert Pipe shall meet the requirements of A.A.S.H.O. Specification M 41-49 or subsequent revisions thereof.

All Corrugated Metal Culvert Pipe shall meet the requirements of A.A.S.H.O. Specification M 36-47 or subsequent revisions thereof.

These pipes will be furnished free by the Department f.o.b. at the nearest approved railway siding.

All materials required for Reinforced Concrete Box Culverts shall meet the requirements set forth under that specification.

The Engineer reserves the right to inspect and test the pipe after its delivery to the work, and if defects are found which make it unserviceable, the pipe may be rejected for use on the project. If these defects are deemed the fault of the Contractor, the pipe shall be replaced by the Department at the expense of the Contractor.

The materials used for bedding and backfilling of culverts shall be granular material selected by the Engineer from one of the various classes of excavation.

6.3.3. METHODS OF CONSTRUCTION:

(a) Trenches:

Where the foundation for the culvert is below the natural ground a trench shall be excavated in which to form the bed and place the culvert. This trench shall have a width of not less than two (2) feet greater than the external diameter of the culvert, unless otherwise authorized due to unsuitable material encountered, Where multiple pipes are laid, they shall be spaced not less than one diameter apart and excavation will be allowed one (1) foot beyond the outside of each pipe as well as between them.

The bedding surface for pipe culverts shall provide a firm foundation of uniform density throughout the entire length of the culvert and shall in general be slightly cambered in the direction parallel with the pipe centre line to correct for expected settlement and ensure tight joints in the lower half of the pipe. Recesses shall be excavated for any bells involved.

The excavation shall be carried out in accordance with Article 2.6.3. of the Specification for "Excavation for Structures."

(b) Bedding:

The culverts shall be bedded in a granular foundation of uniform density and carefully shaped, by means of a template supported at the desired grade, to fit the lower part of the culvert exterior for at least ten (10) percent of its overall height.

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All materials encountered shall be removed below grade and replaced with suitable granular material obtained from one of the various classes of excavation, in such manner as to provide a compacted cushion having a thickness under the culvert of not less than one half (1/2) inch per foot height of fill over the top of the culvert, with a minimum allowable thickness of eight (8) inches.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, unless other special construction methods are called for on the plans, all of such unstable soil under the culvert and for a width of at least one diameter on each side of the culvert shall be removed and replaced with granular material properly compacted to provide adequate support for the culvert.

(c) Installation of Reinforced Concrete Culvert Pipe:

The pipe shall be laid carefully, hubs upgrade, ends fully and closely jointed, and true to lines and grades as given. Proper facilities shall be provided for lowering the sections when they are to be placed in a trench. Each section shall be securely attached to the adjoining sections by the method contemplated for the type of joint used. All joints, unless otherwise specified, shall be filled with stiff mortar composed of one part of portland cement and one and one-half (1-1/2) parts of sand. The cement shall be supplied by the Department and the sand and water shall be approved by the Engineer. The mortar shall be placed so as to form a durable, watertight joint. After each section of pipe is laid and before the succeeding section is laid, the lower portion of the hub shall be plastered thoroughly on the inside with mortar to such depth as to bring the inner surfaces of the abutting pipes flush and even. After the section is laid, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the air and sun with a cover of thoroughly wetted earth or burlap. Any pipe which is not in true alignment or which shows any undue settlement after being laid, or is damaged, shall be taken up and relaid or replaced without extra compensation.

(d) Installation of Corrugated Metal Culvert Pipe:

Every culvert under the highway shall be so laid that the minimum distance from the subgrade to the top of the pipe shall be not less than 1/5 (one-fifth) the diameter of the pipe with a minimum of one (1) foot.

The pipe shall be laid with the separate sections joined firmly together and with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides. Any metal in the joints which is not protected thoroughly by galvanizing shall be coated with a suitable asphaltum paint.

Proper facilities shall be provided for lowering the pipe when it is to be placed in a trench. The pipe shall be laid carefully and true to lines and grades as given. Any pipe which is not in true alignment after being laid, or is damaged, shall be taken up and relaid or replaced without extra compensation.

Pipes of forty-two (42) inch or larger diameter shall be strutted as shown on the plans or in accordance with the manufacturer's recommendations. The struts shall be placed before the embankment is made and shall be removed when removal is ordered by the Engineer.

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(e) Installation of Reinforced Concrete Box Culvert:

After the bed has been constructed and finished as specified in Item (b) of this Article, the forms shall be built thereon, the reinforcing and the concrete masonry placed as shown on the standard plan and as specified in Article 5.1.3. - "Reinforced Concrete Box Culverts".

(f) Backfilling:

After the bedding has been prepared, the culvert installed, and the concrete has aged to the satisfaction of the Engineer, granular material obtained from one of the various scheduled excavation items shall be placed alongside the culvert in layers not exceeding six (6) inches in depth and within the limits shown on the standard plans No. S-8 and S-9. The layers of backfill shall be placed alternately on each side of the culvert so as not to displace it during the operation, and they shall be compacted to one hundred (100) per cent of the dry density obtained by performing the standard proctor compaction test on the material as specified in A.A.S.H.O. Standard Test T 99-49. Each layer, if dry, shall be moistened and then compacted by rolling or by tamping with approved mechanical rammers. Special care shall be taken to compact the fill thoroughly under the haunches of the pipe. This method of filling and compacting shall be continued until the embankment has reached an elevation eight (8) inches above the top of the culvert.

6.3.4. METHOD OF MEASUREMENT:

The quantity for which payment will be made in pipe culvert installation, will be the actual lengths in feet, constructed in accordance with the Plans or as directed by the Engineer, measured in place where laid or relaid.

6.3.5. BASIS OF PAYMENT:

(a) Pipe culvert materials will be furnished free by the Department f.o.b. at the nearest approved railway siding. Similarly, all cement and reinforcing steel will be supplied free by the Department. The cost of constructing and installing reinforced concrete box culverts will be paid for as specified in Section 5.1. - Specification for "Reinforced Concrete Box Culverts."

(b) Payment for the installation of pipe culverts of the types and sizes specified, will be made for the length of each type and size as above determined, measured in lineal feet, at the contract unit prices per lineal foot for these items. These prices shall include the transportation from the point of delivery, the laying, assembling, and caulking the pipe complete, all materials, labour, equipment, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(c) The cost of excavation will be paid for as stated in Article 2.6.5. - [illegible] "Excavation for Structures" which price will include the cost of any bracing, sheeting or shoring necessary to retain the walls of the excavation.

(d) The cost of backfill material will be paid for under one of the various scheduled excavation items.

0 0 0

SECTION 4 - UNDERDRAINS
(1954)

6.4.1. DESCRIPTION:

This item shall consist of underdrains, constructed in accordance with these specifications and in conformity with the lines, grades, dimensions, and designs shown on the plans or designated by the Engineer.

6.4.2. MATERIALS:

Pipe for underdrains shall be either tile, or perforated corrugated metal pipe and shall confirm to either A.A.S.H.O. Specification M 66-42 or M 136-47, or subsequent revisions thereof. The pipe shall be supplied by the Department free of cost to the Contractor at the nearest approved railway siding.

Backfill for underdrains shall consist of pit-run gravel selected by the Engineer from Borrow Excavation, and paid for under that item.

6.4.3. METHODS OF CONSTRUCTION:

(a) Trench and Bedding:

The trench shall be excavated to the width, line, and grade given by the Engineer. For cuts in soil, the base of the trench shall be deep enough to provide a two (2) inch granular bed under the pipe. In rock cuts, the base of the trench shall be deep enough to provide a four (4) inch granular bed between the highest solid rock peaks and the under side of the pipe. The excavation in either rock or earth shall have a bottom width equal to the diameter of the pipe plus two (2) feet.

The bed of pit-run granular material shall be placed and tamped true to grade, providing recesses for the pipe bells if necessary. The granular material will be selected by the Engineer and supplied by the Department and shall contain no stone larger than one and one-half (1 1/2) inches.

(b) Placing the Pipe:

Pipe of the kind and size required shall be embedded firmly in the bottom course of gravel. Bell and spigot pipe shall be laid with the bell ends upgrade and the spigot ends entered in the adjacent bells but not mortared or otherwise closed to the desired infiltration of water. The joints shall be covered with two-ply tar paper strips not less than six (6) inches in width and of sufficient length to permit the ends being turned outward and laid flat on the bottom course of gravel on either side of the pipe for a distance of three (3) inches.

Perforated pipe shall be laid with the perforated side of the pipe down and separate sections shall be firmly joined together with the connectors supplied.

(c) Placing the Backfill:

The pit-run granular backfill material shall then be carefully placed by hand shovelling on each side and over the top of the pipe to a depth of at least six (6) inches, special care being taken not to disturb the alignment or grade of the pipe. The pipe trench shall then be filled with pit-run granular material to the elevation shown on the plans or directed by the Engineer. If the Engineer so directs, the top one (1) foot of backfill material shall be the same material as is in the adjacent area.

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(d) Blind Drain:

Where blind (French) drains are called for, they shall be dug to the cross section shown on the plans and to the depth staked by the Engineer. The trench thus prepared shall be filled with pit-run gravel selected by the Engineer and supplied by the Department, to within twelve (12) inches of the finished ground surface. The upper twelve (12) inches of the trench shall then be filled with suitable material of either the porous or impervious type as shown on the plans or required by the Engineer. Both the gravel and surface filling shall be firmly tamped.

6.4.4. METHOD OF MEASUREMENT:

(a) The quantity to be paid for under this item shall be the number of linear feet of the various types of underdrain pipe or blind drain installed in accordance with the plans and specifications and measured separately in place.

(b) The quantity of excavation shall be measured as stated in Article 2.6.4. - Excavations for Structures.

(c) The quantity of pit-run granular backfill material shall be measured as stated in Article 2.3.4 - Borrow Excavation.

6.4.5. BASIS OF PAYMENT:

(a) Payment for underdrains shall be made for the quantities as determined above, measured in linear feet, at the contract unit price per linear foot for each of the various types of drain, which price and payment shall constitute full compensation for bedding, installing, and backfilling the drains, for all labour, equipment, tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Excavation shall be paid for as stated in Article 2.6.5. - Excavation for Structures.

(c) Granular backfill material will be paid for as stated in Article 2.3.5. Borrow Excavation, at the contract unit price for "Borrow Excavation, Common".

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DIVISION 8

DRAWINGS

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Division 8

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		B	C	D	E	F
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Rock Fill	S3	B2-3	C-3	D-3	E-3	-
Rock Cut	S4	B2-4	C-4	D-4	E-4	-
Rock Cut Construction	S6	B2-5	C-5	D-5		-

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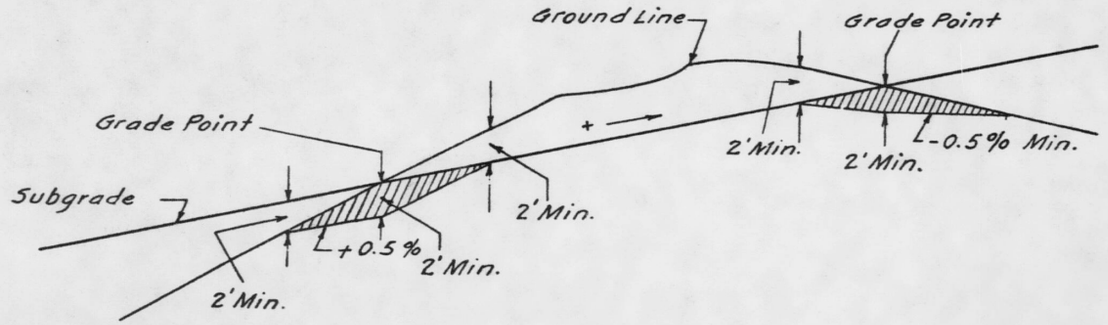

Note: The material shown by the shaded Area shall be removed for full width of Cut and Fill of the Section and replaced with approved material in accordance with Standard Specifications

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT & FILL
CONSTRUCTION METHOD
AT GRADE POINTS
STANDARD PLAN No. 1

DRAWN BY W.J.H. CHECKED BY

APPROVED BY R.A. Campbell
CHIEF 1956

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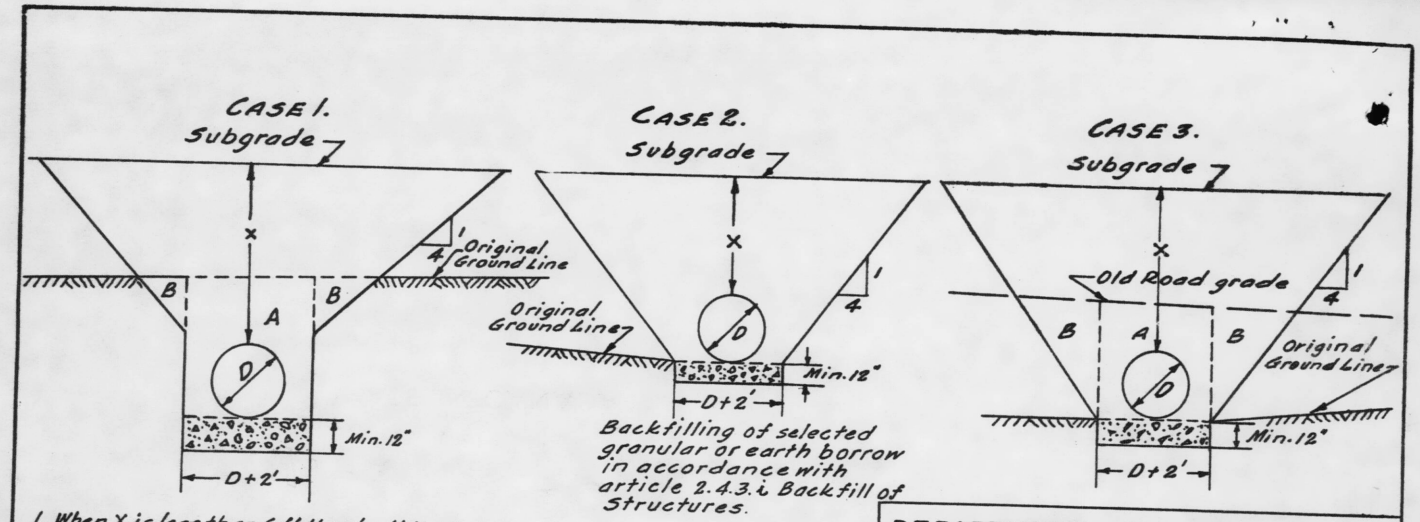

1. When X is less than 6 ft the depth X+D shall be back filled with selected granular borrow.
2. When X is greater than 6 ft. selected granular borrow shall be placed to a height of 3 feet above the top of the pipe culvert and the balance of the fill shall be constructed with select earth borrow
3. Minimum cover X to be 12"
4. Area A - Will be paid for as Excavation for Structures
   Area B - " " " Common Excavation

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

INSTALLATION OF PIPE CULVERTS

STANDARD PLAN Nº 3

DRAWN BY W.J.H. CHECKED BY GB

APPROVED BY _____ CHIEF 1956

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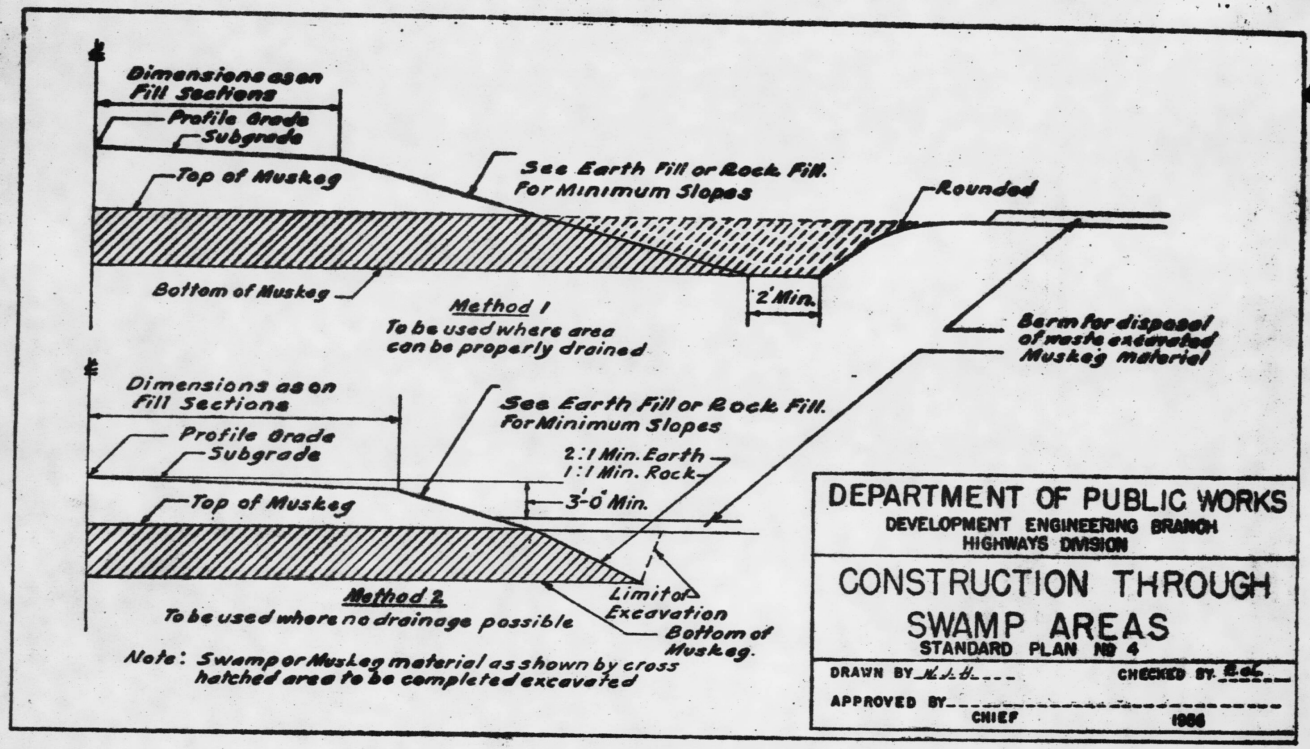

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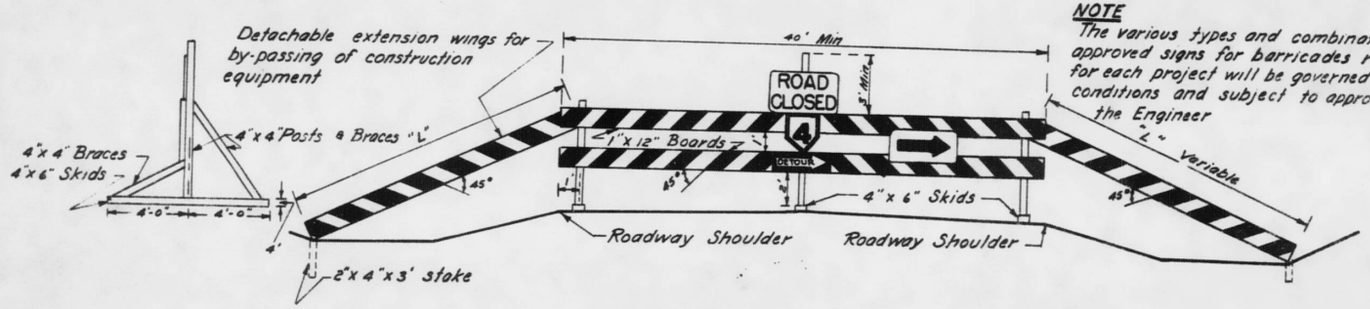

NOTE
The various types and combinations of approved signs for barricades required for each project will be governed by field conditions and subject to approval by the Engineer

All barricades to be 1"x 12" lumber painted 8" inch alternate black and white strips
All skids, braces and posts to be painted white and nailed together with No 20d nails
Bases to be weighted where necessary to provide stability

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE

TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD PLAN No.5

DRAWN BY R.H. CHECKED BY
APPROVED BY
CHIEF ENGINEER 1956

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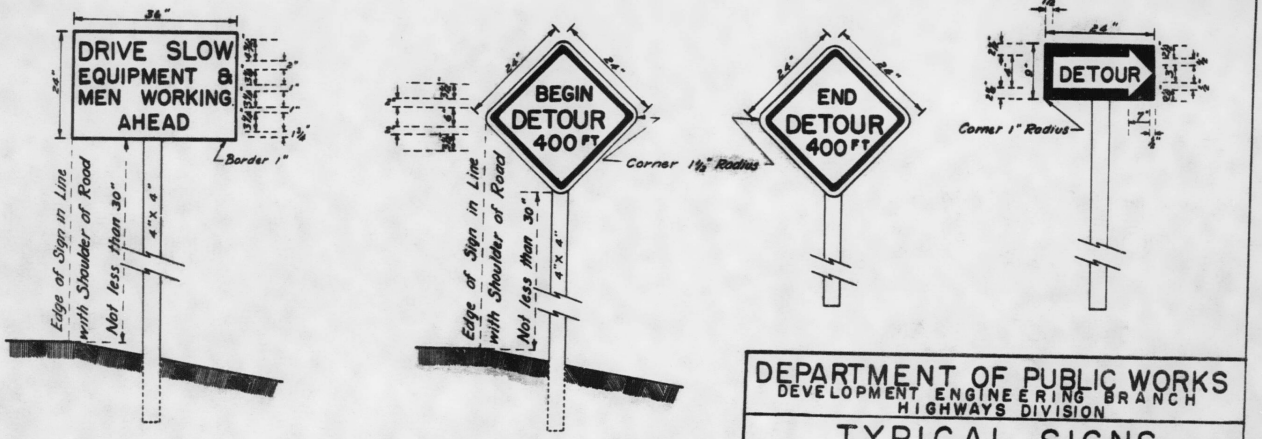

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TYPICAL SIGNS

TO BE USED BY CONTRACTOR ON CONSTRUCTION

STANDARD PLAN No 6

DRAWN BY R.H. CHECKED BY

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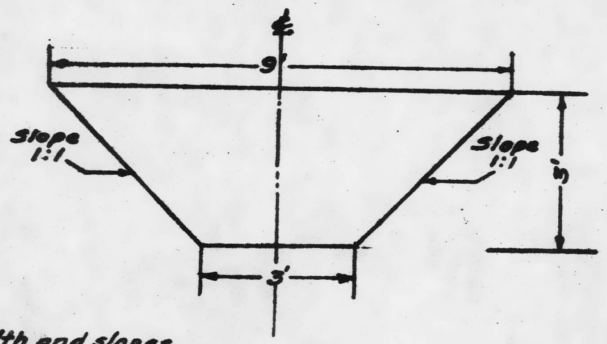

NOTE:
Bottom width and slopes adjusted where necessary to conform with hydraulic and material requirements

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INTERCEPTOR DITCH

STANDARD PLAN NR 7

DRAWN BY [illegible] CHECKED BY [illegible]

APPROVED BY _____ CHIEF 1986

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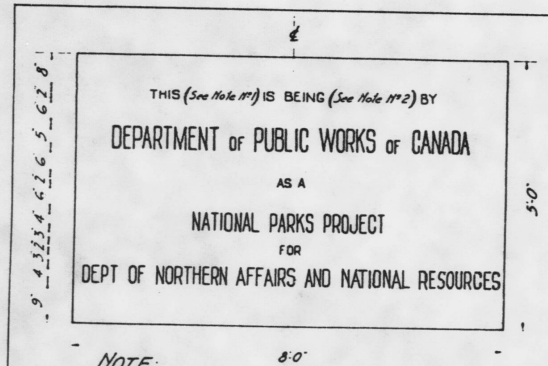
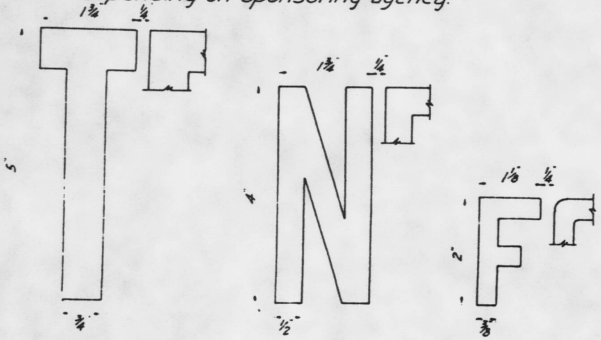
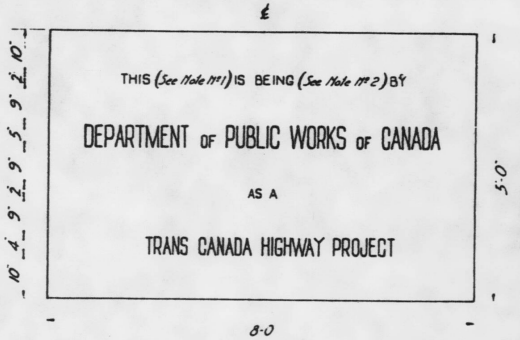


NOTE:
Sub-title of the above sign variable depending on sponsoring agency.



DETAIL OF LETTERS



NOTES

(1) Here insert "Structure" "Highway" etc. as applicable.
(2) Here insert "Erected" "Constructed" etc. as applicable.
(3) Colour to be black on white.

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HIGHWAYS DIVISION

PROJECT SIGN BOARD

STANDARD PLAN NO 8

APPROVED	DATE
DESIGN ENGINEER	
CHIEF	1957

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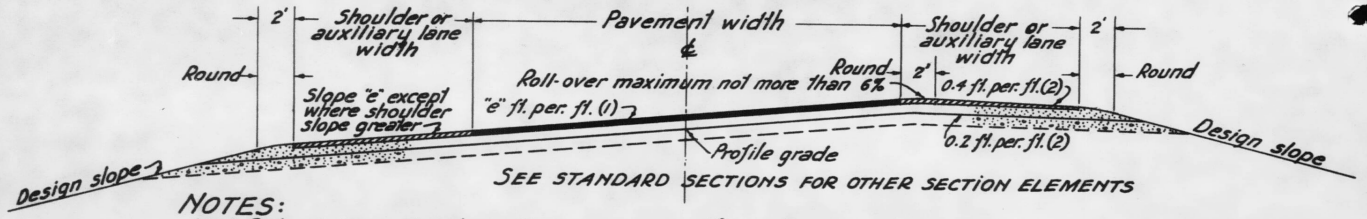
CLASS A, B, C, D, E & F HIGHWAYS



SEE STANDARD SECTIONS FOR OTHER SECTION ELEMENTS

NOTES:

1 "e" Rate of superelevation ft. per ft. = $0.067 \frac{V^2}{R} - F$ (Side friction factor)
"e" Minimum, 0.02 ft. per ft.
"e" Maximum, 0.08 ft. per ft. up to 5° for V 60-70 M.P.H. to 0.08 for 50 M.P.H. down to 0.06 for D^3 above 6°.
"e" Maximum, 0.06 ft. per ft. above 6° for V 45 M.P.H. and lower V^2 and for ramps (3)
See 6-D, 6-1 for values of "e" for main highway or table below.

2 Minimum slope 0.02 ft. per ft. to 0.04 ft. per ft. for gravel or bituminous shoulders.

3 Use upper values preferably for ramps, One way ramp pavement and shoulder cross-sloped one way except at junction for warping. Roads with narrow shoulder 4 ft. or less, shall be cross sloped one way eliminating roll-over.

SUPERELEVATION RATE FOR DESIGN SPEED M.P.H.

Ramps ft. Per ft. (3) | Main Highway ft. Per ft.

DEGREE OF CURVE / VELOCITY	20	25	30	35	40	50	60	70
1°30						.020	.022	.025
2°00					.020	.027	.035	.038
3°00					.025	.035	.047	.049
4°00				.02	.035	.050	.066	.076
5°00			.02	.02 - .03	.044	.062	.076	.080
6°00			.02 - .03	.03 - .04	.052	.070	.080	
8°00		.02	.03 - .04	.04 - .05	.058	.076	.080	
13.3	.02	.02 - .03	.03 - .04	.04 - .06	.06	.06 - .08		
18.5	.02 - .03	.02 - .04	.04 - .05	.05 - .06	.06			
25.0	.02 - .04	.03 - .05	.04 - .06	.05 - .06				
38.0	.03 - .04	.03 - .05	.04 - .06					
60.0	.04 - .05	.04 - .06						
	.04 - .06							

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT & ENGINEERING BRANCH
HIGHWAYS DIVISION

SUPERELEVATED SECTION
CLASS A, B, C, D, E & F HIGHWAYS
STANDARD PLAN Nº 9

Drawn by R.E.S Checked by R.A.C.

APPROVED BY [signature] for Chief 1957

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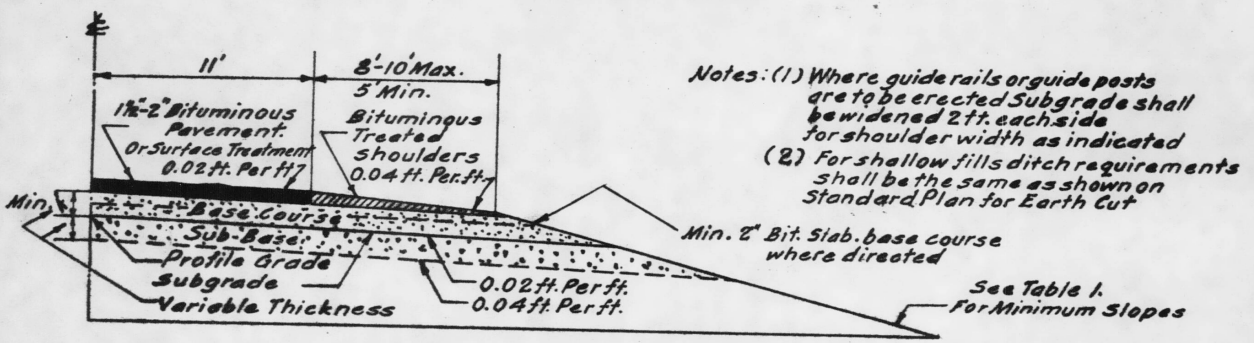
CLASS 'C' HIGHWAY



Notes: (1) Where guide rails or guide posts are to be erected Subgrade shall be widened 2 ft. each side for shoulder width as indicated
(2) For shallow fills ditch requirements shall be the same as shown on Standard Plan for Earth Cut

TABLE. I
MINIMUM SLOPES

Height of Cut or Fill	TERRAIN: Rolling	Moderately Steep	Steep
0'-4'	4 : 1	3½ : 1	3 : 1
4'-10'	3½ : 1	3 : 1	2 : 1
10'-15'	3 : 1	2½ : 1	1½ : 1
15'-20'	2 : 1	2 : 1	1½ : 1
Over 20'	2 : 1	1½ : 1	1½ : 1

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HIGHWAYS DIVISION

EARTH FILL

PLAN NO C-1

DRAWN BY M.J.H. CHECKED BY

APPROVED BY _____ CHIEF 1956

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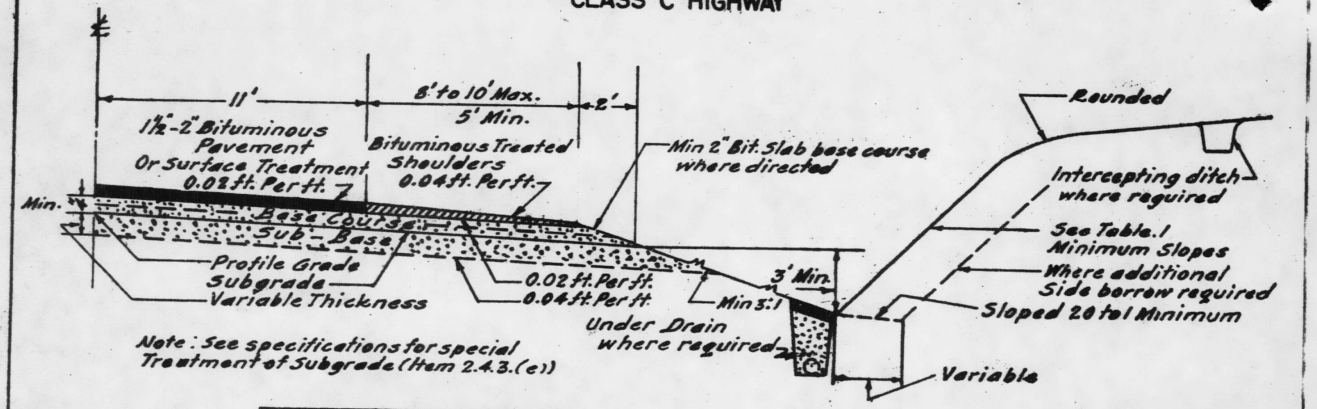
CLASS 'C' HIGHWAY



Note: See specifications for special Treatment of Subgrade (Item 2.4.3.(e))

TABLE. 1
MINIMUM SLOPES

Height of Cut or Fill	TERRAIN		
	Rolling	Moderately Steep	Steep
0 4	4 : 1	3½ : 1	3 : 1
4'-10'	3½ : 1	3 : 1	2 : 1
10'-15'	3 : 1	2½ : 1	1½ : 1
15'-20'	2 : 1	2 : 1	1½ : 1
Over 20'	2 : 1	1½ : 1	1½ : 1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT

PLAN No C-2

DRAWN BY ____ CHECKED BY ____

APPROVED BY ____ CHIEF ____ 1966

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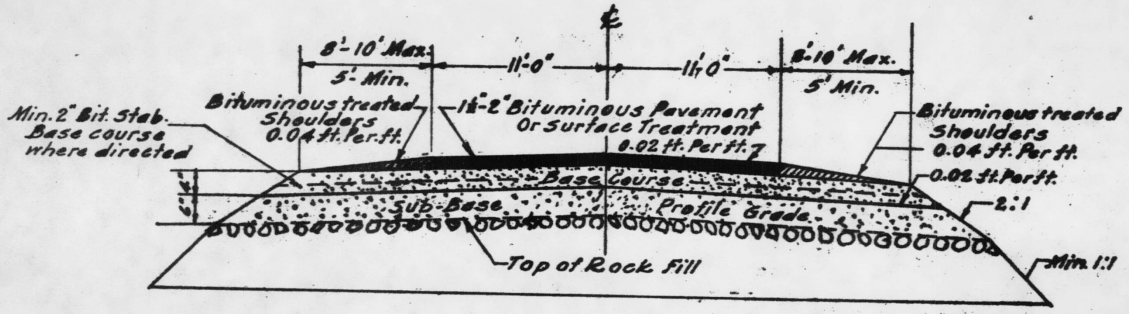
CLASS 'C' HIGHWAY



Note: (1) If guide rails etc. are to be erected subgrade shall be widened 2 ft. each side for shoulder width as indicated
(2) Top of rock fill to be chinked with Rock spalls and fines to provide an earth tight surface

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK FILL

PLAN Nº C-3

DRAWN BY [illegible] CHECKED BY [illegible]
APPROVED BY [illegible] CHIEF 1948

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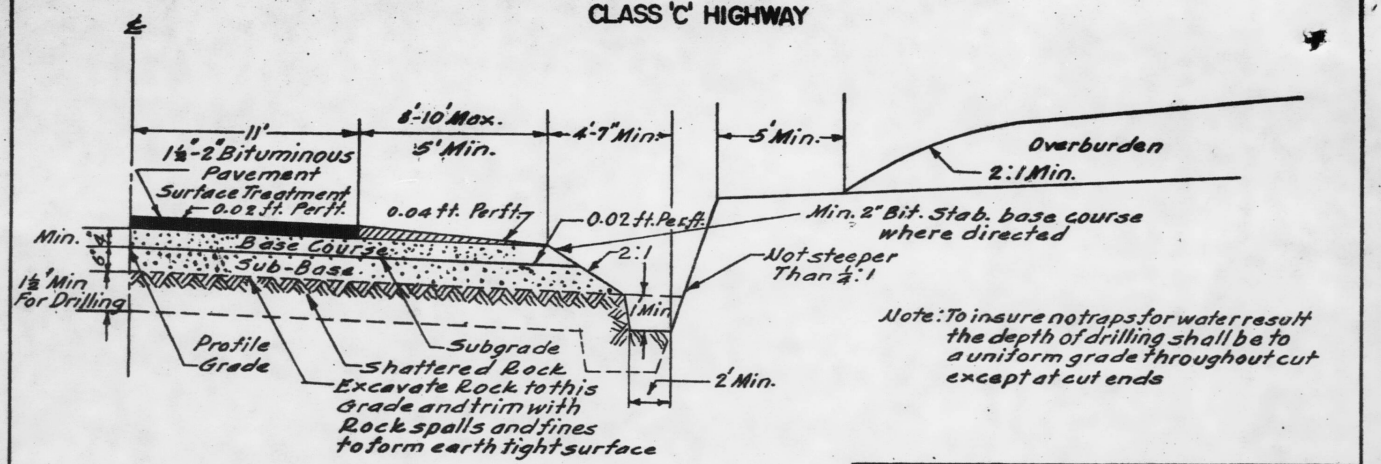

Note: To insure no traps for water result the depth of drilling shall be to a uniform grade throughout cut except at cut ends

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT

PLAN No C-4

DRAWN BY _____ CHECKED BY _____

APPROVED BY _____ CHIEF _____ 1964

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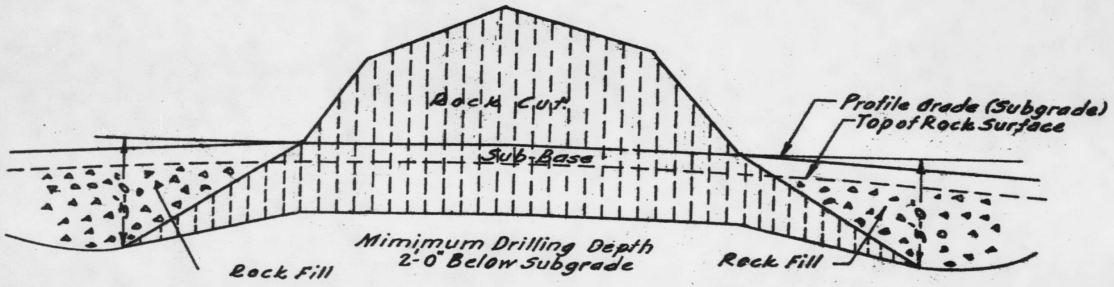

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CONSTRUCTION
PLAN Nº C-5

DRAWN BY W.L.H. CHECKED BY

APPROVED BY
CHIEF ENGINEER 1966

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DIVISION "B"

SUPPLEMENTAL SPECIFICATION FOR STRUCTURAL PLATE PIPE, PIPE-ARCH AND ARCH CULVERT

B.1 DESCRIPTION

This item consists of the provision of all materials, labour and equipment required to construct structural plate pipe, pipe-arch and arch culverts, including liners when required, all as designated by the Engineer.

B.2 MATERIALS

All structural plates shall be of galvanized corrugated metal, conforming to the requirements of AASHO Standard Specifications for Highway Bridges - 1953 addition, Division IV, Section 19.

All structural plate culverts, together with all necessary fittings shall be supplied by the Contractor in the gauges and dimensions ordered in writing by the Engineer.

When required, liners for inverts of pipes and pipe-arches, shall be obtained from the same manufacturer and shall be of material not lighter than 12 gauge.

B.3 METHODS OF CONSTRUCTION

Structural plate pipe and pipe-arch culverts shall be erected on beds prepared in accordance with Division 6, Section 3 of the Standard Specifications.

Structural plate arch culverts shall be erected on foundations constructed in accordance with Division 5, Section 3 of the Standard Specifications.

Invert liners will be placed in accordance with the practice recommended by the manufacturer, or as directed by the Engineer. The insertion of fasteners by the use of an approved explosive gun will be permitted. Transverse over-lapping of liner plates is not necessary. Longitudinal overlapping, shall be at least two (2) inches and the centre of any perforation for fasteners, shall be at least one (1) inch from the ends of plates.

B.4 METHODS OF MEASUREMENT

(a) Structural Plate Pipe, Pipe-Arch and Arch Culverts

The quantity for which payment will be made shall be the lineal feet of structural plate pipe, pipe-arch and arch culvert measured along the invert in place and accepted by the Engineer.

(b) Invert Liners

The quantity for which payment will be made shall be the square feet of invert liner measured in place and accepted by the Engineer.

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B.5 BASIS OF PAYMENT

The contract unit price per lineal foot of structural plate pipe, pipe-arch and arch culvert, and the contract unit price per square foot for invert liners will be full compensation for all work herein described to complete structural plate-pipe, pipe-arch and arch culverts, including the supply, transportation and handling of all materials and for all labour, equipment, tools and all works subsidiary and incidental thereto, for which payment is not elsewhere provided.

Payment for excavation will be made as provided for in Article 2.6A.5 of the Standard Specifications relating to Excavation for Structures.

Payment for concrete and reinforcing steel in foundations for arch culverts will be made as provided in Article 5.3.5 of the Standard Specification relating to Concrete Structures - Foundations.

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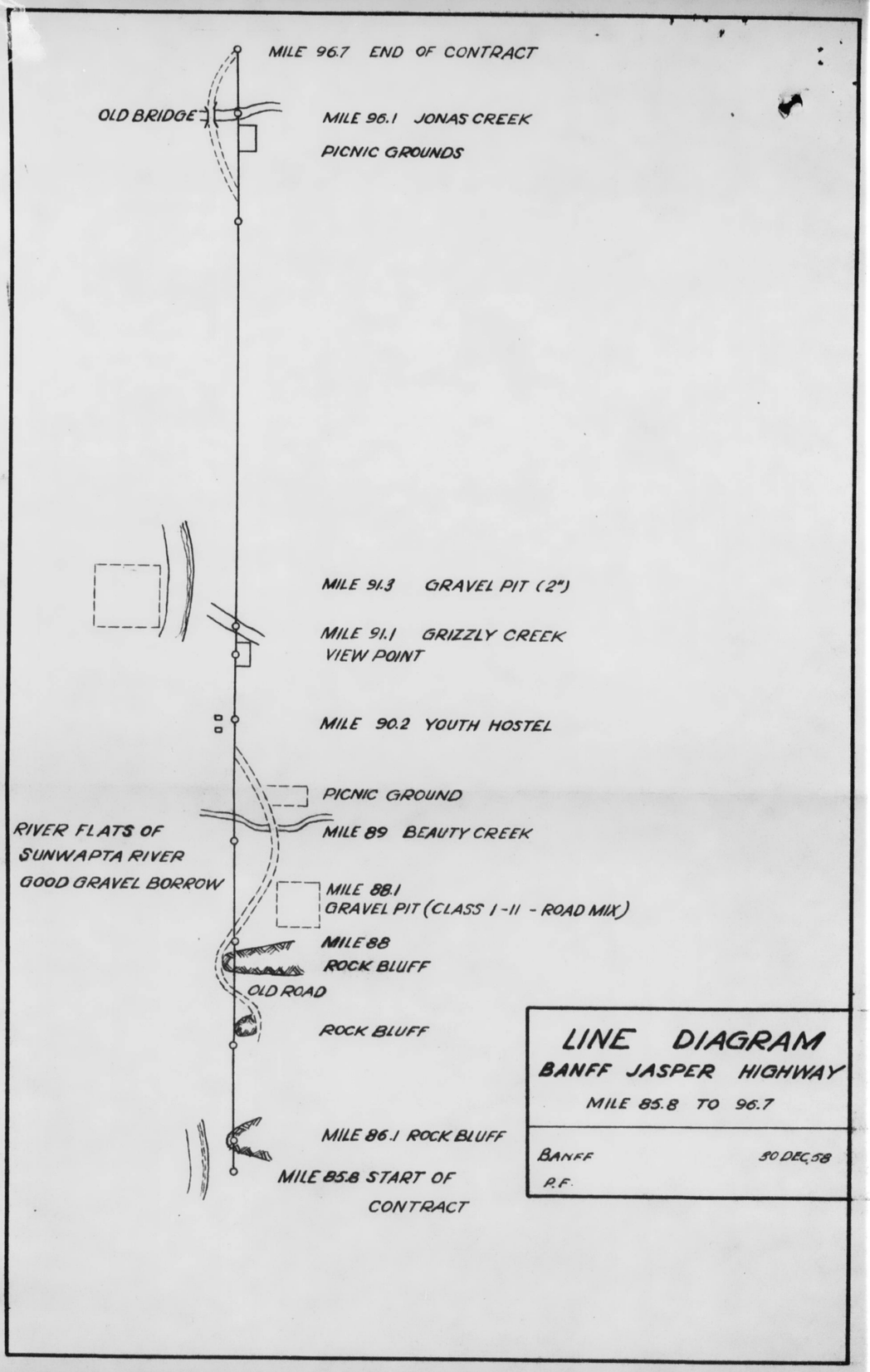

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FILE No. J.60-23

PLANS&SPECS

YEAR							
MONTH	DAY						IN
Aug	18	Robbie					
Oct	18	Edsvik					
Nov	15	Edsvik					
Jan	24	Mabes					

NANR 10-3 (3-56)
R-39-1158-P.

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pt 1

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FILE No. J.60-23

YEAR

PLANS&SPECS

MONTH	DAY	CHARGED TO		MONTH	DAY	CHARGED TO	IN

NANR 10-3 (3-56)
R-39-1158-P.

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CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

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pt 2

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No. J.60-23 PLANS & SPECS. Volume 2

From _____ To DEC/62

DEPARTMENT OF
Northern Affairs And National Resources
19___

Subject:
- BANFF & JASPER
HIGHWAY IN JASPER

CLOSED

CLOSED

NATIONAL PARKS BRANCH

CLOSED

NPC 442

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J. 60-23 Plans etc

DRAWING NO	SHEET NO	TOTAL SHEETS
J.A.61 9 ab.1	1	14

DEPARTMENT OF PUBLIC WORKS
CANADA
DEVELOPMENT ENGINEERING BRANCH

STATION NO. 0+00 TO STATION NO. 525+49.6

CONTRACT LENGTH - Mile 115 To Mile 125.0
Mile 139.5 To Mile 140.0
Athabasca River Bridge Approach.

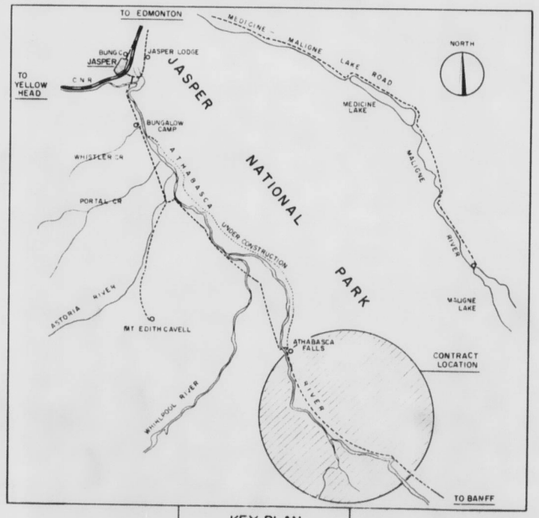
PLAN & PROFILE NO. J.A.61.9ab.1 To 14

CONTRACT NO. 4/63/B.J.

TYPE OF WORK GRADING - CULV. - BASE COURSE

ROAD NAME OR NO. BANFF - JASPER HIGHWAY

CONTRACT LOCATION



KEY PLAN
Scale 1" = 3 MI.

THESE DRAWINGS HAVE BEEN
REDUCED TO
HALF SIZE

RECOMMENDED FOR APPROVAL
DISTRICT ENGINEER
DESIGN ENGINEER
CONSTRUCTION ENGINEER
CHIEF OF DIVISION
APPROVED
CHIEF ENGINEER, DEVELOPMENT ENGINEERING BRANCH
DATE

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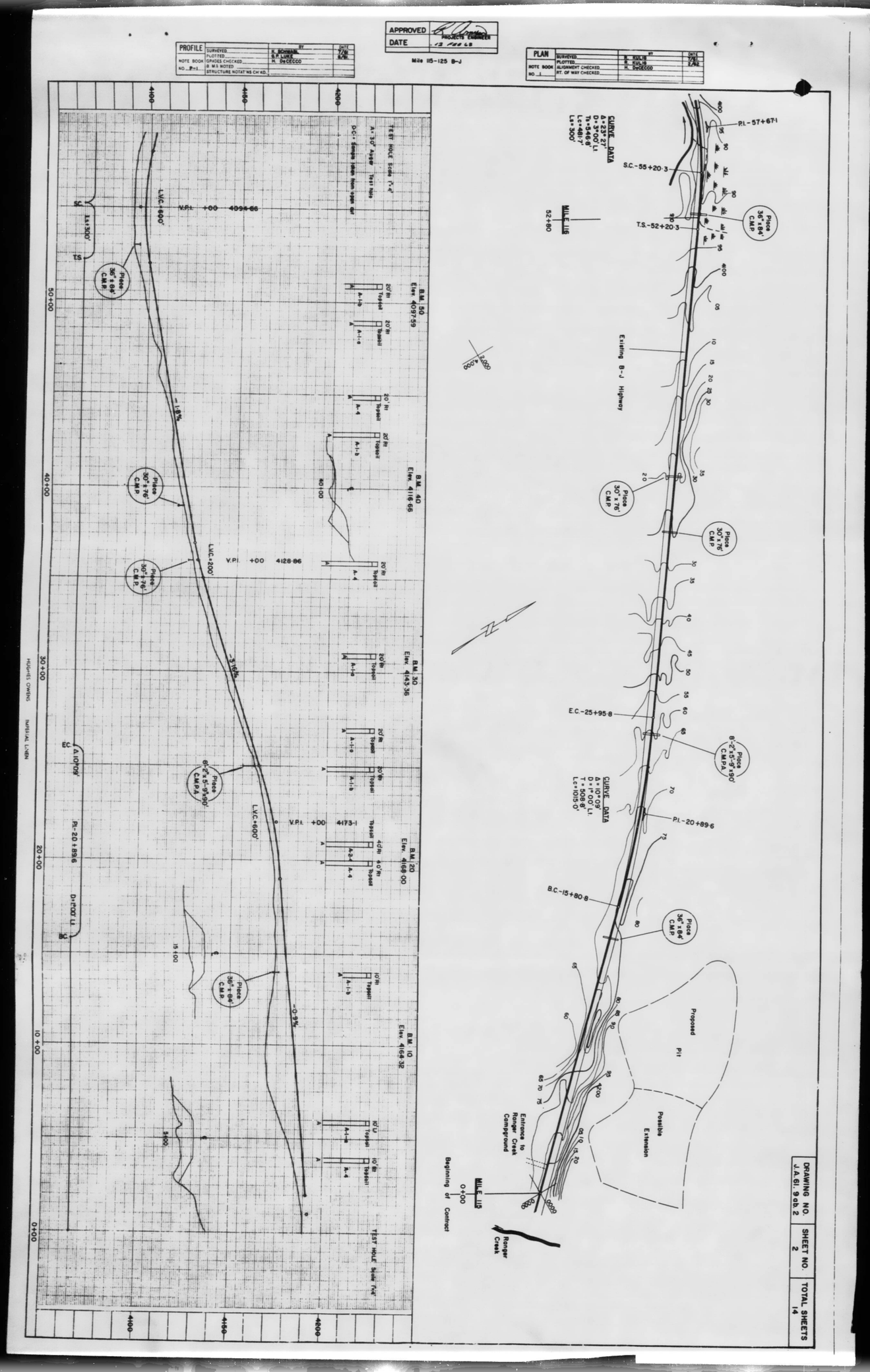

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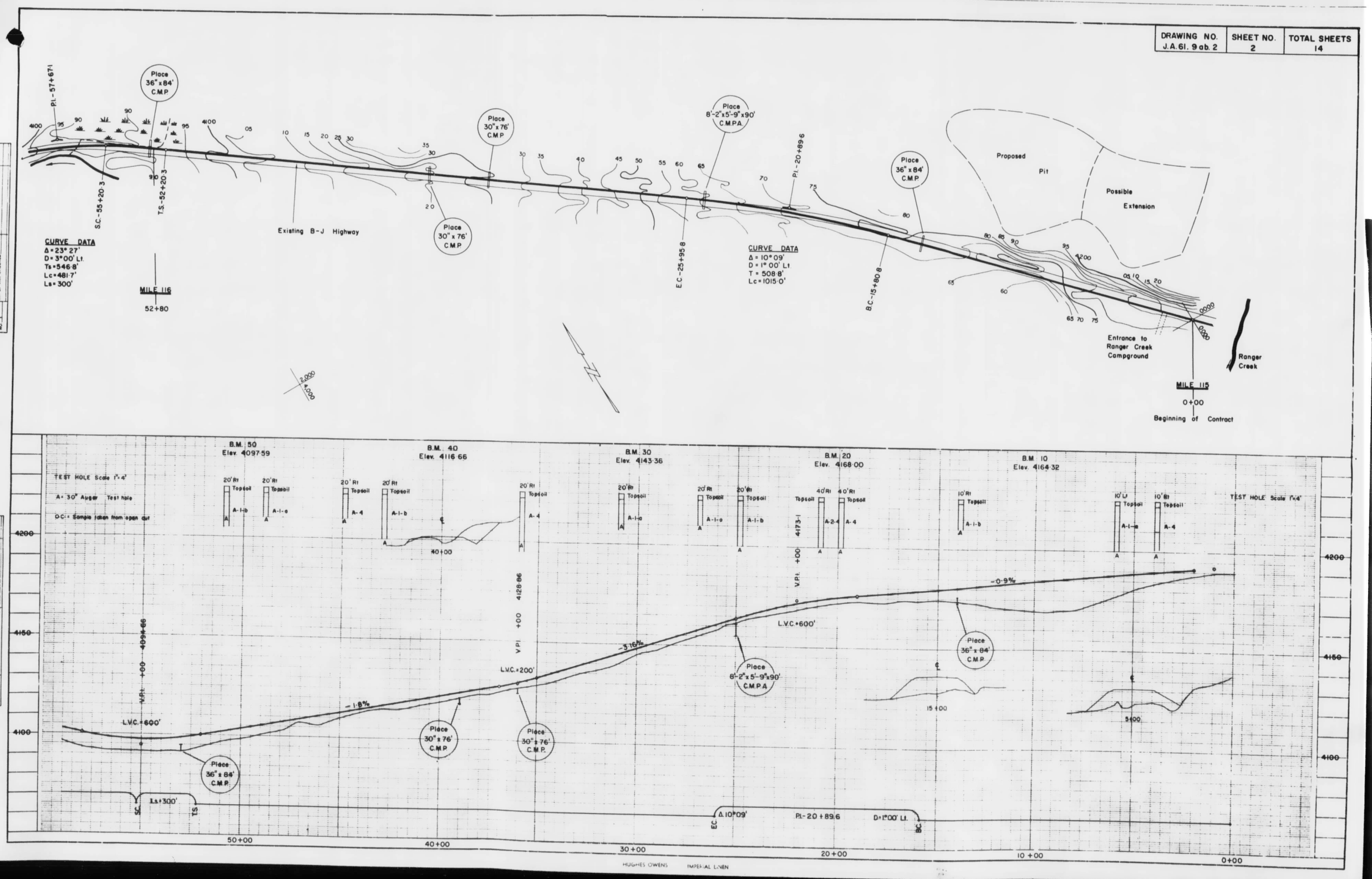

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PROFILE — SURVEYED; PLOTTED; NOTE BOOK; CHECKED; BY; NO.; STRUCTURE NOTING CHKD; K. JONES; R. KOLB; H. SHACKLETON; DATE; FILE

APPROVED — Modern Transportation Consultants Ltd.
DATE 23 JAN 68

Mile 115-125 B-J

HUGHES OWENS IMPERIAL LINEN

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PROFILE		BY	DATE
NOTE BOOK NO. P-1	SURVEYED	K. SCHWABL	7/61
	PLOTTED	G.P. LUKE	8/61
	GRADES CHECKED	M. DeCECCO	
	B. M.'S NOTED		
	STRUCTURE NOTATIONS CHKD.		

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DATE	12 FEB 63

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NOTE BOOK NO. 1	SURVEYED	R. KULIG	7/61
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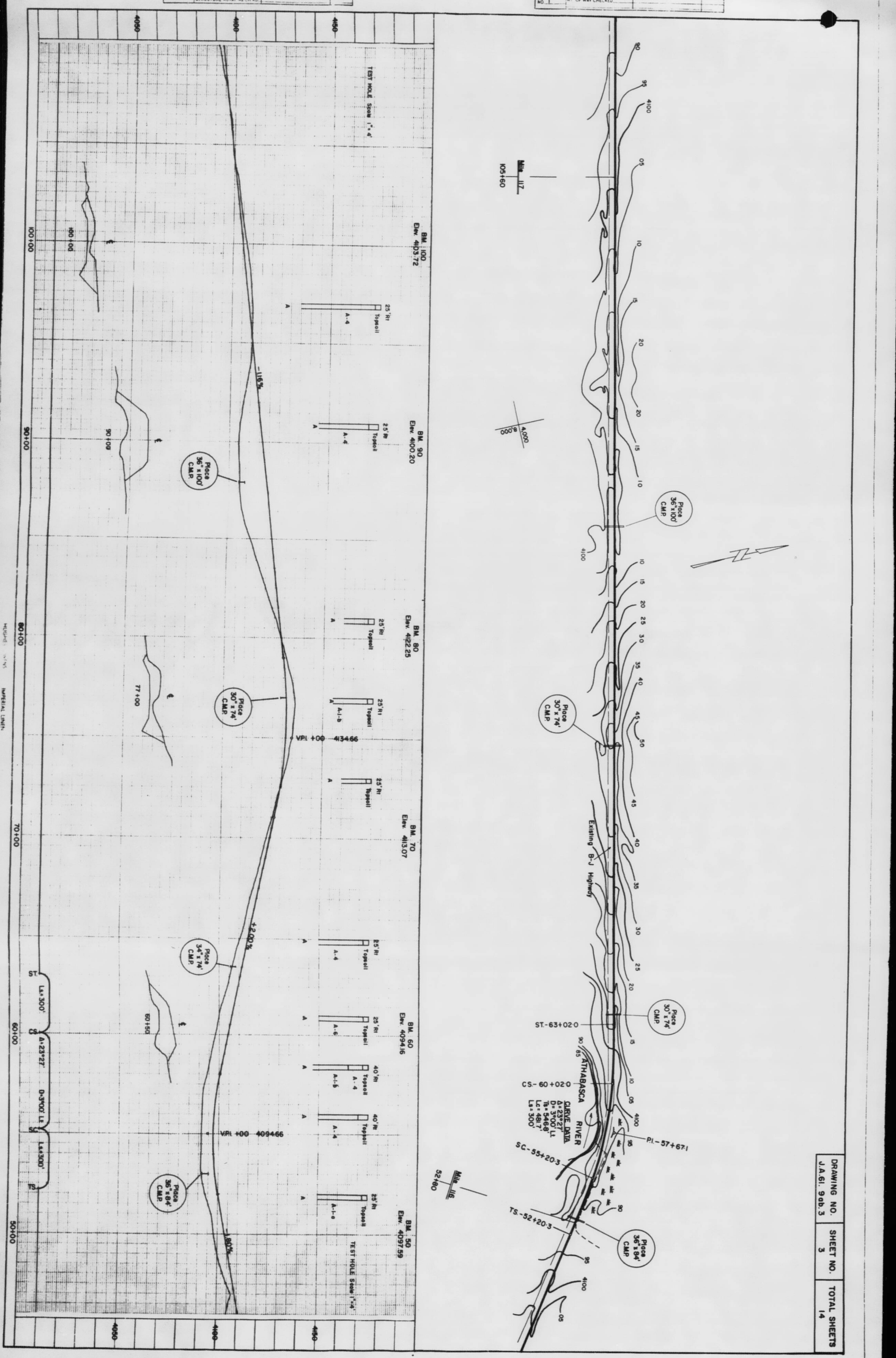

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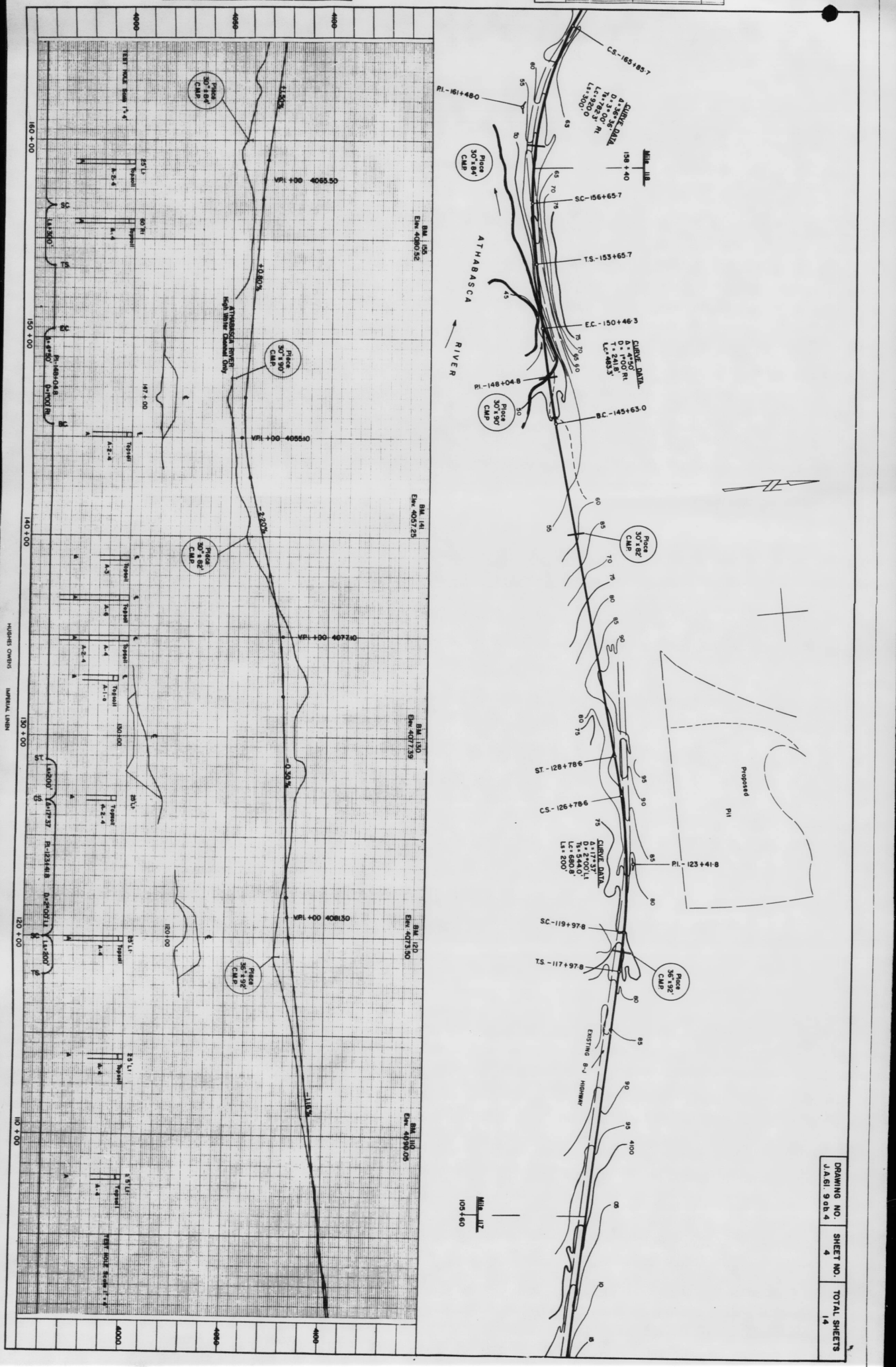

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	S.M.S. NOTED		
	STRUCTURE NOTAT'NS CH'KD.		

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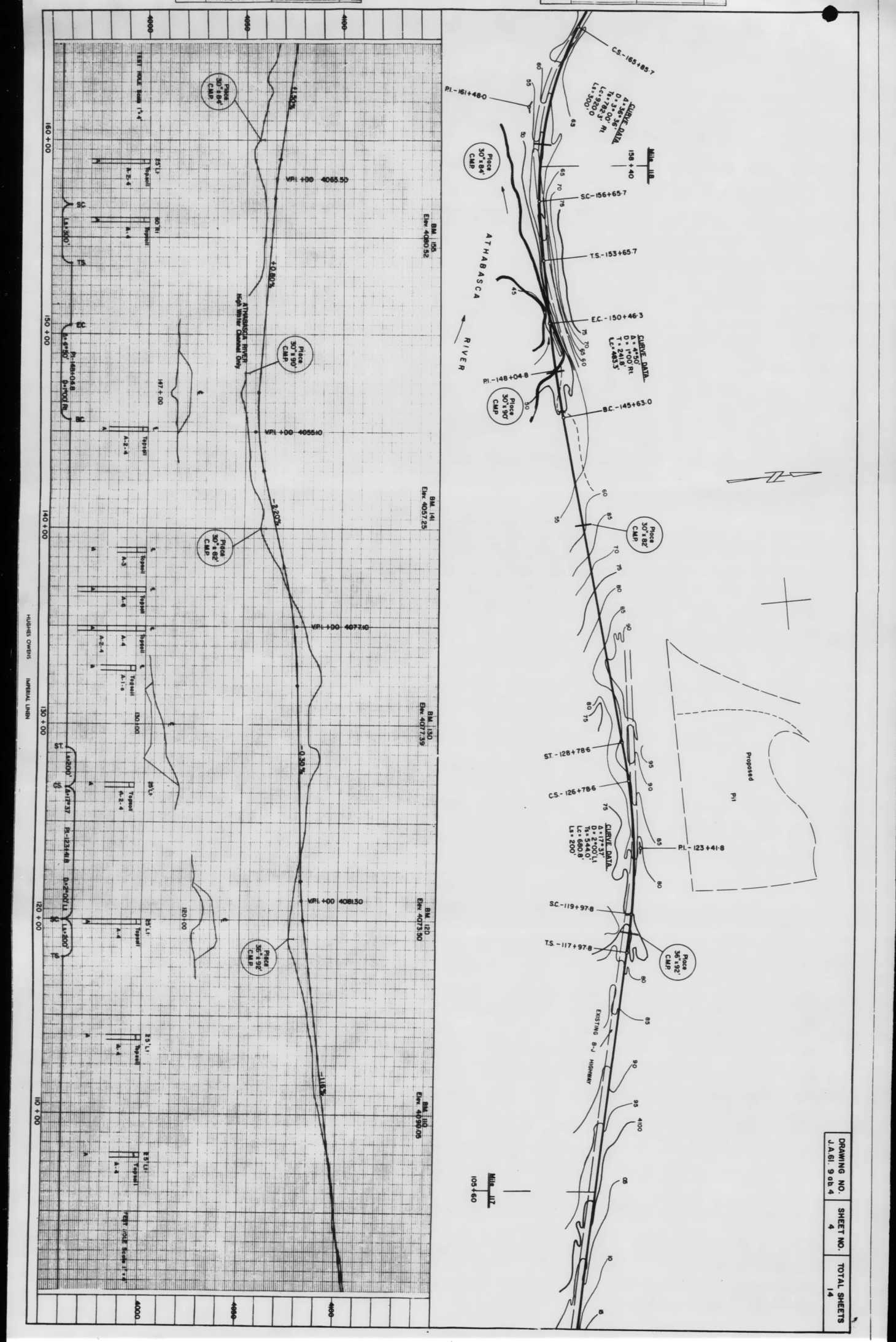

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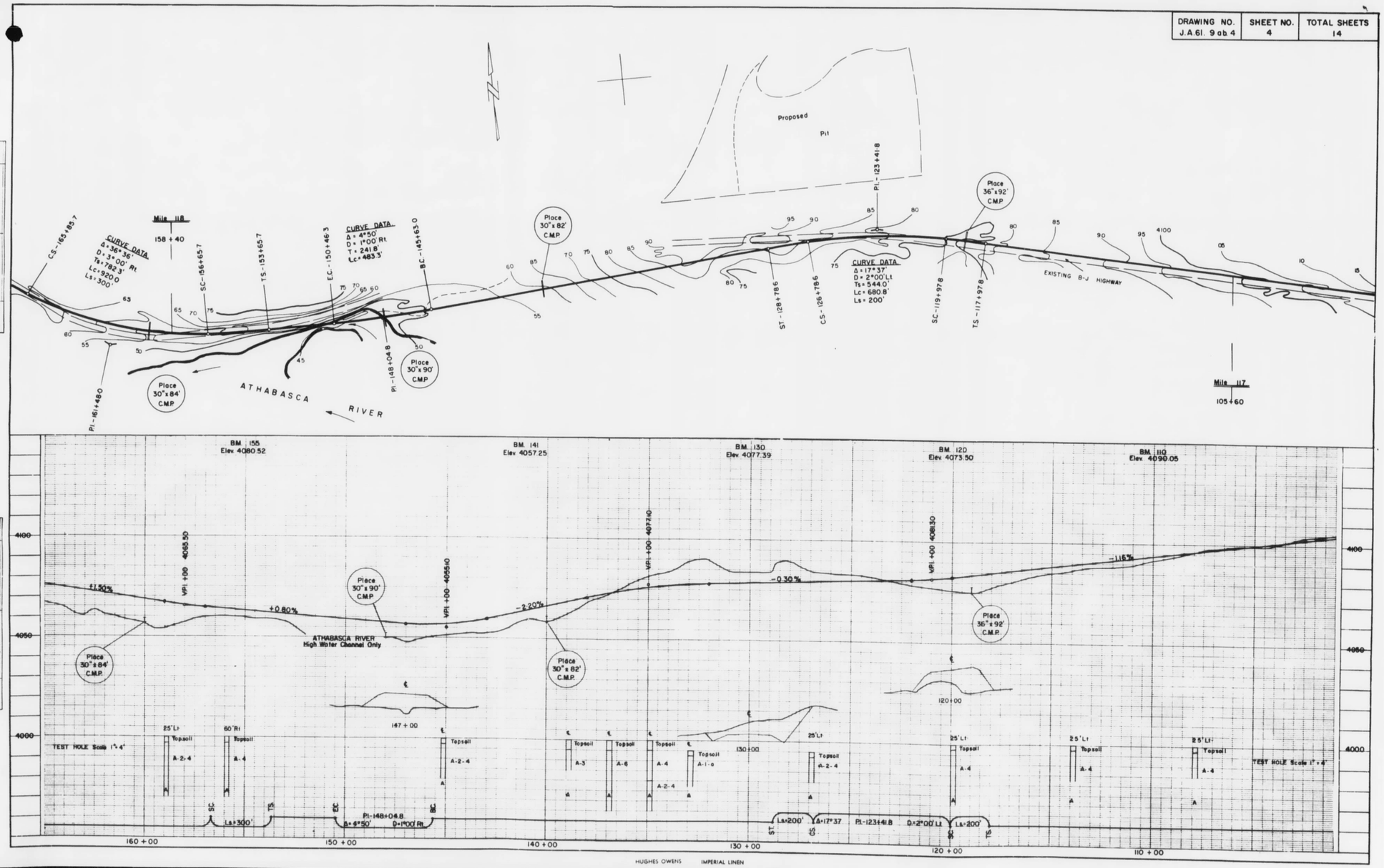

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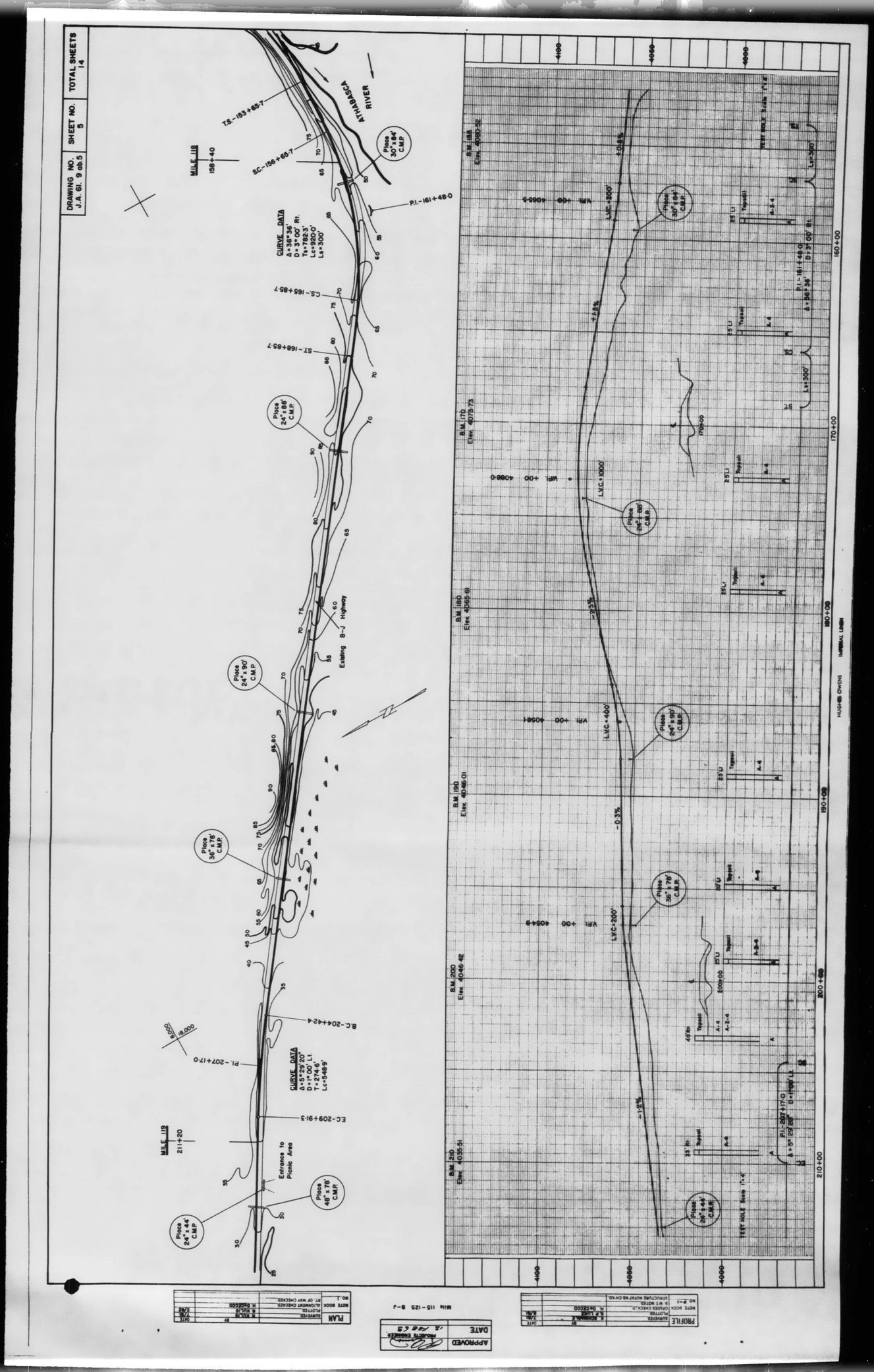

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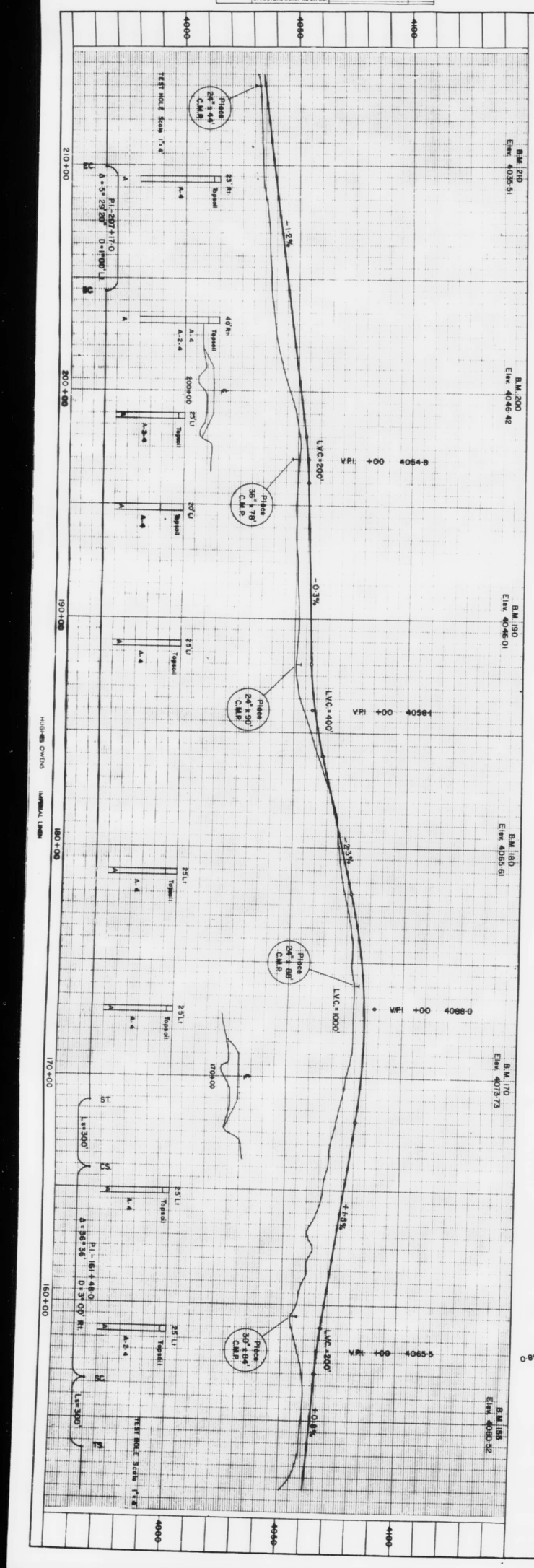

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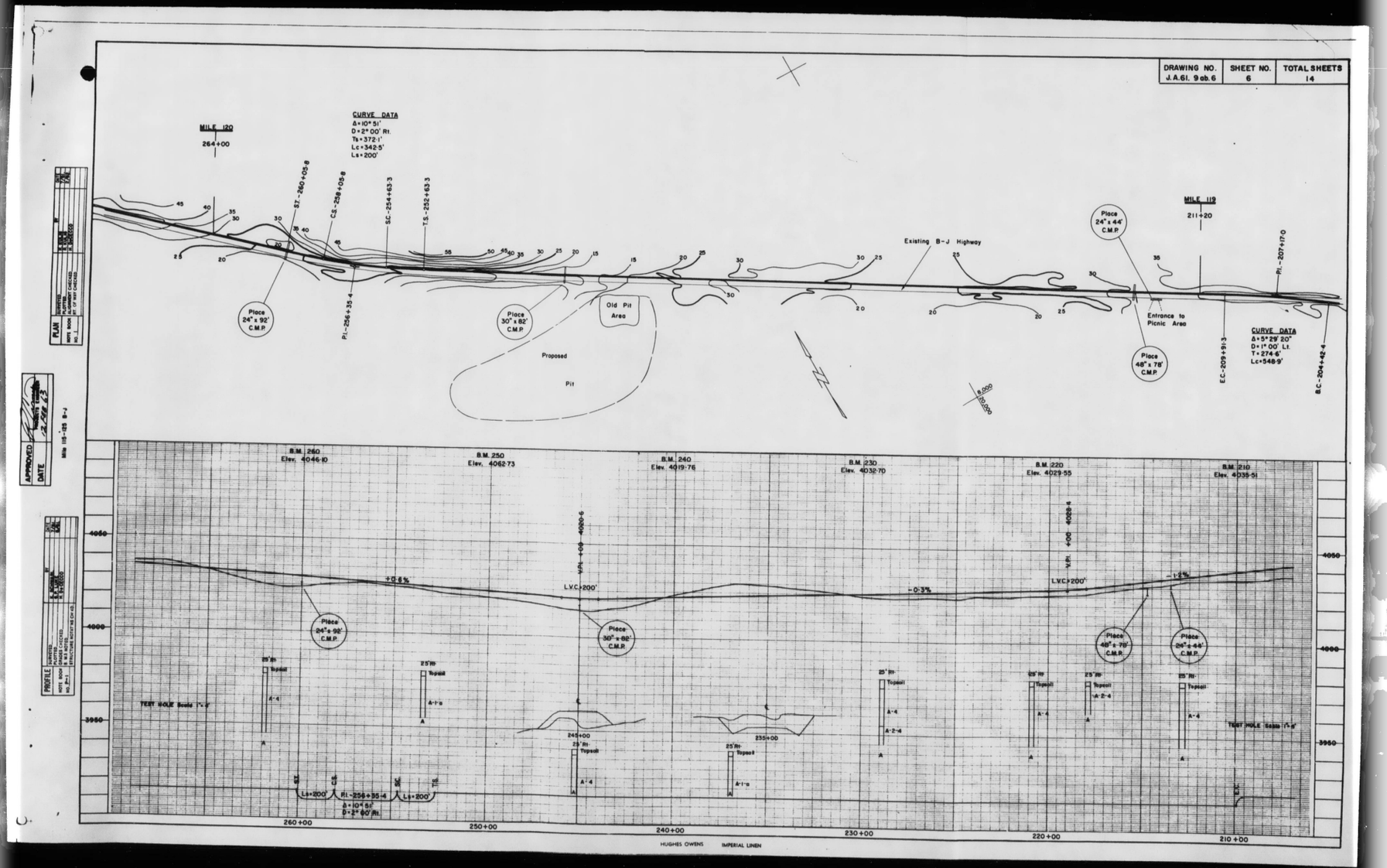

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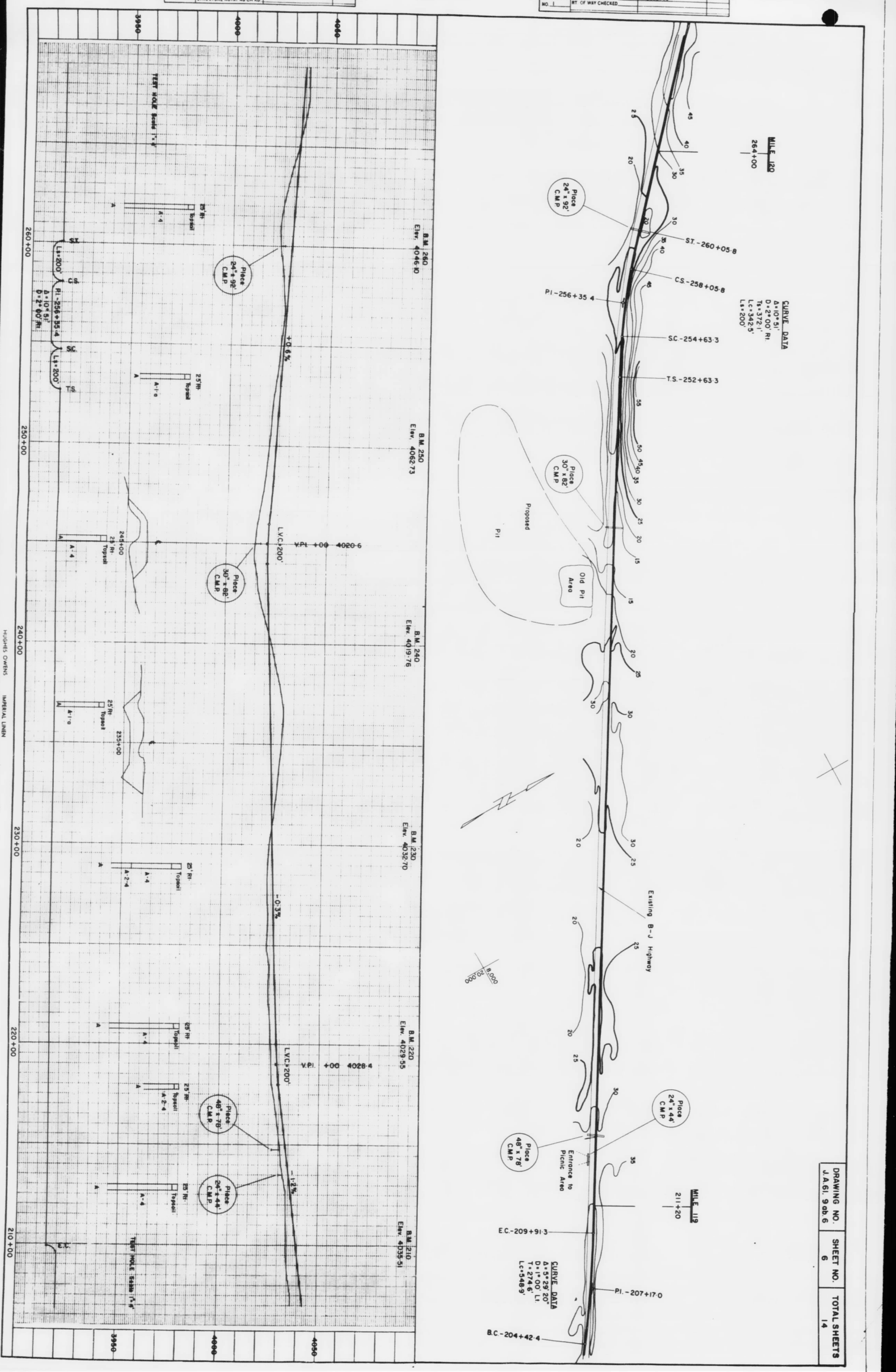

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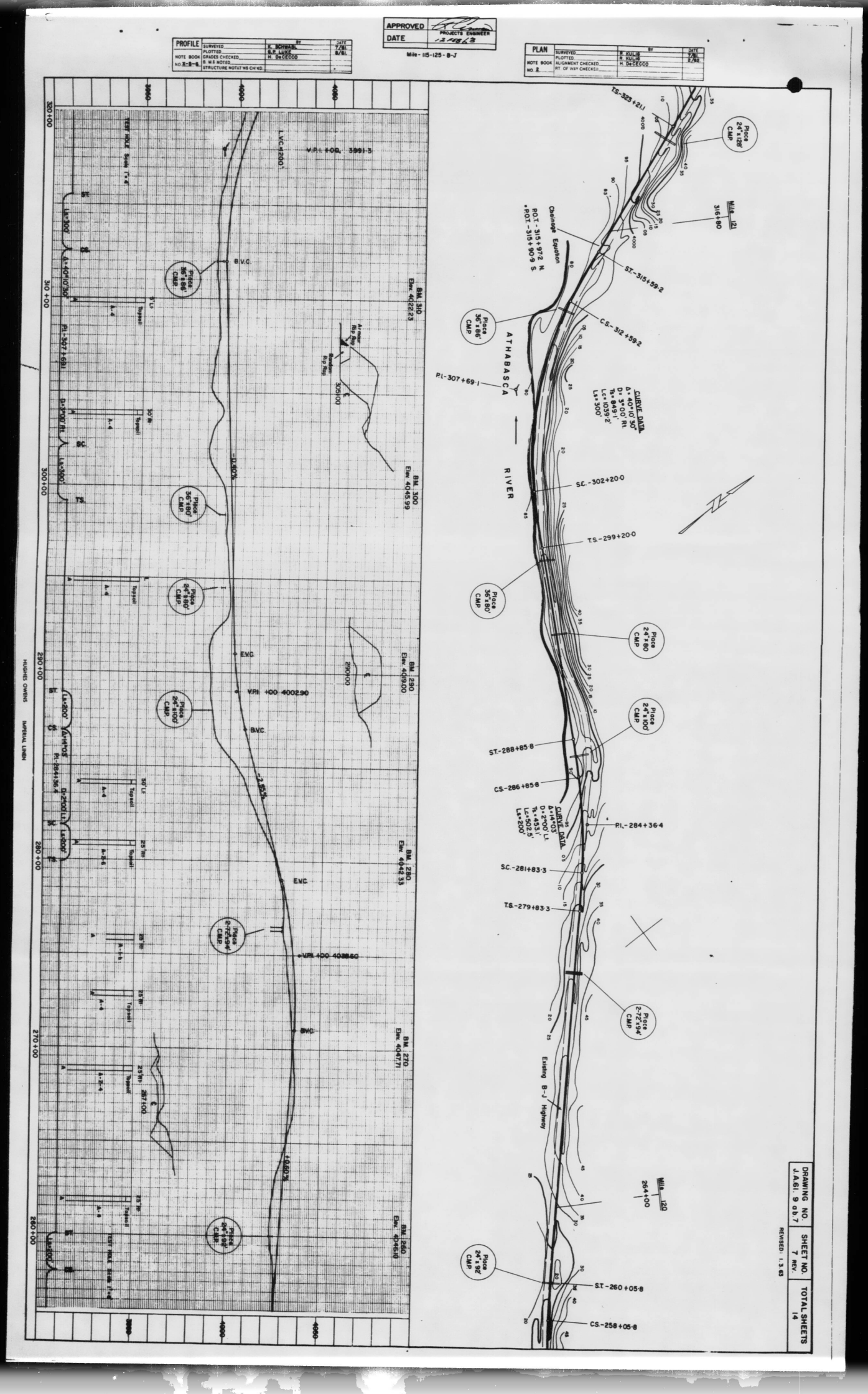

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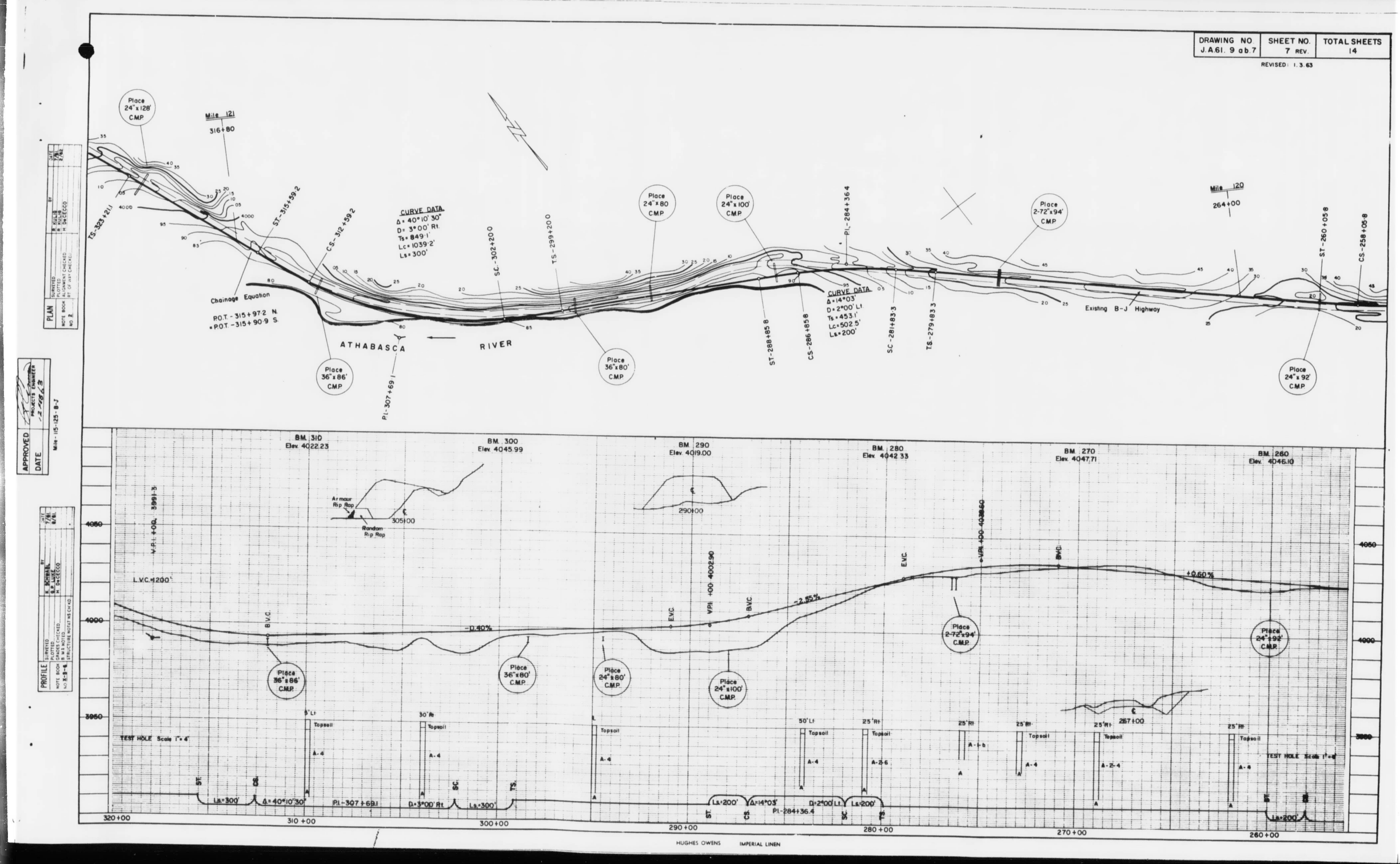

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APPROVED: PROJECTS ENGINEER
DATE: 12-19-62

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HUGHES OWENS IMPERIAL LINEN

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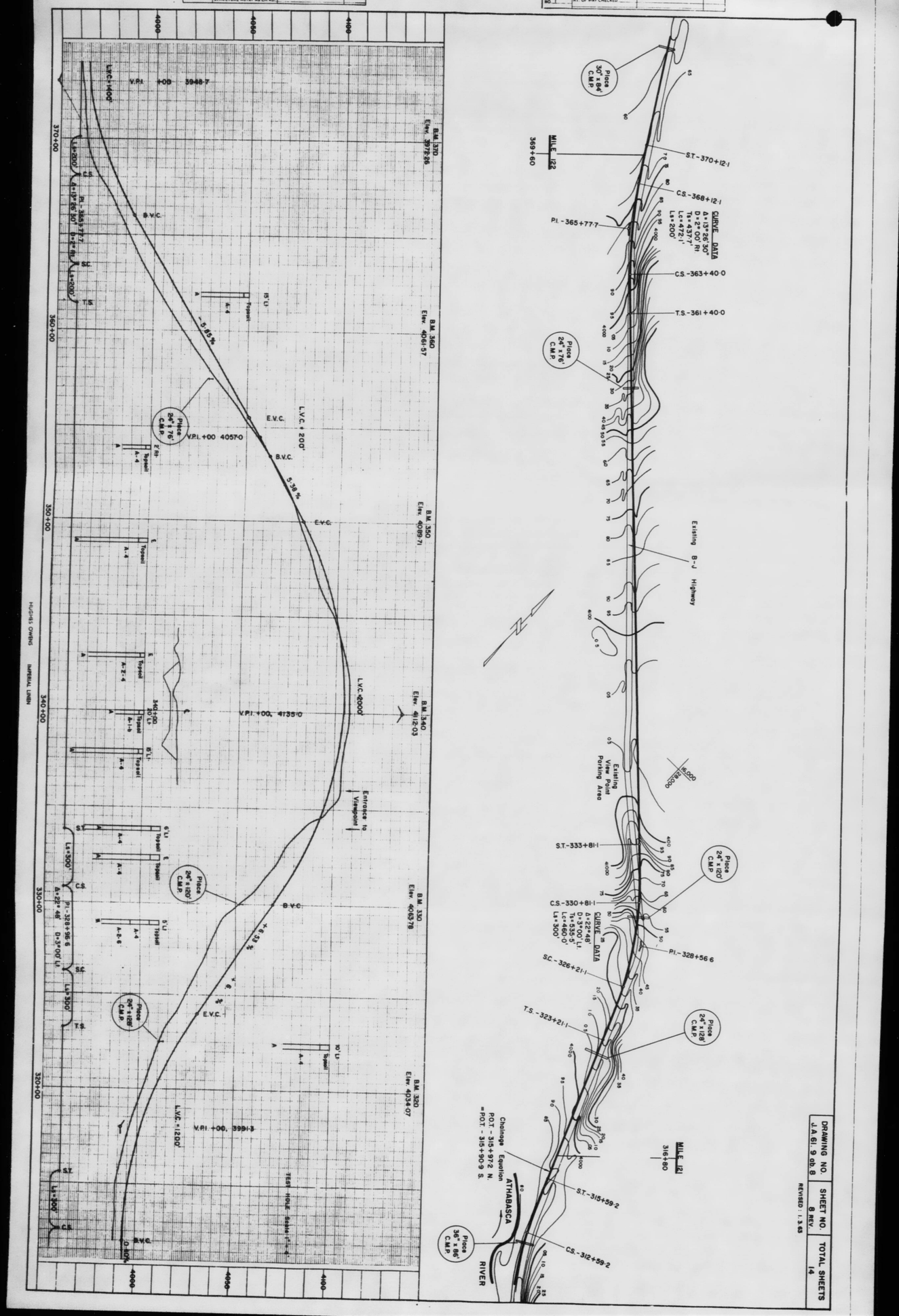

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	B.M.'S NOTED		
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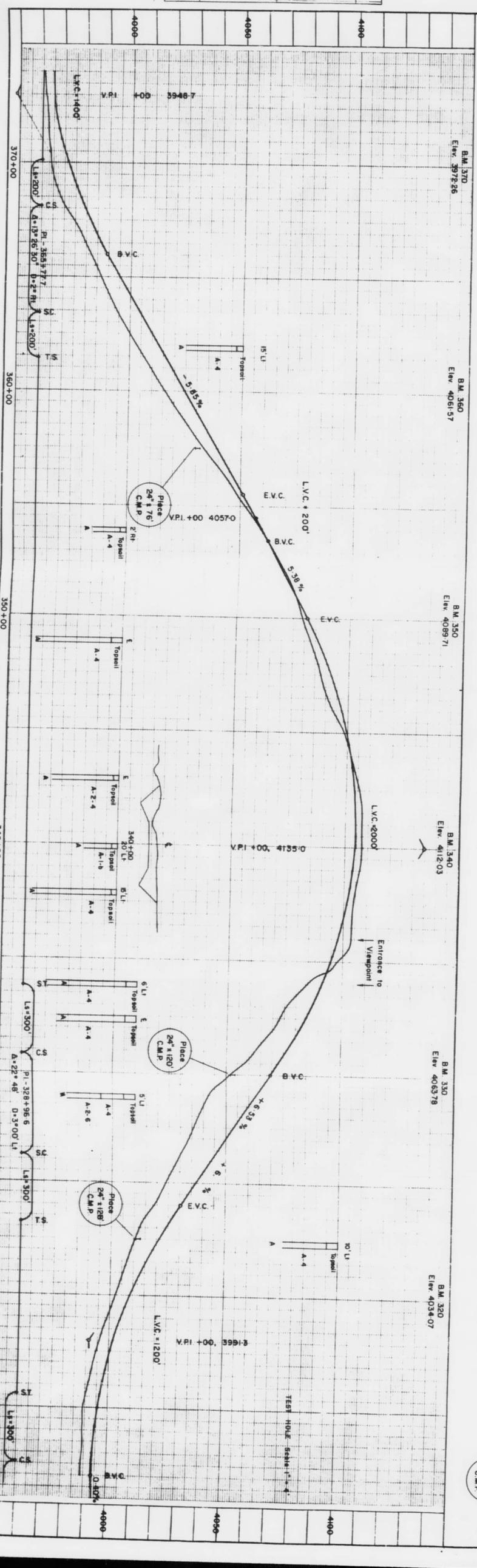

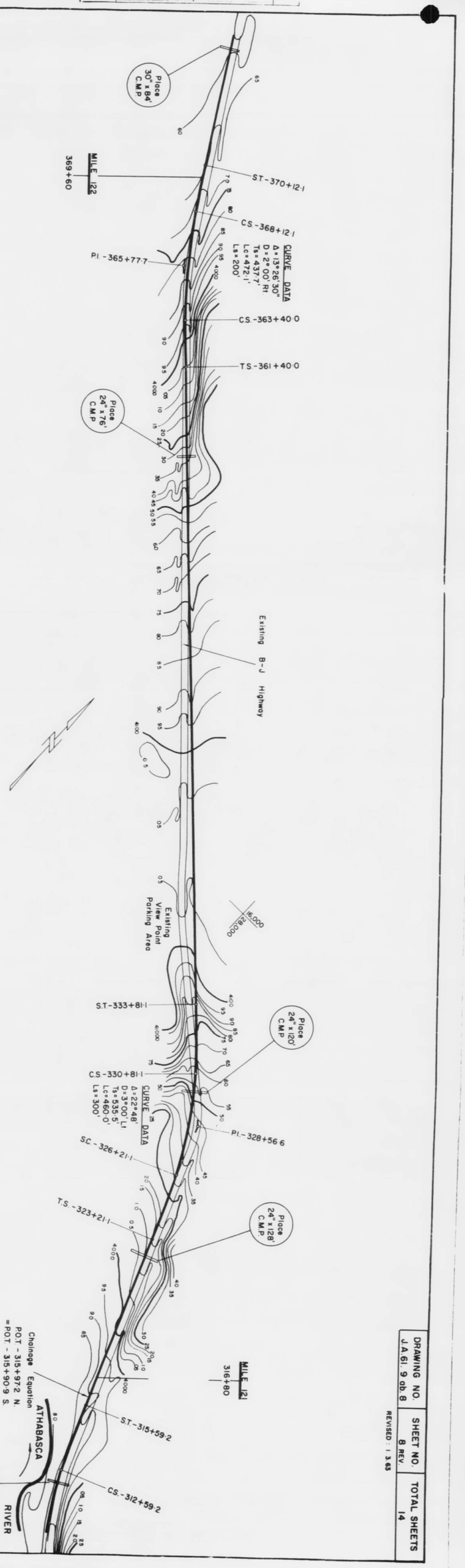

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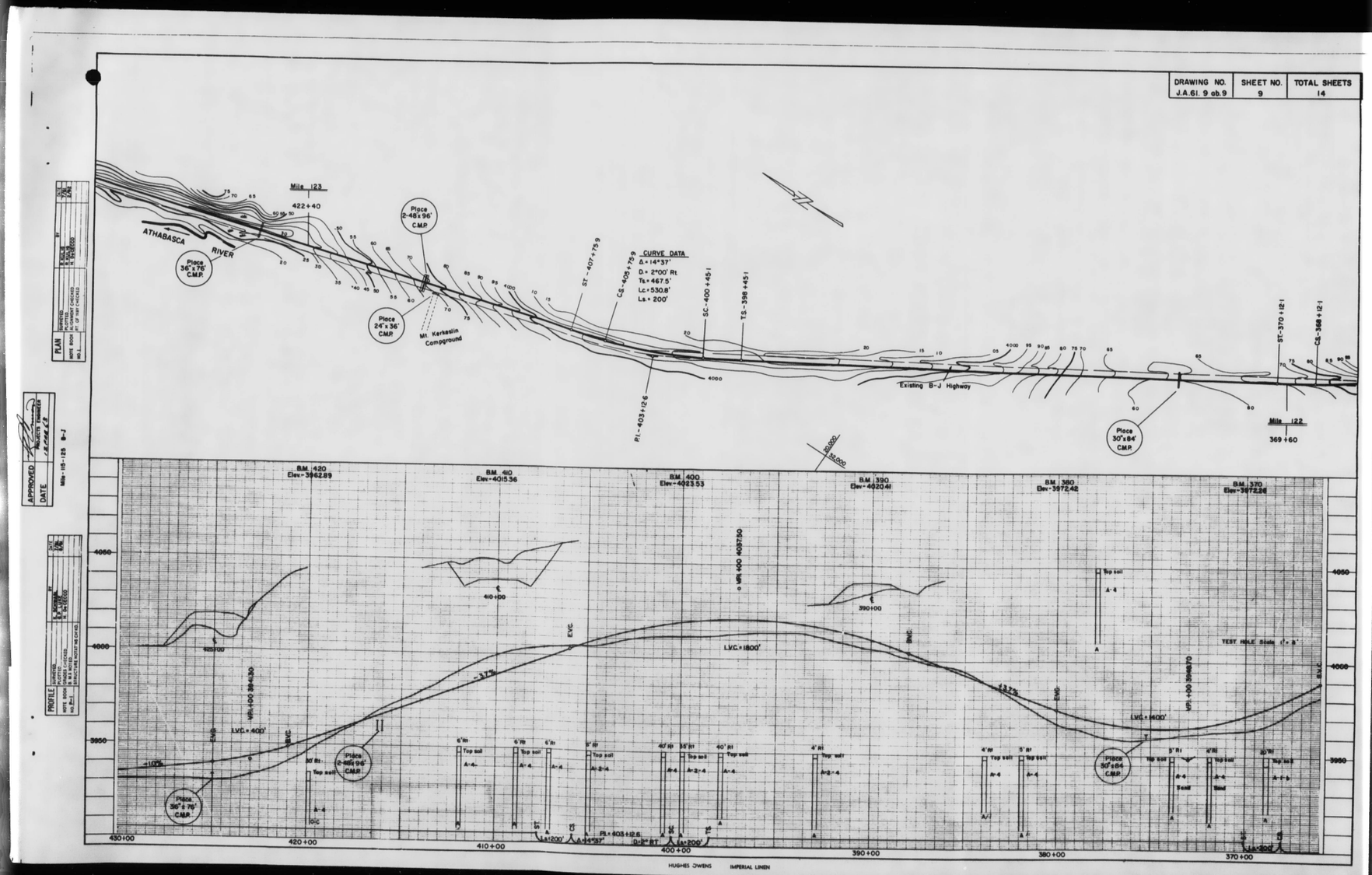

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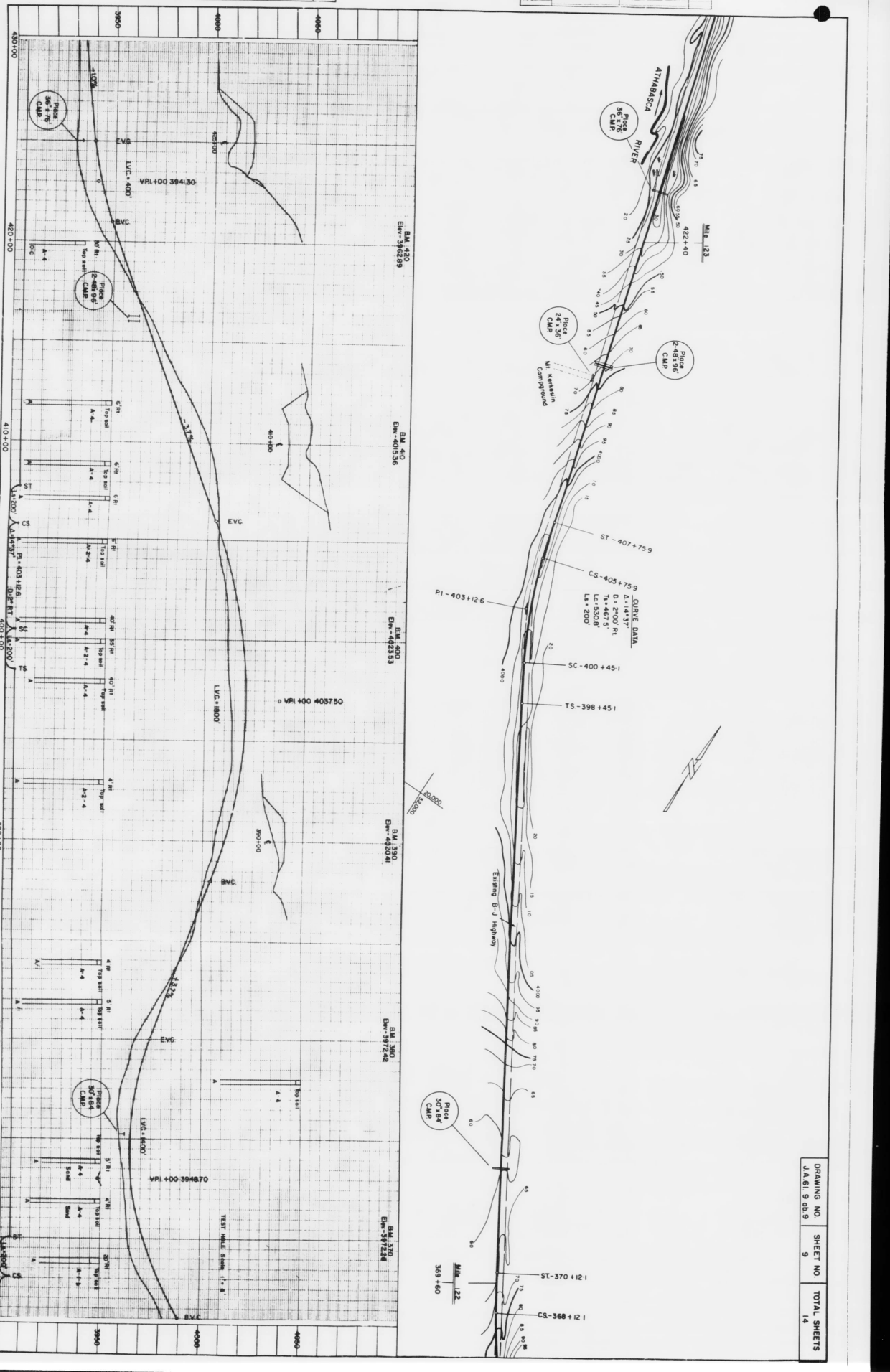
National Archives of Canada
Archives nationales du Canada
000705

APPROVED	
DATE	PROJECTS ENGINEER 12 FEB 63

Mile - 115 - 125 B-J

PROFILE		BY	DATE
NOTE BOOK	SURVEYED	K. SCHWAB, G.P. LUKE	7/62
NO. P-1	PLOTTED	H. DeCECCO	8/62
	GRADES CHECKED		
	B M'S NOTED		
	STRUCTURE NOTATNS CHKD.		

PLAN		BY	DATE
NOTE BOOK	SURVEYED	R. KULAS	7/62
NO.	PLOTTED	R. KULAS	7/62
	ALIGNMENT CHECKED	H. DeCECCO	
	RT. OF WAY CHECKED		



DRAWING NO.	SHEET NO.	TOTAL SHEETS
J A 61 9 ab 9	9	14

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Parcs Canada

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File/dossier J60-23
pt 2

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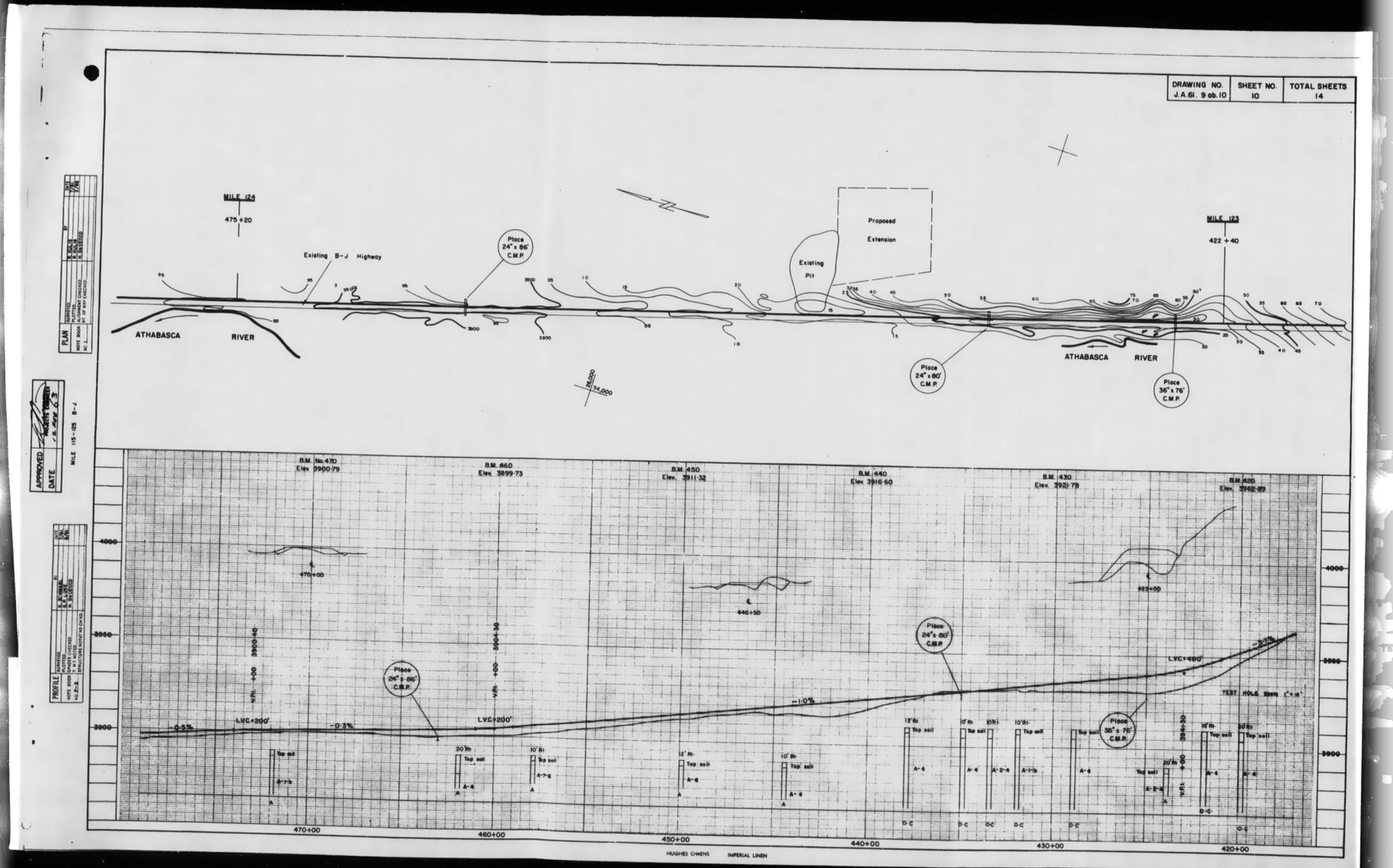

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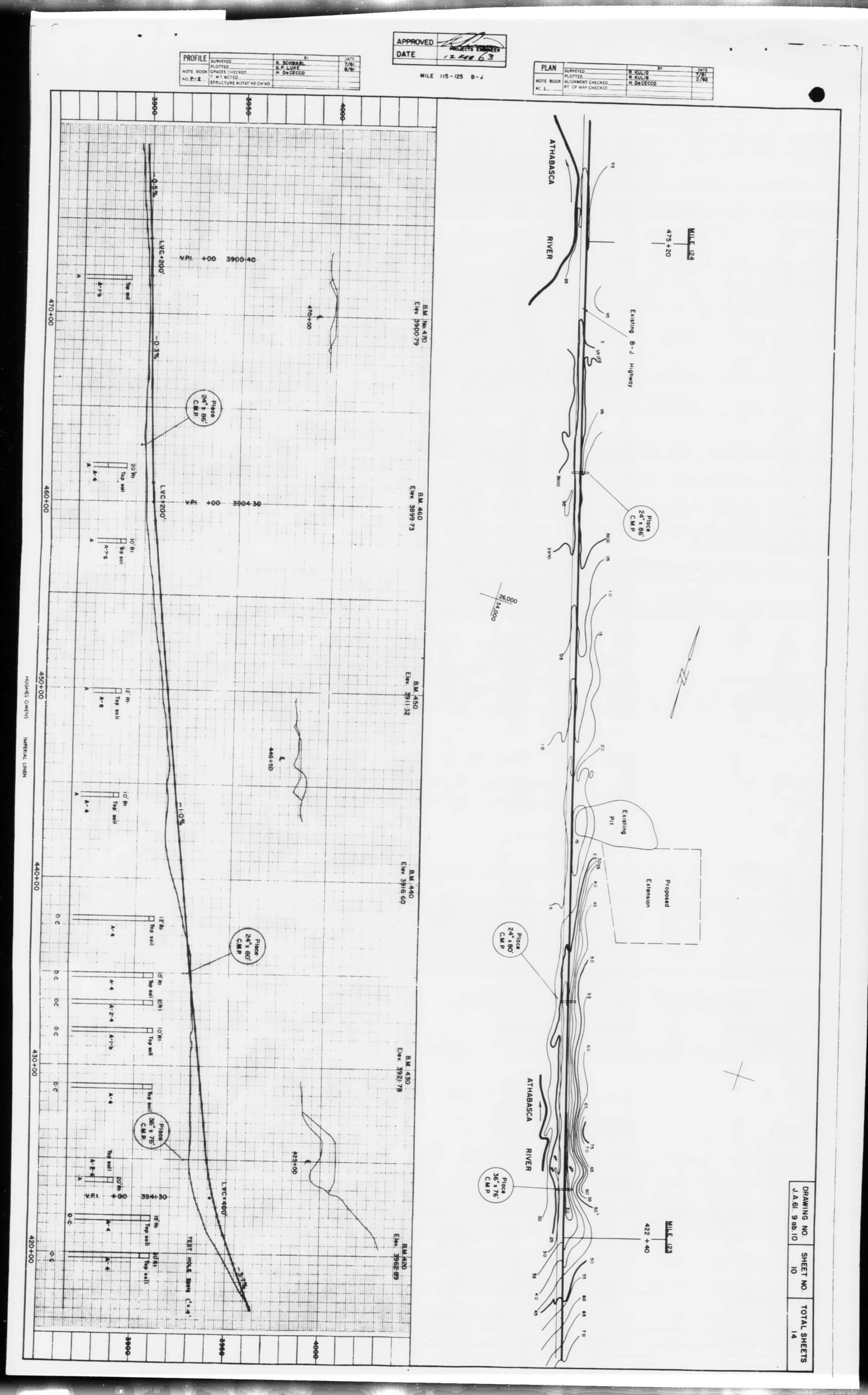

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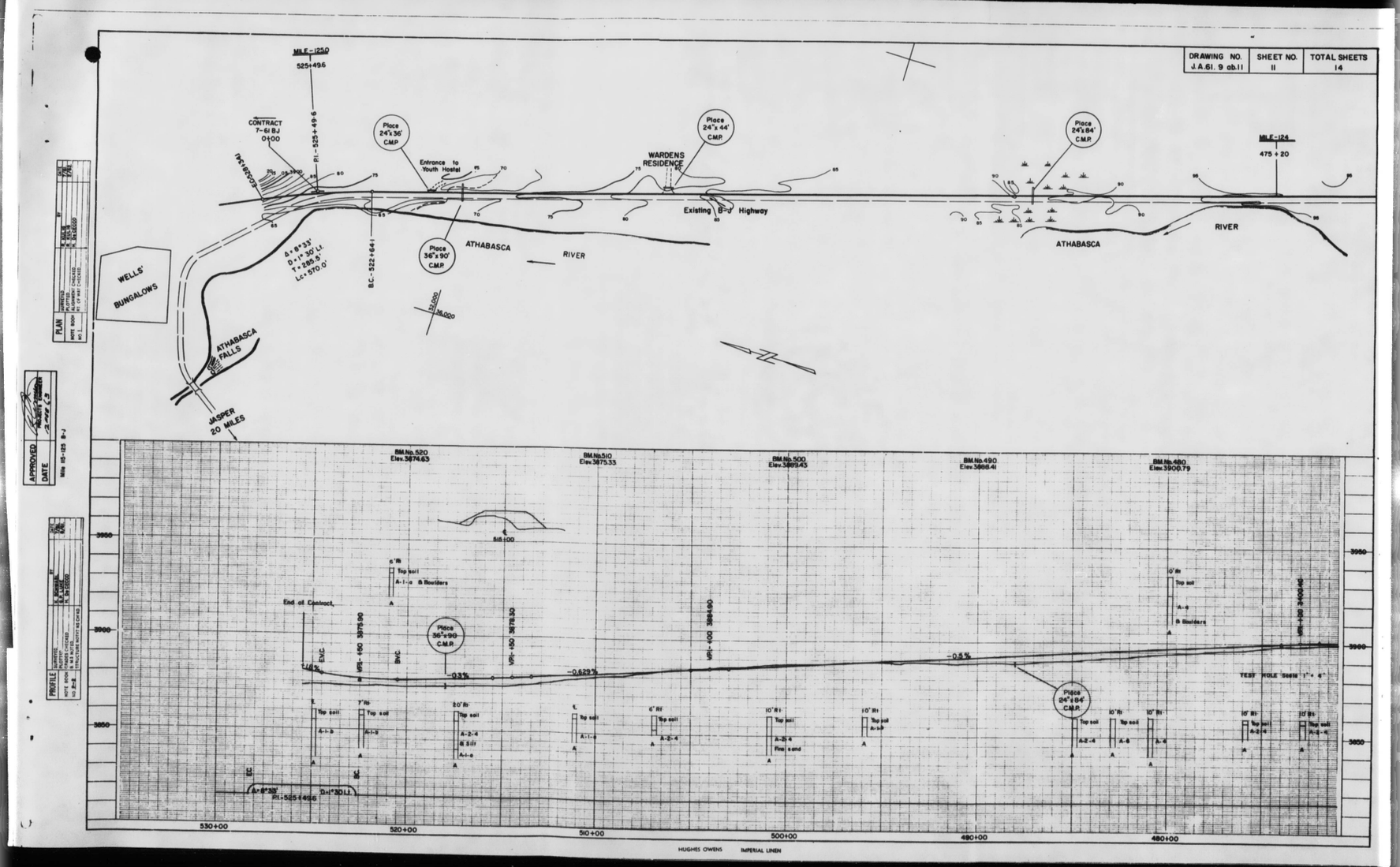

PLAN
PROFILE
APPROVED
DATE

HUGHES OWENS IMPERIAL LINEN

Parks Canada
Parcs Canada

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File/dossier J60-23
pt 2

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PROFILE		BY	DATE
NOTE BOOK No. P-2	SURVEYED	K. SCHWABL	7/61
	PLOTTED	G.P. LUKE	8/61
	GRADES CHECKED	M. DeCECCO	
	B.M.'S NOTED		
	STRUCTURE NOTAT NS CH KD		

APPROVED	PROJECTS ENGINEER
DATE	12 DEC 63

Mile 115-125 B-J

PLAN		BY	DATE
NOTE BOOK No. 1	SURVEYED	R. KULIG	7/61
	PLOTTED	R. KULIG	2/62
	ALIGNMENT CHECKED	M. DeCECCO	
	RT. OF WAY CHECKED		

WELLS' BUNGALOWS

JASPER 20 MILES

ATHABASCA FALLS

EC 528+34

CONTRACT 7-61 BJ 0+00

MILE-i250 525+496

P.I. - 525+49·6

Δ = 8°33'
D = 30' Lt.
T = 285.5'
Lc = 570.0'

B.C. - 522+64·1

Place 24'x36' CMP

Entrance to Youth Hostel

Place 36"x90' CMP

32,000
36,000

ATHABASCA RIVER

Place 24'x44' CMP

WARDENS RESIDENCE

Existing B-J Highway

Place 24'x84' CMP

ATHABASCA RIVER

MILE-i24 475+20

EC

A-8°33'
PI. 525+49·6
D-i°30' Lt.

B.C.

End of Contract

E.V.C.

L=8%

VPI- +50 3875.90

B.V.C.

-0.3%

Place 36"x90' C.M.P.

VPI- +50 3878.30

-0.629%

BM No. 520 Elev. 3874.63

BM No. 510 Elev. 3875.33

VPI- +00 3884.90

-0.5%

BM No. 500 Elev. 3889.43

BM No. 490 Elev. 3898.41

Place 24"x84' C.M.P.

BM No. 480 Elev. 3900.79

TEST HOLE 5618 1'-6"

VPI- +00 3900.40

DRAWING NO.	SHEET NO.	TOTAL SHEETS
J.A. 61. 9 ob. 11	11	14

HUGHES OWENS IMPERIAL LINEN

Parks Canada
Parcs Canada

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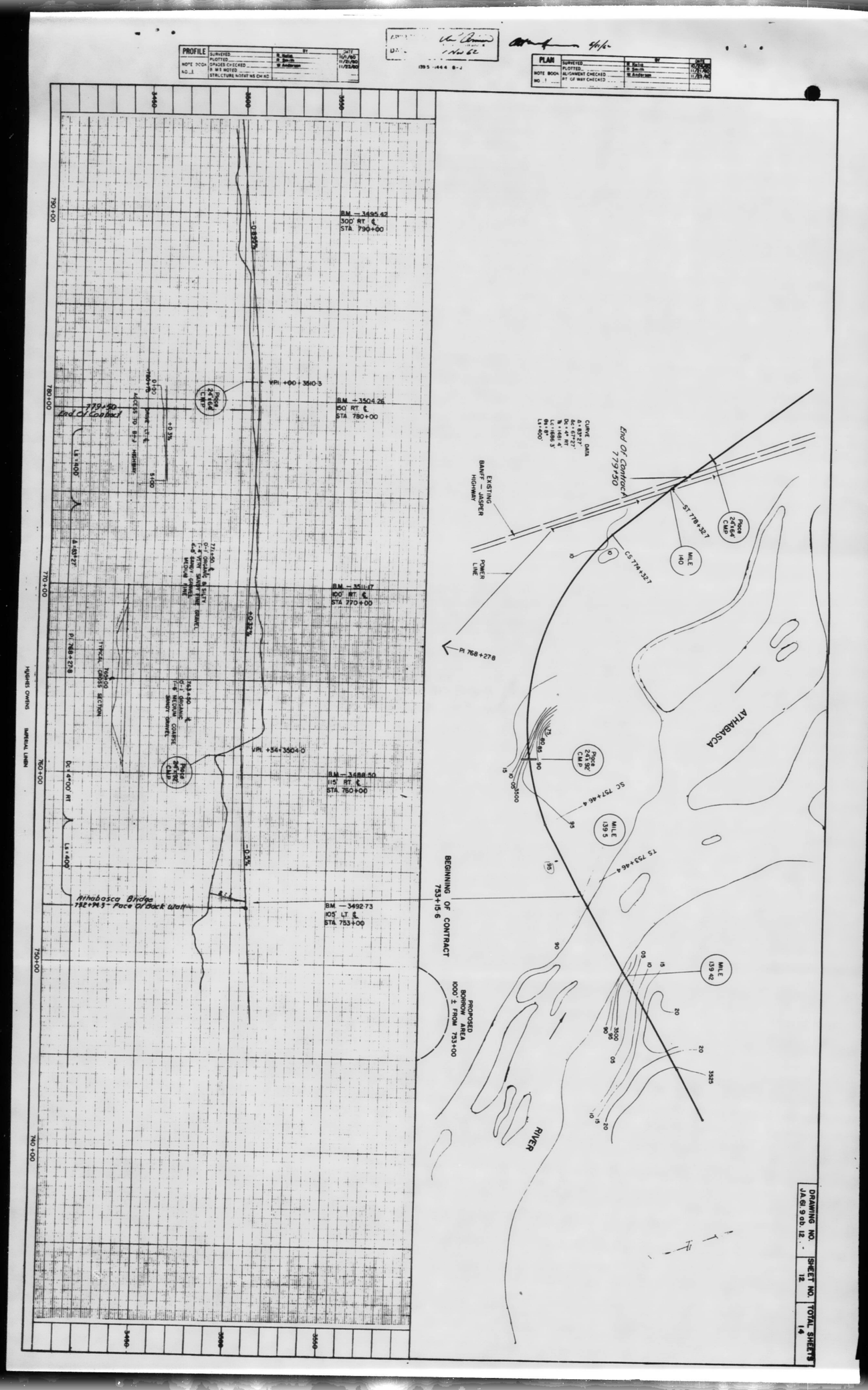

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Parcs Canada
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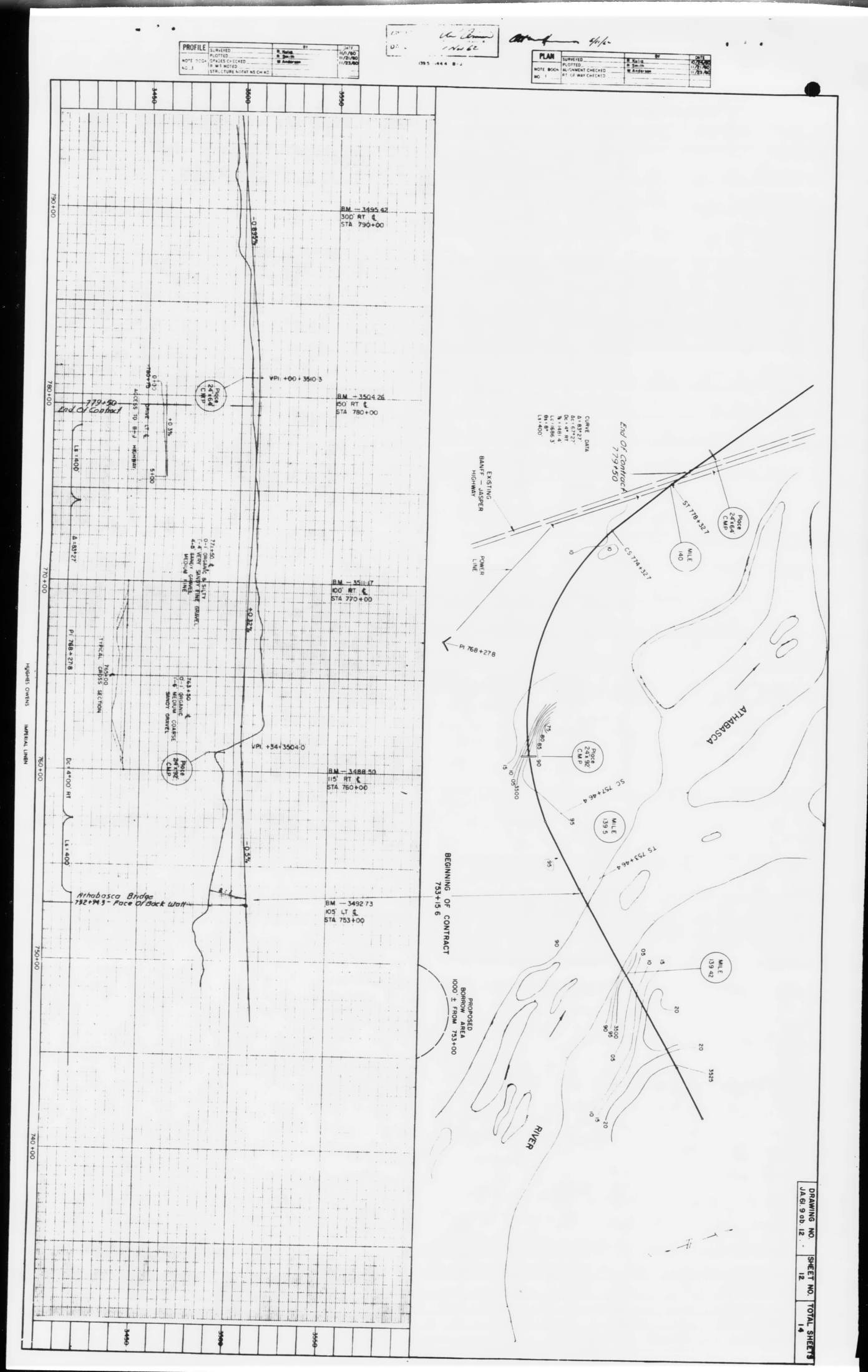

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Parcs Canada
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DRAWING NO.	VERT SCALE	HORIZ SCALE	SHEET NO.	TOTAL SHEETS
J.A.61.9ab.13	—	—	13	14

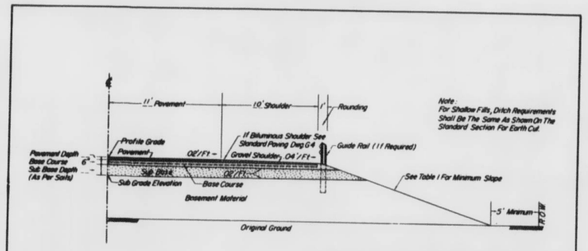


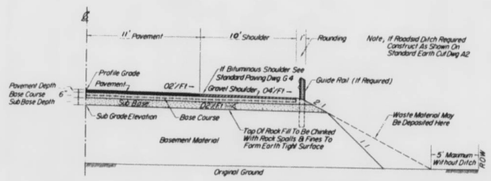
TABLE I
MINIMUM SLOPES

Height Of Cut Or Fill	TERRAIN Rolling	Mod. Steep	Steep
0'-4'	4:1	4:1	4:1
4'-10'	4:1	3:1	2:1
10'-15'	3:1	2 To 1	1To 1
15'-20'	2:1	2:1	1To 1
Over 20'	2:1	1To 1	1To 1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A1

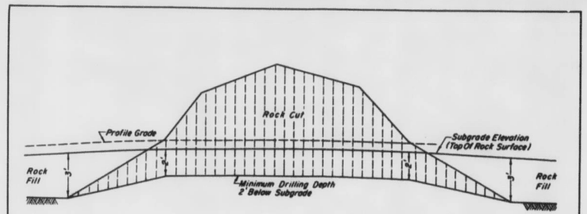
DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960



DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO A3

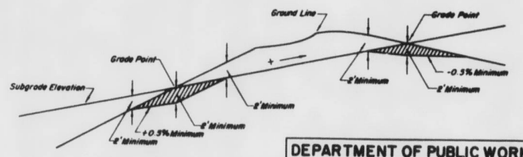
DRAWN BY B Nicol CHECKED BY A.T.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960



DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CONSTRUCTION
STANDARD DRAWING NO. B1

DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960



Note: The Material Shown By The Shaded Area Shall Be Removed For Full Width Of Cut & Fill Of The Section & Replaced With Approved Material In Accordance With Standard Specifications

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT & FILL
CONSTRUCTION METHOD AT GRADE POINTS
STANDARD DRAWING NO. B-2

DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

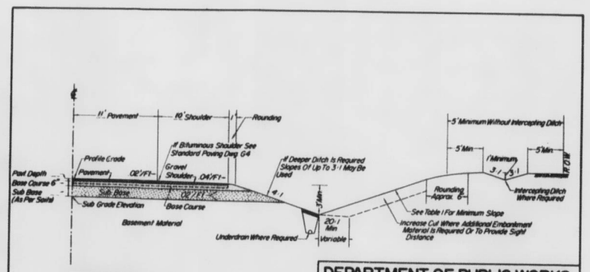


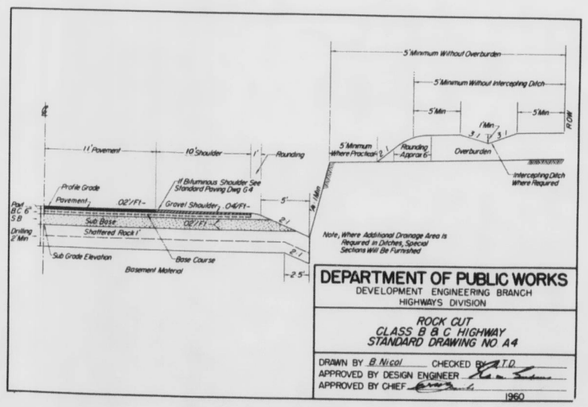
TABLE I
MINIMUM SLOPES

Height Of Cut Or Fill	TERRAIN Rolling	Mod. Steep	Steep
0'-4'	4:1	4:1	4:1
4'-10'	4:1	3:1	2:1
10'-15'	3:1	2 To 1	1To 1
15'-20'	2:1	2:1	1To 1
Over 20'	2:1	1To 1	1To 1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A2

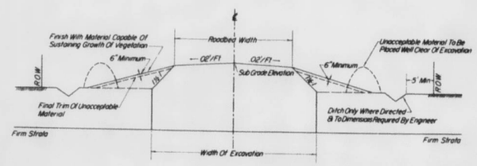
DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960



DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO A4

DRAWN BY B Nicol CHECKED BY A.T.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960



Note
Roadbed Width Shall Be Sufficient To Receive Granular B Surface Courses In Accordance With Standard Drawing No. A-1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

CONSTRUCTION THROUGH SWAMP AREAS
(EXCAVATION METHOD)
STANDARD DRAWING NO.B3

DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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Parcs Canada

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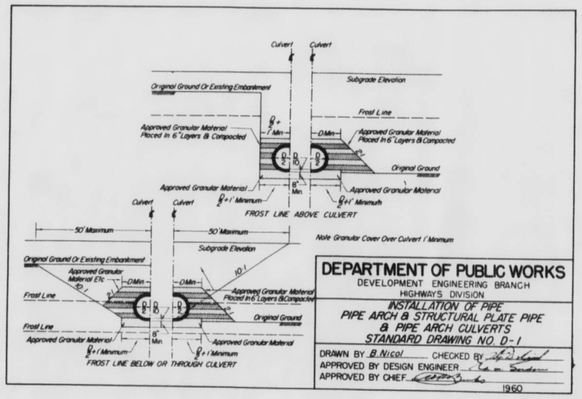
DRAWING NO.	VERT. SCALE	HORIZ. SCALE	SHEET NO.	TOTAL SHEETS
J.A.61.9ab.14			14	14



DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

INSTALLATION OF PIPE PIPE ARCH & STRUCTURAL PLATE PIPE & PIPE ARCH CULVERTS
STANDARD DRAWING NO. D-1

DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

CONSTRUCTION SIGN FOR PROJECTS OVER $50,000 UNDERTAKEN BY DEPARTMENT OF PUBLIC WORKS FOR OTHER DEPARTMENTS.

8'-0"

THIS (A) FOR
DEPARTMENT OF (B)
THE HON. (C) ,MINISTER
IS BEING (D) BY
DEPARTMENT OF PUBLIC WORKS
OF CANADA
THE HON. (C) ,MINISTER

INSERT APPROPRIATE WORDING E.G.
(A) HIGHWAY – BRIDGE
(B) OTHER DEPARTMENT
(C) MINISTER'S NAME
(D) CONSTRUCTED – ERECTED – PAVED

CONSTRUCTION SIGN FOR PROJECTS UNDER $50,000 UNDERTAKEN BY DEPARTMENT OF PUBLIC WORKS FOR OTHER DEPARTMENTS.

2'-6"

THIS (THESE) (A) FOR
DEPARTMENT OF (B)
THE HON. (C) ,MINISTER
IS (ARE) BEING (D) BY
DEPARTMENT OF PUBLIC WORKS
OF CANADA
THE HON. (C) ,MINISTER

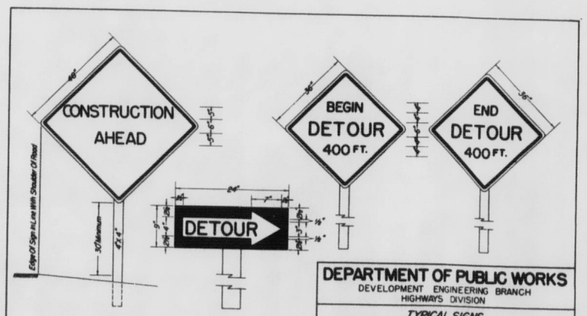
INSERT APPROPRIATE WORDING E.G.
(A) HIGHWAY – BRIDGE
(B) OTHER DEPARTMENT
(C) MINISTER'S NAME
(D) CONSTRUCTED – ERECTED – PAVED

REV. No. 2, FEB 1963

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

PROJECT SIGN BOARDS OTHER DEPARTMENTS
STANDARD DRAWING NO. F28

DRAWN BY R LEGAULT CHECKED BY B NICOL
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
FEBRUARY 1963

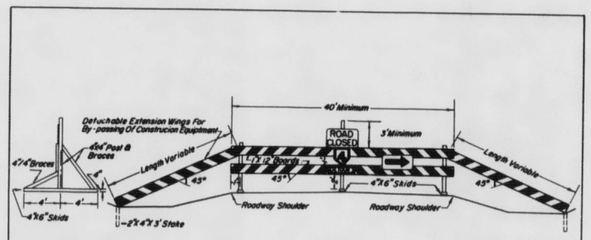


Note
1. Colouring - Black Lettering & Trim On Yellow Background
2. Mounting Posts For All Signs Similar To That Shown By Construction Ahead
3. Corner Radii - 1½"

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL SIGNS
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F1

DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960



Notes:
1. The Various Types & Combinations Of Approved Signs For Barricades Required For Each Project Will Be Governed By Field Conditions & Subject To Approval By The Engineer
2. All Barricades To Be 1" X 12" Lumber Painted & Alternate Black & Yellow Stripe
3. All Skids, Braces & Posts To Be Painted White & Nailed Together With No. 20d Nails
4. Bases To Be Weighted Where Necessary To Provide Stability

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F3

DRAWN BY B Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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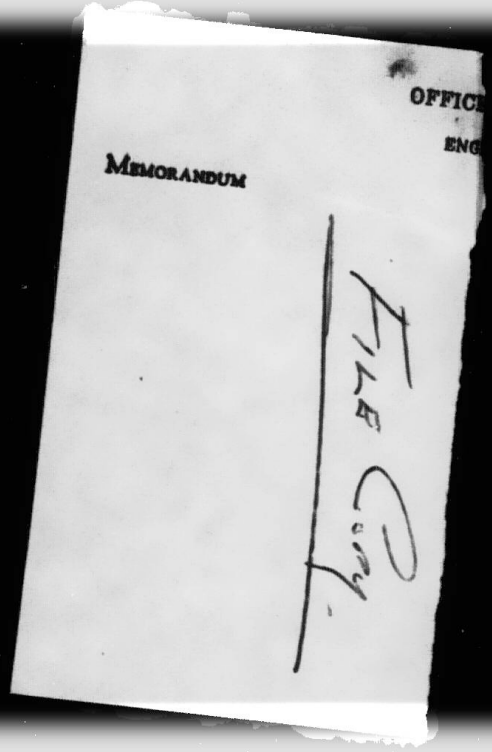
OFFICE

ENG

MEMORANDUM

FILE Copy

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Parcs Canada

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DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

J60-23 Pl a Sec

CONTRACT AND SPECIFICATIONS

FOR

PAVING, MILE 125 TO MILE 140

BANFF - JASPER HIGHWAY

JASPER NATIONAL PARK, ALTA.

CONTRACT NO. 5/63/B.J.

000716

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DEPARTMENT OF PUBLIC WORKS OF CANADA

CONSTRUCTION TENDER

for

CONTRACT NO. 5/63/B.J.

(I, We) STANDARD GRAVEL & SURFACING OF CANADA LIMITED
(Official name of Company/Contractor)

5340 - 1st Street S.W., Calgary, Alberta
(Business address for purposes of this contract)

hereby offer to Her Majesty the Queen in right of Canada represented by the Minister of Public Works, to execute in a careful and workmanlike manner, the following work:

PAVING, MILE 125 TO MILE 140

BANFF - JASPER HIGHWAY

JASPER NATIONAL PARK, ALTA.

which work is more particularly described in the documents entitled "Plans and Specifications", and in the other tender documents, at the place and in the manner therein set out.

For the Total Amount of: (amount to be in words) three hundred and one thousand three hundred and sixty-seven dollars

$ 301,367 cts 00

If the present offer is accepted within sixty (60) days from the date on which the tenders are opened, (I, we) undertake to enter into a contract, in the standard Government form, for the execution of the work, and to complete the work

(i) by October 31 (date) 19 63

(ii) within ..... (period of time) from the date of notification of acceptance of (my, our) offer.

This tender form comprises pages 1 to 7 inclusive

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Parcs Canada
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UNIT PRICE TABLE: (I, We) agree that the following table is the Unit Price Table to be used for the purposes of the Contract.

Item	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity	Price Per Unit	Total
1.	Clearing Division 2, Section 1	acre	2.0	$ 100.00	$ 200.00
2.	Grubbing Division 2, Section 1	acre	2.0	50.00	100.00
3.	Compaction (a) Pneumatic tired roller, complete unit	hour	850	7.50	6,375.00
	(b) Pneumatic tired roller, roller only	hour	850	1.00	850.00
	(c) Vibratory, steel wheel, complete unit	hour	50	13.00	650.00
	Division 3, Section 1				
4.	Water Division 3, Section 1	1000 gallon unit	600	4.00	2,400.00
5.	Stripping Aggregate Borrow Areas Division 3, Section 1 " 4, " 1	cu.yd.	6,500	0.20	1,300.00
6.	Sub-Base Course (Class 2) Division 1, Section 1 " 3, " 1	ton	7,000	0.65	4,550.00
7.	Base Course (Class 1) Division 1, Section 1 " 3, Section 1	ton	14,000	0.90	12,600.00
8.	Hauling sub-base course and base course Division 3, Section 1	ton-mile	108,000	0.095	10,260.00
9.	Asphaltic Concrete Pavement Division 1, Section 1 " 4, Sections 1 & 5	ton	48,000	2.41	115,680.00
10.	Asphaltic Material - 150-200 Pen. Division 1, Section 1 " 4, Section 1	ton	2,900	25.50	73,950.00
11.	Asphaltic Prime, M.C.-0 Division 1, Section 1 " 4, " 3	gallon	120,000	0.17	20,400.00
12.	Conditioning Road Bed Division 1, Section 1 " 6, " 8	square yard	363,600	0.02	7,272.00

. . . 2(a)

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Parks Canada
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Archives nationales du Canada

Item	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity	Price Per Unit	Total
13.	Blending Sand Division 1, Section 1 " 4, " 1	ton	7,900	$ 2.30	$ 18,170.00
14.	Asphaltic Mixture in Stockpile Division 1, Section 1 Supplementary Specification	ton	2,000	1.80	3,600.00
15.	Asphaltic Material S.C.-3 Division 1, Section 1 Supplementary Specification	ton	100	30.10	3,010.00
16.	Supplemental Work Division 1, Section 1				20,000.00

TOTAL AMOUNT OF TENDER: .....$ 301,367.00.....

0007119

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pt 2

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ORIGIN OF MATERIAL: (My, Our) tender is based on the use of Canadian Material in accordance with Section 27 (1) of the General Conditions, with the exception of the following non-Canadian items:

Item	Class of Material	Country of Origin	Approx. Quantity	Price Per Unit	Amount	Canadian Product Amount
	NIL					

If Canadian Material for items listed above is required (my, our) tender is to be increased by:

(In words) .....

..... $ ..... cts...

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Parks Canada
Parcs Canada
National Archives of Canada
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SUB-CONTRACTS: (I, We) will subcontract the following parts of the work to the subcontractor listed for each part. (I, We) agree not to make changes in the following list without the written consent of the Engineer. In (my, our) opinion the sub-contractors named hereunder are reliable and competent to perform that part of the work for which they are listed. The under-mentioned parts for which no subcontractor is named will be executed by (my, our) own forces.

Part of the Work	Sub-Contractor	Address
NIL		

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Parcs Canada

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EXPERIENCE: (I, We) have in the past executed the following works which are similar to the work for which the present offer is made:

(NOTE: Not necessary if the Contractor has similar work underway for the Department of Public Works).

WORK	PLACE	YEAR	FOR WHOM
Base & Paving	B.J. Highway	1949-1962	Dom. D.P.W.

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Parcs Canada

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SECURITY REQUIREMENTS:

A - WHEN TENDERING

1. FOR TENDER LESS THAN $25,000: No security accompanies this tender. (I, We) understand that the Department may require security upon award of contract in accordance with B-1 and B-2 hereunder.

2. FOR TENDER $25,000 AND OVER: (I, We) herewith enclose security in accordance with EITHER:

   (i) a bid bond, in an approved form and from a company whose bonds are acceptable, in an amount of at least 10% of the tender, OR

   (ii) a security deposit in an amount of at least 10% of the tender, or, where the tender exceeds $250,000. in an amount of $25,000 plus 5% of the amount by which the tender exceeds $250,000. The maximum requirement for any tender is $100,000. The deposit must be a certified cheque drawn on a bank to which the Bank Act or the Quebec Savings Banks Act applies, payable to the Receiver General of Canada, OR

   (iii) bonds of the Government of Canada or of a company included in "National Railways" (as that expression is defined in the Canadian National Railways Capital Revision Act) unconditionally guaranteed as to principal and interest by the Government of Canada, if such bonds are

      (a) payable to bearer,

      (b) hypothecated to the Minister of Finance and Receiver General of Canada in accordance with the Domestic Bonds of Canada Regulations, or

      (c) registered in the name of the Minister of Finance and Receiver General of Canada.

   The security deposit, as indicated in (ii) and (iii) above, will be forfeited if (I, we) refuse to enter into a contract when called upon to do so, but the Minister may, if it is in the public interest, waive the right of Her Majesty to forfeit the security deposit.

B - UPON AWARD OF CONTRACT

1. Upon notification of acceptance of (my, our) tender, (I, we) will furnish:

   (i) a security deposit, as described in A-2 (ii), or as described in A-2 (iii) above, together with a labour and materials payment bond in the amount of at least 50% of the amount payable under the contract, OR

   (ii) a performance bond and a labour and materials payment bond and each in the amount of 50% of the amount payable under the contract.

2. Should it not be possible to obtain a labour and materials payment bond on making application therefor to at least two acceptable bonding companies, an additional security deposit, in the amount of 10% of the amount payable under the contract, will be furnished.

3. The amount of the security deposit required under B-1 (i) above may be reduced by the amount of the security deposit which accompanied the tender.

4. Guarantee bonds are to be in approved form and from companies whose bonds are acceptable. Samples of the approved form of Bid Bond, Performance Bond, and Labour and Materials Payment Bond and a list of bonding companies whose bonds are acceptable to the Government of Canada are available for inspection at, and may be obtained from, any office of the Department of Public Works.

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SIGNATURE: (See "INSTRUCTIONS TO BIDDERS")

IN WITNESS WHEREOF I (We) have hereunto set (my, our) hand(s) this 4th day of July 1963.

COMPANY SEAL

Signed, sealed and delivered by the Contractor in the presence of:

P.J. Quinton

Signature of Witness

STANDARD GRAVEL & SURFACING OF CANADA LIMITED

J.V. Dunne

Signature of Tenderer

SEAL

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This document is the document referred to as "Plans and Specifications" and marked "A" in the Articles of Agreement entered into on the _____

day of _____19___ between Her Majesty the Queen and _____

_____.

(
) _____
(
Minister

(
) _____
(
Contractor

"A"
PLANS & SPECIFICATIONS
FOR
CONTRACT NO. 5/63/B.J.

1. SPECIFICATIONS

Division 1 - Project and General Requirements
Section 1 - Project Requirements
Section 2 - General Requirements

Division 2 - Earthwork
Section 1 - Clearing & Grubbing

Division 3 - Base Courses
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Section 8 - Conditioning Road Bed

Supplemental Specification - Asphaltic Mixture in Stockpile

2. PLANS

(a) Standard Plans - A1, F1, F2-A, F2-D, F3, G9

(b) Line Diagram No. B.J. 1-1-150

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DIVISION 1

SECTION 1 - PROJECT REQUIREMENTS

FOR

CONTRACT NO. 5/63/B-J

1. Description

The work under this contract consists of sub-base course, base course, conditioning of roadbed, priming, paving and such other work as hereinunder may be specified or ordered by the Engineer.

2. Location

The work is located on the Banff-Jasper Highway in Jasper National Park, Alberta, between Mile 125 and Mile 140. Mile 140 is 4.0 miles south of Jasper town. Access along the existing Banff-Jasper Highway crosses the Miette River on a structure with a posted load limit of 15 tons.

The work to be done is located as follows:

(1) Supplying and placing sub-base course and base course material from Mile 139.5 to Mile 140.

(2) Scarifying and re-shaping newly-constructed grade from Mile 125 to Mile 139.5.

(3) Priming and paving from Mile 125 to Mile 140.

3. Completion Dates

(1) Completion of Paving - October 1, 1963.

(2) Final completion - October 31, 1963.

4. Work being done by others

(1) The construction of the road from Mile 139.5 to Mile 140, between the Athabasca River Bridge and the existing highway, is being done by others up to subgrade elevation. This work may or may not be completed before the award of this contract. The contractor may, therefore, have to schedule his operations to the south of the Athabasca River until the subgrading is completed.

(2) A grading contract is being awarded south of Mile 125. A source of aggregate supply at Mile 123.5 will, therefore, be within the limits of the grading contract and the contractor will make his own arrangements to avoid conflict of interests of the two contracting parties with respect to operating in the deposit and maintenance of the roadway from the deposit to Mile 125.

5. Aggregate Materials

(1) Granular materials within the vicinity of the project are coarse gravels. Careful selection and processing will be required to meet the specifications. It is suggested that the deposit at Mile 136.4 may be used for sub-base course Class 2, base course Class 1 material and for asphaltic pavement aggregate when blending sand is added. Approximately 25% of the material in this deposit is greater than five (5) inches in diameter and will have to be rejected.

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(2) Blending sand for asphaltic pavement may be found in a deposit at Mile 123.4. Approximately 15% of the paving aggregate will be blending sand from this deposit. The blending sand must be screened to one quarter (¼) inch size before being transported to the plant site. Approximately 20% of this material will have to be removed by the screening process from selected areas of the deposit. Blending sand will be measured for payment in tons of sand processed, delivered and accepted at the asphalt plant site.

6. Asphaltic Concrete Pavement

The asphaltic concrete pavement shall be Type 'B' laid in a single lift, of approximately 2" compacted thickness. The asphalt aggregate mixture shall conform to Division 4, Section 1, Table 4 for three quarter (3/4) inch aggregate.

7. Asphaltic Mixture in Stockpile

Two thousand (2,000) tons of asphaltic mixture is required in stockpile at a site designated by the Engineer within the contract limits. The asphalt aggregate mixture shall conform to Division 4, Section 1, Table 4 for three quarter (3/4) inch aggregate. Anti-stripping agent in the stockpiled mixture will not be required.

8. Asphaltic Materials

(1) Asphalt for prime coat:- Medium curing cut back asphalt, Grade MC-0.

(2) Asphalt cement:- 150 - 200 penetration.

(3) Asphalt binder for mixture in stockpile:- Slow curing cut back asphalt, Grade SC-3.

9. Construction Camp

A site for a construction camp exists at Mile 135 which has been previously used by others. The contractor must, however, have approval from the Engineer before setting up camp.

10. Supplemental Work not Covered by Unit Prices

A sum of $20,000.00 has been included in the Unit Price Table for materials, labour and equipment for doing work of an indeterminate nature that may be found necessary or desirable during the prosecution of the contract. This work may consist of the following:

(1) Construction of parking areas and access roads.

(2) Cleaning ditches and drainage channels, constructing new drainage and diversion channels and dressing up side and backslopes.

(3) Cutting off side slope angles and rip-rapping culvert ends.

The above sum will be added to the costs of the other items in arriving at the total tender amount. Work Orders will be issued against this item as required and payment will be made only for work so ordered and completed. There is no guarantee that any or all of the work provided for under this item will be required.

11. Field Laboratory

The contractor shall supply for the Engineer's use, a field laboratory, in accordance with Standard Drawing No. G9 and provide lighting, heating

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and other services as required by the Engineer for the duration of the work.

The cost of this building shall be considered incidental to the work and no additional compensation will be allowed.

The building shall remain the property of the contractor, and on completion of the contract shall be removed from the site of the work.

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DIVISION 1

SECTION 2 - GENERAL REQUIREMENTS

1. Right-of-way - The lines shown on the plan (or as indicated by the Engineer) generally parallel to the centreline of the highway showing the area reserved for highway purposes. — Terms and Definitions

   Roadway - The portion of the right-of-way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structure.

   Substructure - All that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls, and wing protection railings.

   Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, except as noted above for substructure.

2. Unless otherwise provided, the Contractor shall maintain the work during construction. The maintenance shall constitute continuous and effective work, prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer. — Maintenance of Work During Construction

3. (1) Where materials are located on Federal Government property, the Department will make available to the Contractor the right to use such materials. Where materials are located on other than Federal Government property, the Contractor shall be responsible for the procurement of such materials. — Control of Materials

   (2) If the Contractor desires to use material from sources other than those designated, he shall do so only on the written authority of the Engineer.

   (3) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work.

4. In case the Contractor is required to haul materials across the tracks of any railway, or elects to do so, he shall make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing. — Railway Crossings

5. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient warning lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise. — Barricades and Warning Signs

6. (1) Linear — Measurement of Quantities

   All items which are measured by the linear foot, such as pipe culverts, guiderail, underdrains, etc., will be measured along centreline unless otherwise shown on the plans.

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Measurement of Quantities (Cont'd)

(2) Area

(a) All longitudinal and transverse measurement for areas except for seeding and sodding will be measured horizontally.

(b) All longitudinal and transverse measurements for seeding and sodding will be made on the actual flat or sloped surface seeded or sodded.

(3) Volume

(a) In computing volumes of excavation, borrow and embankment, the end area method will be used whenever possible.

(b) When materials are to be measured in the haulage vehicle, the vehicle may be of any size or type acceptable to the Engineer. Unless approved vehicles are of uniform capacity, each must bear a plainly legible identification mark indicating its specific approved capacity and all loads shall be levelled and measured when the vehicles arrive at the point of delivery if so requested. No allowance will be made for settlement of the material while in transit.

(c) Material specified to be measured by the cubic yard may be weighed and such weights shall be converted to cubic yards for payment purposes. Factors of conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(4) Weight

(a) The term ton shall mean 2000 pounds avoirdupois.

(b) All materials which are specified for measurement by weight shall be weighed on scales approved by and at locations designated by the Engineer. Trucks used to haul material being paid for by weight shall be weighed empty at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

(c) Weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any vehicles used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(d) If material is shipped by rail, the car weight will be accepted.

(5) Materials

(a) Bituminous material may be measured by the imperial gallon or by weight in each railroad tank car, tank truck, distributor tank or drum delivered for the project.

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(b) The volumetric measurement of bituminous material for these specifications shall be based upon a temperature of 60°F and shall be taken when the material is of a uniform temperature and free from air bubbles. Measurement of Quantities (Cont'd)

(c) Only the quantity of bituminous material actually accepted in the work will be considered in determining the amount due the contractor.

(6) Time

(a) Unless otherwise provided for in the special provisions or by written authority of the Engineer, hourly rental of equipment will be measured in actual working time and necessary travelling time of the equipment within the limits of the project at an all-inclusive rate and each unit of mobile equipment shall be equipped with an approved device to register the hours of operation.

(b) Payment for equipment engaged at monthly rates will begin when such equipment is actively engaged and will continue for as many months or fractions thereof, as, in the opinion of the Engineer, such equipment is required on the work.

7. The Contractor, at his own expense, shall prepare and erect a standard Department of Public Works sign, constructed of weatherproof plywood, reinforced and braced as necessary, and painted and lettered in accordance with standard detail drawings supplied by the Department. The sign will contain only such information as may be approved and supplied by the Department, and shall be erected in a manner and location approved by the Engineer. For highway construction, two project signs shall be provided. Project Signs

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DIVISION 2

SECTION 1 - CLEARING AND GRUBBING

REVISED MAY 1963

2.1.1 DESCRIPTION

This item consists of the removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans and any other areas which may be designated by the Engineer.

2.1.2 MATERIALS

No materials are involved.

2.1.3 CONSTRUCTION

(1) Clearing

(a) Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush and fallen timber, stumps and rubbish, except such trees and shrubs as may be designated for preservation. Trees and shrubs designated for preservation shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, trees, roots and stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging the right-of-way, shall be removed.

(b) Clearing shall be completed at least one-half mile in advance of grading operations.

(2) Grubbing

Grubbing shall include the removal and disposal of roots 2 inches in diameter and larger, stumps, imbedded logs, and other objectionable debris.

(3) Disposal

Trees, logs, stumps, brush and other rubbish shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

(4) Excavation

If the Contractor clears or grubs in a manner such that excavation is removed during the operation, payment will not be made for the excavation so removed.

2.1.4 MEASUREMENT

The quantities to be measured for payment shall be the number of acres, and fractions thereof, of land acceptably cleared and/or grubbed in accordance with these specifications.

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DIVISION 3

SECTION 1 - BASE COURSE (CLASS 1) AND SUB-BASE COURSES (CLASS 2) AND (CLASS 3)

REVISED MARCH, 1963

3.1.1 DESCRIPTION

This item consists of crushing and/or screening gravel or stone, and placing in stockpile(s) or on the road in accordance with these specifications.

3.1.2 MATERIALS

(1) Base Course (Class 1)

(a) This material shall consist of crushed stone or crushed gravel meeting the requirements of Tables 1 and 2. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if provided for in Division 1, Section 1.

TABLE 1

Physical Requirements of Coarse Aggregate (Material Retained on No. 4 Sieve)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Designation T-96	35	35
(b) Crushed fragments, min. % by wt.	-	50
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Designation T-104	15	15

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

TABLE 2

Physical Requirements - Deleterious Materials

Description	Maximum Percentage
1. Shales	4
2. Siltstones	1
3. Chert	5
4. Ochre	1
5. Clay ball	1
Max. allowable total % by weight of deleterious material	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

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(b) Gradation

The aggregate shall conform within the limits specified in Table 3. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 3

Base Course (Class 1)

Sieve No.	Percent Passing
3/4"	100
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

(2) Sub-Base Course (Class 2)

This material shall consist of crushed stone or crushed gravel, meeting the gradation requirements of Table 4. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if provided for in Division 1, Section 1.

TABLE 4

Sub-Base Course (Class 2)

Sieve No.	Percent Passing
2"	100
1"	70 - 100
1/2"	50 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuation from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

(3) Sub-Base Course (Class 3)

This material shall consist of gravel, talus rock, disintegrated granite, sand, or other granular materials meeting the gradation requirements of Table 5. It shall be composed of clean, hard particles free from clay lumps, cementation, and organic material. It shall be washed if provided for in Division 1, Section 1.

TABLE 5

Sub-Base Course (Class 3)

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Sieve No.	Percent Passing
4"	100
1"	60 - 100
No. 4	25 - 100
No. 10	12 - 85
No. 40	5 - 40
No. 200	0 - 8

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

(4) General - Base Course (Class 1) and Sub-Base Courses (Class 2 and 3)

(a) The portion of the material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

(b) Even though particle sizes are within the limits of the grading sizes herein provided, materials will be considered unsuitable, if particle shapes are thin or elongated or exhibit other characteristics precluding satisfactory compaction and a roadbed acceptable to the Engineer.

3.1.3 CONSTRUCTION

(1) Clearing and Grubbing

The clearing and grubbing of deposits from which these materials are obtained, stockpile sites and access roads to these deposits and/or stockpile sites shall be carried out as specified in Article 2.1.3.

(2) Stripping

The areas from which these materials are obtained shall be stripped of all overburden to a distance of at least 25 feet from the working face, and this overburden will be disposed of in stockpiles, access road construction, or as directed by the Engineer.

(3) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to the right-of-way. Any work and materials required for the construction of such access roads will be specified by the Engineer.

(4) Blending Aggregates

It shall be permissible to blend or mix two or more materials to meet the gradation requirements. When two or more materials are blended, they shall be thoroughly mixed by mechanical means.

(5) Preparation of Surface Prior to Placing

Each course shall be placed on a surface which shall be clean, dry, free from frost, snow and loose or adhering deleterious materials, properly shaped and compacted.

(6) Spreading & Compacting Base Course (Class 1) and Sub-Base Course (Class 2 and 3)

The base course (Class 1) material shall be laid in layers of not more than three (3) inches in compacted thickness or as directed by the Engineer. The sub-base (Class 2 and 3) material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer, but in no instance more than 6" for Class 2 nor 8" for Class 3. Tail-gating will not be permitted. Immediately

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following spreading and smoothing of each layer, all material shall be compacted to the full width shown on the plans using compaction equipment conforming to the requirements specified in Article 3.1.3(7). All compacting shall start at the edges and progress towards the centre, so that each succeeding pass shall uniformly overlap the previous one. While compacting progresses, the entire surface of each layer shall be shaped in length, to maintain a uniformly smooth surface conforming to the required lines and grades.

Any irregularities in the completed surface of each base course (Class 1) lift that exceed 3/8 inch, or of each sub-base lift that exceed 1¼ inches, from the template grade for that particular lift when tested with a 10 foot straight edge shall be remedied to the satisfaction of the Engineer by loosening the suface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Additional material when required shall be paid for at the contract unit price for base course material.

Each layer shall be compacted to at least 100% maximum density (latest A.A.S.H.O. Designation T99). During compaction, the base course shall be maintained at the optimum moisture content. Water, when required, shall be applied with an approved distributor which has a gauge easily visible from the road indicating the water level in the tank.

(7) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

(a) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(b) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(c) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(d) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(e) Vibratory Compactors shall be of a design approved by the Engineer. Steel drum vibratory compactors shall weigh not less than 3.5 tons and pneumatic vibratory compactors shall weigh not less than 12 tons.

(f) A compaction unit shall consist of a self-propelled or a power-drawn compactor. Compaction units shall be capable of moving a minimum speed of 3 m.p.h. Each complete unit shall be equipped with an hour meter of approved design. Compactors with motor power will be designated as "complete units".

(g) When approved by the Engineer additional compactors may be hauled by the single prime mover. In such cases the additional compactors shall be designated as "compactors only".

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(8) Stockpiling

The stockpile site(s) shall be cleaned of all deleterious material and shall be firm and level. The stockpile(s) shall be shaped as directed by the Engineer and constructed in layers not exceeding three feet in depth over the entire stockpile area. During winter operations, stockpile(s) shall be kept free of ice and snow.

3.1.4 MEASUREMENT

(1) The quantity of Base Course or Sub-Base Course for which payment will be made shall be the number of tons placed and accepted in the completed work.

(2) The quantity of Haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course or sub-base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(3) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units supplied and distributed on the work. Water used on access road during hauling will not be included for payment.

(4) The quantity of compaction "complete units" for which payment will be made shall be the number of approved hours that the equipment worked as recorded on the hour meters. No payment will be allowed for interruptions or downtime of any kind.

(5) The quantities for clearing and/or grubbing of borrow areas, stockpile sites and access roads; for stripping of aggregate deposit areas; and for work and materials required for the construction of access roads will be measured and paid for separately as provided for in the appropriate Unit Price Table Items.

(6) The quantity of "compactors only" for which payment will be made shall be the number of approved hours worked, as recorded on the hour meters.

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DIVISION 4

SECTION 1 - ASPHALTIC CONCRETE PAVEMENT

TYPE "A", "B" AND "C"

MARCH 1963

4.1.1 DESCRIPTION

(1) This item consists of asphaltic concrete composed of coarse and fine aggregate, mineral filler where required and hot asphalt cement, mixed in a central plant, placed and compacted on a prepared roadbed in accordance with these specifications and in conformity with the cross-sections shown on the standard plans and to the lines and grades staked by the Engineer.

(2) The pavement shall be constructed in two layers, consisting of a wearing course and a binder course unless one course construction is specified on the plans or in Division 1, Section 1.

4.1.2 MATERIALS

(1) General

Samples of all materials which are to be used under these specifications shall be submitted to the Department for analysis and for the preparation of trial mixes to determine the job formula.

(2) Aggregate

(a) Coarse aggregate shall consist of crushed stone or crushed gravel of approved quality, free from coatings of clay, silt, dust or organic material. The portion of the material retained on the No. 4 sieve shall be known as coarse aggregate.

(b) Fine aggregate shall consist of natural sand, gravel sand, screenings or a combination thereof of approved quality, and conforming to the limits specified in Table 3. It shall be composed of clean, hard, angular particles, free from clay lumps, cementation and organic material.

(c) Mineral filler shall consist of dry limestone dust or other inert mineral matter, of approved quality, and conforming to the limits specified in Table 5. As delivered to the mixer, it shall be free from lumps and loosely bonded aggregations.

(3) Asphalt Cement

Asphalt cement shall conform to Canadian Government Specifications Board Specification 16-GP-3. The grade of the asphalt will be specified in Division 1, Section 1. The Contractor shall obtain from the manufacturer and furnish in tabular or graphic form, the temperature - viscosity relationship of the asphalt cement to be used.

(4) General Composition of Mixture

The coarse aggregate, fine aggregate and mineral filler, when required, shall be combined in proportions specified by the Engineer, within the limits set out in Table 4. Any aggregate gradation which shows extreme variation between allowable limits will not be acceptable. To this composite blended aggregate shall be added asphalt cement within the percentage limits set forth in Table 4.

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(5) Formula for Job-Mix

(a) The general composition limits prescribed above are extreme ranges of tolerance to govern mixtures made from any raw materials meeting the specifications, and they are maximum and minimum in all cases. A closer control appropriate to the job materials used will be required. The Engineer will establish a job-mix formula for each mixture to be used on the project, to which the Contractor shall conform within the tolerance specified below. The fomula shall establish a single definite percentage of aggregate passing each required sieve size, a single definite percentage of asphalt cement to be added to the aggregate, and a single definite design temperature.

(b) The design temperature shall be such that the asphalt cement will have a Saybolt Furol Viscosity of 112.5 seconds.

(c) After the job-mix formula is established as prescribed above, the mixtures furnished for the project shall conform thereto within the following ranges of tolerances:

Passing ½ inch and larger sieves ..... ± 5%

Passing sieves between ½ inch and No. 200 sieve ... ± 3%

Passing No. 200 sieve ..... ± 2%

Asphalt Cement ..... ± 0.30%

Temperature of Asphalt Cement on Mixing ..... ± 10°F.

Temperature of Aggregates on Mixing ..... ± 15°F.

Temperature of Mixture when emptied from mixer .... ± 15°F.

Temperature of mixture on delivery to road ..... + 15°F., - 20°F.

(d) Samples of the actual mixture in use will be taken as many times daily as the Engineer considers necessary for checking uniformity. Mixtures which are not within the above tolerances shall be removed from the job and disposed of at the Contractor's expense. No change in the job-mix formula shall be made without the approval of the Engineer. Should a change in sources of materials be made, a new job-mix formula shall be established before the mixture containing the new materials is produced.

(6) Design Criteria

(a) The laboratory - compacted mixtures when compacted by the "Marshall Test Procedure" (75 blows per face), shall have the following test properties:

	Type "A"		Type "B"		Type "C"	
	Min.	Max.	Min.	Max.	Min.	Max.
Marshall Stability lbs. at 140°F.	1000	-	800	-	600	-
* Flow index (in hundredths of an inch)	10	15	10	15	10	18
** Air voids in Mixture (%)	3	5	3	5	3	6
*** Voids in Mineral Aggregate	15	-	15	-	14	-

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* Measured at point where load just begins to decrease.

** Portion of asphalt cement absorbed into aggregate to be allowed for when calculating Air Voids.

*** Voids in mineral aggregate to be calculated on basis of A.S.T.M. bulk specific gravity.

(b) The amount of asphalt used for a particular gradation (the design asphalt content) shall be determined by averaging the quantities of asphalt which have been necessary to obtain the following results in laboratory tests:

(i) Maximum Stability.

(ii) Maximum Density.

(iii) Median for the limits of per cent air voids.

TABLE 1

PHYSICAL REQUIREMENTS FOR COARSE AGGREGATES

Test	Type "A"		Type "B" and "C"	
	Stone	Gravel	Stone	Gravel
(a) Soundness Test, Magnesium Sulphate max. % loss by weight, 5 cycles latest A.A.S.H.O. Designation T-104	15	15	20	20
(b) Los Angeles Rattler Test Max. % loss by weight at 500 rev. latest A.A.S.H.O. Designation T-96	25	25	35	35
(c) Thin and elongated particles max. % by weight	5	5	8	8
(d) Crushed fragments min. % by weight-combined sizes	-	65	-	50
(e) Absorption test max. % by weight latest A.A.S.H.O. Designation T-85	1.0	1.0	1.5	1.5
(f) Loss by washing max. % by weight latest A.A.S.H.O. Designation T-11	-	1.5	-	2.0

1. Thin and elongated particles are fragments whose average thickness or depth is less than one-fifth the length or greatest dimension.

2. Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

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3. Stripping Test - (For special cases involving hydrophylic aggregates) The fine or coarse aggregate, or a composite mixture, shall show no detrimental amount of stripping when tested in the following manner. A test sample comprising the aggregate and asphalt to be used in the paving mixture shall be mixed at the temperature specified herein. The sample shall then be spread in a thin, loose layer and allowed to cure for 24 hours before testing. A portion of the sample, not over one-half the capacity of the jar, shall be placed in a glass jar and be completely covered with distilled water. The jar shall then be fitted with a tight screw cap and allowed to stand for a period of 24 hours. The jar shall then be vigorously shaken for a period of 15 minutes, and the sample of the mixture shall then be examined for stripping. If stripping occurs, the aggregate will be rejected or an approved method of treating will be specified to change the aggregate from a hydrophylic to a hydrophobic state as directed by the Engineer.

TABLE 2

PHYSICAL REQUIREMENTS - DELETERIOUS MATERIALS

DESCRIPTION	TYPE "A"		TYPE "B" and "C"	
	Stone	Gravel	Stone	Gravel
1. Limestone -				
Shaley	Max.2%	Max.2%	Max.2%	Max.2%
Clayey	2	2	2	2
Sandy	1	1	3	3
2. Shales -				
Thin Bedded	1	1	2	2
Thick Bedded	1	1	2	2
3. Siltstones	1	1	1	1
4. Sandstones -				
Friable	2	2	2	2
Loosely Bonded	2	2	2	2
5. Chert	2	2	5	5
6. Clayball	-	0.5	-	1
7. Marble	*	*	*	*
8. Slate	1	1	2	2
9. Ochre	1	1	1	1
10. Quartzite	*	*	*	*
Max. allowable total % by weight of deleterious and objectionable material.	5	5	12	12

Note: The percentage of deleterious and objectionable materials, as listed in Table 2, which are contained in any aggregate shall be determined by the petrographic analysis.

* The percentages of marble and quartzite which are contained in any aggregate shall be kept within limits specified by the Engineer.

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TABLE 3

FINE AGGREGATE

SIEVE NO. *	PERCENTAGE PASSING	
	TYPE "A" and "B"	TYPE "C"
3/8	100	100
4	100	95 - 100
10	75 - 98	55 - 100
20	45 - 80	25 - 85
40	23 - 55	15 - 60
80	7 - 20	5 - 20
200	0 - 5	0 - 5

* U.S. Sieve sizes specified.

Note: In lieu of adding mineral filler the per cent passing the No. 200 sieve may be increased where in the opinion of the Engineer this material is required in the mix. In the fine aggregate not more than 20% of the material passing the No. 200 sieve shall be finer than 0.002 m.m. in size.

TABLE 4

ASPHALT AGGREGATE MIXTURES

TOTAL PASSING EACH LABORATORY SIEVE, PER CENT BY WEIGHT

* Sieve Size	PERCENTAGE BY WEIGHT PASSING				
	1" Max.	7/8" Max.	3/4" Max.	5/8" Max.	1/2" Max.
1"	100	-	-	-	-
7/8"	-	100	-	-	-
3/4"	80 - 100	88 - 100	100	-	-
5/8"	-	-	-	100	-
½"	66 - 82	73 - 90	80 - 100	90 - 100	100
3/8"	-	62 - 78	65 - 85	76 - 88	85 - 100
No. 4	40 - 58	42 - 62	45 - 70	55 - 73	55 - 70
10	25 - 42	25 - 47	30 - 55	35 - 55	40 - 60
20	15 - 30	15 - 33	18 - 40	22 - 40	30 - 50
40	10 - 22	10 - 24	12 - 27	15 - 29	20 - 35
80	5 - 14	5 - 15	5 - 15	7 - 17	7 - 17
200	0 - 8	0 - 8	0 - 8	3 - 8	3 - 8
Asphalt Cement % by Weight	4.0-6.0	4.0-6.5	4.5 - 6.5	5.0 - 7.0	5.0 - 7.5

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* U.S. Sieve sizes specified.

Note: The mix shall also meet the design criteria as specified under Section 4.1.2(6).

TABLE 5

MINERAL FILLER

SIEVE NO.*	PER CENT PASSING
30	10
80	95 - 100
200	65 - 100

* U.S. Sieve size specified.

4.1.3 CONSTRUCTION

(1) Equipment

Equipment shall conform to the requirements specified in Division 4, Section 5 of the Specifications.

(2) Clearing and Grubbing

Clearing and grubbing of areas from which paving aggregates are obtained will be carried out in accordance with Article 2.1.1.

(3) Stripping

Areas from which paving aggregates are obtained shall be stripped of all overburden to a distance of at least 25 feet from the working face, and this overburden shall be disposed of in stockpiles, access road construction, or as directed by the Engineer.

(4) Production and Handling of Aggregates

(a) Aggregates shall be processed to meet the requirements of Tables 3 and 4. Fine and coarse aggregate shall be crushed, screened and separated with approved equipment. The fine aggregate (minus No. 4 material) content in the coarse aggregate shall not exceed 20%.

(b) The separated aggregates and aggregates secured from different sources shall be placed in separate stockpiles.

(c) The site of stockpiles shall be cleaned of all foreign material and shall be reasonably firm and level. Stockpiles shall be constructed in layers not exceeding 3 feet and be built to eliminate coning and segregation of aggregate sizes. During winter operations the stockpiles shall be kept free of ice and snow to the satisfaction of the Engineer.

(d) At least 2000 tons of material must be stockpiled before paving operations are begun.

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(5) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling materials to the right-of-way. Any work and materials required for the construction of such access roads will be specified by the Engineer.

(6) Preparation of Surface

The areas to be surfaced shall be broomed and/or rolled so as to be free of all loose or objectionable material. When specified in Division 1, Section 1, a tack coat or a prime coat shall be applied.

(7) Preparation of Asphalt Cement

The asphalt cement shall be heated to the specified temperature by equipment meeting the requirements of Article 4.5.2(2)(c). Provision shall be made for a continuous supply of asphalt cement to the mixer within the temperature range specified.

(8) Preparation of Mineral Aggregates

(a) The plant shall include cold feed bins of sufficient capacity to supply the mixer when it is operating at full capacity. Bins shall be divided into at least 3 compartments and shall be arranged to ensure separate and adequate storage of appropriate fractions of the aggregate. The different aggregate sizes shall be kept separated until they have been delivered, without segregation to the cold feed bins. Bulldozer feed to a bulk-head will not be permitted.

(b) The mineral aggregates shall be dried and heated to the specified temperature by equipment meeting the requirements of Article 4.5.2(2)(e). The moisture content of the aggregate shall be below that which will cause foaming, steaming or bubbling in the mixture and shall not in any case exceed 0.5%.

(9) Preparation and Composition of Mixture

(a) Each size of hot aggregate, mineral filler if required, and the asphalt cement shall be measured separately and accurately in the proportions in which they are to be mixed. When the mixture is prepared in a twin-pug mixer, the volume of the mix shall not be so great as to extend above the tips of the mixer blades in a vertical position. In batch mixing, after the hot aggregate and mineral filler have been charged into the mixer and thoroughly mixed for a period of not less than 15 seconds, the asphalt cement shall be added and the mixing continued for a period of at least 20 seconds, or longer if necessary, to produce a homogeneous mixture in which all particles of the mineral aggregate are coated uniformly. In continuous mixing, the mixing shall continue for at least 30 seconds, and for such longer periods as may be necessary to coat all the particles.

(b) The constituents of each course shall be combined in such proportions as to produce a mixture conforming to the composition specified by the Engineer and within the specified tolerances.

(10) Transportation and Delivery of Mixtures

(a) The mixtures shall be transported from the mixing plant to the point of use in vehicles conforming to the requirements of Article 4.5.2(6).

(b) No loads shall be sent out so late in the day as to prevent completion of the spreading and rolling of the mixture during daylight, unless artificial light satisfactory to the Engineer is provided.

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(11) Weather Limitations

Asphaltic concrete mixtures shall not be placed when the air temperature is below 40°F. or when the weather is rainy.

(12) Spreading and Finishing

(a) Upon arrival at the point of use, the mixture shall be spread and struck off to the profile grade, elevation and cross-section specified. For this purpose, asphaltic concrete pavers conforming to the requirements of Article 4.5.2(5) shall be used to distribute the mixture over the full width of a single lane.

(b) Asphaltic mixtures shall be laid in courses in lifts as determined by the Engineer, but the depth of a single lift shall be not less than nor greater than that produced by the weights given in the following table for each square yard of mixture laid.

Size of Aggregate	Minimum Weight per sq. yd.	Maximum Weight per sq. yd.
1"	220	330
7/8"	190	285
3/4"	165	250
5/8"	135	220
½"	110	165

(c) The Contractor shall endeavour to have paving operations proceed toward the plant so that the trucks will not interfere with rolling, or in any other way damage the surface being placed.

(d) If, during construction, it is found that the spreading and finishing equipment in operation leaves tracks or indented areas that are not satisfactorily corrected by the scheduled operations, or if it produces other permanent blemishes, the use of such equipment shall be discontinued and other satisfactory spreading and finishing equipment shall be provided by the Contractor.

(e) Immediately after any course is screeded and before roller compaction is started, the surface shall be checked, any irregularities adjusted, all fat sandy accumulations from the screed removed by a rake or hoe, and all fat spots in any course removed and replaced with a satisfactory material. Irregularities in alignment and grade along the outside edge shall also be corrected by the addition or removal of mixture before the edge is rolled.

(f) Immediately following the rolling, the surface of each course shall be checked with a straightedge, and any irregularities exceeding the depth or surface tolerances specified shall be immediately corrected.

(g) In irregular sections, intersections, turnouts, or other locations where it is impractical to spread and finish the first or second lift of mixture by machine methods, the Contractor may use acceptable hand methods.

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(h) When the mixture is to be spread by hand, it shall be dumped upon steel dump boards outside of the areas on which it is to be spread. Immediately thereafter, it shall be distributed into place by means of hot shovels and spread with hot rakes in a loose layer of uniform density and correct depth. Tines of the rakes shall be at least ½ inch longer than the loose depth of mixture, and spaces between tines shall be not less than the maximum diameter of aggregate particle except that in no case shall the spaces be less than 1 inch. Loads shall not be dumped any faster than they can be properly handled by the shovelers. The shovelers shall not distribute the dumped load faster than it can be handled by the rakers. The rakers will not be permitted to stand in the hot mixture while raking, except where necessary to correct errors in the first raking, in which case they shall be equipped with stilt sandals. The raking must be carefully and skillfully done in such a manner that, after the first passage of the roller over the raked mixture, a minimum amount of back patching will be required.

(i) The Contractor shall provide suitable means for keeping all small tools clean and free from accumulations of bituminous material. He shall provide and have ready for use at all times enough tarpaulins or covers, as may be directed by the Engineer, for use in any emergency such as rain, chilling wind, or unavoidable delay, for the purpose of covering or protecting any material that may be dumped and not spread.

(j) The Contractor shall blade shoulder material from the side slopes to provide shoulder support and a smooth transition from the top edge of pavement to the adjacent material.

(13) Joints

(a) Joints between old and new pavements or between successive days' work shall be made in such a manner as to ensure a thorough and continuous bond between the old and new surface.

(i) Transverse or Construction Joints

Except when a bulkhead is used to form the transverse joints, the edge of the previously laid course shall be cut back to its full depth so as to expose a fresh vertical face, clean of any broken or loose material. The joint shall be painted with a thin, uniform coating of hot asphalt cement, asphalt cement dissolved in naptha or emulsified asphalt and the hot mixture shall then be placed in contact with it, raked to a proper depth and graded and rolled to its maximum density. The joint shall be checked with a 10-foot straightedge and any deviations from the allowable tolerances for surface requirements shall be corrected before the paver proceeds.

(ii) Longitudinal Joints

All longitudinal joints shall be formed vertically and adjacent strips of pavement formed by overlapping the joints with the pavers to ensure a uniformly tight bond with the previously placed material. The overlapped portion of the joint shall be properly "set-up" with the back of a rake, an approved light steel broom or similar tools at the proper height and level to receive the maximum compression under rolling. The work of "setting-up" this joint shall be performed always by competent workmen, who are capable of making a correct, clean and neat joint.

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(b) When mixtures are laid in more than one (1) course the bottom course shall be laid in adjacent strips to a width as directed by the Engineer so that the longitudinal joints are offset from the longitudinal joints of the following courses by not less than one (1) foot. The top course shall be laid in adjacent strips of uniform widths so that the centre joint is coincidental with the centre line of the pavement.

(c) All joints along curbs, gutters, headers, manholes, etc. shall be painted with a thin uniform coating of hot asphalt cement, asphalt cement dissolved in naptha or emulsified asphalt.

(14) Rolling

(a) After spreading, the mixture shall be thoroughly and uniformly rolled, as soon after being spread as it will bear the roller without checking or undue displacement. The type of rollers used shall conform to Article 4.5.2(8). The minimum number of rollers required for the various tonnage per hour of hot-mix produced shall meet the following requirements:

Tons of Mix Produced per Hour	Minimum Number of Rollers
0 - 80	2
81 - 120	3
121 - 150	4
151 - 180	5

When the temperature in the shade is less than 50°F., one additional roller will be required.

(b) On production of 81 tons per hour or more, one of the rollers shall be a pneumatic tired straight wheel roller. At least 50 per cent of the rollers shall weigh not less than 10 tons.

(c) Rolling shall start longitudinally at the sides and proceed toward the centre, except on superelevated curves where rolling shall progress from the lower to the upper edge, parallel with the centre line of the road and overlapping on successive trips by at least one-half ($\frac{1}{2}$) the width of the rear wheel. Alternate trips of the roller shall be of slightly different lengths.

(d) The speed of the roller shall not exceed 3 miles per hour and shall at all times be slow enough to avoid displacement of the hot mixture. Any displacements occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected. Rolling shall proceed continuously until the specified density is reached and all roller marks are eliminated. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but excess of either water or oil will not be permitted.

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(e) Along curbs, headers, manholes and similar structures, and at all places not accessible to the roller, thorough compaction must be secured by means of hot tampers, and at all contacts of this nature the joints between these structures and the mixture must be effectively sealed.

(f) After final rolling, the completed course shall, at no point, have a density of less than 96 per cent of the laboratory compacted density if placed prior to September 1st and 98 per cent of the laboratory compacted density if placed September 1st or thereafter.

(15) Surface Requirements

(a) The surface of each finished course shall be free from waves or irregularities so that when a straightedge 10 feet long is laid on the surface parallel to the centreline of the highway, the surface shall, in no place, vary from the lower edge of the straight edge more than 1/8" for Type "A", 3/16" for Type "B" or $\frac{1}{4}$" for Type "C".

(b) Tests for conformity with the specified crown will be made and any variations beyond those specified above shall be corrected.

(16) Pavement Samples

When and as directed by the Engineer, the Contractor shall cut samples from the completed course which will be used for determining composition and density. The Contractor shall patch the sampled area with fresh, hot mixture and thoroughly compact and bond the new material to the surrounding pavement. No additional compensation will be allowed for furnishing such test samples and replacing the areas with new pavement.

4.1.4 MEASUREMENT

(1) The quantity of Asphaltic Concrete Pavement which will be measured for payment shall be the number of tons of material placed, compacted and accepted in the completed pavement.

(2) The quantity of asphaltic material which will be measured for payment shall be the number of tons actually incorporated into the asphaltic mixture used in the accepted work.

(3) The quantities for clearing and grubbing and for stripping of aggregate deposit areas will be measured for payment separately as provided for under the appropriate Unit Price Table items.

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DIVISION 4

SECTION 3 - PRIME COAT

REVISED MARCH 1963

4.3.1 DESCRIPTION

(1) This item consists of supplying and applying an asphaltic material as a primer to compacted granular base courses and includes the following:

(a) Preparation of Surface.

(b) Application of asphalt primer.

(c) Application of sand cover, as required.

All materials and methods of construction shall conform to the requirements of these Specifications.

4.3.2 MATERIALS

(1) Asphalt Primer

Asphalt primer shall be of the type and grade specified in Division 1, Section 1, and shall conform to the Specifications of the Canadian Government Specifications Board.

(2) Sand

Sand cover, if required, shall consist of any clean, granular mineral material approved by the Engineer, all of which shall pass a No. 4 sieve.

(3) Approval of Materials

Prior to use, samples of all materials proposed to be employed under these specifications shall be submitted to the Engineer for test and analysis and no material shall be used until it has been approved. The source of the material must be approved by the Engineer.

4.3.3 CONSTRUCTION

(1) Preparation of Surface

If the surface to be treated is ravelled, contains holes or depressions or is excessively dense, such irregularities shall be repaired by light scarifying and re-shaping. In general, the depth loosened shall not exceed one inch. In this case sweeping will not be required. If a dusty surface results from the above operation, a light application of water may, on the direction of the Engineer, be applied shortly before the application of asphalt primer to improve coverage and penetration. Immediately prior to application of the asphalt primer, if required, loose and foreign material shall be removed by light sweeping.

(2) Pressure Distributor

The pressure distributor used for applying primer material shall conform to the requirements specified in Article 4.5.2(7).

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(3) Application of Asphalt Primer

(a) Upon the prepared surface, asphalt primer shall be applied uniformly at the rate as directed by the Engineer. It shall be applied only when the surface is dry or but slightly damp and when the air temperature in the shade is not less than 50°F. The asphalt primer shall be applied by means of a pressure distributor at the application temperature specified for the material used.

(b) To prevent lapping at the end junction of two applications, the distributor shall be promptly shut off. Before continuing application, building paper shall be spread over the treated surface for a sufficient distance back, so that the sprayers are operating at full force when the untreated surface is reached. The building paper shall then be removed and destroyed. A hand spray shall be used to apply primer material necessary to touch up all spots unavoidably missed by the distributor.

(4) Application of Sand Cover

Preferably the asphalt primer should be entirely absorbed by the base course and therefore require no sand cover. If, however, complete absorption has not taken place 4 hours after application, sufficient sand only to blot up the excess asphalt and prevent it from picking up under traffic shall be spread over the surface.

(5) Rolling

When directed by the Engineer, the prime surface shall be rolled with self-propelled pneumatic tired or steel wheeled rollers of an approved design.

4.3.4 MEASUREMENT

(1) The quantity of "Prime Coat" measured for payment shall be the number of gallons at 60°F supplied and used in the accepted work. Preparation of the surface, including scarifying, shaping and compacting, will not be measured separately for payment but will be considered incidental to the supplying and applying of Prime Coat.

(2) The quantity of "Sand Cover" measured for payment shall be the number of cubic yards or tons supplied and applied to the primed surface when specified in Division 1, Section.

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DIVISION 4

SECTION 5 - EQUIPMENT FOR ASPHALT OPERATIONS

REVISED MARCH 1963

4.5.1 DESCRIPTION

This item is to describe the general requirements of the equipment and tools that are required for producing and laying hot plant mixed asphaltic stabilized base courses, asphaltic concrete pavements, prime coats, seal coats and tack coats. No pay items are involved in this specification.

4.5.2 GENERAL REQUIREMENTS

(1) The equipment includes:

Mixing Plant

Mechanical Paver

Distributor

Rollers

Vehicles for transporting asphaltic mixtures

Truck Scales

Small tools and all other equipment.

The type, condition and quantity of equipment shall be such as may be necessary for the proper execution of the work within the time limit specified. All equipment furnished shall be maintained in good condition and shall be subject to the approval of the Engineer prior to and during its use.

(2) Requirements for all Plants

(a) Uniformity

Plants used in the preparation of paving mixtures shall be designed and co-ordinated so as to handle the proposed construction within the specified job-mix tolerances.

(b) Plant Scales

Scales for any weighbox or hopper may be either of the beam or springless-dial type and shall be of a standard make and design, sensitive to one-half of 1 per cent of the maximum load that may be required. When of the beam type, there shall be a separate beam for each size aggregate with "tell-tale" actuated for each separate beam, and a tare beam for balancing the hopper.

(c) Equipment for Preparation of Asphalt

Tanks for storage of asphalt shall be capable of heating the materials, under effective and positive control at all times, to the temperature requirements set forth in the specifications. Heating shall be accomplished by steam coils, electricity or other means such that no flame shall come in contact with the heating tank. A circulating system of adequate size, shall be provided to ensure the proper and continuous circulation of the asphalt between storage tank and mixer during the entire operating period. All

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pipelines and fittings shall be steam jacketed or otherwise properly insulated to prevent heat loss. Storage tank capacity shall be sufficient for at least one day's run.

(d) Feeder for Dryer

(i) The plant shall be provided with an accurate mechanical means for uniformly feeding the mineral aggregate into the dryer so that a uniform production and a uniform temperature may be secured.

(ii) For Asphaltic Stabilized Base Course production a cold bin may not be required and feed to the dryer may be accomplished by means of a bulkhead and reciprocating or vibrating type feeder providing segregation of aggregates is avoided.

(iii) For Asphaltic Concrete production (Types A, B and C) a cold feed bin divided into at least 3 compartments will be required. Each compartment shall be equipped with an individual gate control so as to enable the proportioning of the various sizes of cold aggregate.

(e) Dryer

A rotary dryer of a design satisfactory for drying and heating the mineral aggregates shall be provided. The dryer shall be capable of drying and heating the mineral aggregate to the temperature requirements. Flames used for drying and heating shall be adjusted to avoid injury to the aggregate and to avoid forming a coating of carbon or unburnt fuel oil on the aggregate. The aggregate shall be heated to the temperature specified as determined at the discharge chute of the dryer.

(f) Screens

Plant screens shall be capable of screening all aggregates to the sizes required for proportioning, and shall have normal capacities in excess of the full capacity of the mixer.

(g) Hot Bins

The plant shall include a hot storage bin of sufficient capacity to supply the mixer when operating at full capacity. The bin shall be divided into at least 3 compartments arranged to ensure separate and adequate storage of the different aggregate fractions required to produce the disign mix. Separate dry storage shall be provided for mineral filler if required. Each compartment shall be provided with an overflow pipe, located so as to prevent backing up of material into other compartments. The bin shall have a "tailing pipe", for rejections. The discharge points of overflow and "tailing" shall be located so as not to create a hazard nor discomfort. Each compartment shall be provided with an individual outlet gate, designed and constructed so that when closed there will be no leakage. The gates shall cut off quickly and completely and when used in conjunction with a continuous type plant shall be calibrated and capable of being locked into position at an approved setting. Each compartment shall be equipped with a visual indicator to show when it is empty.

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Asphalt Control Unit 4.5.2

Satisfactory means, either by weighing, metering, or volumetric measuring shall be provided to obtain the proper amount of asphalt. All measuring devices shall be sensitive to a 2 per cent variation above or below the actual weight in pounds required. Suitable means shall be provided, either by steam jacketing or other insulating, for maintaining the specified temperature of the asphalt in the pipelines, meters, weigh buckets, spray bars and other containers or flow lines.

(i) Thermometric Equipment

An armoured thermometer reading from 200°F. to 400°F. shall be fixed in the asphalt feed line at a suitable location near the discharge valve at the mixer unit. The plant shall be equipped with a thermometric instrument in the discharge chute of the dryer to register automatically the temperature of the heated aggregate.

(j) Control of Mixing Time

The plant shall be equipped with positive means to govern the time of mixing.

(k) Dust Collectors

When plants are located where dust may be objectionable or interferes with the efficient operation of the plant, proper housings, mixer covers, or dust collecting systems shall be installed. Provision shall be made to waste the material so collected or return it uniformly to the mixture.

(l) Safety Requirements

Adequate and safe stairways to the mixer platform and guarded ladders to other plant units shall be provided. Gears, pulleys, chains, sprockets and other dangerous moving parts shall be guarded. Ample, unobstructed space shall be provided on the mixing platform. A clear, unobstructed passage shall be maintained in and around the truck loading space. This space shall be kept free of drippings from the mixing platform.

(3) Special Requirements for Batching Plants

(a) Weighbox or Hopper

The equipment shall include a means of accurately weighing each size of aggregate in a weighbox or hopper, suspended on scales, large enough to hold a full batch without hand raking or running over. The weighbox or hopper shall be supported on fulcrums and knife edges constructed so they will not be easily thrown out of alignment or adjustment. Gates on bin compartments and hoppers shall be constructed to prevent leakage when closed.

(b) Asphalt Bucket

The asphalt bucket used for weighing shall have sufficient capacity to hold not less than 20 per cent of the weight of aggregate in one batch. It shall be steam jacketed or equipped with insulated electric heating units and shall be suspended and on dial scales or beam scales so that the tare weight of the bucket will be shown for each weighing. A "tell-tale" shall be provided by means of which the net weight of the material added to the mix may be controlled accurately to within 2 per cent of the actual weight in pounds required.

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The bucket shall be arranged so that it will deliver the hot asphalt in a thin uniform sheet or in multiple streams the full width of the mixer.

(c) Mixer Unit for Batch Method

The plant shall include a batch mixer of an approved twin pugmill type, or any other type capable of producing a uniform mixture within the job-mix tolerances. It shall have a batch capacity of not less than 2,000 pounds. For the pugmill type, the clearance of the blades from all fixed and moving parts shall not exceed 3/4 inch unless the maximum diameter of aggregate particle exceeds 1½ inches. If not enclosed, the mixer box shall be equipped with a dust hood to prevent loss of dust. The mixer shall be constructed to prevent leakage of contents until the batch is discharged.

(4) Special Requirements for Continuous Mixing Plant

(a) Gradation Control Unit

The plant shall include a means of accurately proportioning each size of aggregate by either weighing or by volumetric measurement. When proportioning by volume, the unit shall include a feeder mounted under the bin compartments. Each compartment shall have an accurately controlled individual gate to form an orifice for volumetrically measuring the material drawn from each compartment. The orifice shall be rectangular, with one dimension adjustable by positive mechanical means provided with a lock. Indicators shall be provided on each gate to show the gate opening in inches. Mineral filler, if specified, shall be proportioned separately.

(b) Weight Calibration of Aggregate Feed

The plant shall include a means of calibrating the gate openings by means of weight test samples. The materials fed out of the compartments through the orifices shall be by-passed to individual suitable test boxes. The plant shall be equipped to handle and weigh samples up to 800 pounds.

(c) Synchronization of Aggregate and Asphalt Feed

Satisfactory means shall be provided to afford positive interlocking control between the flow of aggregates and the flow of asphalt.

(d) Mixer Unit for Continuous Method

The plant shall include a continuous mixer of the twin pugmill type, or other type that has proved itself capable of producing a uniform mixture within the job-mix tolerance. The paddles shall be adjustable for angular position and reversible. The mixer shall carry the manufacturer's plate giving the net volumetric contents of the mixer at the heights inscribed on a permanent gauge and the rate of feed of aggregate per minute, at plant operating speed. Determination of mixing time shall be by weight method under the following formula:

Mixing time in seconds =

$$\frac{\text{Pugmill dead capacity in pounds}}{\text{Pugmill output in pounds per second}}$$

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(e) Discharge Hopper

Continuous mix plants shall be equipped with a controlled discharge storage hopper of not less than one (1) ton capacity. The hopper shall be kept in operation at all times to prevent the segregation of the mixture.

(5) Mechanical Pavers

(a) Mechanical pavers shall be self-contained, power propelled units, provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing courses not less than 12½ feet wide and from 3/4 inch to 6 inches in depth, true to line, grade and crown.

(b) The receiving hopper shall have sufficient capacity so as not to delay the dump trucks. The hopper shall be equipped to evenly place the mixture in front of the screeds.

(c) The paver shall have sufficient power and traction to operate efficiently on all grades encountered on the work.

(d) Pavers shall employ compensating devices to adjust the grade line so that minor changes in grade elevations will not be reflected immediately in the finished surface, and shall confine the edges of the mixture to true lines.

(e) The screed or strike-off assembly shall operate by cutting, crowding or other action which is effective without tearing, shoving or gouging and produces an even surface without segregation. The screed shall be adjustable to level and crown, having an indicating level in full view of the operator.

(f) The pavers shall be equipped with blending or joint levelling devices for smoothing and adjusting all longitudinal joints between adjacent strips of asphaltic concrete.

(g) The pavers shall be capable of being operated at forward speeds of 5 feet per minute upward, consistent with the satisfactory laying of the mixtures, and shall be equipped with a quick and efficient steering device.

(6) Vehicles for Asphaltic Mixtures

Trucks for hauling asphaltic mixtures shall have tight, clean, smooth metal beds that have been sprayed with a minimum amount of thin fuel oil to prevent the mixture from adhering. Each truck shall be covered with a canvas or other suitable material to protect the mixture from the weather. Any truck which causes excessive segregation of material by its spring suspension or other factors, or has oil leaks of any magnitude, or causes undue delays shall be removed from the work. When required, vehicles shall be insulated to maintain a workable temperature for the mixture, and covers shall be securely fastened.

(7) Distributors

(a) Distributor trucks shall be of the pressure type with insulated tanks. Gravity distributors will not be permitted. spray bars shall be of the full circulating type having a minimum total length of 14 feet. Header bars shall be adjustable to permit varying heights above the surface. Nozzles attached to the bar shall be either the conical or flat slotted type, except that in spreading asphaltic emulsion, special emulsion nozzles shall be used. The distance centre to centre of the nozzles shall not exceed six (6) inches.

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Valves that control the flow to nozzles shall be of a positive acting type, designed to provide a uniform unbroken spread of asphalt material on the surface, and lever-controlled to provide quick opening or closing in one operation. Spray bars shall be controlled by a bootman riding at the rear of the distributor where the operation of all sprays is in full view. Spraying by means of cab-controlled valves will not be permitted.

(b) The distributor shall be equipped with devices and charts to provide accurate, rapid determination and control of the amount of asphaltic material being applied, and with a tachometer of the auxiliary wheel type reading speed in feet per minute. Spraying equipment shall be designed to apply asphaltic material, in controlled amounts, ranging from 0.05 to 1 gallon per square yard with a pressure range of 25 to 75 pounds per square inch. Spray bar extensions used to cover a greater width shall be of the full circulating type. The distributor shall also be equipped with a hose and nozzle attachment for spotting skipped or inaccessible areas. The distributor shall also be equipped with pressure gauges and an accurate thermometer for determination of temperature of the asphaltic material. Distributors shall be maintained at all times to prevent dripping of free asphalt.

(8) Rollers

(a) Rollers shall be self-propelled, smooth running and capable of reversing without back lash, and shall meet the following requirements:

(i) Three-wheel steel rollers shall weigh at least 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of width.

(ii) Tandem steel wheel rollers shall weigh at least 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of width.

(iii) Pneumatic tired straight wheel rollers shall weigh at least 9 tons, and shall provide a compression of not less than 300 pounds per inch of effective rolling width. Front and rear tires shall be staggered to overlap.

(b) The wheels of all rollers shall be equipped with adjustable scrapers, water tanks, and sprinkling apparatus, used to keep the wheels wet and prevent asphalt mixture from adhering to the wheels.

(9) Power Blowers and Power Brooms

Blowers and brooms shall be of the power type suitable for cleaning the surface to be paved.

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(10) Weigh House

The weigh house shall be weather-proof and constructed to afford adequate protection for the recording devices of the scales. It shall be of suitable size, having one sliding window facing the scale platform, one end window, and a shelf desk at least 2 feet wide and 6 feet long. Doors shall not open onto the scale platform. The contractor shall provide adequate lighting and heating.

(11) Small Tools

Small tools shall consist of rakes, shovels, tampers, smoothing irons, pavement cutters and other items as may be required. A sufficient number of small tools shall be available at all times.

(12) Laboratory

The Contractor shall provide and maintain a suitable field laboratory building for the sole use of the Engineer. It shall be not less than 10 feet by 12 feet and 7 feet high, floored and roofed watertight, containing not less than 2 windows and 1 door suitably screened and locked. The building shall contain a work-bench 3 feet wide and 6 feet long and an instrument locker 2 feet by 3 feet by 4 feet with adjustable shelves and equipped with a lock. The building shall be located so that the plant is in full view from at least one window. The Contractor shall provide adequate lighting and heating.

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DIVISION 6

SECTION 8 - CONDITIONING ROAD BED

REVISED MARCH, 1963

6.8.1 DESCRIPTION

This item consists of preparing the surface of an existing road bed in accordance with these specifications.

6.8.2 MATERIALS

Not applicable.

6.8.3 CONSTRUCTION

(1) The surface shall be scarified to a depth of approximately 3 inches. All lumps shall be broken down to aggregate size by manipulation with a grader or by other approved mechanical means.

(2) After scarifying, the material shall be brought to the optimum moisture content, shaped to the required cross-section and compacted to 100% maximum density (latest A.A.S.H.O. Designation T-99).

(3) The reshaped and compacted surface shall be free from waves and irregularities exceeding one-half inch when tested with a 10 foot straightedge.

6.8.4 MEASUREMENT

(1) The quantity of conditioning road bed which will be measured for payment shall be the number of square yards of surface acceptably conditioned in accordance with these specifications.

(2) The quantity of compaction which will be measured for payment shall be the number of approved hours the compaction units and compactors worked as recorded on the hour meters.

(3) The quantity of water which will be measured for payment shall be the number of 1,000 gallon units of water supplied and distributed as directed.

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SUPPLEMENTARY SPECIFICATION
FOR
ASPHALTIC MIXTURE IN STOCKPILE

1. DESCRIPTION

This item consists of an asphaltic mixture composed of coarse and fine aggregate and an asphalt binder, mixed in a central plant and stockpiled.

2. MATERIALS

(1) General

Samples of all materials which are to be used under these specifications shall be submitted to the Department for analysis and quality testing.

(2) Aggregate

(a) Coarse and fine aggregate shall conform to the specifications for asphaltic concrete aggregates.

(b) The maximum size of aggregate to be used shall be indicated in Division 1, Section 1.

(3) Asphaltic Material

The asphaltic binding material shall be of the type and grade specified in Division 1, Section 1 and shall conform to the Canadian Government Specifications Board Specification for the type specified.

(4) Anti-Stripping Agent

When specified in Division 1, Section 1, an anti-stripping agent shall be added to the asphaltic material before it is used in the patching mixture. The anti-stripping agent shall be added in the quantity recommended by the supplier of the specific material used.

(5) General Composition of Mixture

The coarse and fine aggregates and asphaltic binder shall be combined in proportions specified by the Engineer.

3. CONSTRUCTION

(1) Preparation of Asphaltic Material

When specified anti-stripping additives to the asphaltic material must be thoroughly mixed before the asphalt is used. This may be done either at the producing refinery, in tank trucks equipped with circulatory systems or other methods approved by the Engineer.

(2) Preparation of Mixture

Patching mixture shall be prepared in a plant meeting the requirements of Division 4, Section 5 of the Specifications. The constituents of the mixture shall be combined in such proportions as to produce a mixture conforming to the composition specified by the Engineer.

The aggregate and asphalt shall be heated so as to produce a mixture having a maximum temperature of 140°F. and a minimum temperature of 100°F. with a recommended mixing temperature of 125°F.

Aggregates when mixed shall contain not over two (2) per cent of moisture.

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(3) Stockpiling

The prepared mixture shall be stockpiled to a height not greater than 10 feet. Equipment used in stockpiling, including hauling trucks, shall not run on the mixture or in any way compress the mixture. To obtain height above that of the truck dump the material shall be lifted and placed by front end loader, clam shell or similar equipment to the allowable maximum height.

4. METHOD OF MEASUREMENT

(1) The quantity of asphaltic mixture in stockpile which will be measured for payment shall be the number of tons stockpiled and accepted.

(2) The quantity of asphaltic material which will be measured for payment shall be the number of tons actually incorporated into the mixture acceptably stockpiled.

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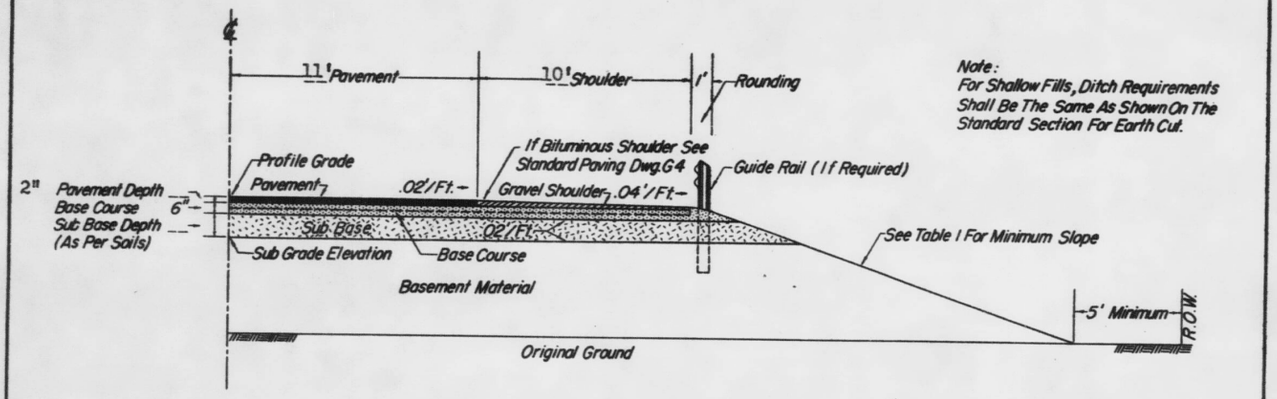

TABLE I
MINIMUM SLOPES

Heigth Of Cut Or Fill	TERRAIN		
	Rolling	Mod. Steep	Steep
0 - 4'	4 : 1	4 : 1	4 : 1
4 - 10'	4 : 1	3 : 1	2 : 1
10 - 15'	3 : 1	2½ : 1	1½ : 1
15 - 20'	2 : 1	2 : 1	1½ : 1
Over 20'	2 : 1	1½ : 1	1½ : 1

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A1

DRAWN BY B. Nicol CHECKED BY

APPROVED BY DESIGN ENGINEER

APPROVED BY CHIEF

1960

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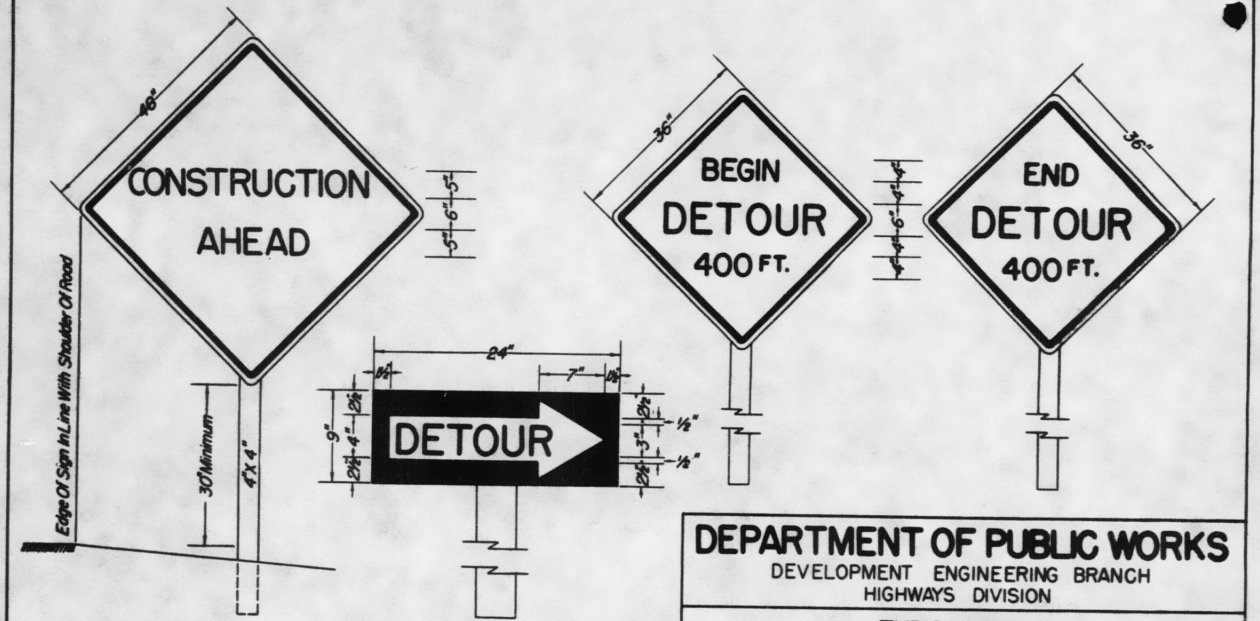

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL SIGNS
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 1

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

Note:
1. Colouring - Black Lettering & Trim On Yellow Background
2. Mounting Posts For All Signs Similar To That Shown By Construction Ahead
3. Corner Radii - 1½"

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Note:
Colour - Black Letters On White Background

REV. No. 2 JAN. 1963

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

STYLE OF LETTERING FOR
PROJECT SIGN BOARDS
STANDARD DRAWING NO. F 2-A

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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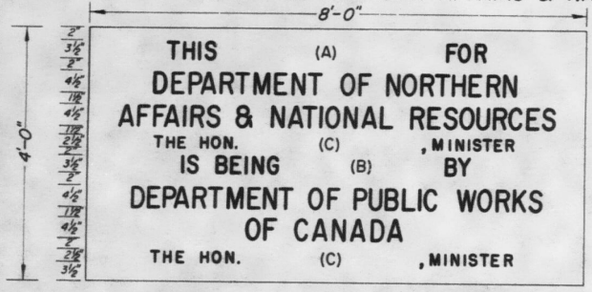
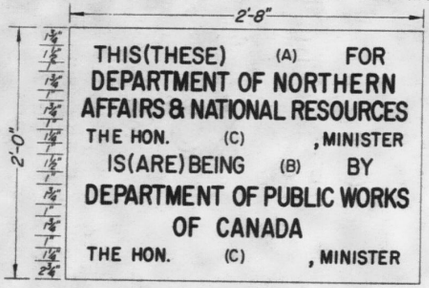
CONSTRUCTION SIGN FOR PROJECTS OVER $50,000. UNDERTAKEN BY DEPARTMENT OF PUBLIC WORKS FOR DEPARTMENT OF NORTHERN AFFAIRS & NATIONAL RESOURCES.



INSERT APPROPRIATE WORDING E.G.
(A) HIGHWAY-BRIDGE
(B) CONSTRUCTED-ERECTED-PAVED
(C) MINISTER'S NAME

CONSTRUCTION SIGN FOR PROJECTS UNDER $50,000. UNDERTAKEN BY DEPARTMENT OF PUBLIC WORKS FOR DEPARTMENT OF NORTHERN AFFAIRS & NATIONAL RESOURCES.



INSERT APPROPRIATE WORDING E.G.
(A) HIGHWAY-BRIDGE
(B) CONSTRUCTED-ERECTED-PAVED
(C) MINISTER'S NAME

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

PROJECT SIGN BOARDS
NORTHERN AFFAIRS & NATIONAL RESOURCES
STANDARD DRAWING NO. F2D

DRAWN BY R. LEGAULT CHECKED BY B. NICOL
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
FEBRUARY 1963

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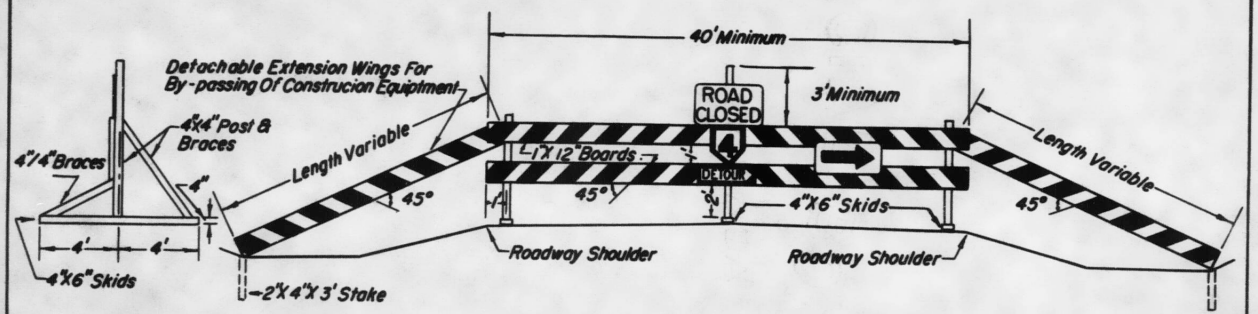

Notes:

1. The Various Types & Combinations Of Approved Signs For Barricades Required For Each Project Will Be Governed By Field Conditions & Subject To Approval By The Engineer
2. All Barricades To Be 1" X 12" Lumber Painted 8" Alternate Black & Yellow Strips
3. All Skids, Braces & Posts To Be Painted White & Nailed Together With No. 20d Nails
4. Bases To Be Weighted Where Necessary To Provide Stability

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 3

DRAWN BY B. Nicol CHECKED BY

APPROVED BY DESIGN ENGINEER

APPROVED BY CHIEF

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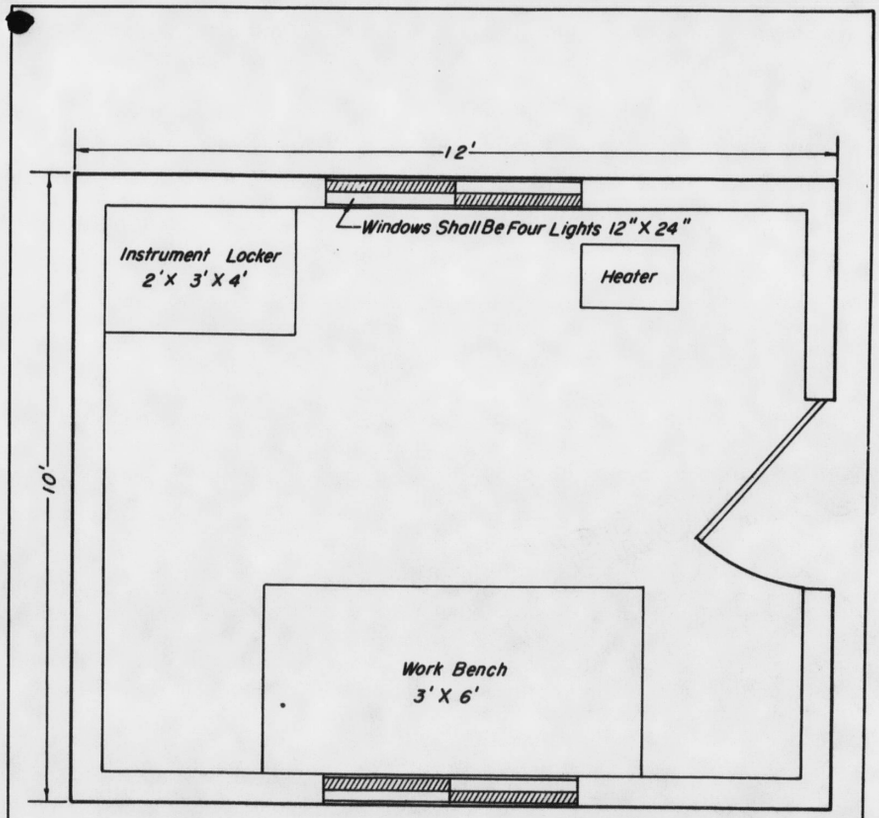

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

FIELD LABORATORY AT PROJECT SITE STANDARD DRAWING NO. G9

DRAWN BY B.Nicol CHECKED BY

APPROVED BY DESIGN ENGINEER

APPROVED BY CHIEF

1960

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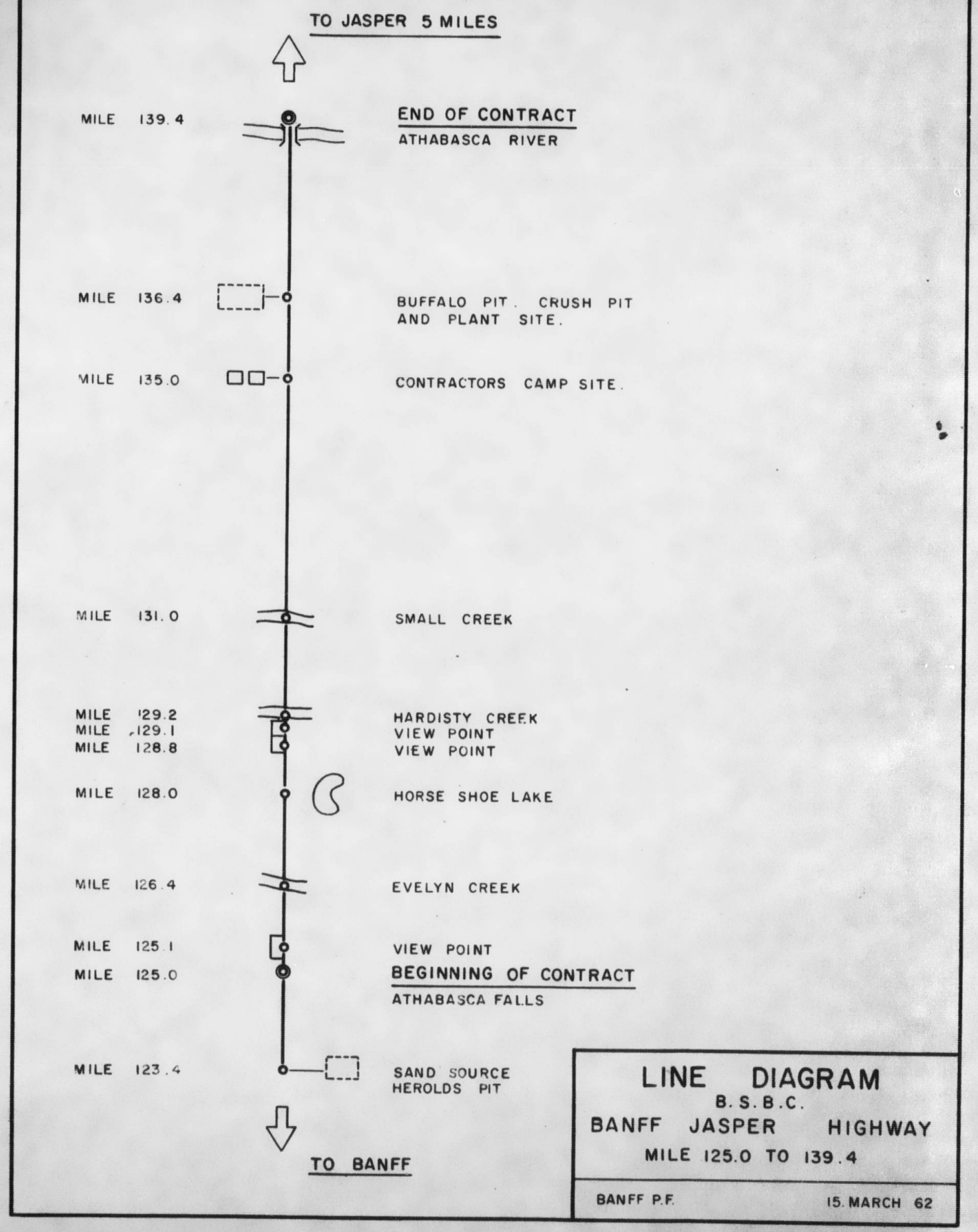

LINE DIAGRAM

B.S.B.C.

BANFF JASPER HIGHWAY

MILE 125.0 TO 139.4

BANFF P.F. 15. MARCH 62

B.J. 1-1-150.

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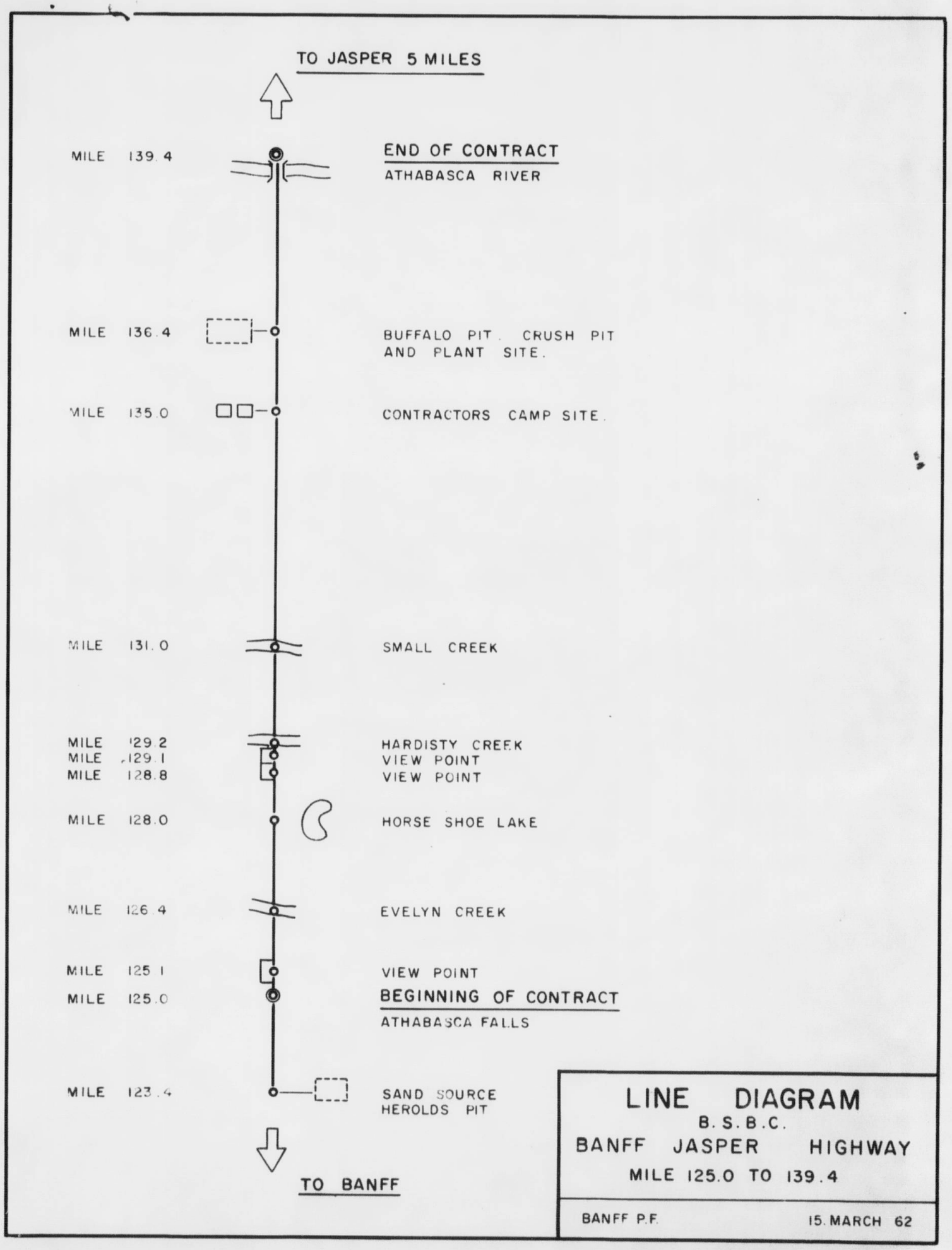

LINE DIAGRAM

B.S.B.C.

BANFF JASPER HIGHWAY

MILE 125.0 TO 139.4

BANFF P.F. 15. MARCH 62

B.J. 1-1-150.

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These Articles of Agreement made in duplicate this

day of 19 between

Her Majesty the Queen
in right of Canada (referred to
in the documents forming the
contract as "Her Majesty")
represented by the Minister of

_____
(referred to in the documents forming
the contract as "the Minister")

and

_____
(referred to in the documents forming
the contract as the "Contractor")

Witness that Her Majesty and the Contractor covenant and agree as follows:

ARTICLE I

The Contractor will between the date of these Articles of Agreement and the day of 19 in a careful and workmanlike manner execute the following work:

which work is more particularly described in the documents that are attached hereto, entitled "Plans and Specifications" and marked "A" (referred to in the documents forming the contract as the "Plans and Specifications") at the place and in the manner therein set out.

ARTICLE II

(1) Her Majesty will pay to the Contractor as consideration for the execution of the portion of the work to which the fixed price arrangement is applicable the sum of $ (subject to any additions or deductions provided for in these Articles, the General Conditions, the Terms of Payment, or the Labour Conditions except any addition or deduction which is expressly stated to be applicable only to a unit price arrangement), at the times and in the manner set out or referred to in the document that is attached hereto entitled "Terms of Payment" and marked "B"(referred to in the documents forming the contract as the "Terms of Payment").

(2)

(a) Her Majesty will pay to the Contractor as consideration for the execution of the portion of the work to which the unit price arrangement is applicable a sum equal to the number of units of measurement of each class of labour, plant or material actually performed, used or supplied by the Contractor in the execution of the work as measured by the Engineer and set out in the Engineer's Final Certificate of Measurement multiplied by the price for each such unit of measurement as set out in the Unit Price Table as

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added to or amended in accordance with paragraphs (b), (c) and (d) of this Article or as, in a proper case, determined in accordance with paragraph (e) of this Article (such sum being subject to any additions or deductions provided for in the General Conditions, Terms of Payment, Labour Conditions, except any addition or deduction which is expressly stated to be applicable only to a fixed price arrangement) at the times and in the manner set out or referred to in the document that is attached hereto entitled "Terms of Payment" and marked "B" (referred to in the documents forming the contract as the "Terms of Payment").

(b) The Engineer and the Contractor may by agreement in writing add to the Unit Price Table classes of labour, plant or material together with units of measurement, prices per unit and estimated quantities therefor where any labour, plant or material which will be included in the Engineer's Final Certificate of Measurement is not included in any class of labour, plant or material set out in the Unit Price Table.

(c) The Engineer and the Contractor may by agreement in writing amend the price per unit set out in the Unit Price Table for any class of labour, plant or material included therein where an estimated quantity is set out therein for that class of labour, plant or material, if the Engineer's Final Certificate of Measurement shows or will show that the total quantity of that class of labour, plant or material performed, used or supplied by the Contractor in executing the work is less than 85% of that estimated quantity.

(d) The Engineer and the Contractor may by agreement in writing amend the price per unit set out in the Unit Price Table for any class of labour, plant or material included therein where an estimated quantity is set out therein for that class of labour, plant or material, by establishing a price per unit for units of that class of labour, plant or material performed, used or supplied by the Contractor in executing the work which are in excess of 115% of that estimated quantity.

(e) Where the Engineer and the Contractor do not agree as contemplated in paragraphs (b), (c) and (d) of this Article the Engineer shall determine the class of and the unit of measurement of the labour, plant or material involved and the price per unit therefor shall be determined in accordance with section 46 of the General Conditions.

(f) For the information and guidance of the Contractor and the persons administering the contract on behalf of Her Majesty, but not so as to constitute a warranty, representation or undertaking of any nature, either by Her Majesty to the Contractor or by the Contractor to Her Majesty, it is estimated that the total amount payable by Her Majesty to the Contractor for the portion of the work to which the unit price arrangement is applicable will not exceed $

(3) Subsection (1) of this Article is not applicable where the unit price arrangement applies to the whole of the work.

(4) Subsection (2) of this Article is not applicable where the fixed price arrangement applies to the whole of the work.

ARTICLE III

(1) Subject to subsections (2) and (3) of this Article, the document attached hereto, entitled "General Conditions" and marked "C" (referred to in the documents forming the contract as the "General Conditions"), the document attached hereto entitled "Labour Conditions" and marked "D" (referred to in the documents forming the contract as the "Labour Conditions"), the document attached

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hereto and entitled "Insurance Schedule" and marked "E" (referred to in the documents forming the contract as the "Insurance Schedule"), the "Plans and Specifications", the "Terms of Payment" and these Articles of Agreement all form part of the contract between Her Majesty and the Contractor.

(2) Any of the provisions of these Articles, the Terms of Payment and the General Conditions which are expressly stated to be applicable only to a unit price arrangement are not applicable to the whole or to the portion of the work to which the fixed price arrangement is applicable.

(3) Any of the provisions of these Articles, the Terms of Payment and the General Conditions which are expressly stated to be applicable only to a fixed price arrangement are not applicable to the whole or to the portion of the work to which the unit price arrangement is applicable.

ARTICLE IV

The amount of $, that has been deposited with the Minister by the Contractor as a security deposit for the due fulfilment of the contract will be dealt with in accordance with the provisions concerning security deposit contained in the General Conditions.

The Contractor has furnished and Her Majesty accepts a Performance Bond, i.e.,

_____
(insert details - name of Company, amount, date, etc.)

and a Labour and Material Payment Bond, i.e.,

_____
(insert details - name of Company, amount, date, etc.)

with respect to the execution of the work by the Contractor, which bond or bonds shall operate according to their tenor. The Contractor shall post on the site of the work a notice that a Labour and Material Payment Bond is in force together with the name and address of the surety thereunder, definition of those persons protected thereunder and an outline of the procedure for submitting a claim thereunder.

ARTICLE V

For all purposes of or incidental to the contract, the Contractor's address shall be deemed to be:

ARTICLE VI

(1) Her Majesty and the Contractor agree that the following table is, subject to the restrictions contained in subsections (2) and (3) of this Article, the Unit Price Table for the purposes of the contract:

Column 1	Column 2	Column 3	Column 4
Class of labour, plant or material	Unit of Measurement	Brice per unit	Estimated quantity

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(a) The aggregate of all classes of labour, plant or material contained in the Unit Price Table in respect of which no estimated quantity is shown in column 4 together with the units of measurement and the prices per unit relating to such classes of labour, plant or material form the Unit Price Table applicable to a fixed price arrangement.

(b) The price per unit in respect of any class of labour, plant or material set out in the Unit Price Table described in paragraph (a) shall be increased by 10% where the cost to the Contractor of executing the work in respect of any such class of labour, plant or material is increased.

(3) The classes of labour, plant or material that do not fall within subsection (2) of this Article, together with the units of measurement, prices per unit and estimated quantities relating to such classes of labour, plant or material, form the Unit Price Table applicable to a unit price arrangement.

(4) The Unit Price Table described in subsection (3) designates the whole or the portion of the work to which the unit price arrangement is applicable.

(5) The portion of the work which does not fall within subsection (4) of this article is the portion of the work to which the fixed price arrangement is applicable.

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Signed on behalf of Her Majesty
by

_____
Deputy Minister

_____
Deputy Minister

and countersigned on behalf of
Her Majesty by

_____
Secretary

_____
Secretary

at Ottawa in the presence of

_____

on the _____

day of _____

19 ____

_____
Witness

Sealed, attested to and delivered by

_____

_____

as _____ and
Position

by _____

_____

as _____
Position

_____

of the _____
Contractor

Seal.

on the _____ day of

_____ 19

Marginal Note

The attention of the Contractor is drawn to the following Statutory provision:

"It is a term of every contract providing for the payment of any money by Her Majesty that payment thereunder is subject to there being an appropriation for the particular service for the fiscal year in which any commitment thereunder would come in course of payment."

Section 38, Financial Administration Act, R.S.C. 1952, c.116

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This document is the document referred to as "Terms of Payment" and marked "B" in the Articles of Agreement entered into on the

_____ day of _____ ,

19_____ between Her Majesty the Queen and

_____.

Signed

_____
Minister

_____
Contractor

"B"

TERMS OF PAYMENT

Amount Payable — General

1. Her Majesty will pay to the Contractor at the times and in the manner hereinafter set out the amount by which

(a) the aggregate of the amounts described in section 2 of the Terms of Payment exceeds

(b) the aggregate of the amounts described in section 3 of the Terms of Payment

and the Contractor will accept the payment as full consideration for everything furnished and done by him in respect of the work.

Amounts Payable to the Contractor

2. (1) The amounts referred to in paragraph (a) of section 1 of the Terms of Payment are:

(a) the amount set out in Article II of the Articles of Agreement;

(b) the amount, if any, payable to the Contractor pursuant to section 12 of the General Conditions relating to unexpected soil conditions, neglect or delay;

(c) the amount, if any, payable to the Contractor on account of a suspension of work pursuant to section 18 of the General Conditions;

(d) the amount, if any, payable to the Contractor pursuant to section 37 of the General Conditions relating to work not required to be done under the contract but done by the Contractor under order of the Engineer;

(e) the amount, if any, payable to the Contractor by reason of an order or change pursuant to section 38 of the General Conditions; and

(f) the amount, if any, payable to the Contractor pursuant to section 39 of the General Conditions relating to cooperation with other contracting persons and workmen.

(2) Paragraph (e) of subsection (1) is applicable only to a fixed price arrangement.

Amounts Payable to Her Majesty

3. (1) The amounts referred to in paragraph (b) of section 1 of the Terms of Payment are:

(a) the amount, if any, which the Contractor is liable to pay to Her Majesty pursuant to section 14 of the General Conditions relating to damage to Her Majesty's material, plant and real property;

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(b) in the event of delay in completing the work the amount payable to Her Majesty pursuant to section 15 of the General Conditions;

(c) the amount, if any, paid by Her Majesty in satisfaction of obligations of the Contractor or a subcontractor pursuant to section 21 of the General Conditions or pursuant to the Labour Conditions;

(d) the amount, if any, payable by the Contractor to Her Majesty pursuant to section 36 of the General Conditions relating to matters done by Her Majesty which the Contractor refused or failed to do;

(e) the amount, if any, by which the cost of the work to the Contractor was decreased by reason of dispensations or changes pursuant to section 38 of the General Conditions; and

(f) the amount referred to in subsection (1) of section 43 of the General Conditions relating to municipal permits if the Contractor is in breach of subsection (3) of the said section.

(2) Paragraph (e) of subsection (1) is applicable only to a fixed price arrangement.

4. (1) For the purposes of this section "Payment Period" means an interval of thirty days or such other interval as the Contractor and the Engineer agree upon. Time of Payment

(2) The Contractor shall upon the expiration of a Payment Period deliver to the Engineer a Progress Claim in writing and shall describe therein any portion of the work completed and any materials delivered to the site of the work but not incorporated into the work during the Payment Period in respect of which the Progress Claim is made.

(3) Within 14 days of receipt by the Engineer of the Progress Claim the Engineer shall inspect the portion of the work and the material described therein and shall issue a Progress Report, which may take the form of an endorsement on the Progress Claim, indicating the value of the portion of the work and the materials described in the Progress Claim which meet with his satisfaction and which, in his opinion, have been completed or delivered in accordance with the contract and which are not included in any other Progress Report.

(4) Thirty days after the expiration of the fourteen days referred to in subsection (3) and if the Contractor has made and delivered to the Engineer his Statutory Declaration deposing to the fact that as at the date of the immediately preceding Progress Claim, if any, all his lawful obligations to subcontractors, workmen and suppliers of material in respect of the work are fully discharged, an amount equal to 95% of the value of the work and materials as shown in the Progress Report shall become due and be payable by Her Majesty to the Contractor but where a Labour and Material Payment Bond has not been furnished by the Contractor, the amount payable under this subsection shall be an amount equal to 90% of the value of the work and materials as shown in the Progress Report.

(5) Upon the expiration of 60 days from the date of issuance of an Interim Certificate of Completion under subsection (2) of section 40 of the General Conditions and if the Contractor has made and delivered to the Engineer his Statutory Declaration deposing to the fact that all his lawful obligations to subcontractors, workmen and suppliers of material in respect of the work are fully discharged, the amount described in section 1 of the Terms of Payment less the aggregate of

(a) all payments made pursuant to subsection (4);

(b) an amount equal to double the cost to Her Majesty of completing the items and doing the things described in the Interim Certificate of Completion which, in the opinion of the Engineer, are brought about by defects and faults in the work; and

(c) an amount equal to the cost to Her Majesty of completing the items and doing the things described in the Interim Certificate of Completion other than items or things to which paragraph (b) applies;

shall become due and be payable by Her Majesty to the Contractor.

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(6) Upon the expiration of 60 days from the date of issuance of a Final Certificate of Completion under subsection (1) of section 40 of the General Conditions and if the Contractor has made and delivered to the Engineer his Statutory Declaration deposing to the fact that all his lawful obligations and lawful claims against him, arising out of the execution of the work, have been discharged and satisfied, the amount described in section 1 of the Terms of Payment less the aggregate of

(a) all payments made pursuant to subsection (4); and

(b) all payments made pursuant to subsection (5);

shall become due and be payable by Her Majesty to the Contractor.

Progress Report and Payment thereunder not binding on Her Majesty

5. Neither a Progress Report nor a payment by Her Majesty pursuant to the Terms of Payment shall be construed as evidence that the work, material or any part thereof is complete, is satisfactory or is in accordance with the contract.

Delay in Making Payment

6. Delay by Her Majesty in making a payment when it becomes due and is payable pursuant to the Terms of Payment shall be deemed not to be a breach of the contract by Her Majesty but such delay shall, if the payment involved is payable pursuant to subsection (4) of section 4 of the Terms of Payment and if the delay continues for more than fifteen days, entitle the Contractor to interest on the amount overdue and Her Majesty will, when making payment of the amount overdue, pay to the Contractor interest on the amount overdue at the rate of 5% per annum.

Right of Set-off

7. (1) Without restricting any right of set-off given or implied by law, Her Majesty may set-off against any amount payable to the Contractor under the contract, any amount payable to Her Majesty by the Contractor under this contract or under any current contract and without restricting the generality of the foregoing Her Majesty may when making payment pursuant to section 4 of the Terms of Payment deduct from the amount payable any amount which is then payable to Her Majesty by the Contractor under the contract or which, by virtue of the right of set-off, may be retained by Her Majesty.

(2) For the purposes of this section "current contract" means;

(a) a contract between Her Majesty and the Contractor under which the Contractor has an undischarged obligation to perform or supply work, labour or materials, or

(b) a contract between Her Majesty and the Contractor in respect of which Her Majesty has since the date on which these Articles of Agreement were made exercised the right to take the work, the subject of that contract, out of the Contractor's hands.

Payment in Event of Termination

8. In the event that the contract is terminated pursuant to section 19 of the General Conditions Her Majesty will as soon as is practicable under the circumstances pay to the Contractor the amount, if any, payable to the Contractor pursuant to that section.

Roger Duhamel, F.R.S.C., Queen's Printer and Controller of Stationery, Ottawa, 1963

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reference to a subsection or paragraph of the section or subsection, as the case may be, in which the reference is made.

(4) In interpreting the contract in the event of discrepancies or conflicts between anything in the Plans and Specifications and the General Conditions, the General Conditions shall govern.

(5) In interpreting the Plans and Specifications –

(a) in the event of discrepancies or conflicts between the Plans and Specifications, the Specifications shall govern;

(b) in the event of discrepancies or conflicts between the Plans, the Plans drawn with the largest scale shall govern; and

(c) in the event of discrepancies or conflicts between figured dimensions and scaled dimensions, the figured dimensions shall govern.

Successors and Assigns

2. The contract shall inure to the benefit of and be binding upon the parties hereto and their executors, administrators, successors and assigns.

Assignment of Contract

3. The contract may not be assigned without the written consent of the Minister.

Subcontracting by Contractor

4. (1) Neither the whole nor any part of the work may be subcontracted by the Contractor without the consent of the Engineer.

(2) Every subcontracting by the Contractor shall provide that the subcontractor shall comply with all terms and conditions of this contract which can reasonably be applied to his undertaking.

Description of Work All-inclusive

5. The description of the work and material set out in the contract includes not only the particular kind of work and material mentioned but also all labour, plant and material necessary for the full execution, completion and delivery ready for use of the work and material.

No Implied Obligations

6. No implied obligation of any kind by or on behalf of Her Majesty shall arise from anything in the contract, and the express covenants and agreements herein contained and made by Her Majesty are and shall be the only covenants and agreements upon which any rights against Her Majesty are to be founded; and, without limiting the generality of the foregoing, the contract supersedes all communications, negotiations and agreements, either written or oral, relating to the work and made prior to the date of the contract.

Time of Essence

7. Time is of the essence of the contract.

Indemnification by Contractor

8. (1) Except as provided in Section 9 of the General Conditions, the Contractor shall indemnify and save harmless Her Majesty from and against all claims, demands, losses, costs, damage, actions, suits or proceedings by whomsoever made, brought or prosecuted in any manner based upon, arising out of, related to, occasioned by or attributable to the activities of the Contractor in executing the work under the contract or to an infringement or an alleged infringement by the Contractor of a patent of invention.

(2) For the purposes of subsection (1), "activities" includes an act improperly carried out, an omission to carry out an act and a delay in carrying out an act.

Indemnification by Her Majesty

9. Her Majesty shall indemnify and save harmless the Contractor from and against all claims, demands, losses, costs, damage, actions, suits or

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This document is the document referred to as "General Conditions" and marked "C" in the Articles of Agreement entered into

on the _____ day of _____

19_ , between Her Majesty the Queen and

_____

Signed { _____ Minister

_____ Contractor

"C"

GENERAL CONDITIONS

1. (1) In the contract

Interpretation

(a) "Engineer" means the .....
.....
of .....
of the Government of Canada, and includes a person specially authorized by him to perform on his behalf any function under the contract;

(b) "herein", "hereby", "hereof", "hereunder" and similar expressions refer to the contract as a whole and not to any particular subdivision or part thereof;

(c) "material" includes all materials, commodities, articles and things required to be furnished under the contract for incorporation in the work;

(d) "Minister" includes a person acting for, or if the office is vacant, in the place of such Minister, under the authority of an order of the Governor General of Canada in Council, and also his successors in the office, and his or their lawful deputy;

(e) "plant" includes all animals, tools, implements, machinery, vehicles, buildings, structures, equipment, articles and things required for the execution of the work;

(f) "security deposit" means the security given by the Contractor to Her Majesty in accordance with the contract;

(g) "subcontractor" means a person, firm or corporation to whom or to which the Contractor has, pursuant to section 4 of the General Conditions and with the consent of the Engineer, subcontracted the whole or any portion of the work;

(h) "superintendent" means the employee of the Contractor who is designated by the Contractor as being in full charge of the field operations of the Contractor for the purposes of the contract; and

(i) "work" includes the whole of the works, materials, matters and things required to be done, furnished and performed by the Contractor under the contract.

(2) The marginal notes in the contract form no part of the contract but shall be deemed to be inserted for the convenience of reference only.

(3) Unless the context otherwise requires, where in the contract reference is made to a subsection or paragraph, the reference shall be deemed to be a

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proceedings arising out of his activities under the contract which are directly attributable to

(a) lack of or a defect in, title or an alleged lack of or defect in, title to the site of the work; or

(b) an infringement or an alleged infringement of any patent of invention in executing anything for the purposes of the contract, the model, plan or design of which was supplied by Her Majesty to the Contractor.

Members of House of Commons not to Benefit

10. No Member of the House of Commons shall be admitted to any share or part of the contract or to any benefit arising therefrom.

Notices, Orders, etc., to Contractor

11. (1) Notices for the purposes of paragraph (a) of subsection (1) of section 16, section 18 and section 19 of the General Conditions shall be in writing and shall

(a) be delivered to the Contractor in person or, if the Contractor is a corporation or partnership, be delivered to a senior administrative or executive officer of the corporation or partnership, or

(b) sent by mail to the Contractor or his superintendent addressed to the address mentioned in the contract,

and if any question arises as to whether any such notice was communicated to the Contractor it shall be deemed to have been sufficiently communicated to him

(c) if it was delivered pursuant to paragraph (a), on the day it was delivered, and

(d) if it was sent by mail pursuant to paragraph (b), on the day it was received by the Contractor or on the sixth day after it was mailed, whichever is earlier.

(2) Any notice, order, direction, decision or communication other than a notice to which subsection (1) refers, which may be given to the Contractor pursuant to the contract may be given in any manner, but it shall be deemed to have been sufficiently communicated to the Contractor if it was put in writing and the writing was

(a) delivered to the Contractor in person or, if the Contractor is a corporation or partnership was delivered to a senior administrative or executive officer of the corporation or partnership,

(b) delivered to the Contractor's superintendent,

(c) left at the Contractor's office or, if he has more than one office, at one of them, or

(d) sent by mail to the Contractor or his superintendent addressed to the address mentioned in the contract or to the Contractor's last known place of business or residence.

Changes in Soil Conditions and, Neglect or Delay by Her Majesty

12. (1) No payment will be made by Her Majesty to the Contractor in addition to the payment expressly promised by the contract on account of any extra expense, loss or damage incurred or sustained by the Contractor for any reason including a misunderstanding on the part of the Contractor as to any fact, whether or not such misunderstanding is attributable directly or indirectly to Her Majesty or any of Her Majesty's agents or servants (whether or not any negligence or fraud on the part of Her Majesty's agents or servants is involved) unless, in the opinion of the Engineer, the extra expense, loss or damage is directly attributable to

(a) a substantial difference between information relating to soil conditions at the site of the work, or a reasonable assumption of fact based thereon, in the Plans and Specifications or other documents or material communicated by Her Majesty to the Contractor for his use in preparing his tender and the real soil conditions encountered at the site of the work by the Contractor when executing the work, or

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(b) neglect or delay occurring after the date of the contract on the part of Her Majesty in providing any information or in doing any act which the contract either expressly requires Her Majesty to do or which would be done by an owner, in accordance with the usage of the trade, to enable his Contractor to carry out an undertaking similar to the work being executed under the contract for Her Majesty,

in which case, if the Contractor has given to the Engineer written notice of his claim before the expiration of thirty days from the encountering of the soil conditions giving rise to the claim or from the day on which the neglect occurs or the delay commences, as the case may be, Her Majesty will pay to the Contractor in respect of the additional expense, loss or damage incurred or sustained by reason of that difference, neglect or delay, an amount equal to the cost, calculated in accordance with sections 44 to 47 of the General Conditions of the additional plant, labour and materials necessarily involved.

(2) If, in the opinion of the Engineer, the Contractor has effected a saving of expenditure by reason of the execution of the work by the Contractor being rendered less difficult and less costly because the soil conditions actually encountered by the Contractor at the site of the work when executing the work are substantially different from soil conditions indicated in information or a reasonable assumption of fact based thereon in the Plans and Specifications or other documents or material communicated by Her Majesty to the Contractor for his use in preparing his tender, the amount set out in Article II of the Articles of Agreement shall be reduced by an amount equal to the saving effected by the Contractor.

(3) Paragraph (a) of subsection (1) and subsection (2) are applicable only to a fixed price arrangement.

(4) If information relating to soil conditions at the site of the work appeared in the Plans and Specifications or in other documents or material communicated by Her Majesty to the Contractor for his use in preparing his tender and if the real soil conditions encountered at the site of the work by the Contractor when executing the work are substantially different from such information, or a reasonable assumption of fact based thereon, so that the cost to the Contractor of executing the work is directly and substantially increased or decreased by reason of such difference then the Engineer and the Contractor shall exercise their powers under subsection (2) of Article II of the Articles of Agreement relating to amendment of the Unit Price Table so that the benefit of a substantial decrease in cost shall accrue to Her Majesty and the burden of a substantial increase in cost will not be borne by the Contractor.

(5) Subsection (4) is applicable only to a Unit Price Arrangement.

Materials, Plant and Real Property Become Property of Her Majesty

13. (1) All materials and plant and the interest of the Contractor in all real property, licences, powers and privileges acquired, used or provided by the Contractor for the work shall from the time of being so acquired, used or provided, become and they are the property of Her Majesty for the purposes of the work and they shall continue to be the property of Her Majesty

(a) in the case of materials, until incorporated in the work or until the Engineer indicates that he is satisfied that they will not be required for the work, and

(b) in the case of plant, real property, licences, powers and privileges, until the Engineer indicates that he is satisfied that the interest vested in Her Majesty therein is no longer required for the purposes of the work.

(2) Material or plant that is the property of Her Majesty by virtue of this section shall not be taken away from the site of the work, or used or disposed of, except for the purposes of the work, without the consent in writing of the Engineer.

(3) Her Majesty is not liable for loss or damage to material or plant that is the property of Her Majesty by virtue of this section and the Contractor is liable for such loss or damage notwithstanding that the material or plant is the property of Her Majesty.

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14. (1) The Contractor is liable to Her Majesty for loss of or damage to material, plant or real property, whether attributable to causes beyond his control or not, supplied or made available by Her Majesty to the Contractor for use in connection with the work other than loss or damage resulting from and directly attributable to reasonable wear and tear.

Materials, Plant and Real Property Supplied by Her Majesty

(2) The Contractor will not use material, plant or real property to which this section applies except for the purpose of carrying out this contract.

(3) When the Contractor has failed within a reasonable time after being required by the Engineer to do so, to make good any loss or damage for which he is liable under this section, the Engineer may cause the loss or damage to be made good, and the Contractor shall thereupon be liable to Her Majesty for the cost thereof and shall on demand pay to Her Majesty an amount equal to such cost.

(4) The Contractor shall keep records of material, plant and real property to which this section applies that the Engineer from time to time requires and shall, from time to time as the Engineer requires, satisfy the Engineer that such material, plant and real property are at the place and in the condition that they ought to be.

(5) This section applies to material, plant and real property supplied or made available by Her Majesty to the Contractor for use in connection with the work.

15. (1) The Minister may, on the application of the Contractor made before the day fixed by Article I of the Articles of Agreement for completion of the work or before any new date for completion fixed under this subsection, if in his opinion it is in the public interest, extend the time for completion of the work by fixing a new day for completion of the work.

Extension of Time

(2) Where the Contractor does not complete the work by the day fixed by Article 1 of the Articles of Agreement for completion of the work but does complete the work thereafter, the Contractor shall pay to Her Majesty

(a) an amount equal to all salaries, wages and travelling expenses paid by Her Majesty to persons superintending the work during the period of delay,

(b) an amount equal to the value to Her Majesty of the use of the completed work for the period of delay, and

(c) an amount equal to all other expenses and damages incurred or sustained by Her Majesty as a result of the work not being completed during the period of delay.

(3) For the purposes of this section,

(a) the work shall be deemed to be completed on the day the Engineer issues his Interim Certificate of Completion, and

(b) "period of delay" means the period commencing on the day fixed by Article I of the Articles of Agreement for completion of the work and ending on the day immediately preceding the day on which the work is completed, but excluding therefrom any day within a period of extension granted under subsection (1), if on such day, in the opinion of the Minister, causes beyond the control of the Contractor delayed completion of the work.

(4) The Minister may, if in his opinion, it is in the public interest, waive the right of Her Majesty to the whole or any part of a payment payable pursuant to subsection (2).

16. (1) In any of the following cases, namely,

Taking the Work out of the Contractor's hands

(a) where the Contractor has made default or delayed in commencing or in diligently executing the work or any portion thereof to the satisfaction of the Engineer and the Minister or the Engineer has given notice thereof

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to the Contractor and has by such notice required the Contractor to put an end to such default or delay, and such default or delay continues for six days after such notice was communicated;

(b) where the Contractor has made default in the completion of the work, or any portion thereof, within the time limited for such completion by the contract;

(c) where the Contractor has become insolvent;

(d) where the Contractor has committed an act of bankruptcy;

(e) where the Contractor has abandoned the work;

(f) where the Contractor has made an assignment of the contract without the required consent; or

(g) where the Contractor has otherwise failed to observe or perform any of the provisions of the contract;

the Minister may, without any other authorization, take all or any part of the work out of the Contractor's hands and may employ such means as he may see fit to complete the work.

(2) Where the work or any portion thereof has been taken out of the Contractor's hands under subsection (1) the Contractor shall not except as provided in subsection (3), be entitled to any further payment including payments then due and payable but not paid and the obligation of Her Majesty to make payments as provided for in the Terms of Payment shall be at an end and the Contractor shall be liable to and upon demand therefor pay to Her Majesty an amount equal to all loss and damage suffered by Her Majesty by reason of the non-completion of the work by the Contractor.

(3) Where the work or any portion thereof has been taken out of the Contractor's hands under subsection (1) and that portion is subsequently completed by Her Majesty, the Engineer shall determine the amount, if any, of holdback and progress claims of the Contractor unpaid at the time of taking the work out of his hands that in his opinion are not required by Her Majesty for the purposes of the contract and the Minister shall, if he is of opinion that no financial prejudice to Her Majesty will result, authorize payment of that amount to the Contractor.

Effect of Taking the Work from Contractor

17. (1) The taking of the work, or any portion thereof, out of the Contractor's hands pursuant to section 16 of the General Conditions does not operate so as to relieve or discharge the Contractor from any obligation under the contract or imposed upon him by law except the obligation to complete the physical execution of that portion of the work so taken out of his hands.

(2) If the work or any part thereof is taken out of the Contractor's hands pursuant to section 16, all materials and plant and the interest of the Contractor in all real property, licences, powers and privileges acquired, used or provided by the Contractor for the purposes of the work shall, notwithstanding subsection (1) of section 13 of the General Conditions, be the property of Her Majesty without compensation to the Contractor.

(3) If the Engineer certifies that any interest in the property of Her Majesty by virtue of subsection (2) is no longer required for the purposes of the work and that it is not in the interests of Her Majesty to retain the interest it shall become the property of the Contractor.

Suspension of Work by Minister

18. (1) The Minister may, when in his opinion it is in the public interest, require the Contractor to suspend execution of the work either for a specified or unspecified period by communicating notice to that effect to the Contractor.

(2) The Contractor upon receiving notice of the Minister's requirement pursuant to subsection (1) shall suspend all operations except those which, in the Engineer's opinion, are necessary for the care and preservation of the work, the materials and plant.

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(3) During the period of suspension the Contractor shall not remove from the site any part of the work, any materials or any plant without the consent of the Engineer.

(4) If the period of suspension is 30 days or less, the Contractor, upon the expiration of the period of suspension, shall resume the execution of the work and he is entitled to be paid the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of any plant, labour and material necessarily involved in complying with the suspension.

(5) If the period of suspension is more than 30 days and if, upon the expiration of the period of suspension, the Minister and the Contractor agree that the execution of the work be completed by the Contractor, the Contractor shall resume operations and complete the execution of the work in accordance with any terms and conditions agreed upon by the Minister and the Contractor.

(6) If upon the expiration of a period of suspension of more than 30 days, the Minister and the Contractor do not agree that the work will be completed by the Contractor or they are unable to agree upon the terms and conditions under which the Contractor will complete the work, the notice of suspension shall be deemed to be a notice of termination pursuant to section 19.

Termination of Contract

19. (1) The Minister may at any time by giving notice to that effect terminate the contract.

(2) The Contractor will upon receipt of a notice pursuant to subsection (1) cease all operations forthwith.

(3) If the contract is terminated pursuant to subsection (1) Her Majesty will pay to the Contractor an amount equal to the lesser of

(a) the cost as agreed upon by the Contractor and the Engineer of all labour, material and plant supplied by the Contractor as at the date of termination or, if the Contractor and the Engineer cannot agree, as calculated in accordance with the formula set out in section 46 of the General Conditions less all amounts already paid to the Contractor by Her Majesty and less all amounts which the Contractor is liable to pay to Her Majesty, and

(b) the amount calculated in accordance with the terms of payment which would have been payable to the Contractor had he completed the work.

(4) If the contract is terminated pursuant to subsection (1) Her Majesty will pay to the Contractor an amount equal to the cost as agreed upon by the Contractor and the Engineer of all labour, material and plant supplied by the Contractor as of the date of termination or, if the Contractor and the Engineer cannot agree, as calculated in accordance with the formula set out in section 46 of the General Conditions, less all amounts already paid to the Contractor by Her Majesty and less all amounts which the Contractor is liable to pay to Her Majesty.

(5) Subsection (3) is applicable only to a fixed price arrangement and subsection (4) is applicable only to a unit price arrangement.

Provision for Execution of Work

20. The Contractor will provide everything necessary for the execution of the work except things in respect of which the contract expressly provides otherwise and except the site of the work if the work when completed is to remain permanently affixed thereon.

Claims Against and Obligations of the Contractor or Subcontractor

21. (1) Her Majesty may, in order to discharge lawful obligations of and satisfy lawful claims against the Contractor or a subcontractor arising out of the execution of the work, pay any amount which is due and payable to the Contractor pursuant to the Terms of Payment or is payable pursuant to section 41 of the General Conditions following a conversion or a negotiation of the security deposit directly to the obligees of and the claimants against the Contractor or the subcontractor.

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(2) A payment made pursuant to subsection (1) is to the extent of the payment a discharge of Her Majesty's liability under the contract to the Contractor.

(3) To the extent that the circumstance of the work being executed for Her Majesty permits it, the Contractor will comply with all laws in force in the Province where the work is being executed relating to payment periods, mandatory holdbacks, and creation and enforcement of mechanics' liens or, if such Province is the Province of Quebec, the law relating to privileges.

(4) The Contractor will discharge all lawful obligations of his and will satisfy all lawful claims against him arising out of the execution of the work at least as often as the Terms of Payment require Her Majesty to discharge Her obligations to the Contractor.

(5) The Contractor will, whenever so requested by the Engineer, make a statutory declaration deposing to the existence and condition of the obligations and claims referred to in subsection (4).

Execution of Work under Direction of Engineer

22. The Contractor will permit the Engineer to have access to the work at all times during the execution of the work, will provide the Engineer with full information concerning what is being done to execute the work and will give the Engineer every possible assistance in respect of the performance of his duty to see that the work is executed in accordance with the contract and also in respect of the performance and exercise of the duties and powers specially imposed or conferred on him by the contract.

Clearing of Site

23. The Contractor will upon completion of the work clear and clean the work and its site to the satisfaction of and in accordance with any directions of the Engineer.

Contractor's Superintendent

24. (1) The Contractor will, during working hours, until the work has been completed, keep on the site of the work a competent Superintendent who has authority to receive on behalf of the Contractor any order, direction or other communication that may be given under the contract.

(2) The Contractor will, upon the request of the Engineer, remove any Superintendent who, in the opinion of the Engineer, is incompetent or has been conducting himself improperly and shall replace a Superintendent so removed with another Superintendent as described in subsection (1).

Unsuitable Workmen

25. The Contractor will, at the request of the Engineer, remove from the work any person employed on the work who, in the opinion of the Engineer, is incompetent or has been conducting himself improperly and the Contractor shall not permit a person so removed to remain on the site of the work.

No Additional Payment for Increased Costs

26. The amount payable to the Contractor under the contract will not be increased or decreased by reason of any increase or decrease in the cost of the work brought about by an increase or decrease in the cost of plant, labour, material or the wage rates set out in or prescribed pursuant to the Labour Conditions.

Canadian Labour and Materials

27. (1) The Contractor will use Canadian labour and material in carrying out the work, to the full extent to which they are procurable, consistent with proper economy and the expeditious carrying out of the work.

(2) Subject to subsection (1) the Contractor will employ labour from the locality where the work is being executed to the extent to which it is available and shall use the offices of the National Employment Service in the recruitment of workers wherever practicable.

(3) Subject to subsections (1) and (2) the Contractor will employ a reasonable proportion of men who have served on active service with the armed forces of Canada and have been honourably discharged therefrom.

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28. (1) If the Minister is of opinion that national security is involved he may order the Contractor to provide information concerning persons employed or to be employed on the work and may order the removal of any person from the work. **Security**

(2) The Contractor will comply with an order of the Minister pursuant to subsection (1).

29. (1) The Contractor will guard or otherwise protect the work and shall protect the contract, specifications, plans, drawings, information, material, plant and real property provided by Her Majesty to the Contractor against loss or damage from any cause, and without limiting the generality of the foregoing, from espionage and sabotage and will not use, issue or disclose them except as may be essential for the execution of the work without the written consent of the Minister. **Protection of Work and Documents**

(2) If any document or information given or disclosed to the Contractor is given a security rating the Contractor will take all measures directed by the Engineer to ensure the maintenance of the security rating.

(3) The Contractor will provide facilities for and will assist any person authorized by the Minister to inspect or to take security measures in respect of the work.

(4) The Engineer may direct the Contractor to do such things and to construct such works which the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of this section.

30. (1) The Contractor will not allow or permit any public ceremony in connection with the work without the permission of the Minister. **Public Ceremonies**

(2) The Contractor will not erect or permit the erection of any sign or advertising on the work without the approval of the Engineer.

31. (1) The Contractor will at his expense maintain insurance contracts in a form and with companies approved by the Minister of the nature, in the amounts, for the periods and containing the terms and conditions, if any, set out in the Insurance Schedule. **Insurance**

(2) All fire insurance contracts maintained by the Contractor pursuant to subsection (1) shall provide that the proceeds thereof are payable to Her Majesty.

(3) The Contractor will deposit with the Engineer the originals of all contracts of insurance maintained by the Contractor pursuant to subsection (1) and the Contractor will, when required by the Engineer, submit to him proof that such policies are in force.

(4) Upon application by the Contractor the Engineer may waive compliance with subsections (2) and (3).

32. (1) If the work or any portion thereof is lost or destroyed and monies are paid to Her Majesty in respect of the loss or damage under a contract of fire insurance maintained by the Contractor pursuant to section 31 of the General Conditions the monies will be held by Her Majesty for the purposes of the contract. **Insurance – Proceeds**

(2) The Minister may, on behalf of Her Majesty, elect to retain absolutely the monies held under subsection (1) and, in such event, the monies belong absolutely to Her Majesty and

(a) the Contractor is liable to Her Majesty in an amount equal to the amount by which the insurance monies payable is less than the loss and damages suffered and sustained by Her Majesty, including costs associated with clearing and cleaning the site of the work, and

(b) there shall be a financial accounting between Her Majesty and the Contractor in respect of the portion of the work which was lost or damaged and in respect of which monies have been retained absolutely by Her

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Majesty and there shall be included in the financial accounting all amounts paid or payable by Her Majesty under the contract together with all amounts paid or payable by the Contractor under the contract to Her Majesty and Her Majesty will pay to the Contractor any amount which the financial accounting shows to be payable by her Majesty to the Contractor under the contract and similarly the Contractor will pay to Her Majesty any amount which the financial accounting shows to be payable by the Contractor to Her Majesty under the contract.

(3) Upon payment as required by subsection (2) by Her Majesty or the Contractor, as the case may be, Her Majesty and the Contractor are discharged from all rights and obligations under the contract in respect of the portion of the work which was lost or damaged and in respect of which monies have been retained absolutely by Her Majesty, as though such portion of the work had been fully completed and executed by the Contractor in accordance with the contract.

(4) If an election is not made under subsection (2) the Contractor shall restore and replace the portion of the work lost or damaged and the monies shall be disbursed by Her Majesty to the Contractor in the manner and subject to the terms and conditions governing monies payable under the contract to the Contractor by Her Majesty, except that for the purpose of monies "100%" shall be substituted in subsection (4) of section 4 of the Terms of Payment for "95%" and "90%".

Precautions against Damage, Infringements of Rights, Fire, etc.

33. (1) The Contractor shall at his own expense do whatever is necessary to ensure that

(a) no person, property, right, easement or privilege is injured, damaged or infringed by reason of the Contractor's activities under this contract;

(b) pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the execution or existence of the work and plant;

(c) fire hazards are eliminated and in the case of a fire in or about the works that it is promptly extinguished;

(d) the health of all persons employed on the work is not endangered;

(e) adequate medical supervision of all persons employed on the work is maintained;

(f) adequate sanitation measures in respect of the work are taken; and

(g) all stakes, buoys, and marks placed on or about the works by or under the authority of the Engineer are protected and are not removed, defaced or altered.

(2) The Engineer may direct the Contractor to do such things and to construct such works which the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of subsection (1).

(3) The Contractor will at his own expense comply with a direction of the Engineer made pursuant to subsection (2).

Interpretation of Contract by Engineer

34. (1) If at any time before the work has been completed and the Engineer has issued his Final Certificate of Completion, any question arises as to whether anything has been done as required by the contract or as to what the Contractor is required by the contract to do, and, in particular, and without limiting the generality of the foregoing, as to

(a) the meaning of anything in the Plans and Specifications;

(b) the meaning to be given to the Plans and Specifications in case of any error therein, an omission therefrom, or an obscurity or discrepancy in their wording or intention;

(c) whether the quality or quantity of any material or workmanship meets the requirements of the contract;

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(d) whether the plant, materials or workmen provided by the Contractor for executing the work and carrying out the contract are adequate to ensure that the work will be executed in accordance with the contract and that the contract will be carried out in accordance with its terms;

(e) what quantity of any kind of work has been completed by the Contractor; or

(f) the timing and scheduling of the various phases of the execution of the work,

the question shall be decided by the Engineer.

(2) The Contractor will construct the work in accordance with the decisions and directions of the Engineer given under this section and in accordance with any consequential decisions and directions given by the Engineer.

Rectification of Defects in Work

35. (1) Without restricting any warranty or guarantee implied or stipulated by law the Contractor will at his own expense rectify and make good any defect or fault however caused, that within twelve months from the date of the Engineer's Final Certificate of Completion appears in the work.

(2) If any defect or fault appears in the work and the Engineer is of the opinion that it is one which the Contractor, either under subsection (1) or under a warranty or guarantee implied or stipulated by law, is obligated to remedy and make good the Engineer may direct the Contractor to remedy and make good the defect or fault by giving notice to the Contractor of the existence of the defect or fault and the notice may specify the time within which the defect or fault is to be rectified and made good.

(3) The Contractor will rectify and make good the defect or fault described in a notice given pursuant to subsection (1) within the time specified in the notice.

Non-compliance by Contractor

36. (1) Where the Contractor has failed to comply with any decision or direction given by the Engineer under sections 23, 29, 33, 34 or 35 of the General Conditions, the Engineer may employ such methods, as he deems advisable, to do that which the Contractor failed to do.

(2) The Contractor shall on demand pay to Her Majesty all costs, expenses and damage incurred or sustained by Her Majesty by reason of the Contractor's non-compliance with any decision or direction given by the Engineer under sections 23, 29, 33, 34 or 35 of the General Conditions and by the action taken by the Engineer pursuant to subsection (1).

Protesting Engineer's Decisions

37. If the Contractor has, within ten days of communication to him by the Engineer of any decision or direction of the Engineer under sections 23, 29, 33, 34, or 35 of the General Conditions given notice to the Engineer in writing that the decision or direction is accepted under protest, Her Majesty will pay to the Contractor for anything the Contractor was required by the Engineer's decision or direction to do beyond what the contract correctly understood and interpreted would have required the Contractor to do, the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the labour, materials and plant necessarily involved in carrying out the decision or direction.

Engineer may order Additional Work, Changes, etc.

38. (1) The Engineer may at any time before he issues his Final Certificate of Completion, in writing,

(a) order work or material in addition to that provided for in the Plans and Specifications; and

(b) dispense with or change the dimensions, character, quantity, quality, description, location or position of the whole or any part of the work or material provided for in the Plans and Specifications or as ordered pursuant to paragraph (a),

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and the Contractor will execute the work in accordance with such orders, dispensations and changes as if the same had appeared in and been part of the Plans and Specifications.

(2) The Engineer shall determine whether anything done or not done by the Contractor pursuant to an order, dispensation or change made by the Engineer pursuant to subsection (1) increased or decreased the cost of the work to the Contractor.

(3) If the Engineer determines under subsection (2), that the cost has been increased Her Majesty will pay to the Contractor the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the additional labour, materials and plant necessarily involved.

(4) If the Engineer determines under subsection (2), that the cost has been decreased, Her Majesty may reduce the amount payable to the Contractor under the contract by an amount equal to the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the labour, material and plant necessarily involved.

(5) Subsections (2), (3) and (4) are applicable only to a fixed price arrangement.

Cooperation with other Contractors

39. (1) Where, in the opinion of the Engineer, it is necessary that contracting persons or workmen, with or without plant and materials, be sent on to the site of the work the Contractor shall, to the satisfaction of the Engineer, allow them access to the work and shall cooperate with them in the carrying out of their duties and obligations.

(2) If the sending onto the work of a contracting firm or workmen under subsection (1) could not have been reasonably foreseen or anticipated by the Contractor when entering into the contract and if, in the opinion of the Engineer, the Contractor has incurred expense in complying with subsection (1) in respect of that contracting firm or those workmen Her Majesty, if the Contractor has given to the Engineer written notice of his claim before the expiration of thirty days from the sending onto the work of the contracting firm or workmen involved, shall pay to the Contractor the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the material, labour and plant necessarily involved.

Engineer's Certificates

40. (1) On the day that

(a) the work has been completed, and

(b) the Contractor has complied with the contract and all orders and directions made pursuant thereto,

to the satisfaction of the Engineer, he shall issue to the Contractor a Final Certificate of Completion.

(2) If the Engineer is satisfied that the work is substantially completed and is acceptable for use by Her Majesty, he may at any time before issuance of a Final Certificate of Completion issue to the Contractor an Interim Certificate of Completion, and shall describe therein the portions of the work not completed to his satisfaction and all things which must be done by the Contractor before a Final Certificate of Completion can be issued.

(3) The Engineer shall measure and keep records of his measurements of the quantities of labour, material and plant performed, used and supplied by the Contractor in executing the work and shall, at the request of the Contractor, inform him of his measurements and the Contractor will assist and cooperate with the Engineer in such measuring and is entitled to inspect the records of measurement kept by the Engineer.

(4) On the day that the Engineer issues his Final Certificate of Completion under subsection (1) he shall issue a Final Certificate of Measurement showing

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the quantity of labour, plant and material performed, used and supplied by the Contractor in executing the work and all measurements included therein shall be binding upon Her Majesty and the Contractor and are conclusive between them as to the quantity of any labour, plant or material performed, used or supplied by the Contractor in executing the work.

(5) Subsections (3) and (4) are applicable only to a unit price arrangement.

Security Deposit – Forfeiture or Return

41. If the work is taken out of the Contractor's hands pursuant to section 16 of the General Conditions or if the contract is terminated pursuant to section 19 of the General Conditions or if the Contractor is in breach of or in default under the contract Her Majesty may negotiate the security deposit, in the case of bonds, or convert the security deposit to Her own use, in the case of money, and the amount realized by Her Majesty shall be deemed to be a debt payable by Her Majesty to the Contractor and Her Majesty shall have the right of set-off and may set-off against the debt any sum or amount which the Contractor may be liable to pay to Her Majesty and the balance of the debt, if any, after the right of set-off has been exercised, and if such balance, in the opinion of the Engineer, is not required for the purposes of the contract shall be paid by Her Majesty to the Contractor.

Security Deposit – Return all or any part thereof

42. (1) Upon the Engineer's Interim Certificate of Completion being issued, Her Majesty will, if the Contractor is not in breach of or in default under the contract, return to the Contractor that part of the security deposit which, in the opinion of the Engineer, is not required for the purposes of the contract.

(2) If the security deposit was deposited in the Consolidated Revenue Fund of Canada Her Majesty will pay to the Contractor interest thereon in accordance with the *Government Contracts Regulations*.

Municipal Permits

43. (1) The Contractor will within one month from the date of the contract tender to the municipal authority an amount equal to all fees and charges which would be payable to the municipal authority in respect of building permits if the work were being constructed for a person other than Her Majesty.

(2) The Contractor will notify the Minister within ten days of the tender the amount of and whether or not the municipal authority accepted the tender.

(3) If the municipal authority did not accept the tender the Contractor will deliver to the Minister within the time limited by subsection (2) the amount of the tender.

(4) For the purposes of this section "municipal authority" means an authority which would have jurisdiction respecting permission to construct the work if the owner of the work were not Her Majesty.

Determination of Cost – Unit Price Table

44. Whenever it is necessary for the purposes of sections 12, 18, 37, 38 and 39 of the General Conditions to determine the cost of labour, plant or material the Unit Price Table shall be used, that is the cost shall be equal to the product of the quantity of such labour, plant or material expressed in the unit set out in column 2 of the Unit Price Table in respect of the labour, plant or material involved, multiplied by the price in respect of the unit set out in column 3 of the Unit Price Table.

Determination of Cost – Negotiation

45. If the method of determination in section 44 of the General Conditions cannot be used because the labour, plant or material involved is not included in the Unit Price Table, the cost of the labour, plant or material for the purposes of sections 12, 18, 37, 38 and 39 of the General Conditions shall be the amount agreed upon from time to time by the Contractor and the Engineer.

Determination of Cost – Failing Negotiation

46. (1) If the method of determination in section 44 of the General Conditions cannot be used and if the Contractor and the Engineer cannot agree as contem-

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plated by section 45 of the General Conditions, the cost of labour, plant or material for the purposes of sections 12, 18, 37, 38 and 39 of the General Conditions shall be equal to the aggregate of

(a) all reasonable and proper amounts actually expended by or legally payable by the Contractor in respect of the labour, plant or material which fall within one of the classes of expenditure described in subsection (2) (being costs which are directly attributable to the execution of the work and are not costs in respect of which the allowance in paragraph (b) is made); and

(b) 10% of the total of the expenditures of the Contractor that meet the test in paragraph (a) being an allowance for all other expenditures by the Contractor and for profit and without limiting the generality of the foregoing, being also an allowance for payments and charges relating to overhead, head office expenses and general administration costs of the Contractor, including finance and interest charges.

(2) Classes of expenditure that are allowable are:

(a) payments to subcontractors;

(b) wages, salaries and travelling expenses of employees of the Contractor while they are actually and properly engaged on the work other than wages, salaries, bonuses, living and travelling expenses of personnel of the Contractor generally employed at the head office, or at a general office, of the Contractor unless such personnel is engaged at the site of the work with the approval of the Engineer;

(c) payments for materials necessary for and incorporated in the work, or necessary for and consumed in the execution of the work;

(d) payments for tools, other than tools customarily provided by tradesmen, necessary for and used in the execution of the work;

(e) payments for preparation, inspection, delivery, installation and removal of plant and materials necessary for the execution of the work;

(f) payments for renting, erecting, maintaining and removing temporary offices, sheds and similar structures necessary for and used by the Contractor in executing the work;

(g) assessments payable under any statutory scheme relating to workmen's compensation, unemployment insurance or holidays with pay;

(h) payments for renting plant and allowances for plant owned by the Contractor necessary for the execution of the work providing that such payments or allowances are reasonable or have been agreed to by the Contractor and the Engineer; and

(i) payments made with the approval of the Engineer that are necessary for the execution of the work.

Determination of Cost – Clarification of Terms

47. (1) For the purposes of sections 45 and 46 of the General Conditions "plant" does not include tools.

(2) For the purposes of sections 44, 45 and 46 of the General Conditions "Unit Price Table" means the table set out in Article VI of the Articles of Agreement.

Records to be Kept by Contractor

48. (1) The Contractor shall maintain full records of his estimates of and actual cost to him of the work together with all proper tender calls, quotations, contracts, correspondence, invoices, receipts and vouchers relating thereto, shall make them available to audit and inspection by the Minister, the Comptroller of the Treasury of the Government of Canada or by persons acting on their behalf, shall allow them to make copies thereof and to take extracts therefrom, and shall furnish them with any information which they may require from time to time in connection with such records.

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(2) The records maintained by the Contractor pursuant to this section shall be kept intact until the expiration of two years from the date of issuance of the Final Certificate of Completion under subsection (1) of section 40 of the General Conditions or until the expiration of such other period as the Minister may direct.

(3) The Contractor shall require all subcontractors and all firms, corporations and persons directly or indirectly controlled by or affiliated with the Contractor and all firms, corporations and persons directly or indirectly having control of the Contractor to comply with subsections (1) and (2) as if they were the Contractor.

49. (1) Subject to subsection 2, the Contractor will lay out the work on the ground to the satisfaction of the Engineer. Layout of Work.

(2) The Engineer may set stakes and establish bench marks to indicate the location, alignment and reference elevations for the work.

(3) The Contractor will execute the work in accordance with any indication given by the Engineers pursuant to subsection 2.

Roger Duhamel, F.R.S.C., Queen's Printer and Controller of Stationery, Ottawa, 1963

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This document is the document referred to as "Labour Conditions" and marked "D" in the Articles of Agreement entered into on the _____ day of _____ 19___ between Her Majesty the Queen and

_____

"D"

DEPARTMENT OF LABOUR

OTTAWA, CANADA

_____
Minister

LABOUR CONDITIONS

PWD 15405

_____
Contractor

The following schedule of labour conditions is applicable to the work of paving, Mile 125 - 140, Banff-Jasper Highway

AT Jasper National Park, Alta.

to be undertaken for the Department of Public Works

Classifications, Wages and Hours

(1) (a) All persons in the employ of the contractor, subcontractor of any person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour. Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week.

(b) Application for permission to exceed 8 hours per day and 44 hours per week on this contract shall be made to the Minister of the Contracting Department for reference to the Minister of Labour.

(c) Every person in the employ of the contractor or subcontractor shall, except where the Minister of Labour otherwise orders, be paid for hours worked in excess of 44 hours per week at a rate of not less than one and one-half times the wages required to be paid under this contract; and where the Minister of Labour so orders, be paid at the same overtime rate for hours worked in excess of 8 hours per day.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Asphalt tampers, smoothers & spreaders	$ 1.60
Carpenters & joiners	2.45
Compressor operators	1.80
Drill runners	1.65
Firemen	1.80
Grader operators	2.20
Labourers	1.60
Oilers (construction equipment)	1.80
Operators (draglines, cranes, shovels, etc.)	2.50
Powdermen	1.65
Pump operators	1.80
Roller operators	1.85
Tractor operators (large)	2.20
Tractor operators (small)	1.80
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	2.15

(see next page)

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Labour Conditions (A-1)

Minister of Labour to Determine Proper Classifications of Labour

(2) Where there are special circumstances, which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision.

Schedule to be Posted

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

Contractor to Keep Records Which are to be Open for Inspection

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

Departmental Requirements Before Payments Made to Contractor

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

Authority to Pay Wages in Event of Default by Contractor

(6) All cases of default in the payment of wages to employees by the contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

Conditions of Subcontracting

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contract shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

Workmen to be Residents of Canada

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

Non-Discrimination in Hiring and Employment of Labour

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

CONTRACT
AND
SPECIFICATIONS

FOR

GRADING, CULVERTS AND BASE COURSE

MILE 115 TO MILE 125 AND

GRADING & CULVERTS, MILE 139.5 TO 140

BANFF - JASPER HIGHWAY

CONTRACT NO. 4/63/BJ

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DEPARTMENT OF PUBLIC WORKS OF CANADA

CONSTRUCTION TENDER

FOR

CONTRACT NO. 4/63/BJ

(I, We) ..J.A. MOULSON CONSTRUCTION CO. LTD.....
(Official name of Company/Contractor)

Box 30/Sub P.O. 50, Calgary, Alberta
(Business address for purposes of this contract)

hereby offer to Her Majesty the Queen in right of Canada represented by the Minister of Public Works, to execute in a careful and workmanlike manner, the following work:

Grading, Culverts and Granular Base Course from Mile 115 to Mile 125, and Grading and Culverts only from Mile 139.5 to Mile 140, Banff-Jasper Highway, Jasper National Park, Alberta

which work is more particularly described in the documents entitled "Plans and Specifications", and in the other tender documents, at the place and in the manner therein set out.

For the Total Amount of: (amount to be in words) Eight hundred and Forty-One Thousand Nine Hundred and Forty-Seven Dollars

$ 841,947 cts 00

If the present offer is accepted within sixty (60) days from the date on which the tenders are opened, (I, we) undertake to enter into a contract, in the standard Government form, for the execution of the work, and to complete the work from Mile 115 to Mile 125

(i) by 31 October 19 64.
(date)

(ii) From Mile 139.5 to Mile 140 within 30 days from the date of notification
(period of time)
of acceptance of (my, our) offer.

This tender form comprises pages 1-7 inclusive

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UNIT PRICE TABLE: (I, We) agree that the following table is the Unit Price Table to be used for the purposes of the contract.

Item	Class of Labour Plant or Material	Unit of Measurement	Estimated Quantity	Price Per Unit	Total
1.	Clearing Spec. 2.1	acre	50	$ 120.00	$ 6,000.00
2.	Grubbing Spec. 2.1	acre	120	20.00	2,400.00
3.	Excavation Common (Roadway & Borrow) Specs. 1.1.7; 1.1.9; 2.2 & 2.3	cubic yard	1,270,000	0.32	406,400.00
4.	Excavation Rock Specs. 1.1.8, 2.2, 2.3	cubic yard	2,000	1.45	2,900.00
5.	Compaction, Complete Units (i) Pneumatic Tired Specs. 2.3 & 3.1	Hour	1,000	5.75	5,750.00
	(ii) Grid, Spec. 2.3	Hour	2,500	8.00	20,000.00
	(iii) Steel Drum, Vibratory Specs. 2.3; 3.1	Hour	5,400	7.65	41,310.00
	(iv) Self-Powered, Hand-Operated Vibratory, Spec. 2.3	Hour	130	3.55	461.50
6.	Compaction, Roller Only Pneumatic Tired Specs. 2.3; 3.1	Hour	300	1.10	330.00
7.	Water Specs. 2.3; 3.1; 6.7	1000 gallons	4,600	2.20	10,120.00
8.	Overhaul, Spec. 2.5	cubic yard mile	700,000	0.08	56,000.00
9.	Channel Excavation Specs. 1.1.8; 2.4	cubic yard	10,000	0.60	6,000.00
10.	Sub-Base Course, Class 3 Specs. 1.1.7; 3.1	ton	85,000	0.34	28,900.00
11.	Sub-Base Course Class 2 Specs. 1.1.7; 3.1	ton	80,000	0.47	37,600.00
12.	Base Course Class 1 Specs. 1.1.7; 3.1	ton	48,000	0.70	33,600.00
13.	Hauling Sub-Base and Base Course Specs. 1.1.7; 3.1	ton/mile	445,000	0.11	48,950.00
14.	Armour Rip Rap Spec. 6.1	cubic yard	1,500	5.50	8,250.00
15.	Random Rip Rap Specs. 1.1.6 & 6.1	cubic yard	6,000	4.00	24,000.00
16.	Hand Placed Rip Rap Spec. 6.2	cubic yard	500	6.50	3,250.00

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Item	Class of Labour Plant or Material	Unit of Measurement	Estimated Quantity	Price Per Unit	Total
17.	Supply & Deliver Corrugated Metal Pipe, Spec. 6.3	linear foot			
	(i) 18" diameter, 16 gauge		50	2.60	130.00
	(ii) 24" diameter, 14 "		1,600	4.15	6,640.00
	(iii) 30" " 14 "		1,000	5.00	5,000.00
	(iv) 36" " 12 "		700	7.95	5,565.00
	(v) 48" " 12 "		200	10.95	2,190.00
	(vi) 72" " 10 "		200	22.35	4,470.00
18.	Supply & Deliver Structural Plate Pipe Arch 8'-2" x 5'-9" - 10 gauge, Spec. 6.3	linear foot	90	41.20	3,708.00
19.	Install Corrugated Metal Pipe	linear foot			
	(i) 18" diameter		50	0.85	42.50
	(ii) 24" "		1,600	1.15	1,840.00
	(iii) 30" "		1,000	1.40	1,400.00
	(iv) 36" "		700	1.85	1,295.00
	(v) 48" "		200	2.25	450.00
	(vi) 72" " Spec. 6.3		200	5.00	1,000.00
20.	Install Structural Plate Pipe Arch, 8'-2" x 5'-9" Spec. 6.3	linear foot	90	15.00	1,350.00
21.	Excavation for Underdrains, Common Spec. 6.4	cubic yard	1,500	0.80	1,200.00
22.	Supply and Deliver 8" diameter corrugated metal underdrains Spec. 6.4	linear foot	1,500	1.15	1,725.00
23.	Install 8" Underdrain Spec. 6.4	linear foot	1,500	1.60	2,400.00
24.	Supply Calcium Chloride Spec. 6.7	ton	100	104.00	10,400.00
25.	Apply Calcium Chloride Spec. 6.7	ton	100	12.00	1,200.00
26.	Rental of Vehicles, Specs. 1.11 & 6.9	month			
	(i) 2-½ ton Panel trucks		24	265.00	6,360.00
	(ii) 2-½ ton pick-up trucks		24	265.00	6,360.00
27.	Miscellaneous Work Spec. 1.1.12				35,000.00
			TOTAL AMOUNT OF TENDER		$ 841,947.00

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ORIGIN OF MATERIAL: (My, Our) tender is based on the use of Canadian Material in accordance with Section 27 (1) of the General Conditions, with the exception of the following non-Canadian items:

Item	Class of Material	Country of Origin	Approx. Quantity	Price Per Unit	Amount	Canadian Product Amount

If Canadian Material for items listed above is required (my, our) tender is to be increased by:

(In words) .....

..... $ ..... cts...

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SUB-CONTRACTS: (I, We) will subcontract the following parts of the work to the subcontractor listed for each part. (I, We) agree not to make changes in the following list without the written consent of the Engineer. In (my, our) opinion the sub-contractors named hereunder are reliable and competent to perform that part of the work for which they are listed. The under-mentioned parts for which no subcontractor is named will be executed by (my, our) own forces.

Part of the Work	Sub-Contractor	Address
Gravel Crushing	Shaw Construction	Midnapore, Alta.

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EXPERIENCE: (I, We) have in the past executed the following works which are similar to the work for which the present offer is made:

(NOTE: Not necessary if the Contractor has similar work underway for the Department of Public Works).

WORK	PLACE	YEAR	FOR WHOM
Grading & Base	Mile 51-76.6 MacKenzie Highway	1962	Dept. of Public Works, Canada

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SECURITY REQUIREMENTS:

A - WHEN TENDERING

1. FOR TENDER LESS THAN $25,000: No security accompanies this tender. (I, We) understand that the Department may require security upon award of contract in accordance with B-1 and B-2 hereunder.

2. FOR TENDER $25,000 AND OVER: (I, We) herewith enclose security in accordance with EITHER:

   (i) a bid bond, in an approved form and from a company whose bonds are acceptable, in an amount of at least 10% of the tender, OR

   (ii) a security deposit in an amount of at least 10% of the tender, or, where the tender exceeds $250,000. in an amount of $25,000 plus 5% of the amount by which the tender exceeds $250,000. The maximum requirement for any tender is $100,000. The deposit must be a certified cheque drawn on a bank to which the Bank Act or the Quebec Savings Banks Act applies, payable to the Receiver General of Canada, OR

   (iii) bonds of the Government of Canada or of a company included in "National Railways" (as that expression is defined in the Canadian National Railways Capital Revision Act) unconditionally guaranteed as to principal and interest by the Government of Canada, if such bonds are

      (a) payable to bearer,

      (b) hypothecated to the Minister of Finance and Receiver General of Canada in accordance with the Domestic Bonds of Canada Regulations, or

      (c) registered in the name of the Minister of Finance and Receiver General of Canada.

The security deposit, as indicated in (ii) and (iii) above, will be forfeited if (I, we) refuse to enter into a contract when called upon to do so, but the Minister may, if it is in the public interest, waive the right of Her Majesty to forfeit the security deposit.

B - UPON AWARD OF CONTRACT

1. Upon notification of acceptance of (my, our) tender, (I, we) will furnish:

   (i) a security deposit, as described in A-2 (ii), or as described in A-2 (iii) above, together with a labour and materials payment bond in the amount of at least 50% of the amount payable under the contract, OR

   (ii) a performance bond and a labour and materials payment bond and each in the amount of 50% of the amount payable under the contract.

2. Should it not be possible to obtain a labour and materials payment bond on making application therefor to at least two acceptable bonding companies, an additional security deposit, in the amount of 10% of the amount payable under the contract, will be furnished.

3. The amount of the security deposit required under B-1 (i) above may be reduced by the amount of the security deposit which accompanied the tender.

4. Guarantee bonds are to be in approved form and from companies whose bonds are acceptable. Samples of the approved form of Bid Bond, Performance Bond, and Labour and Materials Payment Bond and a list of bonding companies whose bonds are acceptable to the Government of Canada are available for inspection at, and may be obtained from, any office of the Department of Public Works.

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SIGNATURE: (See "INSTRUCTIONS TO BIDDERS")

IN WITNESS WHEREOF I (We) have hereunto set (my, our) hand(s) this 18th day of June 1963.

Signed, sealed and delivered by the Contractor in the presence of:	J. A. MOULSON CONSTRUCTION LTD.
W.J. Garrett	J.A. Moulson
Signature of Witness	Signature of Tenderer

SEAL COMPANY SEAL

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   (a) Specifications

      Division 1 - Sections 1 & 2

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   (b) Plans

      Folio JA.61.9ab Drawings 1-14 inclusive (issued separately)

      Drawing BJ-1-1-149 Line Diagram Mile 115.0 - 125.0

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2. Specimen Articles of Agreement

3. Specimen Terms of Payment (Marked "B")

4. Specimen General Conditions (Marked "C")

5. Labour Conditions (Marked "D")

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This document is the document referred to as "Plans and Specifications" and marked "A" in the Articles of Agreement, entered into on the _____day of_____ 19____ between Her Majesty the Queen and_____

_____

_____
Minister

_____
Contractor

"A"
PLANS AND SPECIFICATIONS
FOR
CONTRACT NO. 4/63/BJ

1. SPECIFICATIONS

Division 1 - PROJECT AND GENERAL REQUIREMENTS

Section 1 - Project Requirements
Section 2 - General Requirements

Division 2 - EARTHWORK

Section 1 - Clearing & Grubbing
Section 2 - Roadway and Borrow Excavation
Section 3 - Embankment Construction
Section 4 - Channel Excavation
Section 5 - Overhaul

Division 3 - BASE COURSE

Section 1 - Base Course (Class 1) & Sub-Base Courses (Class 2) & (Class 3)

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Section 1 - Random & Armour Rip Rap
Section 2 - Hand Placed and Grouted Hand Placed Rip Rap
Section 3 - Culverts
Section 4 - Underdrains
Section 7 - Dust Control
Section 9 - Rental Vehicles

2. PLANS

Folio JA-61-9ab Drawings 1-14 inclusive (issued separately)

Drawing BJ-1-1-149 - Line Diagram Mile 115.0 - 125.0

Drawing BJ-1-1-150 - Line Diagram Mile 125.0 - 139.4

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DIVISION 1

SECTION 1 - PROJECT REQUIREMENTS

FOR

CONTRACT NO. 4/63/B-J

1. Description

The work to be done under this contract consists of grading, culverts and granular base courses on the Banff-Jasper Highway from Mile 115 to Mile 125, and grading and culverts only from Mile 139.5 to Mile 140 connecting the Athabasca River Bridge to the existing highway, Jasper National Park.

2. Completion Dates

From Mile 115 to 125 - October 31, 1964

From Mile 139.5 to Mile 140 - 30 days after notification of award of contract.

3. Nearest Railway Siding

Jasper, Alberta. The north end of the main section of the contract - Mile 125.0 is approximately 20 miles from Jasper.

4. Nearest Post Office

Jasper, Alberta.

5. Borrow Pits

(a) Borrow material may be obtained from deposits at:

(1) Station 17+00 = Mile 115.3, East Side

(2) " 128+00 = Mile 117.4, East Side

(3) " 241+00 = Mile 119.6, West Side

(4) " 444+00 = Mile 123.4, East Side

(b) A paving contract will be carried out from Mile 125 to Mile 140 during the 1963 construction season. The paving contractor will be obtaining aggregates from the deposit at Mile 123.4 and shall be permitted free and unhindered access to the pit and shall be allowed to haul over the section of the highway under construction from Mile 123.4 to Mile 125.

6. Random Rip Rap

There is a stockpile of random rip rap on the edge of the right-of-way at Mile 124.7, which may be used for the work.

7. Base Course & Sub-Base Course

Suitable aggregate deposits for the production of base course and sub-base course materials are located at:

Mile 115.3 - Class 1 and Class 2 Aggregate Source.
(For Mile 115 to Mile 120 approximately)

Mile 123.4 - Class 1 and Class 3 Aggregate Source.
(For Mile 120 to Mile 125 approximately)

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Approximately 10,000 cubic yards of select granular borrow material will be required for bedding, backfill and embankment around culverts and bridge approach fills. This material will be selected by the Engineer and will be classified as Roadway and Borrow Excavation, Common in accordance with the provisions of Division 2, Section 2.

8. Rock Excavation

Ledge rock encountered in excavation which cannot be removed except by blasting will be classified as Excavation Rock. All other materials encountered will be classified as Excavation, Common.

The Contractor is warned to carefully examine the nature of the materials and to note that, notwithstanding Articles 2.2.2(2) and 2.4.2(2), no rock classification for boulders or other materials will be allowed except for ledge rock as defined above.

9. Stripping

During stripping operations, where so directed by the Engineer, the material removed shall be windrowed outside of the toe of the slopes. Upon completion of the embankment construction, it shall be pushed up the slope and trimmed in accordance with Article 2.2.3(3). No additional payment will be made for pushing the stripped material against the embankment slopes and trimming same.

10. Maintenance of Traffic

The Contractor is warned that heavy tourist traffic may be expected from the middle of June to the middle of September.

11. Vehicles

Vehicles supplied for the Engineer's use shall consist of two standard ½ ton panel trucks and two standard ½ ton pick-up trucks. All vehicles shall be new when supplied to the work.

Work Not Covered by Unit Prices

12. The sum of $35,000.00 is included in the Unit Price table for the following work to be done as may be required on an equipment rental and labour basis:

(a) Clean-up and trim existing pit at Mile 123.4.

(b) Loading, hauling and unloading various sized corrugated metal pipes from piles on the Banff-Jasper Highway to installation sites within the contract area.

(c) Grouting headwalls at Mile 115.5, Mile 120.2 and 122.9.

(d) Clean-up of stream entrances beyond the right-of-way limits.

(e) Clean-up of slopes of old highway right-of-way left untouched by normal grading operations.

(f) Digging test pits to verify borrow pit limits.

(g) Cleaning out and repairing ditches or slopes damaged due to unavoidable slides on completed sections.

The above sum of $35,000.00 is to be added to the sums of the other items in arriving at the total amount of tender. There is no guarantee that any or all of the above amount will be expended. Only such work shall be performed as specified by the Engineer in writing.

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DIVISION 1

SECTION 2 - GENERAL REQUIREMENTS

1. Right-of-way - The lines shown on the plan (or as indicated by the Engineer) generally parallel to the centreline of the highway showing the area reserved for highway purposes. — Terms and Definitions

Roadway - The portion of the right-of-way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structure.

Substructure - All that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls, and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, except as noted above for substructure.

2. Unless otherwise provided, the Contractor shall maintain the work during construction. The maintenance shall constitute continuous and effective work, prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer. — Maintenance of Work During Construction

3. (1) Where materials are located on Federal Government property, the Department will make available to the Contractor the right to use such materials. Where materials are located on other than Federal Government property, the Contractor shall be responsible for the procurement of such materials. — Control of Materials

(2) If the Contractor desires to use material from sources other than those designated, he shall do so only on the written authority of the Engineer.

(3) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work.

4. In case the Contractor is required to haul materials across the tracks of any railway, or elects to do so, he shall make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing. — Railway Crossings

5. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient warning lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise. — Barricades and Warning Signs

6. (1) Linear — Measurement of Quantities

All items which are measured by the linear foot, such as pipe culverts, guiderail, underdrains, etc., will be measured along centreline unless otherwise shown on the plans.

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Measurement of Quantities (Cont'd)

(2) Area

(a) All longitudinal and transverse measurement for areas except for seeding and sodding will be measured horizontally.

(b) All longitudinal and transverse measurements for seeding and sodding will be made on the actual flat or sloped surface seeded or sodded.

(3) Volume

(a) In computing volumes of excavation, borrow and embankment, the end area method will be used whenever possible.

(b) When materials are to be measured in the haulage vehicle, the vehicle may be of any size or type acceptable to the Engineer. Unless approved vehicles are of uniform capacity, each must bear a plainly legible identification mark indicating its specific approved capacity and all loads shall be levelled and measured when the vehicles arrive at the point of delivery if so requested. No allowance will be made for settlement of the material while in transit.

(c) Material specified to be measured by the cubic yard may be weighed and such weights shall be converted to cubic yards for payment purposes. Factors of conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(4) Weight

(a) The term ton shall mean 2000 pounds avoirdupois.

(b) All materials which are specified for measurement by weight shall be weighed on scales approved by and at locations designated by the Engineer. Trucks used to haul material being paid for by weight shall be weighed empty at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

(c) Weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any vehicles used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(d) If material is shipped by rail, the car weight will be accepted.

(5) Materials

(a) Bituminous material may be measured by the imperial gallon or by weight in each railroad tank car, tank truck, distributor tank or drum delivered for the project.

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(b) The volumetric measurement of bituminous material for these specifications shall be based upon a temperature of 60°F and shall be taken when the material is of a uniform temperature and free from air bubbles. Measurement of Quantities (Cont'd)

(c) Only the quantity of bituminous material actually accepted in the work will be considered in determining the amount due the contractor.

(6) Time

(a) Unless otherwise provided for in the special provisions or by written authority of the Engineer, hourly rental of equipment will be measured in actual working time and necessary travelling time of the equipment within the limits of the project at an all-inclusive rate and each unit of mobile equipment shall be equipped with an approved device to register the hours of operation.

(b) Payment for equipment engaged at monthly rates will begin when such equipment is actively engaged and will continue for as many months or fractions thereof, as, in the opinion of the Engineer, such equipment is required on the work.

7. The Contractor, at his own expense, shall prepare and erect a standard Department of Public Works sign, constructed of weatherproof plywood, reinforced and braced as necessary, and painted and lettered in accordance with standard detail drawings supplied by the Department. The sign will contain only such information as may be approved and supplied by the Department, and shall be erected in a manner and location approved by the Engineer. For highway construction, two project signs shall be provided. Project Signs

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DIVISION 2

SECTION 1 - CLEARING AND GRUBBING

REVISED MARCH, 1963

2.1.1 DESCRIPTION

This item consists of the removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans and any other areas which may be designated by the Engineer.

2.1.2 MATERIALS

No materials are involved.

2.1.3 CONSTRUCTION

(1) Clearing

(a) Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush and fallen timber, stumps and rubbish, except such trees and shrubs as may be designated for preservation. Trees and shrubs designated for preservation shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, trees, roots and stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging the right-of-way, shall be removed.

(b) Clearing shall be completed at least one-half mile in advance of grading operations.

(2) Salvage

All merchantable timber shall become the property of the Contractor and may be disposed of at his discretion, provided it be removed from the site of the work before the completion date of the contract.

(3) Grubbing

Grubbing shall include the removal and disposal of roots 2 inches in diameter and larger, stumps, imbedded logs, and other objectionable debris.

(4) Disposal

Trees, logs, stumps, brush and other rubbish shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

(5) Excavation

If the Contractor clears or grubs in a manner such that excavation is removed during the operation, payment will not be made for the excavation so removed.

2.1.4 MEASUREMENT

The quantities to be measured for payment shall be the number of acres, and fractions thereof, of land acceptably cleared and/or grubbed in accordance with these specifications.

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DIVISION 2

SECTION 2 - ROADWAY AND BORROW EXCAVATION

REVISED MARCH, 1963

2.2.1 DESCRIPTION

This item consists of the excavation and disposal of all materials in conformity with the lines and grades or dimensions indicated on the plans or as staked or directed by the Engineer, and includes:

(a) Roadway and borrow excavation

(b) Excavation for culverts and other drainage installations not requiring footings.

(c) Formation of side ditches, embankments, permanent access and connecting roads, approaches, entrances, parking areas, berms, approved haul roads to borrow areas and other earthworks necessary for the construction of the road.

(d) Removal and disposal of unsuitable materials from excavation, embankment and borrow areas.

(e) Placing top soil.

(f) Transportation of excavated materials for 1000 feet freehaul distance.

(g) Benching slopes.

(h) Scarifying sub base.

(i) Finishing of top surfaces and slopes.

(j) Maintenance of the work set forth under this section in a finished condition until it or any portion thereof has been accepted as completed by the Engineer.

2.2.2 MATERIALS

Classification

(a) Excavation Common will include the excavation of all materials not hereinafter classified as Excavation Rock.

(b) Excavation Rock will include the excavation of all boulders more than ½ cubic yard in volume, all rock in mass formation and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle except by blasting. Excavation Rock will not apply to asphalt pavement, gravel, or broken stone; such material will be classified as Excavation Common.

2.2.3 CONSTRUCTION

(1) Utilization of Excavated Materials

All suitable materials removed by excavation from the roadway shall be used, as far as practicable, in the formation of embankments before any material from Borrow Excavation shall be used. Embankment construction shall be carried out as specified in Division 2, Section 3.

(2) Location of Borrow Pits

The Engineer will designate all borrow areas. The Contractor shall notify the Engineer sufficiently in advance of opening any approved borrow area, so

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that necessary measurements may be made.

(3) Unsuitable Materials

When unsuitable material is encountered, the material shall be removed to the lateral limits and depths specified and shall be placed and trimmed along embankment slopes or elsewhere, as directed by the Engineer. Materials suitable for topsoil shall be placed in stockpiles.

(4) Placing Topsoil

Topsoil material from stockpile or other sources shall be placed at such locations and as directed by the Engineer.

(5) Construction in Roadway Cuts

(a) Where the subgrade is on transition from excavation to embankment to ground slopes at the grade point shall be treated in accordance with the Standard Plan "Earth Cut and Fill Construction Method at Grade Point."

(b) Where there is no subexcavation in cuts the area from inslope to inslope of ditches shall be treated as follows:

(i) Where granular sub-base is not provided the basement soil shall be sub-excavated one foot and replaced in 6 inch layers compacted to 100% of maximum density (latest A.A.S.H.O. Designation T 99).

(ii) When granular sub-base is provided the basement soil shall be scarified to a depth of 6 inches and compacted to 100% of maximum density (latest A.A.S.H.O. Designation T 99).

(c) Where unsuitable materials are sub-excavated, as detailed in (3) above, the excavated areas shall be backfilled in 8 inch layers with approved materials and to the elevations indicated by the Engineer and compacted to 95% of maximum density (latest A.A.S.H.O. Designation T 99) except that the top 12 inches shall be compacted to 100% of maximum density (latest A.A.S.H.O. Designation T 99).

(d) In rock cuts the rock shall be removed to the subgrade elevation as shown on the standard plan and the exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface.

(6) Rock Excavation

(a) If, during excavation, material appearing to conform to the classification for Excavation Rock is encountered, the Contractor shall notify the Engineer and shall provide ample opportunity for him to investigate and made such measurements as are necessary to determine the volume of the material in question.

(b) Rock Excavation in roadway cuts shall be carried out in accordance with the Standard Plans.

(c) In order to obtain uniform shattering, drilling shall be carried out to a plane parallel to and at a minimum of 2 feet below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both ends of cuts on level gradients, to a point at least 3 feet below sub-grade or correspondingly lower if this minimum drilling

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in the cut has been exceeded. See Standard Plan "Rock Cut Construction." All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(d) Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the limits of the staked sections.

(7) Drainage

Side ditches shall be constructed to the depths and widths indicated on the plans, to permit ready run-off of surface water.

(8) Finishing Top Surfaces and Slopes

The top surface and side slopes of cuts shall be left in a neat condition and true to the lines and grades as staked by the Engineer. When boulders are encountered in cut slopes they shall be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

When in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand finishing may be called for.

2.2.4 MEASUREMENT

(1) Excavation Common

(a) The quantity of Excavation Common for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for materials acceptably excavated. The measurement will include sub-excavation of unsuitable material, benching slopes, surface boulders ½ cubic yard or less in volume, authorized stripping of excavation and embankment areas and excavation of topsoil material, from stock-piles or other sources.

(b) In a cut section where material is removed and replaced (Article 2.2.3 (5)(b)(i), the volume for which payment will be made shall be considered as twice the volume contained in a prism having a depth of 12 inches and an area equal to the top area of the replaced material. There will be no measurement for scarifying the 6 inches under Article 2.2.3(5)(b)(ii).

(c) In cleared and/or grubbed areas, the original cross-sections for excavation measurements shall be taken after the clearing and/or grubbing operations are complete.

(d) No measurement for payment will be made for unnecessary excavation beyond the lines established by the Engineer with the exception of unavoidable slide material. Measurement for payment will not be made for the removal of slide material when such slides are attributable to the negligence of the Contractor.

(e) The measurement for Excavation Common will include rock excavation in excess of allowable overbreak as described in Article 2.2.4(2)(c).

(2) Excavation Rock

(a) The Quantity of Excavation Rock for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for material including surface boulders greater than ½ cubic yard in volume which is acceptably excavated and placed in accordance with these Specifications. Drilling and shattering as specified under Article 2.2.3(6)(c) will not be measured for payment.

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(b) Where, in the opinion of the Engineer, unavoidable overbreak occurs, payment will be made for the actual quantity involved, provided this overbreak quantity does not exceed 10 per cent of the actual quantity of rock within the lines as staked by the Engineer between the established 100 foot station intervals where the overbreak occurs.

(c) All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position for payment as Excavation Common.

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DIVISION 2

SECTION 3 - EMBANKMENT CONSTRUCTION

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2.3.1 DESCRIPTION

This item consists of the construction of the subgrade in embankments and cuts to the lines, grades, cross sections and dimensions shown on the plans or as staked by the Engineer.

2.3.2 MATERIALS

(1) Materials used for embankments shall be free from muck, wood, brush, roots, sods, ashes, rubbish, top soil and other organic matter.

(2) The material for embankments shall be stable material which can be properly compacted by the methods hereinafter specified. All material shall be approved by the Engineer prior to incorporation. In embankments adjacent to abutments and other structures, where shown on the plans, the material shall be granular in nature and approved by the Engineer.

2.3.3 CONSTRUCTION

(1) Embankment Foundation

(a) The foundation for the embankments shall be prepared by removing unsuitable materials as specified in Article 2.2.3(3).

(b) When the sub-grade elevation of the new embankment is less than 1 foot above an existing pavement, the pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

(2) Side Hill Construction

When an embankment is to be constructed on a slope or against an existing embankment, sloping surface shall, if required, be benched or broken up in such a manner that the new material will bond with the resulting surface. The method employed shall be approved by the Engineer.

(3) Placing Embankment

(a) Material shall not be placed while frozen nor shall it be placed on a frozen surface.

(b) The embankment shall be constructed to the required cross-section. A crown shall be maintained at all times during construction to ensure ready run-off of surface water.

(c) The embankment material shall be placed in successive uniform layers over the entire area as follows:

(i) Material containing less than 25 percent by volume of stones larger than 4 inches shall be placed in 8 inch compacted layers.

(ii) Material containing 25 percent or more by volume of stones larger than 4 inches shall be placed in layers not exceeding the maximum size of the stones. Stones larger than 4 inches shall not be placed within 6 inches of the subgrade elevation.

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(iii) In embankments composed principally of material obtained from rock cuts, the larger stones shall be carefully distributed and the interstices filled with smaller stones and other material to form a compact mass. Such embankments shall be constructed in layers not exceeding 3 feet. The placing of individual rocks and boulders not exceeding 5 feet in least dimension will be permitted provided they are carefully distributed and the interstices filled with finer material to form a dense and compact mass. Each layer, before starting the next, shall be levelled and smoothed with suitable equipment. Hauling and spreading equipment shall be operated over the full width of each layer.

(iv) The top of the rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(4) Compaction

(a) Embankment material shall be spread in layers. Each layer shall be brought to its required degree of compaction throughout its entire width before successive layers are placed.

(b) The embankment shall be compacted to not less than 95 percent of the maximum density (latest A.A.S.H.O. Designation T 99), with the top six inches below the subgrade being compacted to a dry density of 100 percent of the maximum density (latest A.A.S.H.O. Designation T 99).

(c) The Engineer will specify the type of compaction units to be used during construction. On each embankment at least one approved compactor shall be in continuous operation while material is being placed. Additional units shall be used as directed by the Engineer.

(d) During compaction operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor which has a gauge easily visible from the road indicating the water level in the tank. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated or work shall cease temporarily while the material is brought to approximately the optimum moisture content.

(5) Embankment Adjacent to Structures

(a) Embankment on Bridge Approaches - The permission of the Engineer must be obtained before any fill is placed against concrete abutments or wing walls. Approach fills within the lines shown on the plan or as directed shall be constructed of approved granular material placed in 6 inch layers and compacted to 100 percent maximum density (latest A.A.S.H.O. Designation T 99). In the case of rigid frame structures the embankment shall be placed simultaneously at uniform elevations on both sides of the structure.

(b) Embankment at Culverts - Embankment around culverts shall consist of approved granular material placed to the limits shown on Standard Drawing No. D-1. Material shall be placed in 6" layers alternately on each side of the culvert so as not to displace it during installation and shall be compacted to 100% maximum density (latest A.A.S.H.O. Designation T 99). Special care shall be taken to obtain the required compaction under the haunches.

(c) Fill - Retaining Walls - The fill behind the walls shall be approved granular material placed in layers not exceeding 6 inches in thickness and compacted as directed by the Engineer. In the case of cell type retaining walls the fill behind the wall shall be tamped and kept near but not above the level of the compacted material within the cells.

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Where fill is to be placed on a sloping surface, the surface must be benched to reduce the load on the retaining structure.

(6) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

(a) Sheepsfoot compactors shall consist of two drum units, each drum having a minimum length of 4 feet. The length of the tamping feet shall not be less than 7 inches. Under working conditions, the compactor shall be of such weight that the minimum load upon each tamper foot will not be less than 250 pounds per square inch of cross sectional area. The sheepsfoot compactor shall be of the self-cleaning type and so constructed that each drum will oscillate independently of the other.

(b) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(c) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(d) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(e) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(f) Vibratory Compactors shall be of a design approved by the Engineer. Steel drum vibratory compactors shall weigh not less than 3.5 tons and pneumatic vibratory compactors shall weigh not less than 12 tons.

(g) A compaction unit shall consist of a self-propelled or a power-drawn compactor. Compaction units shall be capable of moving at a minimum speed of 3 m.p.h. Each complete unit shall be equipped with an hour meter of approved design. Compactors with motive power will be designated as complete units.

(h) When approved by the Engineer, additional compactors may be hauled by the single prime mover. In such cases the additional compactors shall be designated as "Compactors Only".

(i) Self-powered hand-operated tamping units for compaction of backfill and/or embankments contiguous to structures and culverts shall be of the vibratory or ramming type of approved design and weighing not less than 100 pounds.

(j) Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants

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authority for the use of a lesser number of such units in respect of the minimum number of standard units required.

(7) Trimming

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown in the plans and profiles or as staked by the Engineer. Where in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand trimming may be called for.

2.3.4 MEASUREMENT

(1) Embankment construction as above described will not be measured for direct payment except as provided below.

(2) The quantity of compaction "Complete Units" for which payment will be made shall be the number of approved hours that the equipment worked as recorded on the hour meters. No payment will be allowed for interruptions or down-time of any kind.

(3) The quantity of "Compactors Only" for which payment will be made shall be the number of approved hours worked, as recorded on the hour meters.

(4) The quantity of compaction by hand-operated tamping units for which payment will be made shall be the actual number of hours the equipment worked.

(5) The quantity of water for which payment will be made shall be the number of 1,000 gallon units authorized by the Engineer and acceptably applied.

(6) When specific material is used as directed by the Engineer for work as detailed in Article 2.3.3(5), the material used will be measured for payment as provided for in the specifications covering the applicable Unit Price Table Item.

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DIVISION 2

SECTION 4 - CHANNEL EXCAVATION

REVISED MARCH, 1963

2.4.1 DESCRIPTION

This item consists of the excavation required for deepening, widening and relocating water channels, the construction of ditches other than contiguous roadway ditches, hauling material within the free haul distance and disposal of materials in accordance with the plans or as staked by the Engineer.

2.4.2 MATERIALS

Classification

(a) Channel Excavation, Common will include the excavation of all materials not hereinafter classified as Channel Excavation, Rock.

(b) Channel Excavation, Rock will include the excavation of all materials more than ½ cubic yard in volume, all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. Channel Excavation, Rock will not apply to asphalt pavement, gravel, or broken stone, which will be classified as Channel Excavation, Common.

2.4.3 CONSTRUCTION

Suitable excavated material shall be used for embankment when needed. Excess material shall be disposed of as directed by the Engineer. When excavated material is placed near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.4.4 MEASUREMENT

The quantity of Channel Excavation, Common or Channel Excavation, Rock for which payment will be made shall be the volume of material measured in its original position, computed by the average end area method, removed within the neat lines shown on the plans or as staked by the Engineer and disposed of as directed.

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DIVISION 2

SECTION 5 - OVERHAUL

REVISED MARCH, 1963

2.5.1 DESCRIPTION

This item consists of authorized hauling in excess of 1000 feet free haul of any material paid for under the various classes of excavation.

2.5.2 MATERIALS

Not applicable.

2.5.3 CONSTRUCTION

Not applicable.

2.5.4 MEASUREMENT

(1) The quantity of Overhaul, measured in cubic-yard-miles, to be paid for shall be the product of the volume of the overhauled material, measured in its original position, in cubic yards, multiplied by the overhaul distance in miles and fractions thereof.

(2) The overhaul distance shall be the distance between the centres of volume of the overhauled material in its original position and its position after placing, less the free haul distance of 1000 feet. The haul distance shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, the measurement shall be based on the haul distance along the route designated by the Engineer.

(3) In calculating Overhaul, the Mass Diagram method will be used.

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DIVISION 3

SECTION 1 - BASE COURSE (CLASS 1) AND SUB-BASE COURSES (CLASS 2) AND (CLASS 3)

REVISED MARCH, 1963

3.1.1 DESCRIPTION

This item consists of crushing and/or screening gravel or stone, and placing in stockpile(s) or on the road in accordance with these specifications.

3.1.2 MATERIALS

(1) Base Course (Class 1)

(a) This material shall consist of crushed stone or crushed gravel meeting the requirements of Tables 1 and 2. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if provided for in Division 1, Section 1.

TABLE 1

Physical Requirements of Coarse Aggregate (Material Retained on No. 4 Sieve)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Designation T-96	35	35
(b) Crushed fragments, min. % by wt.	-	50
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Designation T-104	15	15

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

TABLE 2

Physical Requirements - Deleterious Materials

Description	Maximum Percentage
1. Shales	4
2. Siltstones	1
3. Chert	5
4. Ochre	1
5. Clay ball	1
Max. allowable total % by weight of deleterious material	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

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(b) Gradation

The aggregate shall conform within the limits specified in Table 3. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 3

Base Course (Class 1)

Sieve No.	Percent Passing
3/4"	100
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

(2) Sub-Base Course (Class 2)

This material shall consist of crushed stone or crushed gravel, meeting the gradation requirements of Table 4. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if provided for in Division 1, Section 1.

TABLE 4

Sub-Base Course (Class 2)

Sieve No.	Percent Passing
2"	100
1"	70 - 100
1/2"	50 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuation from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

(3) Sub-Base Course (Class 3)

This material shall consist of gravel, talus rock, disintegrated granite, sand, or other granular materials meeting the gradation requirements of Table 5. It shall be composed of clean, hard particles free from clay lumps, cementation, and organic material. It shall be washed if provided for in Division 1, Section 1.

TABLE 5

Sub-Base Course (Class 3)

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Sieve No.	Percent Passing
4"	100
1"	60 - 100
No. 4	25 - 100
No. 10	12 - 85
No. 40	5 - 40
No. 200	0 - 8

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

(4) General - Base Course (Class 1) and Sub-Base Courses (Class 2 and 3)

(a) The portion of the material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

(b) Even though particle sizes are within the limits of the grading sizes herein provided, materials will be considered unsuitable, if particle shapes are thin or elongated or exhibit other characteristics precluding satisfactory compaction and a roadbed acceptable to the Engineer.

3.1.3 CONSTRUCTION

(1) Clearing and Grubbing

The clearing and grubbing of deposits from which these materials are obtained, stockpile sites and access roads to these deposits and/or stockpile sites shall be carried out as specified in Article 2.1.3.

(2) Stripping

The areas from which these materials are obtained shall be stripped of all overburden to a distance of at least 25 feet from the working face, and this overburden will be disposed of in stockpiles, access road construction, or as directed by the Engineer.

(3) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to the right-of-way. Any work and materials required for the construction of such access roads will be specified by the Engineer.

(4) Blending Aggregates

It shall be permissible to blend or mix two or more materials to meet the gradation requirements. When two or more materials are blended, they shall be thoroughly mixed by mechanical means.

(5) Preparation of Surface Prior to Placing

Each course shall be placed on a surface which shall be clean, dry, free from frost, snow and loose or adhering deleterious materials, properly shaped and compacted.

(6) Spreading & Compacting Base Course (Class 1) and Sub-Base Course (Class 2 and 3)

The base course (Class 1) material shall be laid in layers of not more than three (3) inches in compacted thickness or as directed by the Engineer. The sub-base (Class 2 and 3) material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer, but in no instance more than 6" for Class 2 nor 8" for Class 3. Tail-gating will not be permitted. Immediately

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following spreading and smoothing of each layer, all material shall be compacted to the full width shown on the plans using compaction equipment conforming to the requirements specified in Article 3.1.3(7). All compacting shall start at the edges and progress towards the centre, so that each succeeding pass shall uniformly overlap the previous one. While compacting progresses, the entire surface of each layer shall be shaped in length, to maintain a uniformly smooth surface conforming to the required lines and grades.

Any irregularities in the completed surface of each base course (Class 1) lift that exceed 3/8 inch, or of each sub-base lift that exceed 1¼ inches, from the template grade for that particular lift when tested with a 10 foot straight edge shall be remedied to the satisfaction of the Engineer by loosening the suface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Additional material when required shall be paid for at the contract unit price for base course material.

Each layer shall be compacted to at least 100% maximum density (latest A.A.S.H.O. Designation T99). During compaction, the base course shall be maintained at the optimum moisture content. Water, when required, shall be applied with an approved distributor which has a gauge easily visible from the road indicating the water level in the tank.

(7) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

(a) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(b) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(c) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(d) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(e) Vibratory Compactors shall be of a design approved by the Engineer. Steel drum vibratory compactors shall weigh not less than 3.5 tons and pneumatic vibratory compactors shall weigh not less than 12 tons.

(f) A compaction unit shall consist of a self-propelled or a power-drawn compactor. Compaction units shall be capable of moving a minimum speed of 3 m.p.h. Each complete unit shall be equipped with an hour meter of approved design. Compactors with motor power will be designated as "complete units".

(g) When approved by the Engineer additional compactors may be hauled by the single prime mover. In such cases the additional compactors shall be designated as "compactors only".

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(8) Stockpiling

The stockpile site(s) shall be cleaned of all deleterious material and shall be firm and level. The stockpile(s) shall be shaped as directed by the Engineer and constructed in layers not exceeding three feet in depth over the entire stockpile area. During winter operations, stockpile(s) shall be kept free of ice and snow.

3.1.4 MEASUREMENT

(1) The quantity of Base Course or Sub-Base Course for which payment will be made shall be the number of tons placed and accepted in the completed work.

(2) The quantity of Haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course or sub-base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(3) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units supplied and distributed on the work. Water used on access road during hauling will not be included for payment.

(4) The quantity of compaction "complete units" for which payment will be made shall be the number of approved hours that the equipment worked as recorded on the hour meters. No payment will be allowed for interruptions or downtime of any kind.

(5) The quantities for clearing and/or grubbing of borrow areas, stockpile sites and access roads; for stripping of aggregate deposit areas; and for work and materials required for the construction of access roads will be measured and paid for separately as provided for in the appropriate Unit Price Table Items.

(6) The quantity of "compactors only" for which payment will be made shall be the number of approved hours worked, as recorded on the hour meters.

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SECTION 1 RANDOM RIP-RAP AND ARMOUR RIP-RAP

REVISED MARCH, 1963.

6.1.1 DESCRIPTION

This item consists of stone rip-rap for bank protection furnished and constructed in accordance with these specifications and in conformity with lines, grades and dimensions shown on the plans or designated by the Engineer.

6.1.2 MATERIALS

The Contractor shall supply all materials. Stone for the rip-rap shall be of approved quality, sound, hard, dense, angular, resistant to the action of air and water and free from seams, cracks or other structural defects. The size of individual stones shall conform to the following gradation tables:

Table 1 - Armour Rip-Rap

Weight of Stones (lbs.)	Percentage
1200 - 2000	60 - 70
400 - 1200	20 - 30
200 - 400	10 - 20
Under - 200	0

Table 2 - Random Rip-Rap

Weight of Stones (lbs.)	Percentage
200 - 400	25 - 50
20 - 200	50 - 75
Under - 20	0

6.1.3 CONSTRUCTION

The Contractor shall excavate or prepare an adequate foundation bed. The stones shall be placed so as to form the required cross-sections. Stone above the low water line shall form a uniform surface, free from humps or depressions with no excessively large individual stones projecting from the general surface. Armour rip-rap stone excessively large and tending to extend beyond the average general surface shall be embedded into the surface, broken down or discarded.

6.1.4 MEASUREMENT

The quantity of Armour and/or Random Rip-Rap which will be measured for payment shall be the quantity of each measured in cubic yards in place and computed by the average end area method for materials satisfactorily incorporated into the work.

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DIVISION 6

SECTION 2 HAND-PLACED RIP-RAP &

GROUTED HAND-PLACED RIP-RAP

REVISED MARCH, 1963

6.2.1 DESCRIPTION

This item consists of constructing hand-placed rip-rap walls, gutters or other protective coverings of approved stone, with or without mortar, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans or as directed by the Engineer.

6.2.2. MATERIAL

(1) General

The Contractor shall supply all materials.

(2) Stone

(a) Stone for rip-rap shall be of approved quality, sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects.

(b) For wall construction, no stone shall be less than ½ cubic foot in volume and 75 per cent of the stones shall be at least 1 cubic foot in volume.

(c) For gutter construction, individual stones shall have approximately flat surfaces and shall be not less than 4 inches in thickness, not less than 2 inches in width and not less than 6 inches in length.

(d) Spalls shall be supplied to fill open joints.

(3) Sand

Sand for mortar shall conform to the latestC.S.A. Specification for Aggregate for Masonry Mortar A82.56.

(4) Cement

Cement for mortar shall be Portland Cement conforming to the latest C.S.A. Specification A5.

6.2.3 CONSTRUCTION

(1) Preparation of Foundation

The Contractor shall prepare an adequate foundation and shall fine-grade to a uniform and even surface the whole area to be rip-rapped. Depressions shall be filled and thoroughly compacted.

(2) Placing

(a) Hand-Place Rip-Rap

Unless laid to form a flat apron, the rip-rap shall commence in a trench below the toe of the slope. Stone shall be laid with close broken joints, firmly bedded into the slope and against adjoining stones, with spalls used to fill the voids. The larger stones shall be placed in the lower courses.

(b) Grouted Hand-Placed Rip-Rap

The stones shall be placed as required under (a) above. The stones shall be wetted before applying the mortar. The spaces between stones shall be filled with cement mortar with the outer faces of the stones left exposed. The mortar shall be composed of one part Portland Cement

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DIVISION 6

SECTION 2 HAND-PLACED RIP-RAP &

GROUTED HAND-PLACED RIP-RAP

REVISED MARCH, 1963

6.2.1 DESCRIPTION

This item consists of constructing hand-placed rip-rap walls, gutters or other protective coverings of approved stone, with or without mortar, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans or as directed by the Engineer.

6.2.2. MATERIAL

(1) General

The Contractor shall supply all materials.

(2) Stone

(a) Stone for rip-rap shall be of approved quality, sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects.

(b) For wall construction, no stone shall be less than ½ cubic foot in volume and 75 per cent of the stones shall be at least 1 cubic foot in volume.

(c) For gutter construction, individual stones shall have approximately flat surfaces and shall be not less than 4 inches in thickness, not less than 2 inches in width and not less than 6 inches in length.

(d) Spalls shall be supplied to fill open joints.

(3) Sand

Sand for mortar shall conform to the latestC.S.A. Specification for Aggregate for Masonry Mortar A82.56.

(4) Cement

Cement for mortar shall be Portland Cement conforming to the latest C.S.A. Specification A5.

6.2.3 CONSTRUCTION

(1) Preparation of Foundation

The Contractor shall prepare an adequate foundation and shall fine-grade to a uniform and even surface the whole area to be rip-rapped. Depressions shall be filled and thoroughly compacted.

(2) Placing

(a) Hand-Place Rip-Rap

Unless laid to form a flat apron, the rip-rap shall commence in a trench below the toe of the slope. Stone shall be laid with close broken joints, firmly bedded into the slope and against adjoining stones, with spalls used to fill the voids. The larger stones shall be placed in the lower courses.

(b) Grouted Hand-Placed Rip-Rap

The stones shall be placed as required under (a) above. The stones shall be wetted before applying the mortar. The spaces between stones shall be filled with cement mortar with the outer faces of the stones left exposed. The mortar shall be composed of one part Portland Cement

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(b) Grouted Hand-Placed Rip-Rap (Cont.)

to three parts fine aggregate of such consistency that it can be placed with a mason's trowel. Grouted hand-placed rip-rap shall be cured in accordance with the curing requirements of the latest C.S.A. Specification A 23 for Concrete and Reinforced Concrete.

6.2.4 MEASUREMENT

The quantity of Hand-Placed Rip-Rap and/or Grouted Hand-Placed Rip-Rap which will be measured for payment shall be the number of cubic yards measured in place and accepted in the completed work. Preparation of the foundation will be considered incidental to the work and will not be measured separately for payment.

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DIVISION 6

SECTION 3 - CULVERTS

REVISED MARCH, 1963

6.3.1 DESCRIPTION

This item consists of the supply and/or installation of corrugated metal, structural plate, and reinforced concrete pipe and pipe arch culverts in accordance with the Specifications and to the lines and grades shown on the plans or as directed by the Engineer.

6.3.2 MATERIALS

(1)

(a) Corrugated metal pipe and pipe arch culverts shall meet the requirements of the latest A.A.S.H.O. Specification M-36.

(b) Structural plate pipe and pipe arch culverts shall meet the requirements of the latest A.A.S.H.O. Specification M-167.

(c) Reinforced concrete pipe and pipe arch culverts shall meet the requirements of the latest A.A.S.H.O. Specification M-170.

(d) When specified, corrugated metal and structural plate pipe and pipe arch culverts shall be asbestos fused and fully coated inside and outside with asphalt cement of approved quality not less than 0.05" thick at the crest of the corrugations. The coating shall adhere firmly to the galvanized metal and shall be moisture and erosion resistant.

(e) When specified, corrugated metal pipe and pipe arch culverts shall have their inverts paved with an asphaltic mixture having a minimum thickness over the crest of the corrugation of 1/8 of an inch. The paving shall adhere firmly to the adjacent layers and shall be moisture and erosion resistant.

(2) The granular materials used for the bed and fill around culverts will be selected by the Engineer from one of the Unit Price Table items.

6.3.3 CONSTRUCTION

(1) Excavation

(a) Excavation shall be carried out in accordance with the appropriate Standard Plan and to the lines and grades staked by the Engineer. During construction the Contractor may be required to provide for the temporary flow of water outside of the limits of the culvert.

(b) The excavated surface for culverts shall provide a firm foundation of uniform density throughout its entire length. When a firm foundation is not encountered at the grade established, unless other special construction methods are called for, all the unstable soil under the culvert and for a width of at least one diameter on each side of the culvert shall be replaced with granular material.

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(2) Bedding

When granular material is used for culvert foundation, it shall be compacted to 100% of Maximum Density (latest A.A.S.H.O. Designation T-99), and shall have a thickness under the culvert of not less than ½" per foot of fill over the top of the culvert, with a minimum allowable thickness of 8 inches. The bed shall be shaped by means of a template to fit the lower part of the culvert exterior for at least 10% of the overall height. Recesses shall be provided for pipe bells when necessary.

(3) Installation

(a) Corrugated Metal, Structural Plate Pipe and Pipe Arch

(i) Coupling bands shall be used to join separate sections firmly together.

(ii) The outside laps of circumferential joints shall point upstream with longitudinal laps on the sides.

(iii) Structural plate pipe and pipe arch shall be placed in accordance with the manufacturer's recommendations.

(b) Reinforced Concrete Pipe and Pipe Arch

(i) The sections shall be laid carefully, bell ends upstream, and with the ends fully and closely jointed. Unless otherwise specified, all joints shall be filled with stiff cement mortar composed of one part of portland cement and one and one-half parts of sand.

(ii) The section ends shall be thoroughly cleaned and wetted with water before the joint is made. Mortar shall then be placed in the lower half of the bell or groove of the section already laid and on the upper half of the spigot or tongue of the section being laid. The two sections shall then be tightly joined together with their inner surfaces flush and even. After the sections are jointed, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the elements with a cover of thoroughly wetted earth or burlap.

(c) Strutting

Pipe culverts shall be strutted in accordance with the manufacturer's instructions.

(d) Appurtenances

(i) End sections, where specified, shall be installed in accordance with the manufacturer's recommendations.

(ii) Concrete inlets, cradles, aprons and headwalls shall be constructed, where specified, in accordance with the plans and the requirements of Division 5, Section 3.

(e) Fill Around Culverts

Fill around culverts shall be carried out in accordance with Article 2.3.3 (5)(b) and to the limits shown on the Standard Plans.

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6.3.4 MEASUREMENT

(1) Supply

(a) The quantity of pipe and pipe arch or structural plate pipe and pipe arch which will be measured for payment shall be the number of linear feet of the types and sizes furnished at the sites of installation or in stockpiles, if surplus to requirements, in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer. Coupling bands will not be measured for payment, but shall be considered as incidental to the supply of culverts.

(b) The quantity of end sections which will be measured for payment shall be the number furnished at the site of installation or in stockpile, if surplus to requirements, in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(2) Installation

(a) The quantity of pipe and pipe arch and structural plate pipe and pipe arch which will be measured for payment shall be the number of linear feet complete in place and accepted by the Engineer.

(b) The quantity of end sections which will be measured for payment shall be the number of end sections complete in place and accepted by the Engineer.

(3) Excavation

The quantity of excavation for culverts which will be measured for payment shall be in accordance with Article 2.2.4.

(4) Bedding and Fill Around Culverts

The quantity of bedding and fill around culverts which will be measured for payment shall be in accordance with the appropriate Unit Price Table items for the material used.

(5) Concrete for Appurtenances

The quantity of concrete for appurtenances, as noted in Article 6.3.3 (3)(d)(ii), which will be measured for payment shall be in accordance with Article 5.3.4.

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DIVISION 6

SECTION 4 - UNDERDRAINS

REVISED MARCH, 1963

6.4.1 DESCRIPTION

This item consists of the supply and placing of underdrains in accordance with these specifications and in conformity with the lines, grades, dimensions, and designs shown on the plans or designated by the Engineer.

6.4.2 MATERIALS

(1) Underdrains

Pipe for underdrains shall be:

(a) perforated corrugated metal pipe conforming to the latest A.A.S.H.O. Specification M-136;

(b) perforated bituminized fibre pipe conforming to the latest A.A.S.H.O. Specification M-177;

(c) perforated concrete pipe conforming to the latest A.A.S.H.O. Specification M-175;

(d) clay drain tile conforming to the latest A.A.S.H.O. Specification M-179.

(2) Porous Backfill

Backfill for underdrains shall consist of granular material meeting the gradation requirements of Class 1 Base Course.

(3) Classification of Excavated Material

(a) Excavation for Underdrains, Common will include the excavation of all materials not hereinafter classified as Excavation for Underdrains, Rock.

(b) Excavation for Underdrains, Rock will include the excavation of all boulders more than 1/2 cubic yard in volume, all rock in mass formation and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. Excavation for Underdrains, Rock will not apply to bituminous pavement, gravel or broken stone; such material will be classified as Excavation for Underdrains, Common.

6.4.3 CONSTRUCTION

(1) Trench and Bedding

(a) The base of the trench shall be deep enough to provide a minimum 4 inch bed under the pipe. The excavation in either rock or earth shall have a bottom width equal to the diameter of the pipe plus 2 feet. Excavated material shall be disposed of as directed by the Engineer.

(b) The bed of granular material shall be placed and tamped true to grade, providing recesses for the pipe bells when necessary.

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(2) Placing the Pipe

(a) Pipe of the type and dimensions required shall be laid firmly in the prepared bed.

(b) Perforated pipe shall be laid with the perforated side of the pipe down and separate sections shall be firmly joined together.

(c) Bell and spigot pipe shall be laid with bell ends upgrade and the spigot ends entered in the adjacent bells but not mortared or otherwise closed. The joints of bell and spigot or clay tile shall be covered with two-ply tar-paper strips not less than 6 inches in width and of sufficient length to permit the ends being turned outward and laid flat on the bottom course of gravel on either side of the pipe for a distance of 3 inches.

(3) Porous Backfill Material

The porous backfill material shall be carefully placed by hand-shovelling to a depth of at least 6 inches over the top of the pipe. The trench shall then be filled with porous backfill and the material compacted to the elevation shown on the plans or as directed by the Engineer. If the Engineer so directs, the remainder of the backfill shall be the same material as in the adjacent area.

6.4.4 MEASUREMENT

(1) Excavation

The quantity of excavation for underdrains which will be measured for payment shall be the volume measured in cubic yards in its original position, computed by the average end area method, removed within the neat lines of excavation for underdrains shown on the plan or staked by the Engineer and disposed of as directed.

(2) Supply

The quantity of underdrain supply which will be measured for payment shall be the number of linear feet furnished at the sites of installation or in stockpile, if surplus to requiremnts, in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(3) Installation

The quantity of underdrain installation which will be measured for payment shall be the number of linear feet complete in place and accepted by the Engineer.

(4) Porous Backfill

The quantity of porous granular backfill for underdrains which will be measured for payment shall be the number of cubic yards of material in place, computed by the average end area method, within the limits of the neat lines as shown on the plans or as staked by the Engineer. No deduction will be made for the volume of material displaced by the pipe. Backfill above the elevation of the porous backfill will be measured for payment under the appropriate Unit Price Table item.

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SECTION 7 - DUST CONTROL

REVISED MARCH, 1963

6.7.1. DESCRIPTION

This item consists of the treatment of roads with calcium chloride.

6.7.2. MATERIALS

(1) Calcium chloride shall be supplied by the Contractor in water-proof paper bags in the quantity ordered in writing by the Engineer.

(2) Calcium chloride shall conform to the latest A.A.S.H.O. Specification Designation M.144.

6.7.3. CONSTRUCTION

(1) Storage

Calcium chloride shall be stored in a weather-tight storage shed provided by the Contractor within the limits of the contract until used or otherwise disposed of as directed by the Engineer.

(2) Application

(a) Calcium chloride shall be applied at the rate specified by the Engineer with mechanical equipment of an approved type.

(b) When required, water shall be applied to the road as directed.

6.7.4. MEASUREMENT

(1) The quantity of supply of calcium chloride which will be measured for payment shall be the number of tons or fractions thereof, furnished as ordered in writing by the Engineer, delivered and placed in storage.

(2) The quantity of application of calcium chloride which will be measured for payment shall be the number of tons or fractions thereof applied as directed.

(3) The quantity of water which will be measured for payment shall be the number of 1000-gallon units applied as directed.

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DIVISION 6

SECTION 9 - RENTAL VEHICLES

REVISED - MARCH 1963

6.9.1 DESCRIPTION

This item consists of supplying vehicles for the use of the Engineer and his representatives.

6.9.2 VEHICLES

(1) Type and Equipment

(a) Vehicles shall be of the types and number specified in Division 1, Section 1.

(b) Vehicles shall be maintained in good running order, equipped with heater, defroster, right and left hand mirrors, windshield washers, permanent type anti-freeze, a spare wheel, jack, wheel wrench, all-weather mud and snow tires on rear and spare wheels, directional signals with two-way flasher, full width front seat, and licenced in accordance with provincial regulations.

(2) Delivery and Return of Vehicles

(a) The vehicles shall be delivered to a location designated by the Engineer. From the time of delivery, they shall be deemed to be in the possession of the Crown until returned to the Contractor.

(b) The Engineer may, at any time or times, return any or all of the vehicles to the Contractor by advising the Contractor's representative in writing. From the date of such advice to the Contractor's representative the specified vehicles shall be deemed to be in the possession of the Contractor.

(c) The Contractor shall upon written request from the Engineer, redeliver to him any vehicles returned to the Contractor.

(d) The Engineer may require the Contractor to furnish vehicles until final measurements have been completed.

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6.9.3 RENTAL CONDITIONS

(1) Damage and Repairs

(a) All vehicles supplied pursuant to this contract are at the risk of the Contractor whether in the possession of the Contractor or the Crown, and the Contractor shall not make any claim or demand, or bring any action ot other legal proceedings against the Crown in respect of damage to any such vehicle, including damage caused by the negligence of an officer or servant of the Crown while acting within the scope of his duties.

(b) All repairs to vehicles supplied under this contract will be performed expeditiously by the Contractor.

(2) Protection

The Contractor, for himself, his heirs, executors and administrators, hereby undertakes to indemnify and save harmless, the Crown, and officers, servants and agents of the Crown from and against all manner of actions, causes of action, suits, debts, duties, agreements, claims and demands whatsoever which may hereafter exist or be made for or by reason of any cause, matter or thing whatsoever arising out of these terms of rental and the transportation or operation and equipment herein referred to.

6.9.4 MEASUREMENT

The quantity of rental vehicles which will be measured for payment shall be the actual number of months or fractions thereof the vehicles are in possession of the Crown.

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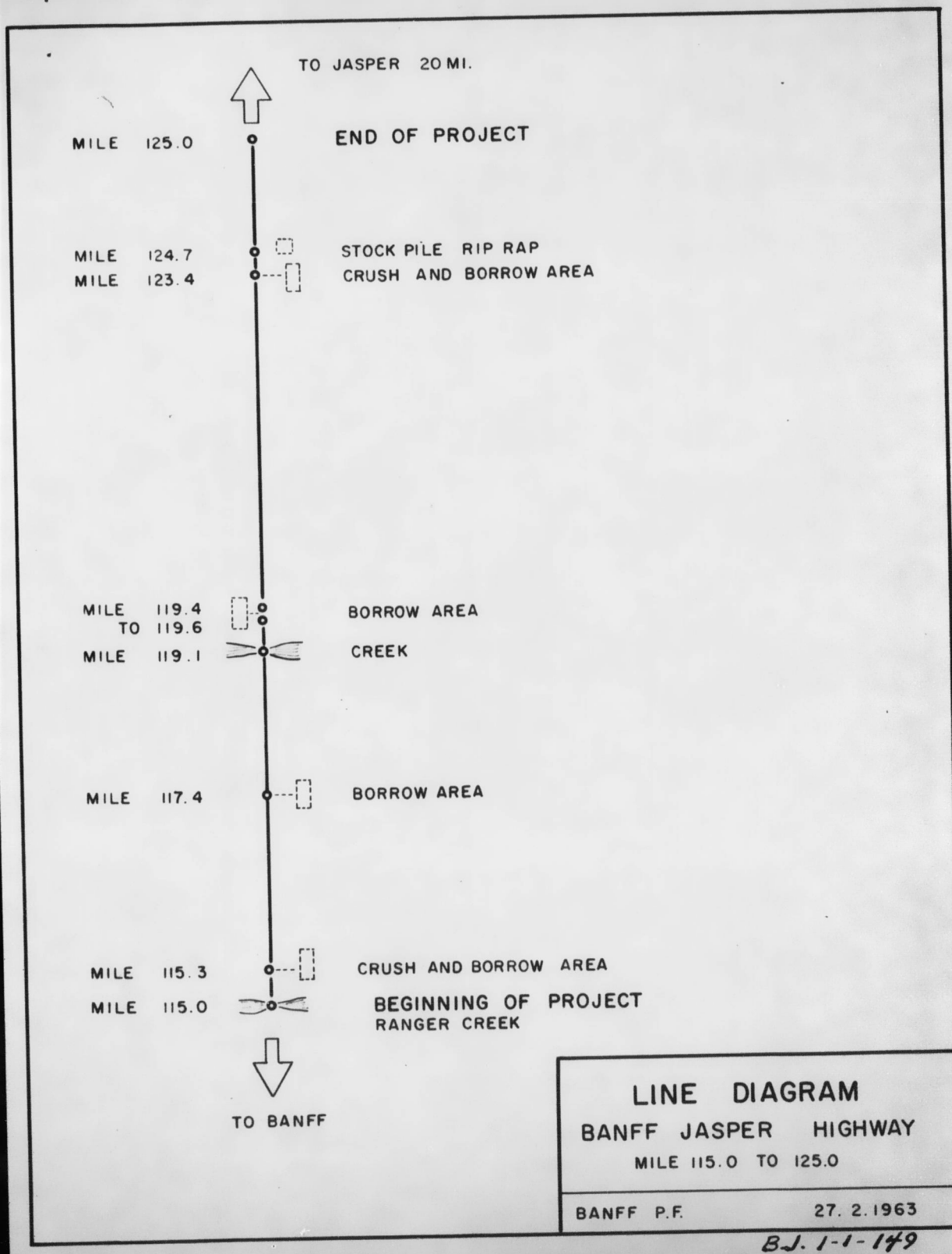

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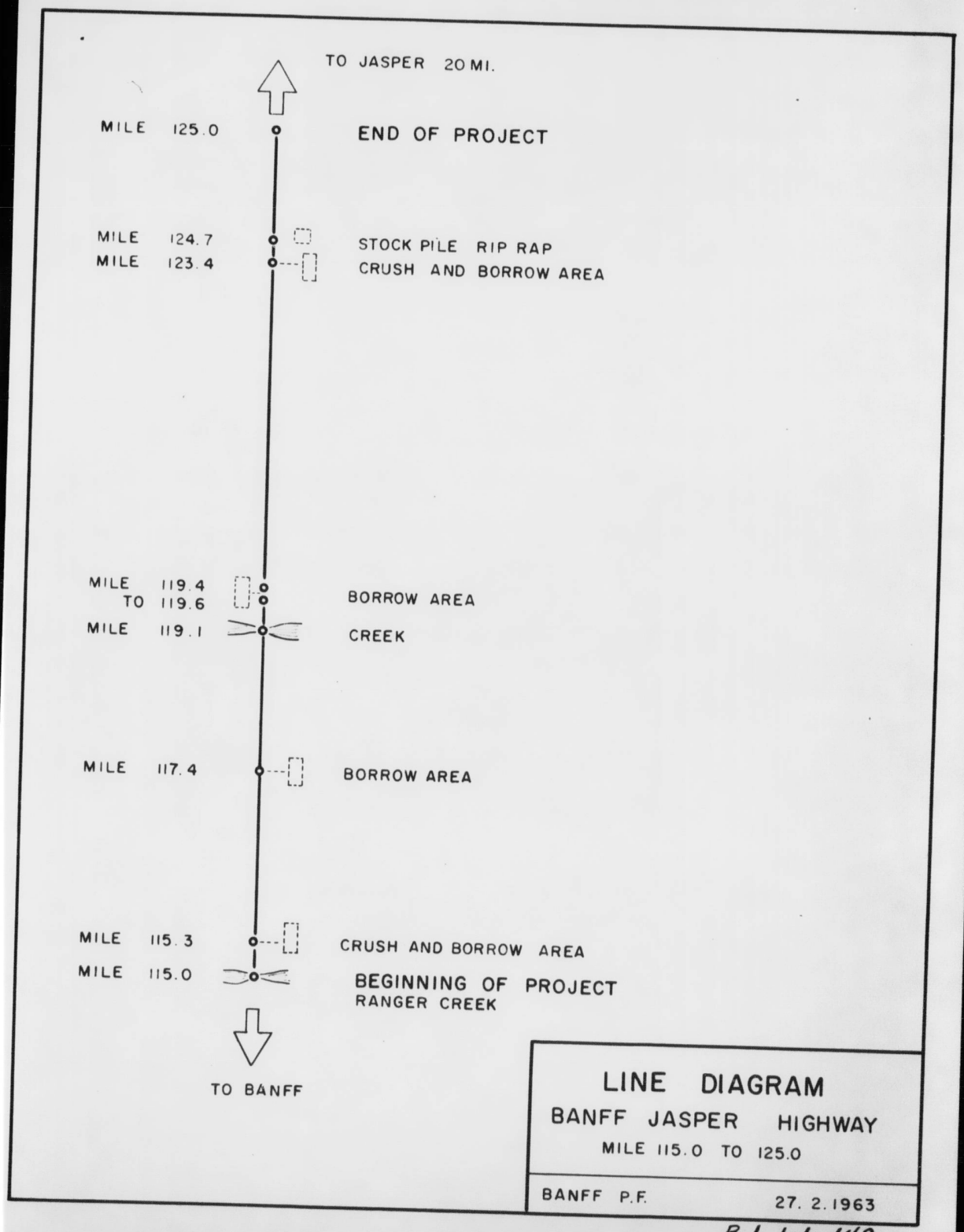

LINE DIAGRAM

BANFF JASPER HIGHWAY

MILE 115.0 TO 125.0

BANFF P.F. 27. 2. 1963

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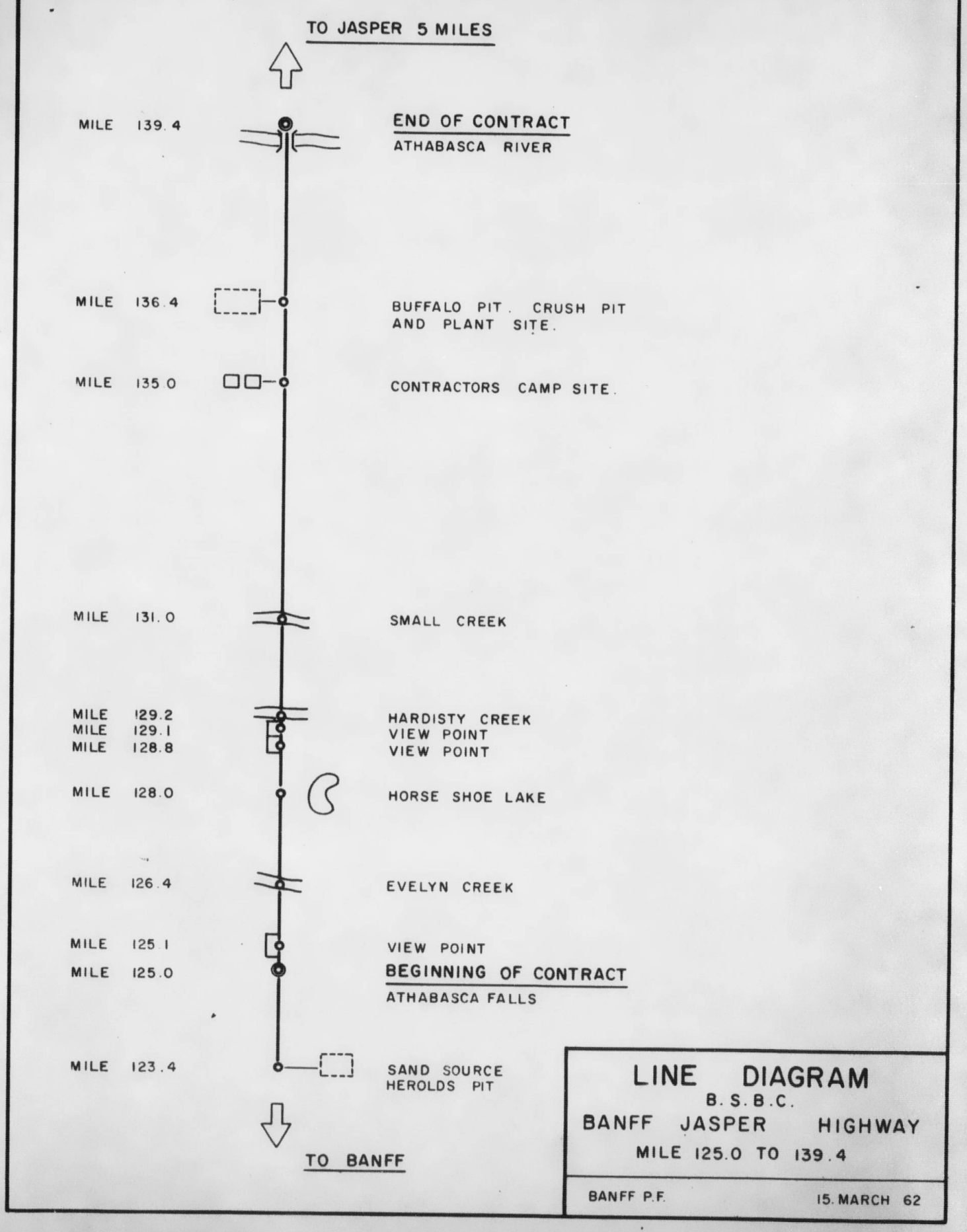

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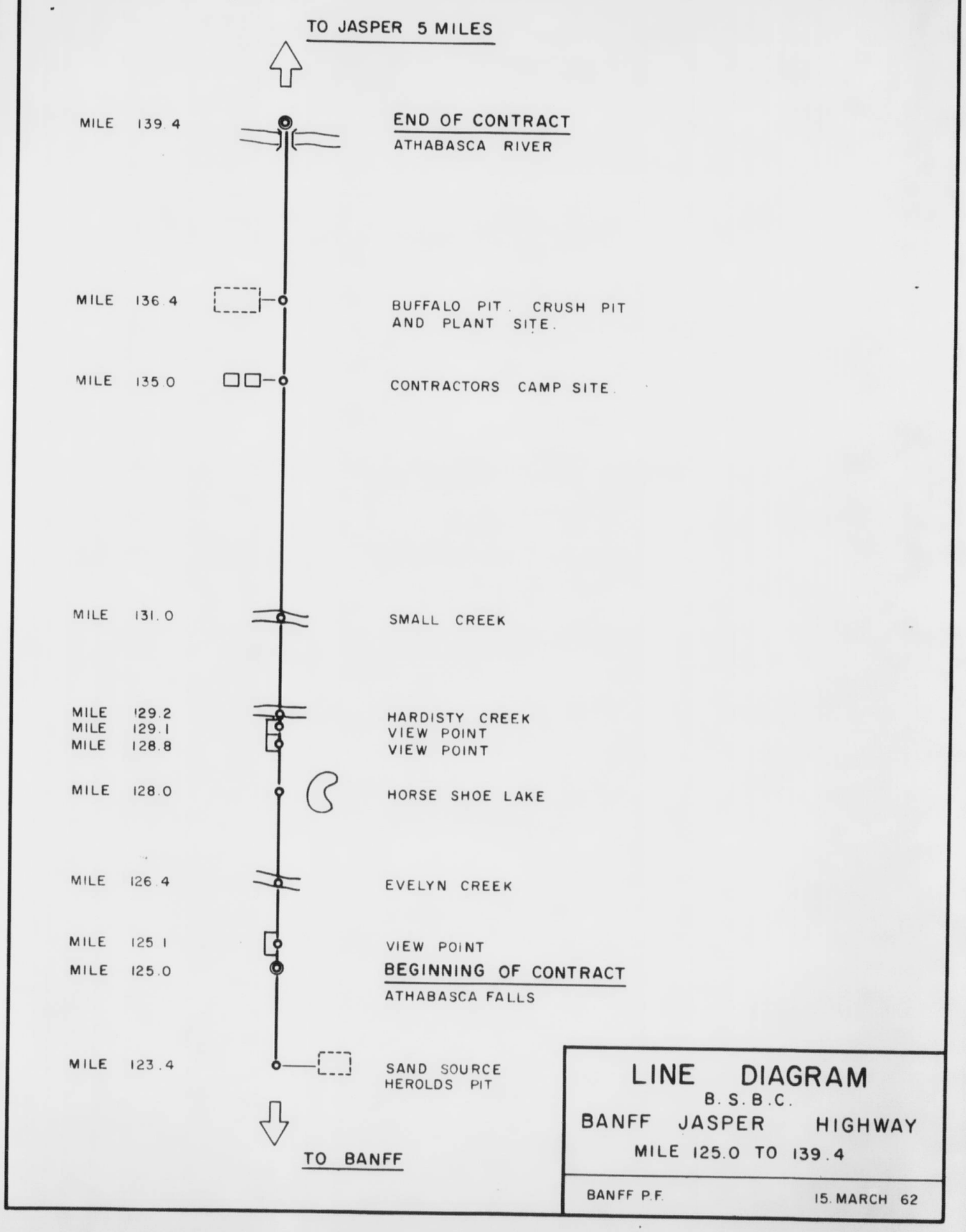

LINE DIAGRAM

B.S.B.C.

BANFF JASPER HIGHWAY

MILE 125.0 TO 139.4

BANFF P.F. 15. MARCH 62

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These Articles of Agreement made in duplicate this

day of 19 between

Her Majesty the Queen
in right of Canada (referred to
in the documents forming the
contract as "Her Majesty")
represented by the Minister of

_____
(referred to in the documents forming
the contract as "the Minister")

and

_____
(referred to in the documents forming
the contract as the "Contractor")

Witness that Her Majesty and the Contractor covenant and agree as follows:

ARTICLE I

The Contractor will between the date of these Articles of Agreement and the day of 19 in a careful and workmanlike manner execute the following work:

which work is more particularly described in the documents that are attached hereto, entitled "Plans and Specifications" and marked "A" (referred to in the documents forming the contract as the "Plans and Specifications") at the place and in the manner therein set out.

ARTICLE II

(1) Her Majesty will pay to the Contractor as consideration for the execution of the portion of the work to which the fixed price arrangement is applicable the sum of $ (subject to any additions or deductions provided for in these Articles, the General Conditions, the Terms of Payment, or the Labour Conditions except any addition or deduction which is expressly stated to be applicable only to a unit price arrangement), at the times and in the manner set out or referred to in the document that is attached hereto entitled "Terms of Payment" and marked "B"(referred to in the documents forming the contract as the "Terms of Payment").

(2)

(a) Her Majesty will pay to the Contractor as consideration for the execution of the portion of the work to which the unit price arrangement is applicable a sum equal to the number of units of measurement of each class of labour, plant or material actually performed, used or supplied by the Contractor in the execution of the work as measured by the Engineer and set out in the Engineer's Final Certificate of Measurement multiplied by the price for each such unit of measurement as set out in the Unit Price Table as

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added to or amended in accordance with paragraphs (b), (c) and (d) of this Article or as, in a proper case, determined in accordance with paragraph (e) of this Article (such sum being subject to any additions or deductions provided for in the General Conditions, Terms of Payment, Labour Conditions, except any addition or deduction which is expressly stated to be applicable only to a fixed price arrangement) at the times and in the manner set out or referred to in the document that is attached hereto entitled "Terms of Payment" and marked "B" (referred to in the documents forming the contract as the "Terms of Payment").

(b) The Engineer and the Contractor may by agreement in writing add to the Unit Price Table classes of labour, plant or material together with units of measurement, prices per unit and estimated quantities therefor where any labour, plant or material which will be included in the Engineer's Final Certificate of Measurement is not included in any class of labour, plant or material set out in the Unit Price Table.

(c) The Engineer and the Contractor may by agreement in writing amend the price per unit set out in the Unit Price Table for any class of labour, plant or material included therein where an estimated quantity is set out therein for that class of labour, plant or material, if the Engineer's Final Certificate of Measurement shows or will show that the total quantity of that class of labour, plant or material performed, used or supplied by the Contractor in executing the work is less than 85% of that estimated quantity.

(d) The Engineer and the Contractor may by agreement in writing amend the price per unit set out in the Unit Price Table for any class of labour, plant or material included therein where an estimated quantity is set out therein for that class of labour, plant or material, by establishing a price per unit for units of that class of labour, plant or material performed, used or supplied by the Contractor in executing the work which are in excess of 115% of that estimated quantity.

(e) Where the Engineer and the Contractor do not agree as contemplated in paragraphs (b), (c) and (d) of this Article the Engineer shall determine the class of and the unit of measurement of the labour, plant or material involved and the price per unit therefor shall be determined in accordance with section 46 of the General Conditions.

(f) For the information and guidance of the Contractor and the persons administering the contract on behalf of Her Majesty, but not so as to constitute a warranty, representation or undertaking of any nature, either by Her Majesty to the Contractor or by the Contractor to Her Majesty, it is estimated that the total amount payable by Her Majesty to the Contractor for the portion of the work to which the unit price arrangement is applicable will not exceed $.

(3) Subsection (1) of this Article is not applicable where the unit price arrangement applies to the whole of the work.

(4) Subsection (2) of this Article is not applicable where the fixed price arrangement applies to the whole of the work.

ARTICLE III

(1) Subject to subsections (2) and (3) of this Article, the document attached hereto, entitled "General Conditions" and marked "C" (referred to in the documents forming the contract as the "General Conditions"), the document attached hereto entitled "Labour Conditions" and marked "D" (referred to in the documents forming the contract as the "Labour Conditions"), the document attached

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hereto and entitled "Insurance Schedule" and marked "E" (referred to in the documents forming the contract as the "Insurance Schedule"), the "Plans and Specifications", the "Terms of Payment" and these Articles of Agreement all form part of the contract between Her Majesty and the Contractor.

(2) Any of the provisions of these Articles, the Terms of Payment and the General Conditions which are expressly stated to be applicable only to a unit price arrangement are not applicable to the whole or to the portion of the work to which the fixed price arrangement is applicable.

(3) Any of the provisions of these Articles, the Terms of Payment and the General Conditions which are expressly stated to be applicable only to a fixed price arrangement are not applicable to the whole or to the portion of the work to which the unit price arrangement is applicable.

ARTICLE IV

The amount of $, that has been deposited with the Minister by the Contractor as a security deposit for the due fulfilment of the contract will be dealt with in accordance with the provisions concerning security deposit contained in the General Conditions.

The Contractor has furnished and Her Majesty accepts a Performance Bond, i.e.,

_____
(insert details - name of Company, amount, date, etc.)

and a Labour and Material Payment Bond, i.e.,

_____
(insert details - name of Company, amount, date, etc.)

with respect to the execution of the work by the Contractor, which bond or bonds shall operate according to their tenor. The Contractor shall post on the site of the work a notice that a Labour and Material Payment Bond is in force together with the name and address of the surety thereunder, definition of those persons protected thereunder and an outline of the procedure for submitting a claim thereunder.

ARTICLE V

For all purposes of or incidental to the contract, the Contractor's address shall be deemed to be:

ARTICLE VI

(1) Her Majesty and the Contractor agree that the following table is, subject to the restrictions contained in subsections (2) and (3) of this Article, the Unit Price Table for the purposes of the contract:

Column 1	Column 2	Column 3	Column 4
Class of labour, plant or material	Unit of Measurement	Price per unit	Estimated quantity

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(2)

(a) The aggregate of all classes of labour, plant or material contained in the Unit Price Table in respect of which no estimated quantity is shown in column 4 together with the units of measurement and the prices per unit relating to such classes of labour, plant or material form the Unit Price Table applicable to a fixed price arrangement.

(b) The price per unit in respect of any class of labour, plant or material set out in the Unit Price Table described in paragraph (a) shall be increased by 10% where the cost to the Contractor of executing the work in respect of any such class of labour, plant or material is increased.

(3) The classes of labour, plant or material that do not fall within subsection (2) of this Article, together with the units of measurement, prices per unit and estimated quantities relating to such classes of labour, plant or material, form the Unit Price Table applicable to a unit price arrangement.

(4) The Unit Price Table described in subsection (3) designates the whole or the portion of the work to which the unit price arrangement is applicable.

(5) The portion of the work which does not fall within subsection (4) of this article is the portion of the work to which the fixed price arrangement is applicable.

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Signed on behalf of Her Majesty
by

_____
Deputy Minister

_____
Deputy Minister

and countersigned on behalf of
Her Majesty by

_____
Secretary

_____
Secretary

at Ottawa in the presence of

_____

on the _____

day of _____

19 _____.

_____
Witness

Sealed, attested to and delivered by

_____

_____

as _____ and
Position

by _____

_____

as _____
Position

of the _____
Contractor

Seal.

on the _____ day of

_____ 19 .

Marginal Note

The attention of the Contractor is drawn to the following Statutory provision:

"It is a term of every contract providing for the payment of any money by Her Majesty that payment thereunder is subject to there being an appropriation for the particular service for the fiscal year in which any commitment thereunder would come in course of payment."

Section 38, Financial Administration Act, R.S.C. 1952, c.116

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This document is the document referred to as "Terms of Payment" and marked "B" in the Articles of Agreement entered into on the

_____ day of _____ ,

19_____ between Her Majesty the Queen and

_____.

Signed { _____ Minister

_____ Contractor

"B"

TERMS OF PAYMENT

Amount Payable – General

1. Her Majesty will pay to the Contractor at the times and in the manner hereinafter set out the amount by which

(a) the aggregate of the amounts described in section 2 of the Terms of Payment exceeds

(b) the aggregate of the amounts described in section 3 of the Terms of Payment

and the Contractor will accept the payment as full consideration for everything furnished and done by him in respect of the work.

Amounts Payable to the Contractor

2. (1) The amounts referred to in paragraph (a) of section 1 of the Terms of Payment are:

(a) the amount set out in Article II of the Articles of Agreement;

(b) the amount, if any, payable to the Contractor pursuant to section 12 of the General Conditions relating to unexpected soil conditions, neglect or delay;

(c) the amount, if any, payable to the Contractor on account of a suspension of work pursuant to section 18 of the General Conditions;

(d) the amount, if any, payable to the Contractor pursuant to section 37 of the General Conditions relating to work not required to be done under the contract but done by the Contractor under order of the Engineer;

(e) the amount, if any, payable to the Contractor by reason of an order or change pursuant to section 38 of the General Conditions; and

(f) the amount, if any, payable to the Contractor pursuant to section 39 of the General Conditions relating to cooperation with other contracting persons and workmen.

(2) Paragraph (e) of subsection (1) is applicable only to a fixed price arrangement.

Amounts Payable to Her Majesty

3. (1) The amounts referred to in paragraph (b) of section 1 of the Terms of Payment are:

(a) the amount, if any, which the Contractor is liable to pay to Her Majesty pursuant to section 14 of the General Conditions relating to damage to Her Majesty's material, plant and real property;

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(b) in the event of delay in completing the work the amount payable to Her Majesty pursuant to section 15 of the General Conditions;

(c) the amount, if any, paid by Her Majesty in satisfaction of obligations of the Contractor or a subcontractor pursuant to section 21 of the General Conditions or pursuant to the Labour Conditions;

(d) the amount, if any, payable by the Contractor to Her Majesty pursuant to section 36 of the General Conditions relating to matters done by Her Majesty which the Contractor refused or failed to do;

(e) the amount, if any, by which the cost of the work to the Contractor was decreased by reason of dispensations or changes pursuant to section 38 of the General Conditions; and

(f) the amount referred to in subsection (1) of section 43 of the General Conditions relating to municipal permits if the Contractor is in breach of subsection (3) of the said section.

(2) Paragraph (e) of subsection (1) is applicable only to a fixed price arrangement.

Time of Payment

4. (1) For the purposes of this section "Payment Period" means an interval of thirty days or such other interval as the Contractor and the Engineer agree upon.

(2) The Contractor shall upon the expiration of a Payment Period deliver to the Engineer a Progress Claim in writing and shall describe therein any portion of the work completed and any materials delivered to the site of the work but not incorporated into the work during the Payment Period in respect of which the Progress Claim is made.

(3) Within 14 days of receipt by the Engineer of the Progress Claim the Engineer shall inspect the portion of the work and the material described therein and shall issue a Progress Report, which may take the form of an endorsement on the Progress Claim, indicating the value of the portion of the work and the materials described in the Progress Claim which meet with his satisfaction and which, in his opinion, have been completed or delivered in accordance with the contract and which are not included in any other Progress Report.

(4) Thirty days after the expiration of the fourteen days referred to in subsection (3) and if the Contractor has made and delivered to the Engineer his Statutory Declaration deposing to the fact that as at the date of the immediately preceding Progress Claim, if any, all his lawful obligations to subcontractors, workmen and suppliers of material in respect of the work are fully discharged, an amount equal to 95% of the value of the work and materials as shown in the Progress Report shall become due and be payable by Her Majesty to the Contractor but where a Labour and Material Payment Bond has not been furnished by the Contractor, the amount payable under this subsection shall be an amount equal to 90% of the value of the work and materials as shown in the Progress Report.

(5) Upon the expiration of 60 days from the date of issuance of an Interim Certificate of Completion under subsection (2) of section 40 of the General Conditions and if the Contractor has made and delivered to the Engineer his Statutory Declaration deposing to the fact that all his lawful obligations to subcontractors, workmen and suppliers of material in respect of the work are fully discharged, the amount described in section 1 of the Terms of Payment less the aggregate of

(a) all payments made pursuant to subsection (4);

(b) an amount equal to double the cost to Her Majesty of completing the items and doing the things described in the Interim Certificate of Completion which, in the opinion of the Engineer, are brought about by defects and faults in the work; and

(c) an amount equal to the cost to Her Majesty of completing the items and doing the things described in the Interim Certificate of Completion other than items or things to which paragraph (b) applies;

shall become due and be payable by Her Majesty to the Contractor.

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(6) Upon the expiration of 60 days from the date of issuance of a Final Certificate of Completion under subsection (1) of section 40 of the General Conditions and if the Contractor has made and delivered to the Engineer his Statutory Declaration deposing to the fact that all his lawful obligations and lawful claims against him, arising out of the execution of the work, have been discharged and satisfied, the amount described in section 1 of the Terms of Payment less the aggregate of

(a) all payments made pursuant to subsection (4); and

(b) all payments made pursuant to subsection (5);

shall become due and be payable by Her Majesty to the Contractor.

Progress Report and Payment thereunder not binding on Her Majesty

5. Neither a Progress Report nor a payment by Her Majesty pursuant to the Terms of Payment shall be construed as evidence that the work, material or any part thereof is complete, is satisfactory or is in accordance with the contract.

Delay in Making Payment

6. Delay by Her Majesty in making a payment when it becomes due and is payable pursuant to the Terms of Payment shall be deemed not to be a breach of the contract by Her Majesty but such delay shall, if the payment involved is payable pursuant to subsection (4) of section 4 of the Terms of Payment and if the delay continues for more than fifteen days, entitle the Contractor to interest on the amount overdue and Her Majesty will, when making payment of the amount overdue, pay to the Contractor interest on the amount overdue at the rate of 5% per annum.

Right of Set-off

7. (1) Without restricting any right of set-off given or implied by law, Her Majesty may set-off against any amount payable to the Contractor under the contract, any amount payable to Her Majesty by the Contractor under this contract or under any current contract and without restricting the generality of the foregoing Her Majesty may when making payment pursuant to section 4 of the Terms of Payment deduct from the amount payable any amount which is then payable to Her Majesty by the Contractor under the contract or which, by virtue of the right of set-off, may be retained by Her Majesty.

(2) For the purposes of this section "current contract" means;

(a) a contract between Her Majesty and the Contractor under which the Contractor has an undischarged obligation to perform or supply work, labour or materials, or

(b) a contract between Her Majesty and the Contractor in respect of which Her Majesty has since the date on which these Articles of Agreement were made exercised the right to take the work, the subject of that contract, out of the Contractor's hands.

Payment in Event of Termination

8. In the event that the contract is terminated pursuant to section 19 of the General Conditions Her Majesty will as soon as is practicable under the circumstances pay to the Contractor the amount, if any, payable to the Contractor pursuant to that section.

Roger Duhamel, F.R.S.C., Queen's Printer and Controller of Stationery, Ottawa, 1963

P.P. & S. Cat. No. 3611

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This document is the document referred to as "General Conditions" and marked "C" in the Articles of Agreement entered into

on the _____ day of _____

19_ , between Her Majesty the Queen and

_____

Signed { _____ Minister

_____ Contractor

"C"

GENERAL CONDITIONS

1. (1) In the contract

Interpretation

(a) "Engineer" means the .....
.....
of .....
of the Government of Canada, and includes a person specially authorized by him to perform on his behalf any function under the contract;

(b) "herein", "hereby", "hereof", "hereunder" and similar expressions refer to the contract as a whole and not to any particular subdivision or part thereof;

(c) "material" includes all materials, commodities, articles and things required to be furnished under the contract for incorporation in the work;

(d) "Minister" includes a person acting for, or if the office is vacant, in the place of such Minister, under the authority of an order of the Govemor General of Canada in Council, and also his successors in the office, and his or their lawful deputy;

(e) "plant" includes all animals, tools, implements, machinery, vehicles, buildings, structures, equipment, articles and things required for the execution of the work;

(f) "security deposit" means the security given by the Contractor to Her Majesty in accordance with the contract;

(g) "subcontractor" means a person, firm or corporation to whom or to which the Contractor has, pursuant to section 4 of the General Conditions and with the consent of the Engineer, subcontracted the whole or any portion of the work;

(h) "superintendent" means the employee of the Contractor who is designated by the Contractor as being in full charge of the field operations of the Contractor for the purposes of the contract; and

(i) "work" includes the whole of the works, materials, matters and things required to be done, furnished and performed by the Contractor under the contract.

(2) The marginal notes in the contract form no part of the contract but shall be deemed to be inserted for the convenience of reference only.

(3) Unless the context otherwise requires, where in the contract reference is made to a subsection or paragraph, the reference shall be deemed to be a

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reference to a subsection or paragraph of the section or subsection, as the case may be, in which the reference is made.

(4) In interpreting the contract in the event of discrepancies or conflicts between anything in the Plans and Specifications and the General Conditions, the General Conditions shall govern.

(5) In interpreting the Plans and Specifications –

(a) in the event of discrepancies or conflicts between the Plans and Specifications, the Specifications shall govern;

(b) in the event of discrepancies or conflicts between the Plans, the Plans drawn with the largest scale shall govern; and

(c) in the event of discrepancies or conflicts between figured dimensions and scaled dimensions, the figured dimensions shall govern.

Successors and Assigns

2. The contract shall inure to the benefit of and be binding upon the parties hereto and their executors, administrators, successors and assigns.

Assignment of Contract

3. The contract may not be assigned without the written consent of the Minister.

Subcontracting by Contractor

4. (1) Neither the whole nor any part of the work may be subcontracted by the Contractor without the consent of the Engineer.

(2) Every subcontracting by the Contractor shall provide that the subcontractor shall comply with all terms and conditions of this contract which can reasonably be applied to his undertaking.

Description of Work All-inclusive

5. The description of the work and material set out in the contract includes not only the particular kind of work and material mentioned but also all labour, plant and material necessary for the full execution, completion and delivery ready for use of the work and material.

No Implied Obligations

6. No implied obligation of any kind by or on behalf of Her Majesty shall arise from anything in the contract, and the express covenants and agreements herein contained and made by Her Majesty are and shall be the only covenants and agreements upon which any rights against Her Majesty are to be founded; and, without limiting the generality of the foregoing, the contract supersedes all communications, negotiations and agreements, either written or oral, relating to the work and made prior to the date of the contract.

Time of Essence

7. Time is of the essence of the contract.

Indemnification by Contractor

8. (1) Except as provided in Section 9 of the General Conditions, the Contractor shall indemnify and save harmless Her Majesty from and against all claims, demands, losses, costs, damage, actions, suits or proceedings by whomsoever made, brought or prosecuted in any manner based upon, arising out of, related to, occasioned by or attributable to the activities of the Contractor in executing the work under the contract or to an infringement or an alleged infringement by the Contractor of a patent of invention.

(2) For the purposes of subsection (1), "activities" includes an act improperly carried out, an omission to carry out an act and a delay in carrying out an act.

Indemnification by Her Majesty

9. Her Majesty shall indemnify and save harmless the Contractor from and against all claims, demands, losses, costs, damage, actions, suits or

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proceedings arising out of his activities under the contract which are directly attributable to

(a) lack of or a defect in, title or an alleged lack of or defect in, title to the site of the work; or

(b) an infringement or an alleged infringement of any patent of invention in executing anything for the purposes of the contract, the model, plan or design of which was supplied by Her Majesty to the Contractor.

Members of House of Commons not to Benefit

10. No Member of the House of Commons shall be admitted to any share or part of the contract or to any benefit arising therefrom.

Notices, Orders, etc., to Contractor

11. (1) Notices for the purposes of paragraph (a) of subsection (1) of section 16, section 18 and section 19 of the General Conditions shall be in writing and shall

(a) be delivered to the Contractor in person or, if the Contractor is a corporation or partnership, be delivered to a senior administrative or executive officer of the corporation or partnership, or

(b) sent by mail to the Contractor or his superintendent addressed to the address mentioned in the contract,

and if any question arises as to whether any such notice was communicated to the Contractor it shall be deemed to have been sufficiently communicated to him

(c) if it was delivered pursuant to paragraph (a), on the day it was delivered, and

(d) if it was sent by mail pursuant to paragraph (b), on the day it was received by the Contractor or on the sixth day after it was mailed, whichever is earlier.

(2) Any notice, order, direction, decision or communication other than a notice to which subsection (1) refers, which may be given to the Contractor pursuant to the contract may be given in any manner, but it shall be deemed to have been sufficiently communicated to the Contractor if it was put in writing and the writing was

(a) delivered to the Contractor in person or, if the Contractor is a corporation or partnership was celivered to a senior administrative or executive officer of the corporation or partnership,

(b) delivered to the Contractor's superintendent,

(c) left at the Contractor's office or, if he has more than one office, at one of them, or

(d) sent by mail to the Contractor or his superintendent addressed to the address mentioned in the contract or to the Contractor's last known place of business or residence.

Changes in Soil Conditions and Neglect or Delay by Her Majesty

12. (1) No payment will be made by Her Majesty to the Contractor in addition to the payment expressly promised by the contract on account of any extra expense, loss or damage incurred or sustained by the Contractor for any reason including a misunderstanding on the part of the Contractor as to any fact, whether or not such misunderstanding is attributable directly or indirectly to Her Majesty or any of Her Majesty's agents or servants (whether or not any negligence or fraud on the part of Her Majesty's agents or servants is involved) unless, in the opinion of the Engineer, the extra expense, loss or damage is directly attributable to

(a) a substantial difference between information relating to soil conditions at the site of the work, or a reasonable assumption of fact based thereon, in the Plans and Specifications or other documents or material communicated by Her Majesty to the Contractor for his use in preparing his tender and the real soil conditions encountered at the site of the work by the Contractor when executing the work, or

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(b) neglect or delay occurring after the date of the contract on the part of Her Majesty in providing any information or in doing any act which the contract either expressly requires Her Majesty to do or which would be done by an owner, in accordance with the usage of the trade, to enable his Contractor to carry out an undertaking similar to the work being executed under the contract for Her Majesty,

in which case, if the Contractor has given to the Engineer written notice of his claim before the expiration of thirty days from the encountering of the soil conditions giving rise to the claim or from the day on which the neglect occurs or the delay commences, as the case may be, Her Majesty will pay to the Contractor in respect of the additional expense, loss or damage incurred or sustained by reason of that difference, neglect or delay, an amount equal to the cost, calculated in accordance with sections 44 to 47 of the General Conditions of the additional plant, labour and materials necessarily involved.

(2) If, in the opinion of the Engineer, the Contractor has effected a saving of expenditure by reason of the execution of the work by the Contractor being rendered less difficult and less costly because the soil conditions actually encountered by the Contractor at the site of the work when executing the work are substantially different from soil conditions indicated in information or a reasonable assumption of fact based thereon in the Plans and Specifications or other documents or material communicated by Her Majesty to the Contractor for his use in preparing his tender, the amount set out in Article II of the Articles of Agreement shall be reduced by an amount equal to the saving effected by the Contractor.

(3) Paragraph (a) of subsection (1) and subsection (2) are applicable only to a fixed price arrangement.

(4) If information relating to soil conditions at the site of the work appeared in the Plans and Specifications or in other documents or material communicated by Her Majesty to the Contractor for his use in preparing his tender and if the real soil conditions encountered at the site of the work by the Contractor when executing the work are substantially different from such information, or a reasonable assumption of fact based thereon, so that the cost to the Contractor of executing the work is directly and substantially increased or decreased by reason of such difference then the Engineer and the Contractor shall exercise their powers under subsection (2) of Article II of the Articles of Agreement relating to amendment of the Unit Price Table so that the benefit of a substantial decrease in cost shall accrue to Her Majesty and the burden of a substantial increase in cost will not be borne by the Contractor.

(5) Subsection (4) is applicable only to a Unit Price Arrangement.

Materials, Plant and Real Property Become Property of Her Majesty

13. (1) All materials and plant and the interest of the Contractor in all real property, licences, powers and privileges acquired, used or provided by the Contractor for the work shall from the time of being so acquired, used or provided, become and they are the property of Her Majesty for the purposes of the work and they shall continue to be the property of Her Majesty

(a) in the case of materials, until incorporated in the work or until the Engineer indicates that he is satisfied that they will not be required for the work, and

(b) in the case of plant, real property, licences, powers and privileges, until the Engineer indicates that he is satisfied that the interest vested in Her Majesty therein is no longer required for the purposes of the work.

(2) Material or plant that is the property of Her Majesty by virtue of this section shall not be taken away from the site of the work, or used or disposed of, except for the purposes of the work, without the consent in writing of the Engineer.

(3) Her Majesty is not liable for loss or damage to material or plant that is the property of Her Majesty by virtue of this section and the Contractor is liable for such loss or damage notwithstanding that the material or plant is the property of Her Majesty.

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14. (1) The Contractor is liable to Her Majesty for loss of or damage to material, plant or real property, whether attributable to causes beyond his control or not, supplied or made available by Her Majesty to the Contractor for use in connection with the work other than loss or damage resulting from and directly attributable to reasonable wear and tear.

Materials, Plant and Real Property Supplied by Her Majesty

(2) The Contractor will not use material, plant or real property to which this section applies except for the purpose of carrying out this contract.

(3) When the Contractor has failed within a reasonable time after being required by the Engineer to do so, to make good any loss or damage for which he is liable under this section, the Engineer may cause the loss or damage to be made good, and the Contractor shall thereupon be liable to Her Majesty for the cost thereof and shall on demand pay to Her Majesty an amount equal to such cost.

(4) The Contractor shall keep records of material, plant and real property to which this section applies that the Engineer from time to time requires and shall, from time to time as the Engineer requires, satisfy the Engineer that such material, plant and real property are at the place and in the condition that they ought to be.

(5) This section applies to material, plant and real property supplied or made available by Her Majesty to the Contractor for use in connection with the work.

15. (1) The Minister may, on the application of the Contractor made before the day fixed by Article I of the Articles of Agreement for completion of the work or before any new date for completion fixed under this subsection, if in his opinion it is in the public interest, extend the time for completion of the work by fixing a new day for completion of the work.

Extension of Time

(2) Where the Contractor does not complete the work by the day fixed by Article 1 of the Articles of Agreement for completion of the work but does complete the work thereafter, the Contractor shall pay to Her Majesty

(a) an amount equal to all salaries, wages and travelling expenses paid by Her Majesty to persons superintending the work during the period of delay,

(b) an amount equal to the value to Her Majesty of the use of the completed work for the period of delay, and

(c) an amount equal to all other expenses and damages incurred or sustained by Her Majesty as a result of the work not being completed during the period of delay.

(3) For the purposes of this section,

(a) the work shall be deemed to be completed on the day the Engineer issues his Interim Certificate of Completion, and

(b) "period of delay" means the period commencing on the day fixed by Article I of the Articles of Agreement for completion of the work and ending on the day immediately preceding the day on which the work is completed, but excluding therefrom any day within a period of extension granted under subsection (1), if on such day, in the opinion of the Minister, causes beyond the control of the Contractor delayed completion of the work.

(4) The Minister may, if in his opinion, it is in the public interest, waive the right of Her Majesty to the whole or any part of a payment payable pursuant to subsection (2).

16. (1) In any of the following cases, namely,

Taking the Work out of the Contractor's hands

(a) where the Contractor has made default or delayed in commencing or in diligently executing the work or any portion thereof to the satisfaction of the Engineer and the Minister or the Engineer has given notice thereof

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to the Contractor and has by such notice required the Contractor to put an end to such default or delay, and such default or delay continues for six days after such notice was communicated;

(b) where the Contractor has made default in the completion of the work, or any portion thereof, within the time limited for such completion by the contract;

(c) where the Contractor has become insolvent;

(d) where the Contractor has committed an act of bankruptcy;

(e) where the Contractor has abandoned the work;

(f) where the Contractor has made an assignment of the contract without the required consent; or

(g) where the Contractor has otherwise failed to observe or perform any of the provisions of the contract;

the Minister may, without any other authorization, take all or any part of the work out of the Contractor's hands and may employ such means as he may see fit to complete the work.

(2) Where the work or any portion thereof has been taken out of the Contractor's hands under subsection (1) the Contractor shall not except as provided in subsection (3), be entitled to any further payment including payments then due and payable but not paid and the obligation of Her Majesty to make payments as provided for in the Terms of Payment shall be at an end and the Contractor shall be liable to and upon demand therefor pay to Her Majesty an amount equal to all loss and damage suffered by Her Majesty by reason of the non-completion of the work by the Contractor.

(3) Where the work or any portion thereof has been taken out of the Contractor's hands under subsection (1) and that portion is subsequently completed by Her Majesty, the Engineer shall determine the amount, if any, of holdback and progress claims of the Contractor unpaid at the time of taking the work out of his hands that in his opinion are not required by Her Majesty for the purposes of the contract and the Minister shall, if he is of opinion that no financial prejudice to Her Majesty will result, authorize payment of that amount to the Contractor.

Effect of Taking the Work from Contractor

17. (1) The taking of the work, or any portion thereof, out of the Contractor's hands pursuant to section 16 of the General Conditions does not operate so as to relieve or discharge the Contractor from any obligation under the contract or imposed upon him by law except the obligation to complete the physical execution of that portion of the work so taken out of his hands.

(2) If the work or any part thereof is taken out of the Contractor's hands pursuant to section 16, all materials and plant and the interest of the Contractor in all real property, licences, powers and privileges acquired, used or provided by the Contractor for the purposes of the work shall, notwithstanding subsection (1) of section 13 of the General Conditions, be the property of Her Majesty without compensation to the Contractor.

(3) If the Engineer certifies that any interest in the property of Her Majesty by virtue of subsection (2) is no longer required for the purposes of the work and that it is not in the interests of Her Majesty to retain the interest it shall become the property of the Contractor.

Suspension of Work by Minister

18. (1) The Minister may, when in his opinion it is in the public interest, require the Contractor to suspend execution of the work either for a specified or unspecified period by communicating notice to that effect to the Contractor.

(2) The Contractor upon receiving notice of the Minister's requirement pursuant to subsection (1) shall suspend all operations except those which, in the Engineer's opinion, are necessary for the care and preservation of the work, the materials and plant.

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(3) During the period of suspension the Contractor shall not remove from the site any part of the work, any materials or any plant without the consent of the Engineer.

(4) If the period of suspension is 30 days or less, the Contractor, upon the expiration of the period of suspension, shall resume the execution of the work and he is entitled to be paid the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of any plant, labour and material necessarily involved in complying with the suspension.

(5) If the period of suspension is more than 30 days and if, upon the expiration of the period of suspension, the Minister and the Contractor agree that the execution of the work be completed by the Contractor, the Contractor shall resume operations and complete the execution of the work in accordance with any terms and conditions agreed upon by the Minister and the Contractor.

(6) If upon the expiration of a period of suspension of more than 30 days, the Minister and the Contractor do not agree that the work will be completed by the Contractor or they are unable to agree upon the terms and conditions under which the Contractor will complete the work, the notice of suspension shall be deemed to be a notice of termination pursuant to section 19.

Termination of Contract

19. (1) The Minister may at any time by giving notice to that effect terminate the contract.

(2) The Contractor will upon receipt of a notice pursuant to subsection (1) cease all operations forthwith.

(3) If the contract is terminated pursuant to subsection (1) Her Majesty will pay to the Contractor an amount equal to the lesser of

(a) the cost as agreed upon by the Contractor and the Engineer of all labour, material and plant supplied by the Contractor as at the date of termination or, if the Contractor and the Engineer cannot agree, as calculated in accordance with the formula set out in section 46 of the General Conditions less all amounts already paid to the Contractor by Her Majesty and less all amounts which the Contractor is liable to pay to Her Majesty, and

(b) the amount calculated in accordance with the terms of payment which would have been payable to the Contractor had he completed the work.

(4) If the contract is terminated pursuant to subsection (1) Her Majesty will pay to the Contractor an amount equal to the cost as agreed upon by the Contractor and the Engineer of all labour, material and plant supplied by the Contractor as of the date of termination or, if the Contractor and the Engineer cannot agree, as calculated in accordance with the formula set out in section 46 of the General Conditions, less all amounts already paid to the Contractor by Her Majesty and less all amounts which the Contractor is liable to pay to Her Majesty.

(5) Subsection (3) is applicable only to a fixed price arrangement and subsection (4) is applicable only to a unit price arrangement.

Provision for Execution of Work

20. The Contractor will provide everything necessary for the execution of the work except things in respect of which the contract expressly provides otherwise and except the site of the work if the work when completed is to remain permanently affixed thereon.

Claims Against and Obligations of the Contractor or Subcontractor

21. (1) Her Majesty may, in order to discharge lawful obligations of and satisfy lawful claims against the Contractor or a subcontractor arising out of the execution of the work, pay any amount which is due and payable to the Contractor pursuant to the Terms of Payment or is payable pursuant to section 41 of the General Conditions following a conversion or a negotiation of the security deposit directly to the obligees of and the claimants against the Contractor or the subcontractor.

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(2) A payment made pursuant to subsection (1) is to the extent of the payment a discharge of Her Majesty's liability under the contract to the Contractor.

(3) To the extent that the circumstance of the work being executed for Her Majesty permits it, the Contractor will comply with all laws in force in the Province where the work is being executed relating to payment periods, mandatory holdbacks, and creation and enforcement of mechanics' liens or, if such Province is the Province of Quebec, the law relating to privileges.

(4) The Contractor will discharge all lawful obligations of his and will satisfy all lawful claims against him arising out of the execution of the work at least as often as the Terms of Payment require Her Majesty to discharge Her obligations to the Contractor.

(5) The Contractor will, whenever so requested by the Engineer, make a statutory declaration deposing to the existence and condition of the obligations and claims referred to in subsection (4).

Execution of Work under Direction of Engineer

22. The Contractor will permit the Engineer to have access to the work at all times during the execution of the work, will provide the Engineer with full information concerning what is being done to execute the work and will give the Engineer every possible assistance in respect of the performance of his duty to see that the work is executed in accordance with the contract and also in respect of the performance and exercise of the duties and powers specially imposed or conferred on him by the contract.

Clearing of Site

23. The Contractor will upon completion of the work clear and clean the work and its site to the satisfaction of and in accordance with any directions of the Engineer.

Contractor's Superintendent

24. (1) The Contractor will, during working hours, until the work has been completed, keep on the site of the work a competent Superintendent who has authority to receive on behalf of the Contractor any order, direction or other communication that may be given under the contract.

(2) The Contractor will, upon the request of the Engineer, remove any Superintendent who, in the opinion of the Engineer, is incompetent or has been conducting himself improperly and shall replace a Superintendent so removed with another Superintendent as described in subsection (1).

Unsuitable Workmen

25. The Contractor will, at the request of the Engineer, remove from the work any person employed on the work who, in the opinion of the Engineer, is incompetent or has been conducting himself improperly and the Contractor shall not permit a person so removed to remain on the site of the work.

No Additional Payment for Increased Costs

26. The amount payable to the Contractor under the contract will not be increased or decreased by reason of any increase or decrease in the cost of the work brought about by an increase or decrease in the cost of plant, labour, material or the wage rates set out in or prescribed pursuant to the Labour Conditions.

Canadian Labour and Materials

27. (1) The Contractor will use Canadian labour and material in carrying out the work, to the full extent to which they are procurable, consistent with proper economy and the expeditious carrying out of the work.

(2) Subject to subsection (1) the Contractor will employ labour from the locality where the work is being executed to the extent to which it is available and shall use the offices of the National Employment Service in the recruitment of workers wherever practicable.

(3) Subject to subsections (1) and (2) the Contractor will employ a reasonable proportion of men who have served on active service with the armed forces of Canada and have been honourably discharged therefrom.

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28. (1) If the Minister is of opinion that national security is involved he may order the Contractor to provide information concerning persons employed or to be employed on the work and may order the removal of any person from the work. **Security**

(2) The Contractor will comply with an order of the Minister pursuant to subsection (1).

29. (1) The Contractor will guard or otherwise protect the work and shall protect the contract, specifications, plans, drawings, information, material, plant and real property provided by Her Majesty to the Contractor against loss or damage from any cause, and without limiting the generality of the foregoing, from espionage and sabotage and will not use, issue or disclose them except as may be essential for the execution of the work without the written consent of the Minister. **Protection of Work and Documents**

(2) If any document or information given or disclosed to the Contractor is given a security rating the Contractor will take all measures directed by the Engineer to ensure the maintenance of the security rating.

(3) The Contractor will provide facilities for and will assist any person authorized by the Minister to inspect or to take security measures in respect of the work.

(4) The Engineer may direct the Contractor to do such things and to construct such works which the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of this section.

30. (1) The Contractor will not allow or permit any public ceremony in connection with the work without the permission of the Minister. **Public Ceremonies**

(2) The Contractor will not erect or permit the erection of any sign or advertising on the work without the approval of the Engineer.

31. (1) The Contractor will at his expense maintain insurance contracts in a form and with companies approved by the Minister of the nature, in the amounts, for the periods and containing the terms and conditions, if any, set out in the Insurance Schedule. **Insurance**

(2) All fire insurance contracts maintained by the Contractor pursuant to subsection (1) shall provide that the proceeds thereof are payable to Her Majesty.

(3) The Contractor will deposit with the Engineer the originals of all contracts of insurance maintained by the Contractor pursuant to subsection (1) and the Contractor will, when required by the Engineer, submit to him proof that such policies are in force.

(4) Upon application by the Contractor the Engineer may waive compliance with subsections (2) and (3).

32. (1) If the work or any portion thereof is lost or destroyed and monies are paid to Her Majesty in respect of the loss or damage under a contract of fire insurance maintained by the Contractor pursuant to section 31 of the General Conditions the monies will be held by Her Majesty for the purposes of the contract. **Insurance – Proceeds**

(2) The Minister may, on behalf of Her Majesty, elect to retain absolutely the monies held under subsection (1) and, in such event, the monies belong absolutely to Her Majesty and

(a) the Contractor is liable to Her Majesty in an amount equal to the amount by which the insurance monies payable is less than the loss and damages suffered and sustained by Her Majesty, including costs associated with clearing and cleaning the site of the work, and

(b) there shall be a financial accounting between Her Majesty and the Contractor in respect of the portion of the work which was lost or damaged and in respect of which monies have been retained absolutely by Her

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Majesty and there shall be included in the financial accounting all amounts paid or payable by Her Majesty under the contract together with all amounts paid or payable by the Contractor under the contract to Her Majesty and Her Majesty will pay to the Contractor any amount which the financial accounting shows to be payable by her Majesty to the Contractor under the contract and similarly the Contractor will pay to Her Majesty any amount which the financial accounting shows to be payable by the Contractor to Her Majesty under the contract.

(3) Upon payment as required by subsection (2) by Her Majesty or the Contractor, as the case may be, Her Majesty and the Contractor are discharged from all rights and obligations under the contract in respect of the portion of the work which was lost or damaged and in respect of which monies have been retained absolutely by Her Majesty, as though such portion of the work had been fully completed and executed by the Contractor in accordance with the contract.

(4) If an election is not made under subsection (2) the Contractor shall restore and replace the portion of the work lost or damaged and the monies shall be disbursed by Her Majesty to the Contractor in the manner and subject to the terms and conditions governing monies payable under the contract to the Contractor by Her Majesty, except that for the purpose of monies "100%" shall be substituted in subsection (4) of section 4 of the Terms of Payment for "95%" and "90%".

Precautions against Damage, Infringements of Rights, Fire, etc.

33. (1) The Contractor shall at his own expense do whatever is necessary to ensure that

(a) no person, property, right, easement or privilege is injured, damaged or infringed by reason of the Contractor's activities under this contract;

(b) pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the execution or existence of the work and plant;

(c) fire hazards are eliminated and in the case of a fire in or about the works that it is promptly extinguished;

(d) the health of all persons employed on the work is not endangered;

(e) adequate medical supervision of all persons employed on the work is maintained;

(f) adequate sanitation measures in respect of the work are taken; and

(g) all stakes, buoys, and marks placed on or about the works by or under the authority of the Engineer are protected and are not removed, defaced or altered.

(2) The Engineer may direct the Contractor to do such things and to construct such works which the Engineer considers reasonable and necessary to ensure compliance with or to remedy a breach of subsection (1).

(3) The Contractor will at his own expense comply with a direction of the Engineer made pursuant to subsection (2).

Interpretation of Contract by Engineer

34. (1) If at any time before the work has been completed and the Engineer has issued his Final Certificate of Completion, any question arises as to whether anything has been done as required by the contract or as to what the Contractor is required by the contract to do, and, in particular, and without limiting the generality of the foregoing, as to

(a) the meaning of anything in the Plans and Specifications;

(b) the meaning to be given to the Plans and Specifications in case of any error therein, an omission therefrom, or an obscurity or discrepancy in their wording or intention;

(c) whether the quality or quantity of any material or workmanship meets the requirements of the contract;

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(d) whether the plant, materials or workmen provided by the Contractor for executing the work and carrying out the contract are adequate to ensure that the work will be executed in accordance with the contract and that the contract will be carried out in accordance with its terms;

(e) what quantity of any kind of work has been completed by the Contractor; or

(f) the timing and scheduling of the various phases of the execution of the work,

the question shall be decided by the Engineer.

(2) The Contractor will construct the work in accordance with the decisions and directions of the Engineer given under this section and in accordance with any consequential decisions and directions given by the Engineer.

Rectification of Defects in Work

35. (1) Without restricting any warranty or guarantee implied or stipulated by law the Contractor will at his own expense rectify and make good any defect or fault however caused, that within twelve months from the date of the Engineer's Final Certificate of Completion appears in the work.

(2) If any defect or fault appears in the work and the Engineer is of the opinion that it is one which the Contractor, either under subsection (1) or under a warranty or guarantee implied or stipulated by law, is obligated to remedy and make good the Engineer may direct the Contractor to remedy and make good the defect or fault by giving notice to the Contractor of the existence of the defect or fault and the notice may specify the time within which the defect or fault is to be rectified and made good.

(3) The Contractor will rectify and make good the defect or fault described in a notice given pursuant to subsection (1) within the time specified in the notice.

Non-compliance by Contractor

36. (1) Where the Contractor has failed to comply with any decision or direction given by the Engineer under sections 23, 29, 33, 34 or 35 of the General Conditions, the Engineer may employ such methods, as he deems advisable, to do that which the Contractor failed to do.

(2) The Contractor shall on demand pay to Her Majesty all costs, expenses and damage incurred or sustained by Her Majesty by reason of the Contractor's non-compliance with any decision or direction given by the Engineer under sections 23, 29, 33, 34 or 35 of the General Conditions and by the action taken by the Engineer pursuant to subsection (1).

Protesting Engineer's Decisions

37. If the Contractor has, within ten days of communication to him by the Engineer of any decision or direction of the Engineer under sections 23, 29, 33, 34, or 35 of the General Conditions given notice to the Engineer in writing that the decision or direction is accepted under protest, Her Majesty will pay to the Contractor for anything the Contractor was required by the Engineer's decision or direction to do beyond what the contract correctly understood and interpreted would have required the Contractor to do, the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the labour, materials and plant necessarily involved in carrying out the decision or direction.

Engineer may order Additional Work, Changes, etc.

38. (1) The Engineer may at any time before he issues his Final Certificate of Completion, in writing,

(a) order work or material in addition to that provided for in the Plans and Specifications; and

(b) dispense with or change the dimensions, character, quantity, quality, description, location or position of the whole or any part of the work or material provided for in the Plans and Specifications or as ordered pursuant to paragraph (a),

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and the Contractor will execute the work in accordance with such orders, dispensations and changes as if the same had appeared in and been part of the Plans and Specifications.

(2) The Engineer shall determine whether anything done or not done by the Contractor pursuant to an order, dispensation or change made by the Engineer pursuant to subsection (1) increased or decreased the cost of the work to the Contractor.

(3) If the Engineer determines under subsection (2), that the cost has been increased Her Majesty will pay to the Contractor the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the additional labour, materials and plant necessarily involved.

(4) If the Engineer determines under subsection (2), that the cost has been decreased, Her Majesty may reduce the amount payable to the Contractor under the contract by an amount equal to the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the labour, material and plant necessarily involved.

(5) Subsections (2), (3) and (4) are applicable only to a fixed price arrangement.

Cooperation with other Contractors

39. (1) Where, in the opinion of the Engineer, it is necessary that contracting persons or workmen, with or without plant and materials, be sent on to the site of the work the Contractor shall, to the satisfaction of the Engineer, allow them access to the work and shall cooperate with them in the carrying out of their duties and obligations.

(2) If the sending onto the work of a contracting firm or workmen under subsection (1) could not have been reasonably foreseen or anticipated by the Contractor when entering into the contract and if, in the opinion of the Engineer, the Contractor has incurred expense in complying with subsection (1) in respect of that contracting firm or those workmen Her Majesty, if the Contractor has given to the Engineer written notice of his claim before the expiration of thirty days from the sending onto the work of the contracting firm or workmen involved, shall pay to the Contractor the cost, calculated in accordance with sections 44 to 47 of the General Conditions, of the material, labour and plant necessarily involved.

Engineer's Certificates

40. (1) On the day that

(a) the work has been completed, and

(b) the Contractor has complied with the contract and all orders and directions made pursuant thereto,

to the satisfaction of the Engineer, he shall issue to the Contractor a Final Certificate of Completion.

(2) If the Engineer is satisfied that the work is substantially completed and is acceptable for use by Her Majesty, he may at any time before issuance of a Final Certificate of Completion issue to the Contractor an Interim Certificate of Completion, and shall describe therein the portions of the work not completed to his satisfaction and all things which must be done by the Contractor before a Final Certificate of Completion can be issued.

(3) The Engineer shall measure and keep records of his measurements of the quantities of labour, material and plant performed, used and supplied by the Contractor in executing the work and shall, at the request of the Contractor, inform him of his measurements and the Contractor will assist and cooperate with the Engineer in such measuring and is entitled to inspect the records of measurement kept by the Engineer.

(4) On the day that the Engineer issues his Final Certificate of Completion under subsection (1) he shall issue a Final Certificate of Measurement showing

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the quantity of labour, plant and material performed, used and supplied by the Contractor in executing the work and all measurements included therein shall be binding upon Her Majesty and the Contractor and are conclusive between them as to the quantity of any labour, plant or material performed, used or supplied by the Contractor in executing the work.

(5) Subsections (3) and (4) are applicable only to a unit price arrangement.

Security Deposit – Forfeiture or Return

41. If the work is taken out of the Contractor's hands pursuant to section 16 of the General Conditions or if the contract is terminated pursuant to section 19 of the General Conditions or if the Contractor is in breach of or in default under the contract Her Majesty may negotiate the security deposit, in the case of bonds, or convert the security deposit to Her own use, in the case of money, and the amount realized by Her Majesty shall be deemed to be a debt payable by Her Majesty to the Contractor and Her Majesty shall have the right of set-off and may set-off against the debt any sum or amount which the Contractor may be liable to pay to Her Majesty and the balance of the debt, if any, after the right of set-off has been exercised, and if such balance, in the opinion of the Engineer, is not required for the purposes of the contract shall be paid by Her Majesty to the Contractor.

Security Deposit – Return all or any part thereof

42. (1) Upon the Engineer's Interim Certificate of Completion being issued, Her Majesty will, if the Contractor is not in breach of or in default under the contract, return to the Contractor that part of the security deposit which, in the opinion of the Engineer, is not required for the purposes of the contract.

(2) If the security deposit was deposited in the Consolidated Revenue Fund of Canada Her Majesty will pay to the Contractor interest thereon in accordance with the *Government Contracts Regulations*.

Municipal Permits

43. (1) The Contractor will within one month from the date of the contract tender to the municipal authority an amount equal to all fees and charges which would be payable to the municipal authority in respect of building permits if the work were being constructed for a person other than Her Majesty.

(2) The Contractor will notify the Minister within ten days of the tender the amount of and whether or not the municipal authority accepted the tender.

(3) If the municipal authority did not accept the tender the Contractor will deliver to the Minister within the time limited by subsection (2) the amount of the tender.

(4) For the purposes of this section "municipal authority" means an authority which would have jurisdiction respecting permission to construct the work if the owner of the work were not Her Majesty.

Determination of Cost – Unit Price Table

44. Whenever it is necessary for the purposes of sections 12, 18, 37, 38 and 39 of the General Conditions to determine the cost of labour, plant or material the Unit Price Table shall be used, that is the cost shall be equal to the product of the quantity of such labour, plant or material expressed in the unit set out in column 2 of the Unit Price Table in respect of the labour, plant or material involved, multiplied by the price in respect of the unit set out in column 3 of the Unit Price Table.

Determination of Cost – Negotiation

45. If the method of determination in section 44 of the General Conditions cannot be used because the labour, plant or material involved is not included in the Unit Price Table, the cost of the labour, plant or material for the purposes of sections 12, 18, 37, 38 and 39 of the General Conditions shall be the amount agreed upon from time to time by the Contractor and the Engineer.

Determination of Cost – Failing Negotiation

46. (1) If the method of determination in section 44 of the General Conditions cannot be used and if the Contractor and the Engineer cannot agree as contem-

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plated by section 45 of the General Conditions, the cost of labour, plant or material for the purposes of sections 12, 18, 37, 38 and 39 of the General Conditions shall be equal to the aggregate of

(a) all reasonable and proper amounts actually expended by or legally payable by the Contractor in respect of the labour, plant or material which fall within one of the classes of expenditure described in subsection (2) (being costs which are directly attributable to the execution of the work and are not costs in respect of which the allowance in paragraph (b) is made); and

(b) 10% of the total of the expenditures of the Contractor that meet the test in paragraph (a) being an allowance for all other expenditures by the Contractor and for profit and without limiting the generality of the foregoing, being also an allowance for payments and charges relating to overhead, head office expenses and general administration costs of the Contractor, including finance and interest charges.

(2) Classes of expenditure that are allowable are:

(a) payments to subcontractors;

(b) wages, salaries and travelling expenses of employees of the Contractor while they are actually and properly engaged on the work other than wages, salaries, bonuses, living and travelling expenses of personnel of the Contractor generally employed at the head office, or at a general office, of the Contractor unless such personnel is engaged at the site of the work with the approval of the Engineer;

(c) payments for materials necessary for and incorporated in the work, or necessary for and consumed in the execution of the work;

(d) payments for tools, other than tools customarily provided by tradesmen, necessary for and used in the execution of the work;

(e) payments for preparation, inspection, delivery, installation and removal of plant and materials necessary for the execution of the work;

(f) payments for renting, erecting, maintaining and removing temporary offices, sheds and similar structures necessary for and used by the Contractor in executing the work;

(g) assessments payable under any statutory scheme relating to workmen's compensation, unemployment insurance or holidays with pay;

(h) payments for renting plant and allowances for plant owned by the Contractor necessary for the execution of the work providing that such payments or allowances are reasonable or have been agreed to by the Contractor and the Engineer; and

(i) payments made with the approval of the Engineer that are necessary for the execution of the work.

Determination of Cost – Clarification of Terms

47. (1) For the purposes of sections 45 and 46 of the General Conditions "plant" does not include tools.

(2) For the purposes of sections 44, 45 and 46 of the General Conditions "Unit Price Table" means the table set out in Article VI of the Articles of Agreement.

Records to be Kept by Contractor

48. (1) The Contractor shall maintain full records of his estimates of and actual cost to him of the work together with all proper tender calls, quotations, contracts, correspondence, invoices, receipts and vouchers relating thereto, shall make them available to audit and inspection by the Minister, the Comptroller of the Treasury of the Government of Canada or by persons acting on their behalf, shall allow them to make copies thereof and to take extracts therefrom, and shall furnish them with any information which they may require from time to time in connection with such records.

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(2) The records maintained by the Contractor pursuant to this section shall be kept intact until the expiration of two years from the date of issuance of the Final Certificate of Completion under subsection (1) of section 40 of the General Conditions or until the expiration of such other period as the Minister may direct.

(3) The Contractor shall require all subcontractors and all firms, corporations and persons directly or indirectly controlled by or affiliated with the Contractor and all firms, corporations and persons directly or indirectly having control of the Contractor to comply with subsections (1) and (2) as if they were the Contractor.

49. (1) Subject to subsection 2, the Contractor will lay out the work on the ground to the satisfaction of the Engineer. Layout of Work.

(2) The Engineer may set stakes and establish bench marks to indicate the location, alignment and reference elevations for the work.

(3) The Contractor will execute the work in accordance with any indication given by the Engineers pursuant to subsection 2.

Roger Duhamel, F.R.S.C., Queen's Printer and Controller of Stationery, Ottawa, 1963

P.P. & S. Cat. No. 3612

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This document is the document referred to as "Labour Conditions" and marked "D" in the Articles of Agreement entered into on the _____ day of _____ 19___ between Her Majesty the Queen and

_____

"D"

DEPARTMENT OF LABOUR

OTTAWA, CANADA

_____
Minister

LABOUR CONDITIONS

PWD 15404

_____
Contractor

The following schedule of labour conditions is applicable to the work of grading, culverts & base course, Mile 115-125 & 139.5-140, Banff-Jasper Highway

AT Jasper National Park, Alta.

to be undertaken for the Department of Public Works

Classifications, Wages and Hours

(1) (a) All persons in the employ of the contractor, subcontractor of any person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour. Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week.

(b) Application for permission to exceed 8 hours per day and 44 hours per week on this contract shall be made to the Minister of the Contracting Department for reference to the Minister of Labour.

(c) Every person in the employ of the contractor or subcontractor shall, except where the Minister of Labour otherwise orders, be paid for hours worked in excess of 44 hours per week at a rate of not less than one and one-half times the wages required to be paid under this contract; and where the Minister of Labour so orders, be paid at the same overtime rate for hours worked in excess of 8 hours per day.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Carpenters & joiners	$ 2.45
Compressor operators	1.80
Drill runners	1.65
Firemen	1.80
Grader operators	2.20
Labourers	1.60
Oilers (construction equipment)	1.80
Operators (draglines, cranes, shovels, etc.)	2.50
Powdermen	1.65
Pump operators	1.80
Roller operators	1.85
Timbermen & cribmen	2.10
Tractor operators (large)	2.20
Tractor operators (small)	1.80
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	2.15

CE-H2

(see next page)

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Labour Conditions (A-1)

Minister of Labour to Determine Proper Classifications of Labour

(2) Where there are special circumstances, which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision.

Schedule to be Posted

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

Contractor to Keep Records Which are to be Open for Inspection

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

Departmental Requirements Before Payments Made to Contractor

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

Authority to Pay Wages in Event of Default by Contractor

(6) All cases of default in the payment of wages to employees by the contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

Conditions of Subcontracting

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contract shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

Workmen to be Residents of Canada

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

Non-Discrimination in Hiring and Employment of Labour

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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ACTION REQUEST
FICHE DE SERVICE

FILE NO. — DOSSIER N°

TO — À Mr. Coleman

DATE

LOCATION — ENDROIT

FROM — DE

- [ ] ACTION / DONNER SUITE
- [ ] APPROVAL / APPROBATION
- [ ] COMMENTS / COMMENTAIRES
- [ ] DRAFT REPLY / PROJET DE RÉPONSE
- [ ] MAKE / FAIRE.....COPIES
- [ ] NOTE AND FILE / NOTER ET CLASSER
- [ ] NOTE & RETURN/OR FORWARD / NOTER ET RETOURNER/OU FAIRE SUIVRE
- [ ] P. A. ON FILE / CLASSER
- [ ] REPLY / RÉPONSE
- [ ] SEE ME / ME VOIR
- [ ] SIGNATURE
- [ ] TRANSLATION / TRADUCTION
- [ ] YOUR REQUEST / À VOTRE DEMANDE
- [ ] Information

This is the latest plan I have seen & it brings the underpass out on Connaught ave. HE

CGSB 6-GP-12B P.P. & S. CAT. 3433

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pt 2

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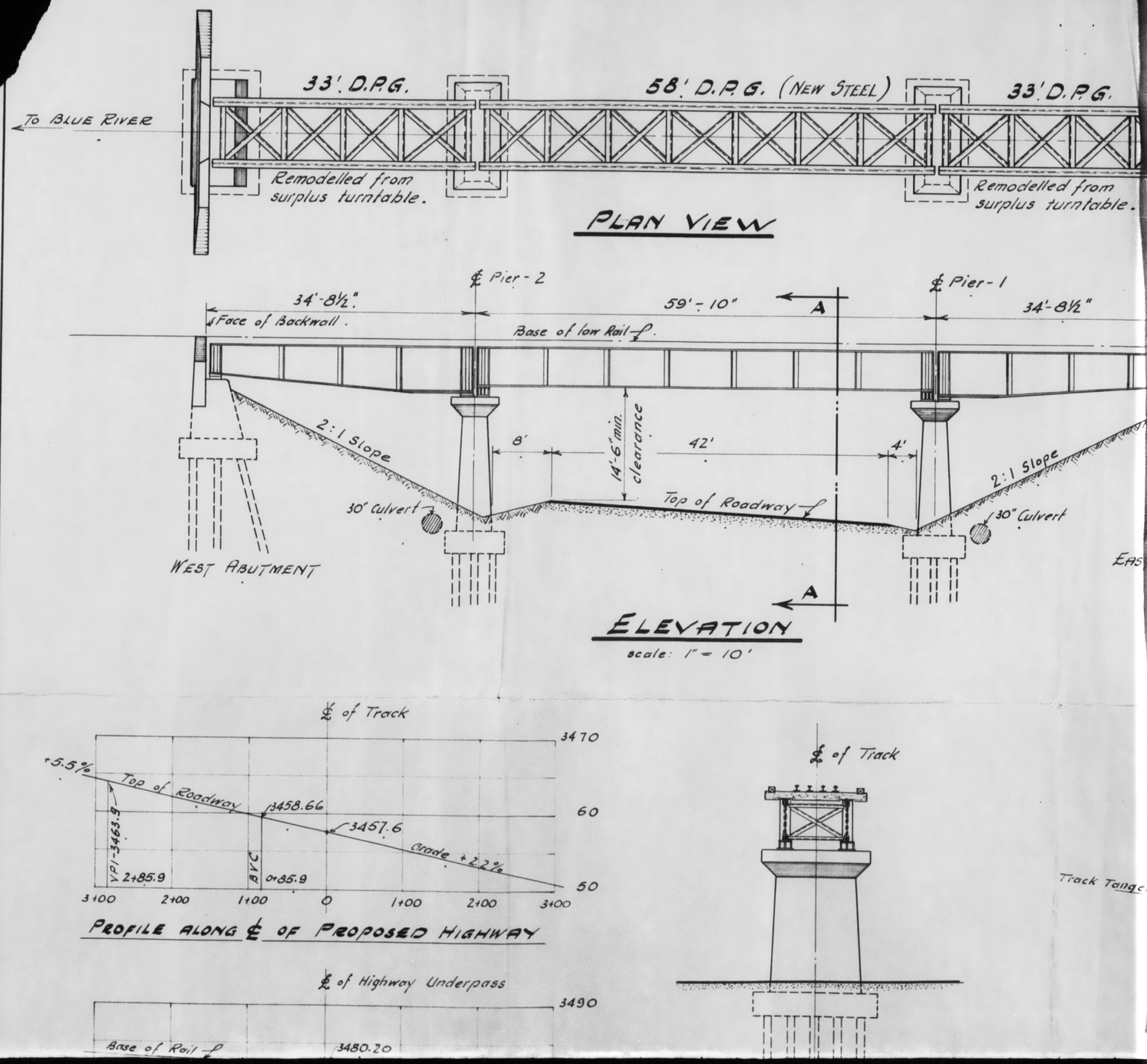

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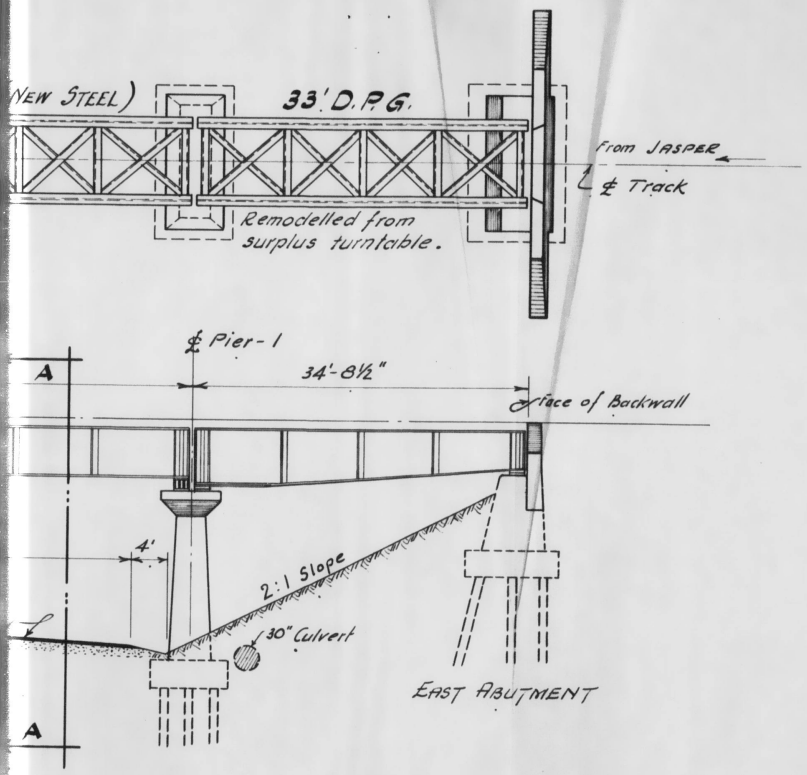

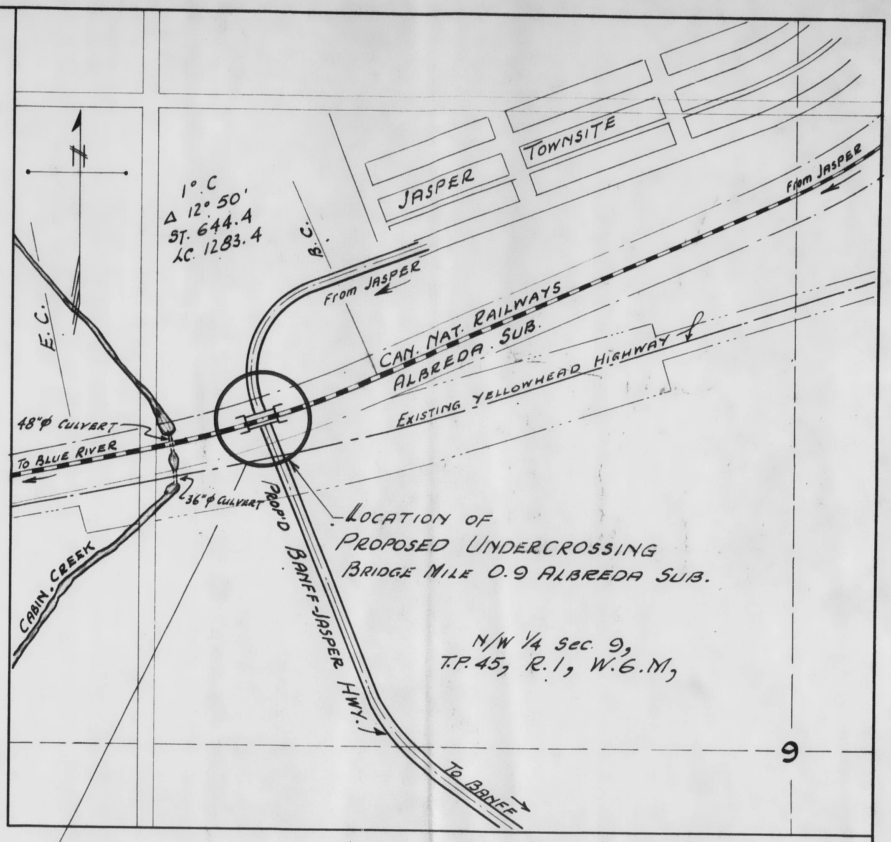

LOCATION PLAN

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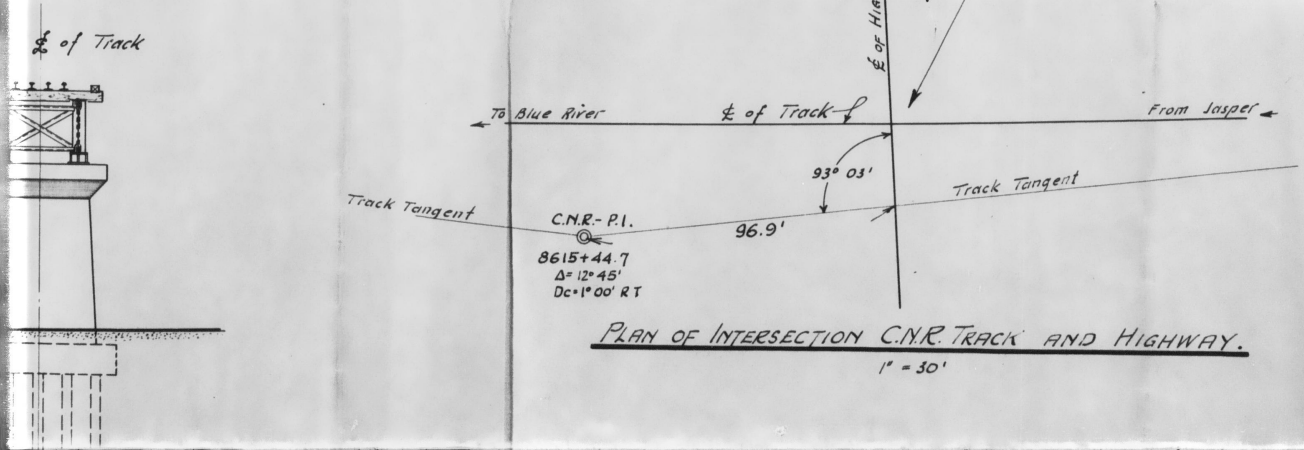
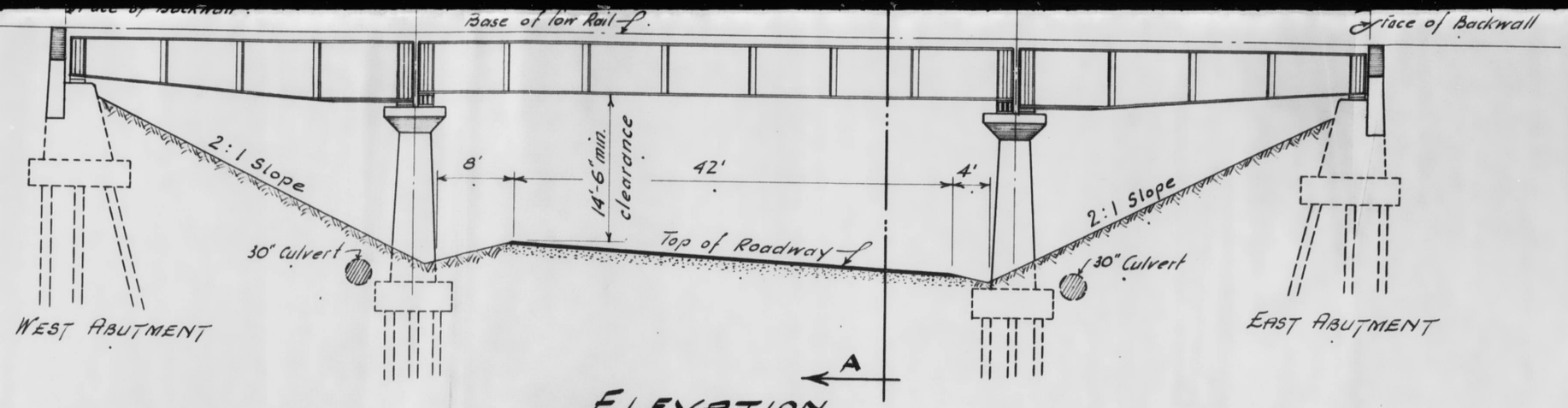


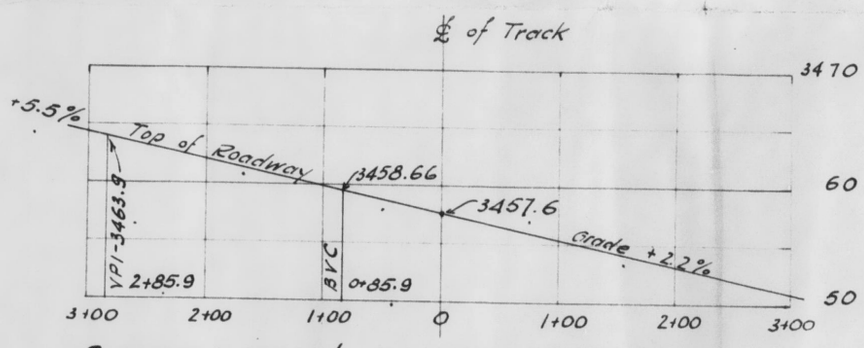
PLAN OF INTERSECTION C.N.R. TRACK AND HIGHWAY.

1" = 30'

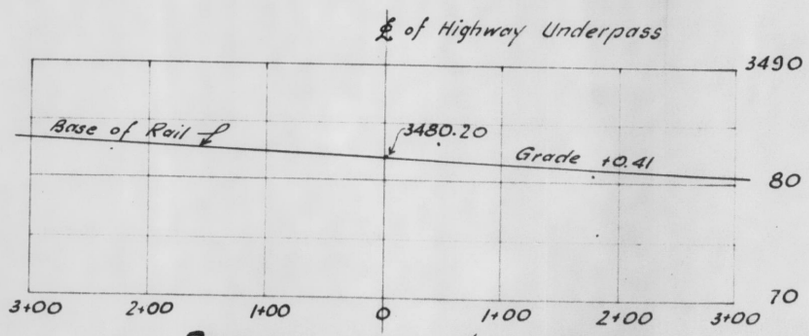


ELEVATION

scale: 1" = 10'

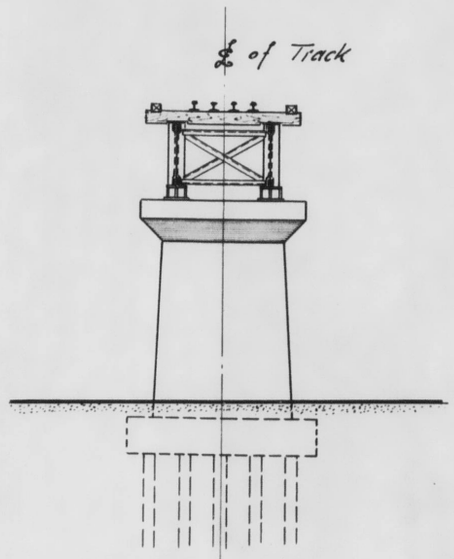


PROFILE ALONG ℄ OF PROPOSED HIGHWAY



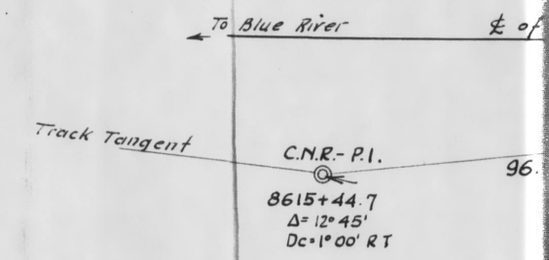
PROFILE ALONG ℄ OF TRACK

Scale: 1" = 100' Horizontal
1" = 10' Vertical



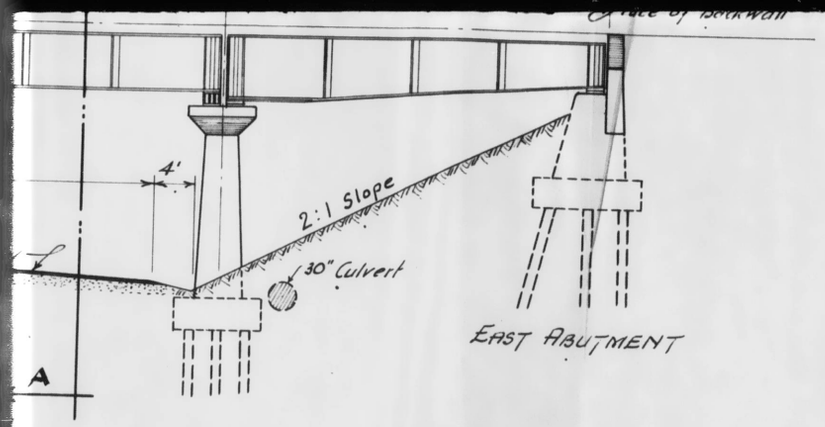
SECTION A-A

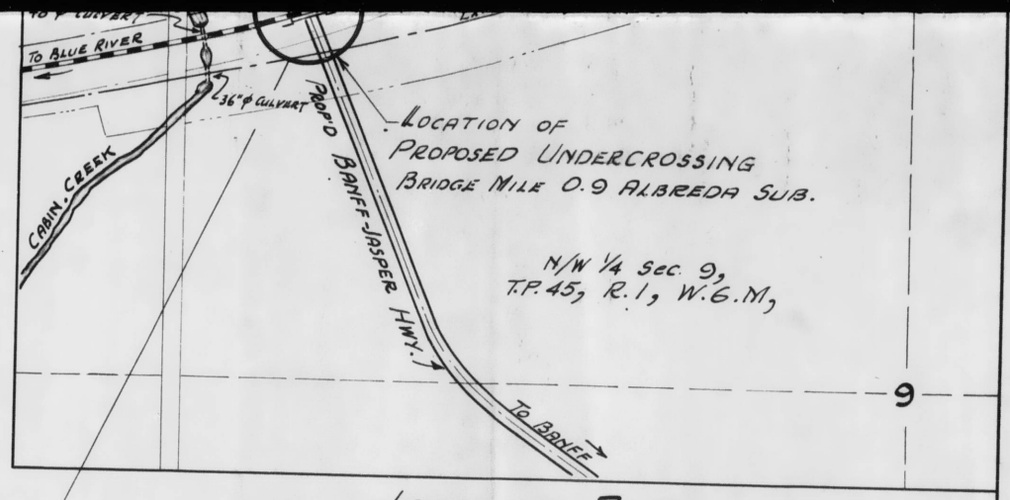
1" = 10'



PLAN OF INTER

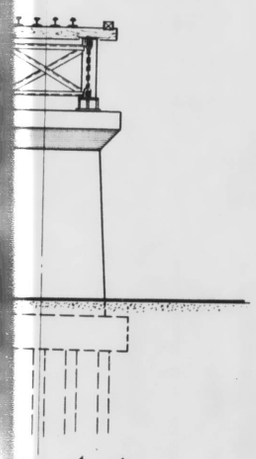
3 OF/DE





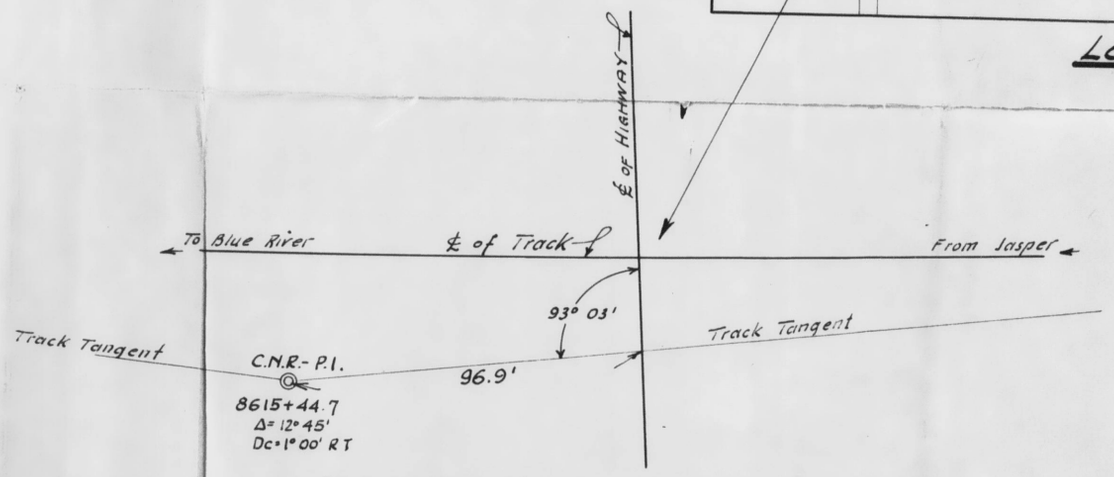
LOCATION PLAN

scale: 1" = 400'



ON A-A

= 10'



PLAN OF INTERSECTION C.N.R. TRACK AND HIGHWAY.

1" = 30'

DATE	REVISIONS

CANADIAN NATIONAL RAILWAYS
MOUNTAIN REGION

B.C. AREA ALBREDA SUBDIVISION, MILE 0.9

LOCATION nearest siding - JASPER

SUBJECT BANFF-JASPER HIGHWAY UNDERCROSSING

DETAIL PROPOSED GENERAL LAYOUT

DESIGNED BY _____ DRAWN BY R.S. CHECKED BY A.G.L.

SCALES AS NOTED.

OFFICE OF REGIONAL ENGINEER, EDMONTON, ALTA. Dec. 21st. 1962

APPROVED

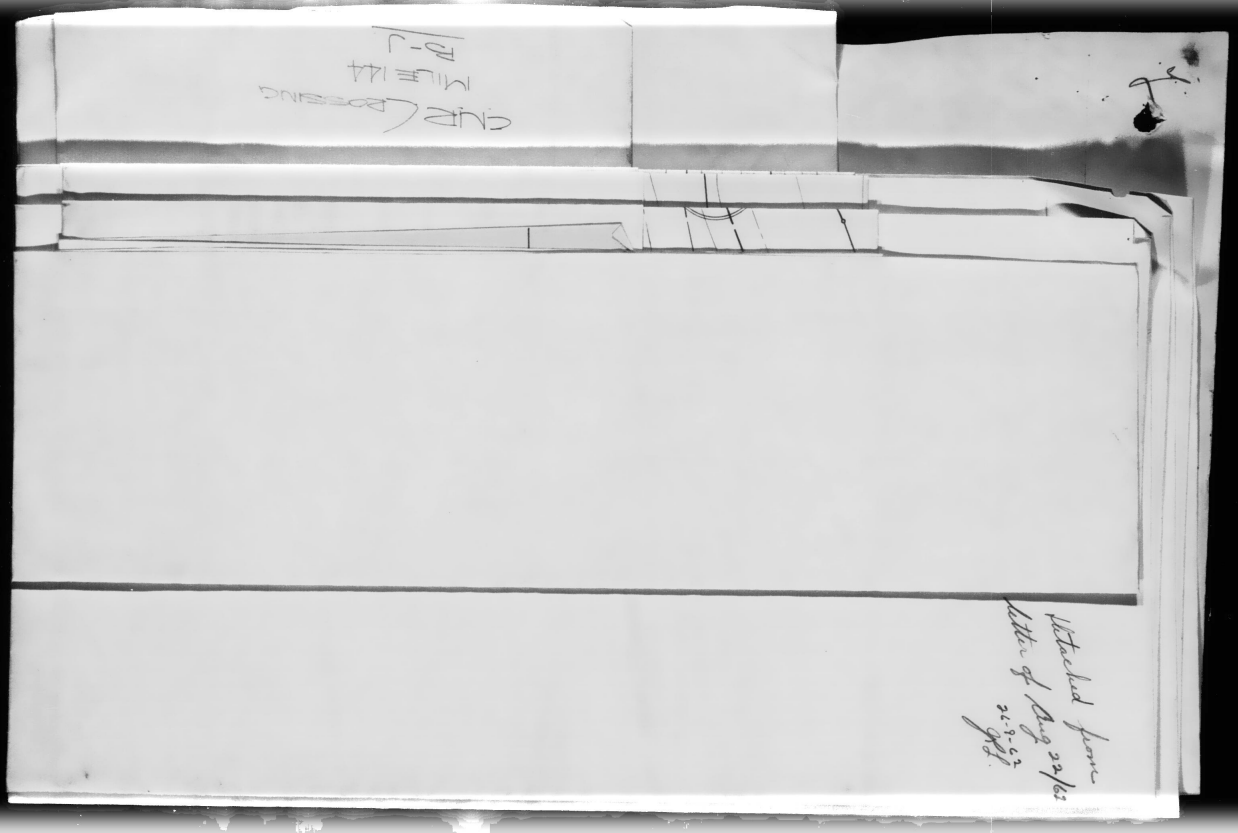
L.R. Morris
BRIDGE AND STRUCTURES ENGINEER

E.L. English
REGIONAL ENGINEER

GENERAL MANAGER

PLAN No. SHEET No.

B-8069-1



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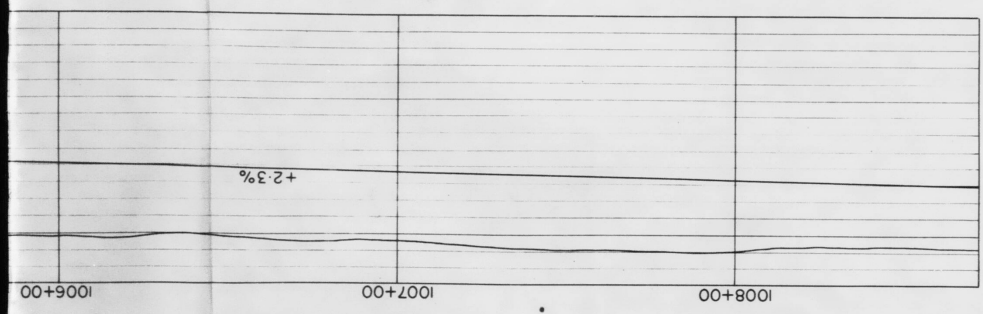

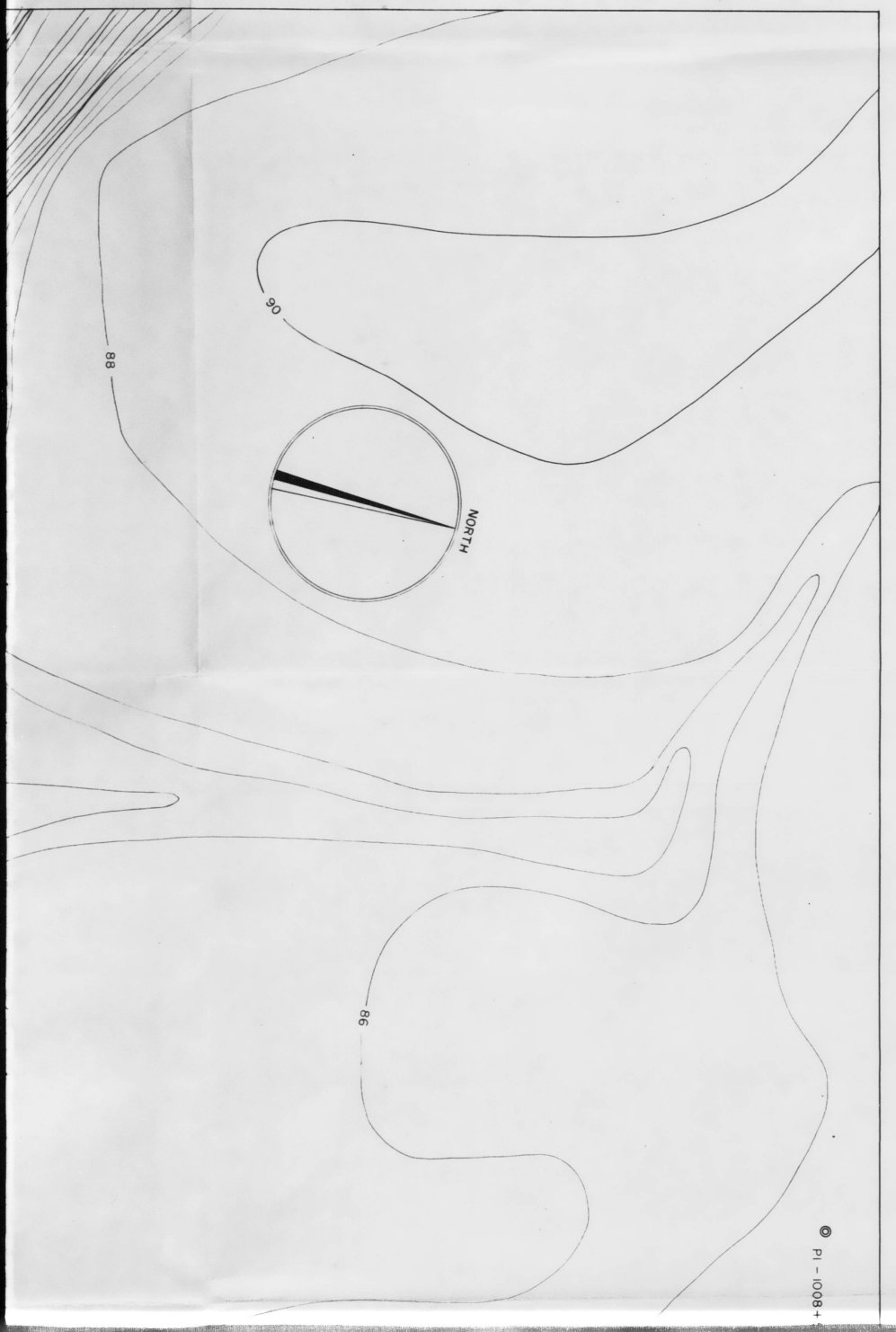

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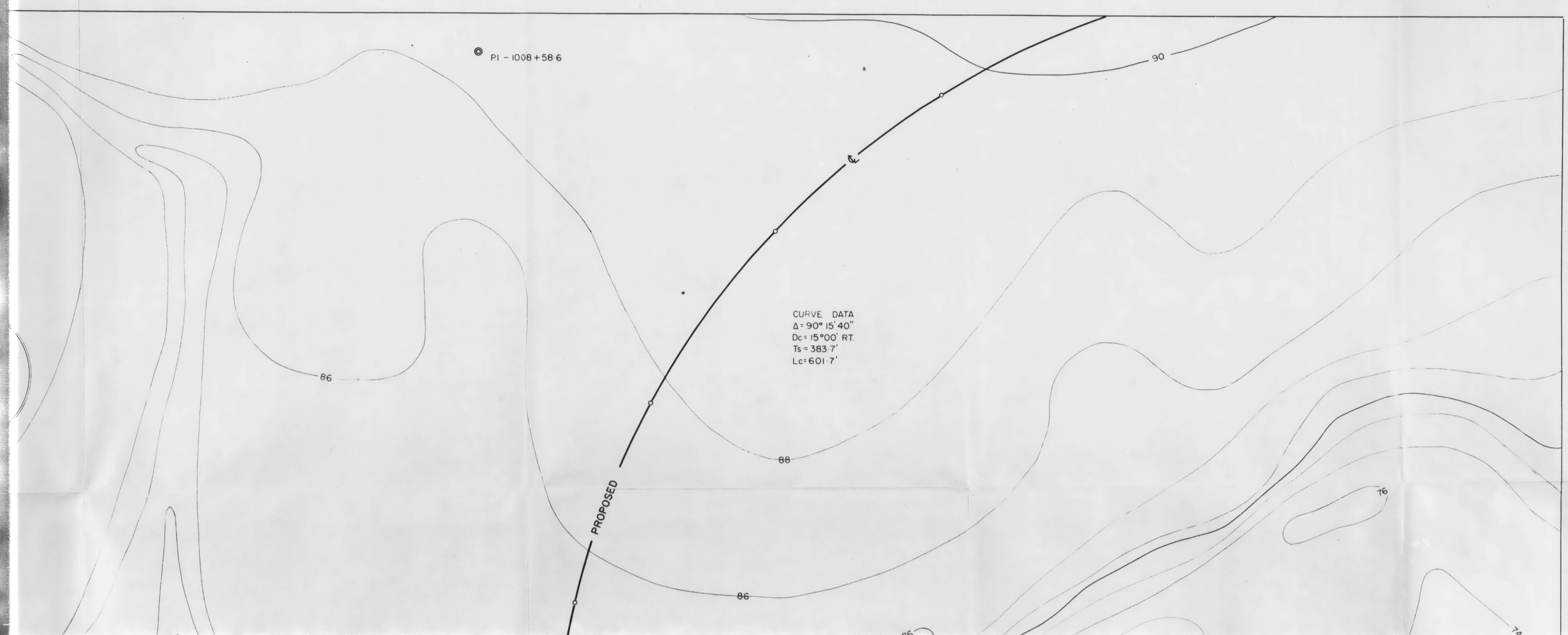
PI - 1008+58·6
90
CURVE DATA
Δ = 90° 15' 40"
Dc = 15°00' RT.
Ts = 383·7'
Lc = 601·7'
86
88
PROPOSED
86
76
74

2 CF/DE



CURVE DATA
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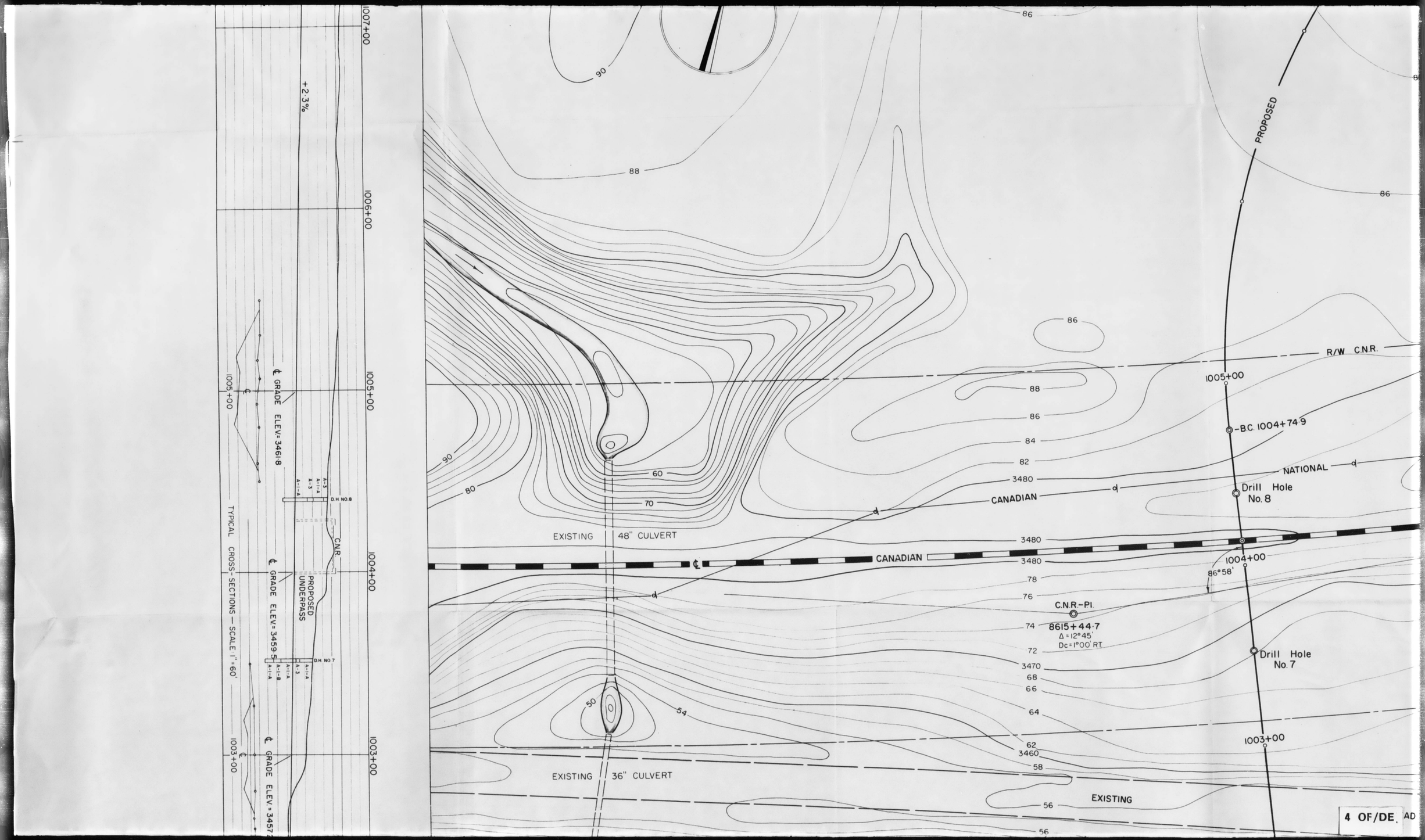
Dc = 15°00' RT.
Ts = 383.7'
Lc = 601.7'


1007+00
1006+00
1005+00
1004+00
1003+00
+2.3%
℄ GRADE ELEV= 3461.8
O.H. NO.8
O.H. NO.7
CNR
PROPOSED UNDERPASS
℄ GRADE ELEV= 3459.5
℄ GRADE ELEV= 3457
TYPICAL CROSS-SECTIONS — SCALE 1"=60'
PROPOSED
R/W C.N.R.
1005+00
-B.C. 1004+74.9
NATIONAL
CANADIAN
Drill Hole No. 8
EXISTING 48" CULVERT
℄ CANADIAN
1004+00
86°58'
C.N.R.-P.I.
8615+44.7
Δ = 12°45'
Dc = 1°00' RT.
Drill Hole No. 7
1003+00
EXISTING 36" CULVERT
EXISTING
4 OF/DE. AD


PROPOSED
R/W C.N.R.
1005+00
-B.C. 1004+74·9
CANADIAN NATIONAL TELEGRAPH LINE
Drill Hole No. 8
CANADIAN NATIONAL RAILWAY
1004+00
86°58'
C.N.R.-P.I.
8615+44·7
Δ = 12°45'
Dc = 1°00' RT.
Drill Hole No. 7
R/W C.N.R.
1003+00
EXISTING
YELLOWHEAD
88
86
84
82
3480
78
76
74
72
3470
68
66
64
62
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58
56
54
52
5 OF/DE

Dc = 15°00' RT.
Ts = 383·7'
Lc = 601·7'

88

86

86

82

74

74

76

72

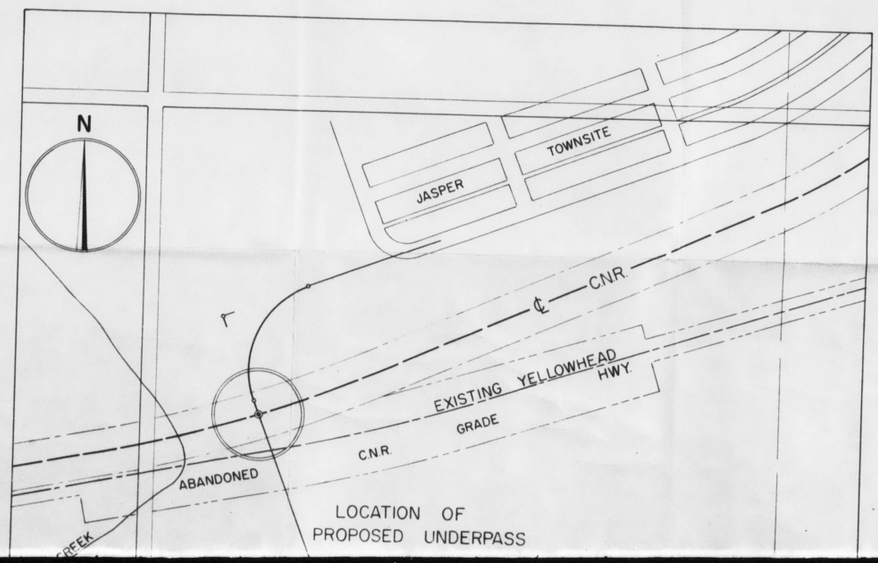
58

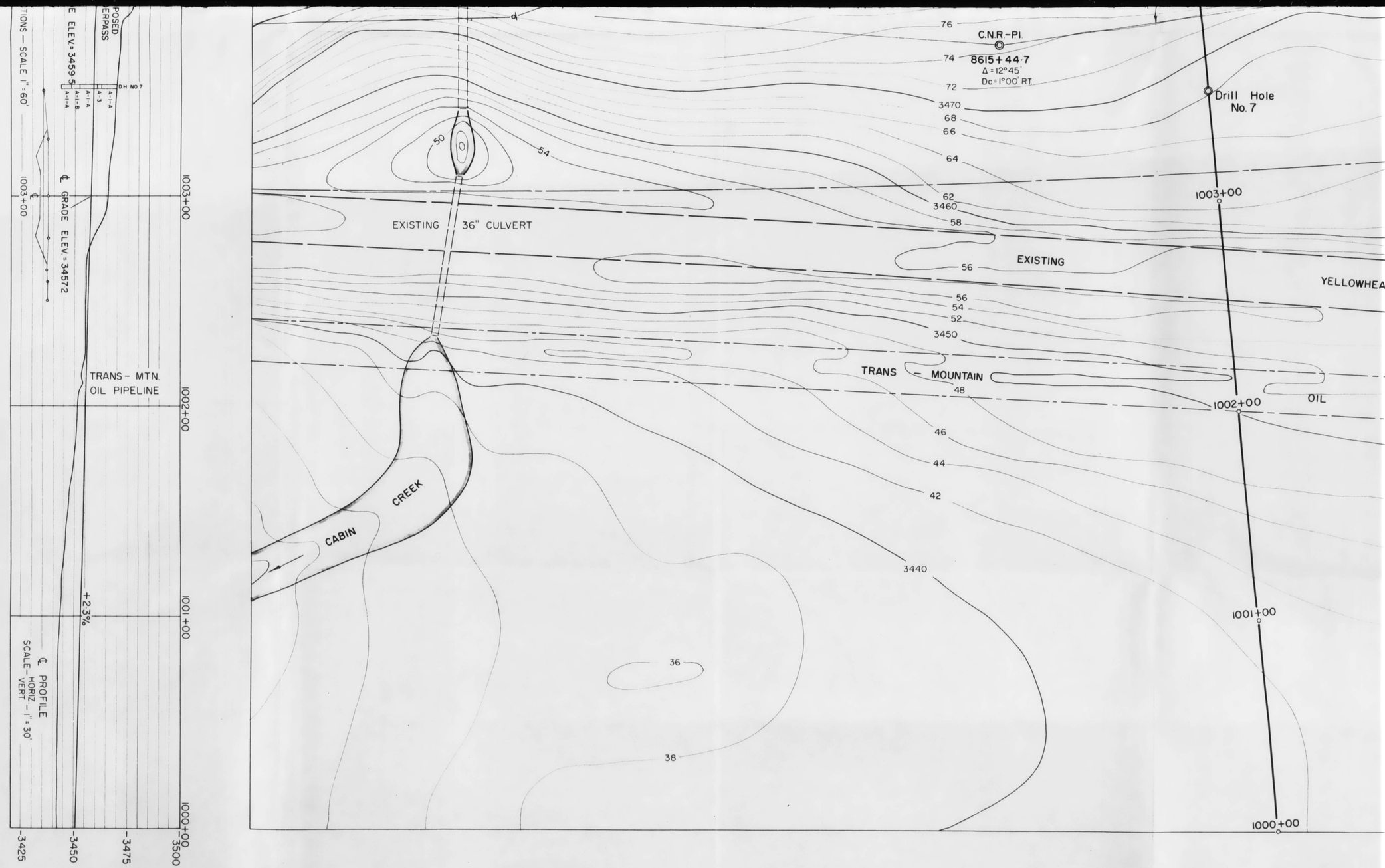
TELEGRAPH — ℄ LINE — ℄

NATIONAL RAILWAY

R/W C.N.R.

JASPER





C.N.R.-P.I.
8615+44.7
Δ=12°45'
Dc=1°00' RT.
Drill Hole No. 7
EXISTING 36" CULVERT
EXISTING
YELLOWHEAD
TRANS - MOUNTAIN
OIL
CABIN CREEK
1003+00
1002+00
1001+00
1000+00
76
74
72
3470
68
66
64
62
3460
58
56
54
52
3450
48
46
44
42
3440
36
38
50
54
℄ GRADE ELEV.=3457.2
TRANS - MTN. OIL PIPELINE
+2.3%
℄ PROFILE
SCALE - HORIZ. VERT. - 1" = 30'
-3425
-3450
-3475
-3500

7 OF/DE

C.N.R-PI
8615+44.7
Δ = 12°45'
Dc = 1°00' RT

Drill Hole
No. 7

R/W C.N.R.

1003+00

ULVERT

EXISTING
YELLOWHEAD
HIGHWAY

JASPER

TRANS - MOUNTAIN
OIL
PIPELINE
R/W

1002+00

I.P

I.P

1001+00

1000+00

3470
3460
3450
3440

76
74
72
68
66
64
62
58
56
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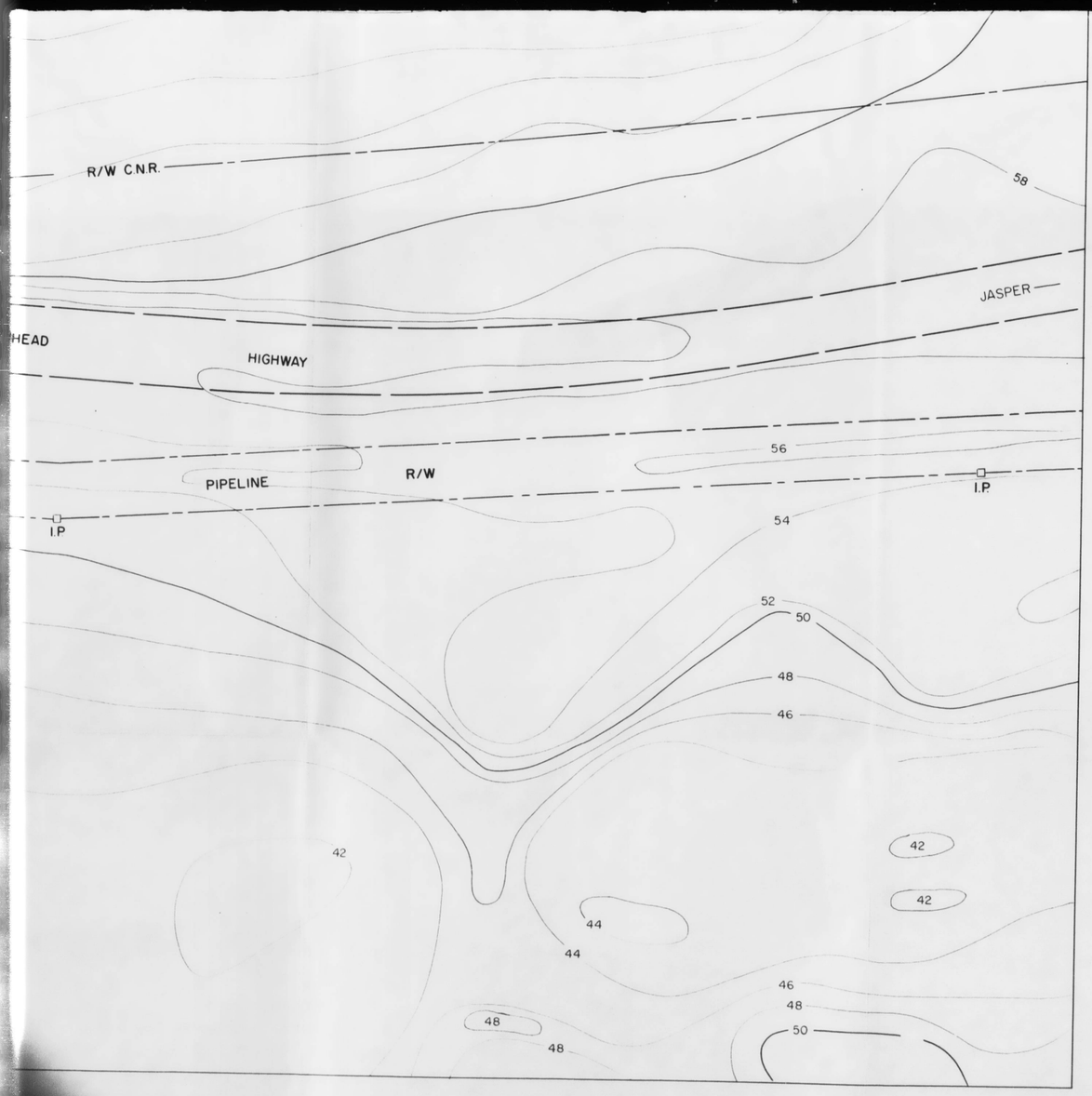
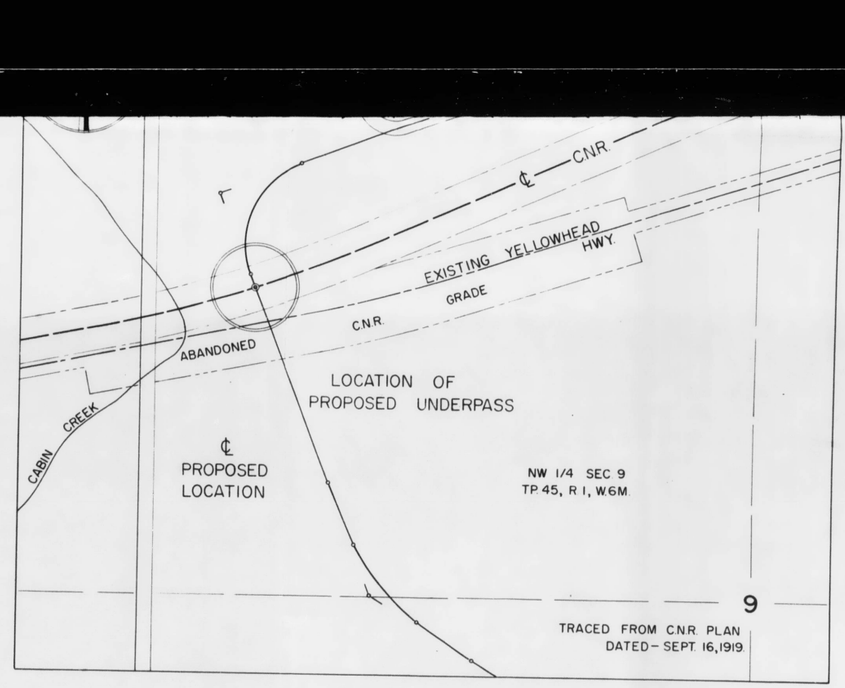
8 OF/DE





DEPARTMENT OF PUBLIC WORKS DEVELOPMENT ENGINEERING BRANCH		
PROPOSED LOCATION UNDERPASS CANADIAN NATIONAL RAILWAY MILE - 144.3 BANFF - JASPER HWY. JASPER NATIONAL PARK		
SCALE: HORIZ. - 1" = 30' VERT. - 1" = 30' CONT. INT. = 2'		
DRAWN BY - R Smith. CHECKED BY TRACED BY - R Smith DIST. ENG.	DATE Dec. 20, 1961.	DESIGN CONSTRUCTION
ORIGIN		APPROVED DATE
REVISIONS		FILE NO.

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 2

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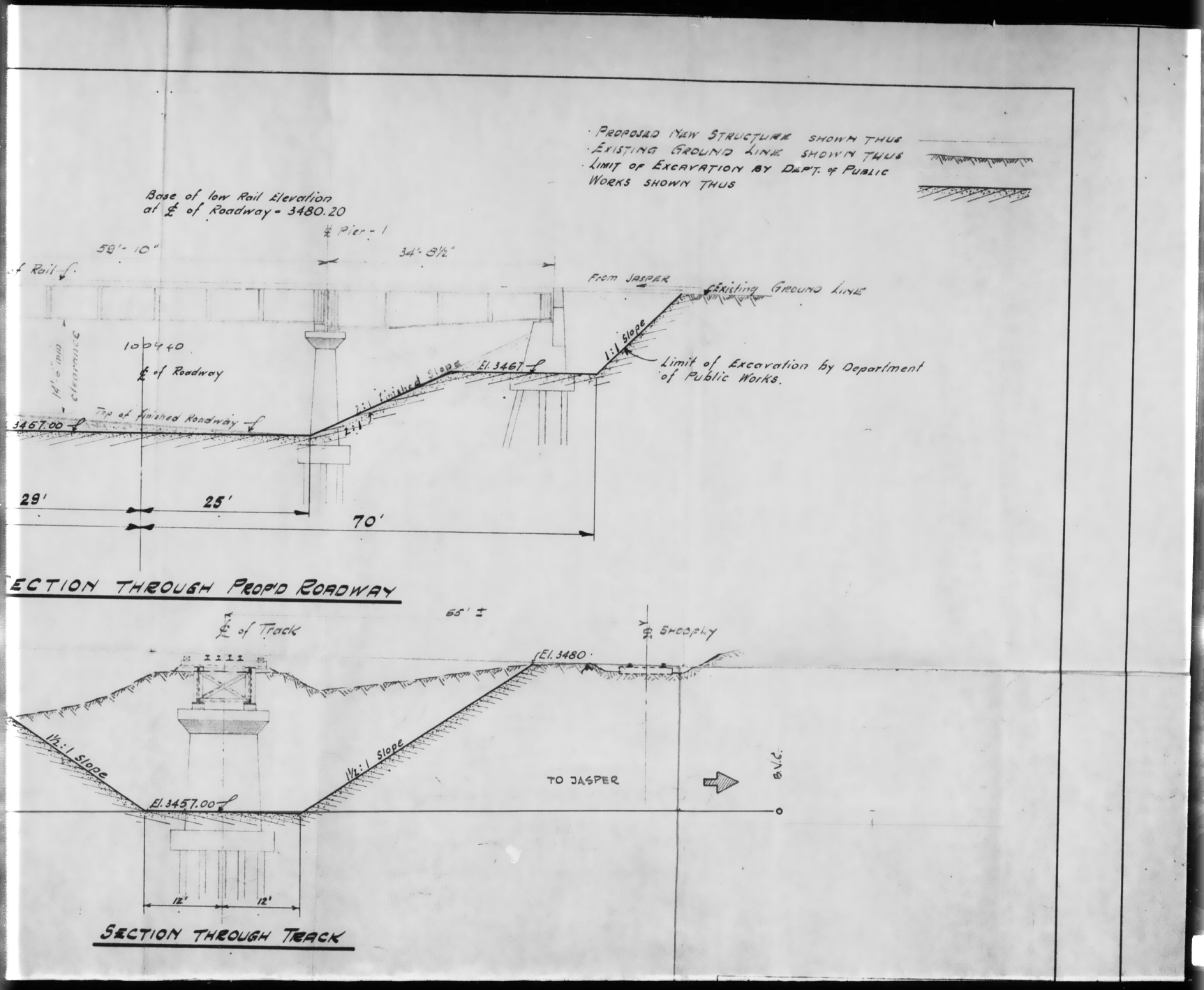
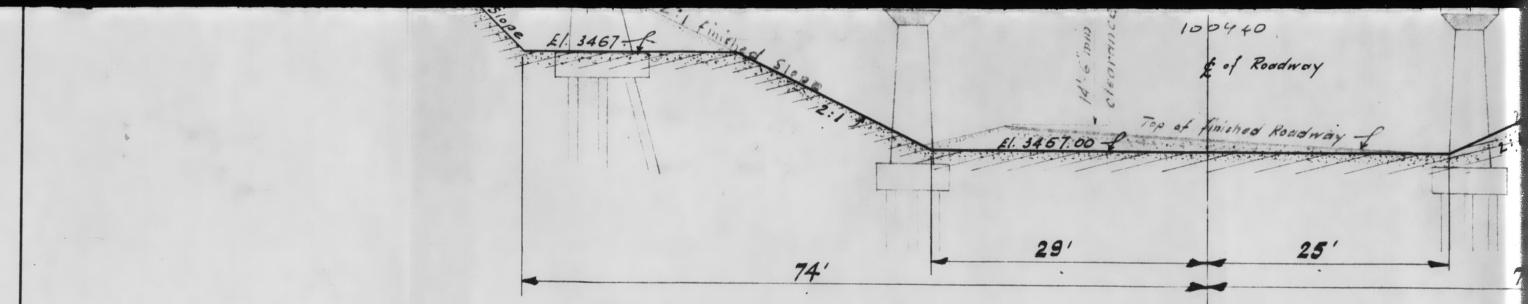
Archives nationales du Canada



SECTION THROUGH PROP'D ROADWAY

SECTION THROUGH TRACK



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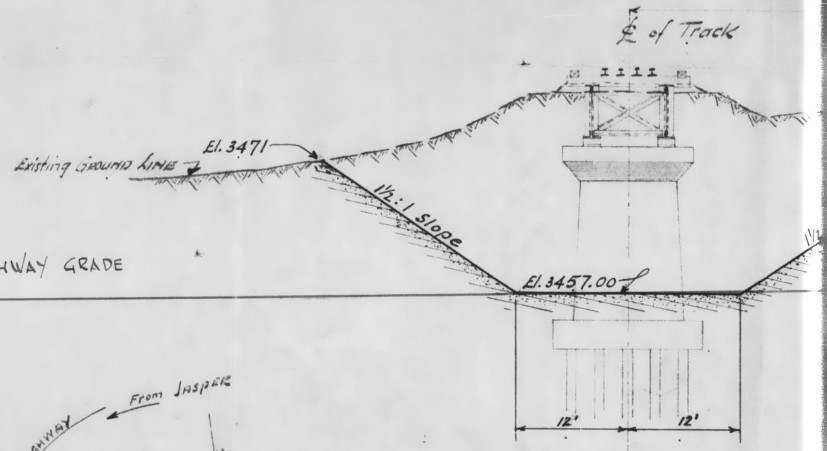

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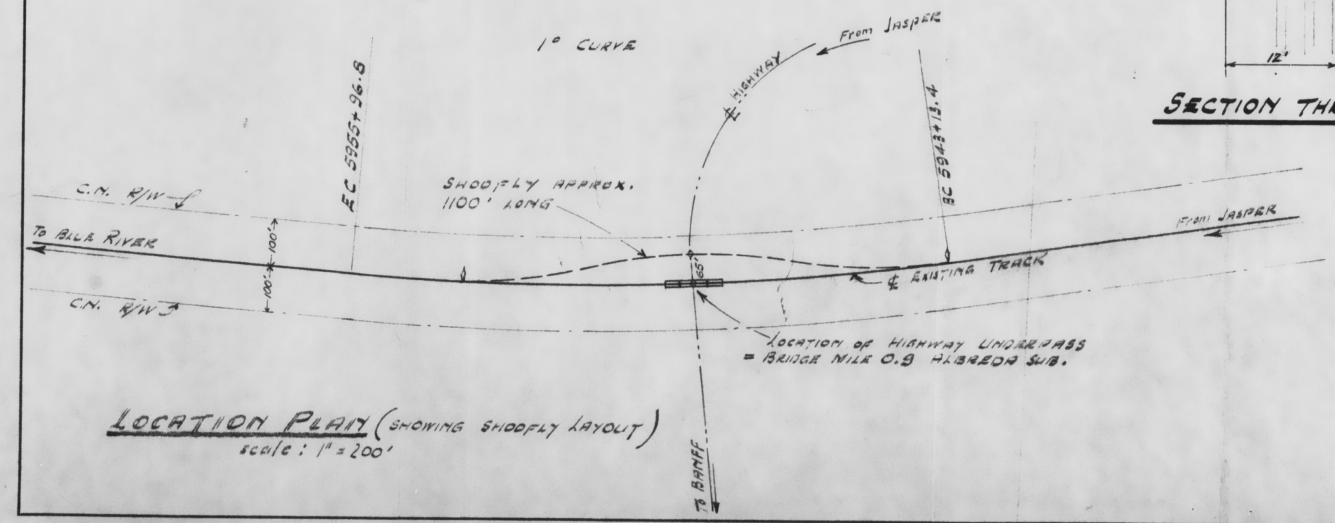
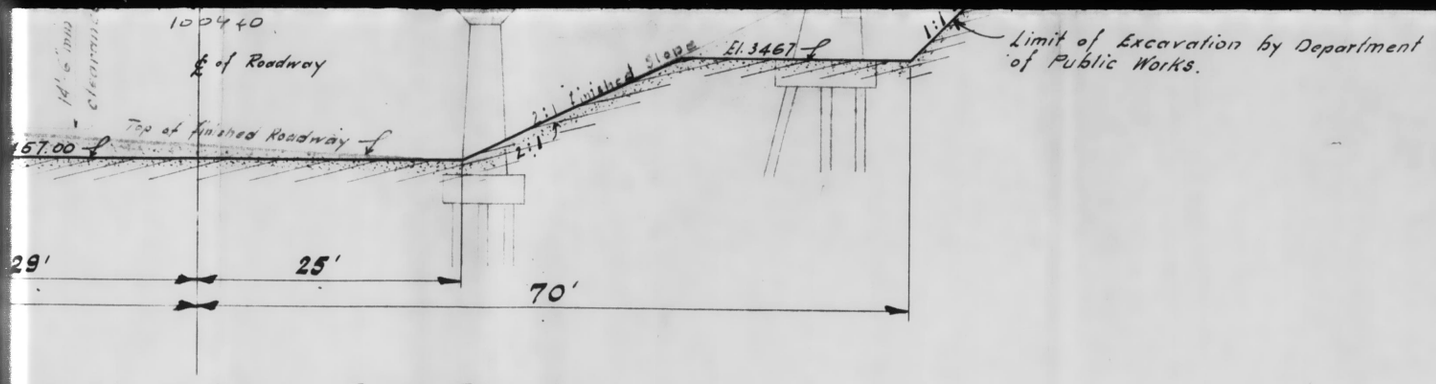


LOCATION PLAN (SHOWING SHOOFLY LAYOUT)
scale: 1" = 200'

3 OF/DE



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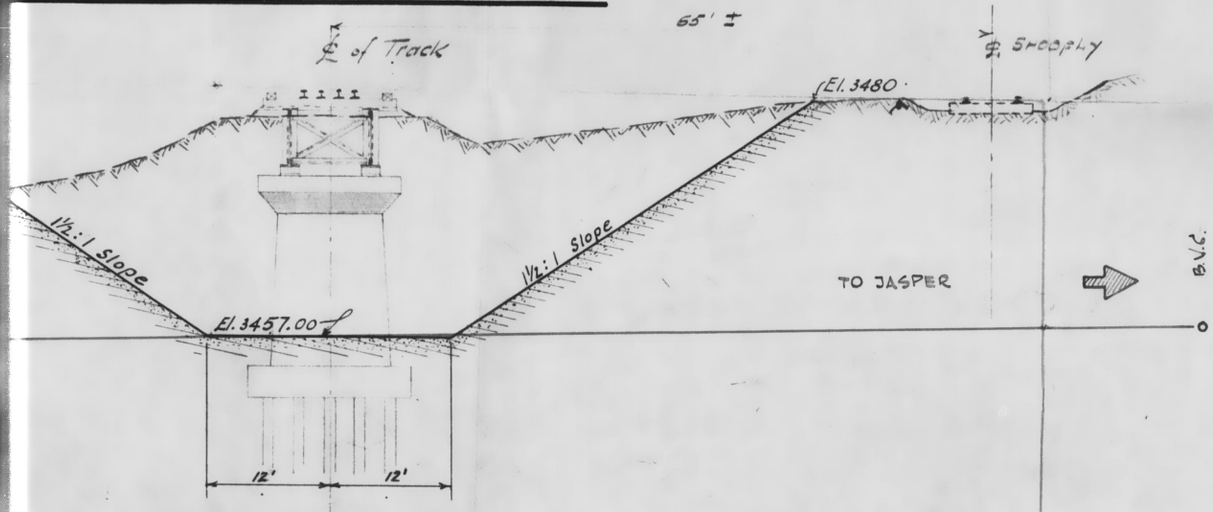

SECTION THROUGH TRACK

FROM JASPER

DATE	REVISIONS

CANADIAN NATIONAL RAILWAYS
MOUNTAIN REGION

B.C. AREA ALBREDA SUBDIVISION, MILE 0.9
LOCATION nearest siding - JASPER
SUBJECT BANFF-JASPER HIGHWAY UNDERCROSSING
DETAIL LIMIT OF EXCAVATION BY DEPT of PUBLIC WORKS
DESIGNED BY ____ DRAWN BY R.S. CHECKED BY A.G.L.
SCALE 1" = 10'
OFFICE OF REGIONAL ENGINEER, EDMONTON, ALTA. Dec. 21st. 1962
APPROVED
L.R. Morris
BRIDGE & STRUCTURES ENGINEER
REGIONAL ENGINEER
GENERAL MANAGER
PLAN No.
SHEET No.

PLAN No.: V-8069-1

FILED WITH

File

J60-23

DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

CONTRACT
AND
SPECIFICATIONS

FOR

BITUMINOUS CONCRETE PAVEMENT TYPE "B"

MILE 86.0 TO MILE 104.5

BANFF-JASPER HIGHWAY

CONTRACT NO. 8/62/BJ

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

TENDER FORM

FOR

CONTRACT NO. 8/62/BJ

BITUMINOUS CONCRETE PAVEMENT TYPE "B"

MILE 86.0 TO MILE 104.5

BANFF-JASPER HIGHWAY

Instructions to Bidders

(1) Pages 2,3(a),5(b),6(a),7,8,9 & 10 must be completed and duly executed as required.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

INSTRUCTIONS TO BIDDERS — OCTOBER, 1961

PART 1 - BIDDING REQUIREMENTS AND CONDITIONS

1.1 Qualifications of Bidders

The bidder will be required to show that he is capable of performing the class of work contemplated and shall submit with the tender on questionnaire forms supplied by the Department:-

(a) A Declaration of Equipment giving a description of the various units, their capacity, condition, age and present location that the bidder will definitely assign to the project being tendered on for its duration.

(b) A statement of his experience in performing work of the type or character for which his bid is submitted.

The bidder may be required to submit such additional evidence of his qualifications as may be deemed necessary by the Department.

1.2 Contents of Tender Forms

All papers bound with or attached to the tender forms are necessary parts thereof and must not be detached or altered.

All plans, specifications and other documents, designated in the tender form, will be considered a part of the tender whether attached or not.

The bidder will be required to deposit with the Department the sum stated in the notice to contractors for each copy of tender form and plans.

1.3 Interpretation of Quantities in Bid Schedule

The quantities appearing in the prepared bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the contract, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased, diminished, or omitted as hereinafter provided without in any way invalidating the unit prices bid.

1.4 Examination of Plans, Specifications, Special Provisions, and Site of Work

The bidder is required to examine carefully the site of the proposed work, the tender, plans, specifications, special provisions, and contract forms before submitting a tender. It is mutually agreed that submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the

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conditions to be encountered in performing the work and as to the requirements of the plans, specifications, supplemental specifications, special provisions, and contract.

1.5 Preparation of Tender

The bidder shall submit his tender upon the blank forms furnished by the Department. The bidder shall specify a unit price, in both words and figures, for each pay item for which a quantity is given, and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, and the total amount of the tender obtained by adding the amounts of the several items.

All words and figures shall be in ink. In case of a discrepancy between the prices written in words and those written in figures, the written words shall govern.

The bidder's tender shall be signed with ink by the individual, by one or more members of the partnership, or by one or more of the officers of the corporation submitting it. If the tender is made by an individual his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the proposal must show the name of the province under the laws of which the corporation was chartered and the names, titles, and business addresses of the president, vice president, secretary and treasurer.

1.6 Irregular Tenders

Tenders shall be considered irregular and may be rejected for the following reasons:-

(a) If the tender form furnished by the Department is not used or is altered.

(b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the tender incomplete, indefinite, or ambiguous as to its meaning.

(c) If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

(d) If the unit prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values.

(e) If they fail to contain a unit price for every pay item indicated.

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1.7 **Security**

(a) **With Tender**

To be considered each tender must be accompanied by:

(i) A bid bond, in an approved form and from a company whose bonds are acceptable, in an amount of at least ten percent of the tender

or

(ii) a security deposit in an amount of at least 10% of the tender, or, where the tender exceeds $250,000.00, in an amount of $25,000.00 plus 5% of the amount by which the tender exceeds $250,000.00. The maximum required for any tender is $100,000.00. The deposit must be in one or more of the following forms:

A certified cheque, payable to the Receiver General of Canada, and drawn on a bank to which the Bank Act or the Quebec Savings Bank Act applies, or bonds of the Government of Canada or of a company included in the "National Railways" (as that expression is defined in the Canadian National Railways Capital Revision Act) unconditionally guaranteed as to principal and interest by the Government of Canada, and if coupon bonds, having attached all coupons that are unmatured at the time of delivery if such bonds are:

(1) payable to bearer

(2) hypothecated to the Minister of Finance and Receiver General of Canada in accordance with the Domestic Bonds of Canada regulations.

or

(3) registered in the name of the Minister of Finance and Receiver General of Canada

(b) **Before Award of Contract**

(i) Before a contract is awarded, the successful tenderer must furnish:

(1) a security deposit, as described in (a) (ii) above, together with a Labour and Materials Payment Bond in an approved form and from a company whose bonds are acceptable in an amount of at least 50% of the amount payable under the contract.

or

(11) a Performance Bond and a Labour and Materials Payment Bond, each in an approved form and from a company whose bonds are acceptable and each in the amount of 50% of the amount payable under the contract.

(ii) Where a contractor is not able to obtain a Labour and Materials Payment Bond as required by (b) (1) above, on making application

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(ii) (Cont'd.)
therefore to at least two acceptable bonding companies, he must furnish an additional security deposit, in the amount of 10% of the tender.

(iii) Where a tender has been accompanied by a security deposit, as described in (a) (ii) above, the amount of the security deposit under (b) (i) (1) above may be reduced by the amount of the security deposit which accompanied the tender.

(c) Samples of the approved form of Bid Bond, Performance Bonds and Labour and Materials Payment Bonds and a list of bonding companies whose bonds are acceptable to the Government of Canada are available for inspection at, and may be obtained from any office of the Department of Public Works.

1.8 Interest

Tenderers are notified that they must make their own arrangements with their bankers as to the payment of interest, if any, on the amount of any certified cheque accompanying their tender. The Government of Canada will not pay interest on said cheque pending the awarding of the contract, nor be responsible for the payment of interest under any arrangements made by the tenderers. The cheque of the tenderer to whom the contract has been awarded will forthwith be deposited in the Department of Finance and interest on the amount thereof at the prevailing rate of interest under the regulations governing deposits in Post Office Savings Banks will be allowed.

1.9 Delivery of Tenders

Each tender must when possible be submitted in a special envelope furnished by the Department and the blank spaces on the envelope must be filled in correctly so as to clearly indicate its contents. When an envelope other than the special one furnished by the Department is used it must be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail the sealed tender must be addressed to the Department at the address and in the care of the official in whose office the bids are to be received. All tenders shall be filed prior to the time and at the place specified in the notice to Contractors. Tenders received after the time for opening of bids will be returned to the bidder unopened.

1.10 Withdrawal or Revision of Tenders

A bidder may, without prejudice to himself, withdraw a tender after it has been deposited with the Department, provided the request for such withdrawal is received by the Department, in writing or by telegram, before the time set for opening tenders. The bidder may then submit a revised tender provided it is received prior to the time set for opening tenders.

1.11 Material Guaranty

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

1.12 Insurance

Tenderers shall take note that insurance of the type specified in Clause 1.5.11 of the General Conditions will be required for all contracts for the construction of a bridge or bridges and all such other work as may, from time to time, be especially provided for in the Information to Tenderers.

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PART 2 - AWARD AND EXECUTION OF CONTRACT

2.1 Consideration of Tenders

After the tenders are opened and read, they will be compared on the basis of the summation of the products of the approximate quantities as shown in the bid schedule by the unit bid prices. In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern.

The right is reserved to reject any or all tenders, to waive technicalities, to advertise for new tenders or to proceed to do the work otherwise, if in the judgment of the awarding authority the best interests of Canada will be promoted thereby.

2.2 Award of Contract

The successful bidder will be notified, by letter mailed to the address shown on his tender, that his bid has been accepted and that he has been awarded the contract. The Contractor's Security Deposit may be forfeited if the tenderer declines to enter into a contract when called upon to do so, or if he, as a Contractor, fails to complete the contract.

2.3 Return of Tender Security

All tender securities will be returned except that of the successful bidder, which will be retained until the contract has been successfully completed and accepted.

2.4 Execution of Contract

The Contractor who submitted the successful bid will be required to sign a contract similar to the Indenture exhibited at the same time as the plans and specifications, and such contract is made subject to the Public Works Health Act R. S. C. 1952 C299.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

TENDER FORM

FOR

CONTRACT NO. 8/62/BJ

FOR: Bituminous Concrete Pavement Type "B"

LOCATION: Mile 86.0 to Mile 104.5
Banff - Jasper Highway

The Undersigned, hereby offer to the Honourable the Minister of Public Works, to furnish all necessary machinery, tools, apparatus, and other means of construction, do all the work, furnish all the material except as otherwise specified and, for the prices named in the attached itemized Bid Schedule, to complete the work herein described in strict accordance with the plans, profiles and specifications therefor, and such other special provisions and supplemental specifications listed in the Schedule of Plans and Specifications which are provided by the Department for the performance of this work.

The Undersigned hereby certify that (I, we) have visited and examined the site of the proposed work or have caused it to be visited and examined by a competent person on (my, our) behalf and have made all enquiries relative to the amount of work and value of the materials and plant required for this work.

The Undersigned, understands that the quantities shown on the Bid Schedule are to be considered as approximate only and the Department reserves the right of increasing or diminishing any or all of the items. However, the bids will be compared on the basis of estimated quantities of work to be done as given on the attached Bid Schedule.

The Undersigned herewith enclose:

(a) a bid bond, in an approved form and from a company whose bonds are acceptable, equal to at least 10% of the tender.

(b) a security deposit equal to 10% of the tender, or $25,000. plus 5% of the amount by which the tender exceeds $250,000. in one or more of the following forms:

(i) a certified cheque, payable to the Receiver General of Canada, and drawn on a bank to which the Bank Act or the Quebec Savings Bank Act applies;

(ii) bonds of the Government of Canada or of a company included in the "National Railways" (as that expression is defined in the Canadian National Railways Capital Revision Act) unconditionally guaranteed as to principal

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(ii) and interest by the Government of Canada with all unmatured coupons attached, if coupon bonds, and

(1) payable to bearer
(2) hypothecated to the Minister of Finance and Receiver General of Canada in accordance with the Domestic Bonds of Canada Regulations.

or

(3) registered in the name of the Minister of Finance and the Receiver General of Canada.

The Undersigned understands that before a contract is awarded the successful tenderer must furnish security in one of the forms described in Article 1.7 (b) of Instructions to Bidders.

Envelopes containing this tender are to be endorsed:

"Tenders for Contract 8/62/BJ"

and addressed to the Secretary of the Department of Public Works, Ottawa.

The signature(s) of the person(s) tendering must be in their respective handwriting.

In the case of partnerships, the signature, post office address and occupation of each partner must be given.

By my/our signature hereunder, I/we hereby identify this as the tender for Contract 8/62/BJ executed by me/us and bearing date the 4th day of May 19 62

POOLE ENGINEERING (1958) LTD.

WITNESS R. J. Hollingshead ? SIGNATURE J. E. Poole

ADDRESS Edmonton ADDRESS Edmonton, Alta.

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Schedule of Documents, Plans and Specifications

Provided by the Department

for

Tender Submission

Contract No. 8/62/BJ

1.	Instructions to Bidders	
2.	Information to Tenderers	Page 4 - 4(b)
3.	Bid Schedule	Page 5 - 5(b)
4.	Construction Program and Equipment Statement	Page 6 - 6(a)
5.	Schedule of Equipment Rental Rates Alberta National Parks	
6.	Statement of Experience	Page 8
7.	Employment of Sub-Contractors	Page 9
8.	Notice to Tenderers	Page 10
9.	Indenture	
10.	Labour Conditions	
11.	Plans and Specifications	

(a) General Specifications

Division		Section
(i)	General Conditions	1 - 8 inclusive
(ii)	Earthwork	3
(iii)	Base Course	1
(iv)	Pavements	1, 5
(vi)	Incidental Construction	1, 2, 9, 10

(b) Standard Plans

F1, F2-A (REV.1), F2-B (REV.1), F3, G9

(c) Plan and Profile

Line diagram
Plan Jonas Creek Camp Ground

(d) Supplemental Specifications

Bituminous Patching Mixture in Stockpile

. . . 3(a)

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By my/our signature hereunder, I/we hereby identify this as the Schedule of Plans and Specifications provided by the Department of Public Works for the performance of the work under and forming part of this Contract No. 8/62/BJ executed by me/us and bearing date

this 4th day of May 196 2

POOLE ENGINEERING (1958) LTD.

WITNESS R. J. Hollingshead ? SIGNATURE J. E. Poole

ADDRESS Edmonton ADDRESS Edmonton, Alta.

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INFORMATION TO TENDERERS
FOR
CONTRACT NO. 8/62/BJ

1. Description

The work to be done under this contract consists of placing 2 inches of Bituminous Concrete Pavement Type "B", 42 feet wide in one lift from Mile 86 to Mile 96.5 and 3 inches of Bituminous Concrete Pavement Type 'B' 42 feet wide in two lifts from Mile 96.5 to Mile 104.5 on the Banff-Jasper Highway, together with such other incidental works as may be detailed hereunder or ordered by the Engineer. Mile 0 on the Banff-Jasper Highway is at Lake Louise.

2. Completion Date

October 15, 1962.

3. Nearest Post Office

Lake Louise, Alberta - South - Mile 0
Jasper, Alberta - North - Mile 145.

4. Nearest Railway Siding

Lake Louise, Alberta - South - Mile 0
Jasper, Alberta - north - Mile 145.

5. Maintenance of Traffic

Heavy tourist traffic may be expected from June 15 to September 15. The contractor's operations must be such as to cause a minimum of interference to this traffic.

6. Access and Communications

Access from the south crosses two short bridges posted at 10 tons load limit and traverses 9% grades on the Big Hill and Sunwapta Hill sections. Access from the north crosses three bridges posted at 15 tons load limit and two bridges posted at 20 tons load limit. The contractor should consult the local Parks engineering staff before crossing these bridges with heavier loads.

No commercial communications are available at the project site.

SPECIAL PROVISIONS

7. Scheduling of Operations

The gravel section of the highway from Mile 96.5 to Mile 104.5 must be covered with at least the first lift of bituminous pavement before any other paving is done and as soon as practicable in the spring.

. . . . 4(a)

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8. Aggregate Materials

(a) Base Course (class 1) aggregate and bituminous pavement aggregate may be processed from a deposit at approximately Mile 88.5. The constractor is warned that the water table in the gravel flats is fairly high and material may have to be taken from the water and stockpiled for draining before being processed.

(b) The aggregate material for the Bituminous Concrete Pavement Type 'B' shall be crushed to 5/8" maximum size and separated into two stockpiles in accordance with the Specifications for Bituminous Concrete Pavements.

(c) Table No. 3 of the Specifications for Fine Aggregate notwithstanding, the gradation of the fine aggregate shall fall within the following limits:

Sieve No.	Percent Passing
4	100
10	60 - 95
20	35 - 75
40	20 - 50
80	7 - 20
200	0 - 8

9. Bituminous Material

(a) The bituminous material for the bituminous concrete pavement shall be 150-200 penetration asphalt cement conforming to the requirements of the Canadian Government Specifications Board Specification 16-GP-3.

(b) The bituminous material for the bituminous patching mixture in stockpile shall be S.C.3, slow-curing, cut-back asphalt conforming to the requirements of the Canadian Government Specifications Board Specification 16-GP-1b.

10. Bituminous Patching Mixture in Stockpile

It is proposed to plant mix and stockpile approximately 1,000 tons of patching mixture near the proposed plant site at Mile 88.3. The mixture shall conform to the Supplementary Specification for Bituminous Patching Mixture in Stockpile.

11. Conditioning Road Bed

(a) Several areas of existing M.C.2 road mix base course are over-asphalted and the contractor will scarify, pulverize, re-mix and re-lay this material. The unit bid price for this work shall include payment for all equipment and tools necessary for scarifying, pulverizing, mixing and re-laying and compacting.

(b) The gravel section of the road within the project will be scarified and reshaped in accordance with the Specifications for Conditioning Road Bed.

. . . 4(b)

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12. Field Laboratory

A building suitable for a field laboratory shall be provided by the contractor in accordance with the requirements of Articles 1.4.4 and 4.5.2(12) of the Specifications.

13. Construction Camp

A site for a construction camp exists at approximately Mile 88.3 which has been used previously by others. The contractor must have approval of the Engineer before setting up any camp.

14. Rip Rap

Rip rap will be required to extend rip rap groynes and other protective works in the area Mile 88 to 89. Rip rap may be obtained from a talus slope deposit one thousand feet right of the highway at Mile 88.2. This deposit has been worked by others and an access road exists.

15. Vehicles for the Engineer

Two vehicles will be required for the use of the Engineer for five months each, a total of 10 vehicle months. The vehicles shall be of the ½-ton pick-up type.

16. Force Account

A sum of $30,000.00 is included in the Bid Schedule for force account work consisting of grading parking areas and access roads, constructing diversion channels, cleaning out rock falls and scaling rock cuts, cleaning ditches and drainage channels, dressing side slopes and back slopes, and other incidental work as may become apparent during the progress of the contract for which unit price payment is not provided. The above sum will be added to the costs of the other items in arriving at the total tender amount. Extra work orders will be issued against this item for work done by the contractor and payment will be made only for work so ordered and completed in accordance with Article 1.7.3 of the Specifications. There is no guarantee that all or any of this force account work will be done.

17. Labour and Materials Payment Bond

Where a Labour & Materials Payment Bond has been provided, the contractor shall post and keep posted in a conspicuous place on the site of the work, information to the effect that a Labour and Materials Payment Bond has been provided, the name and address of the surety, a definition of those items covered by the bond and a brief outline of the procedures for submitting a claim.

18. Trimming

Trimming of the outer edge of the shoulders shall be carried out so that a smooth transition is provided between the top of the bituminous concrete pavement and the side slopes. No additional payment will be made for this work.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 8/62/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
1.	3.1.5(1) & Info. to Tenderers Para. 8	Base Course (Class 1), at Seventy-five cents per ton	4,100	0	75	3075	00
2.	3.1.5(2)	Hauling Base Course (Class 1), at Eight Cents per ton mile	50,000	0	08	4000	00
3.	3.1.5(3)	Water for Compaction, at Six dollars per 1000 gal. unit	100	6	00	600	00
4.	3.1.5(4)	Compaction, pneumatic tired roller (complete unit), at Seven dollars & fifty cents per hour	200	7	50	1500	00
5.	3.1.5(4)	Compaction, pneumatic tired roller (roller only), at Two dollars per hour	100	2	00	200	00
6.	4.1.5(1)& Info. to Tenderers Paras.8&9	Bituminous Concrete Pavement Type "B", at Three dollars & five cents per ton	71,000	3	05	216,550	00
7.	4.1.5(2) & Info. to Tenderers Para. 9	Bituminous Material 150-200 Penetration Asphalt Cement, at Twenty-two dollars per ton	3,900	22	00	85800	00
8.	4.1.5(2)& Info. to Tenderers Para. 9	Bituminous Material SC.3, Slow Curing, Cut Back Asphalt, at Thirty dollars per ton	50	30	00	1500	00

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 8/62/BJ

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
9.	6.1.5 & Info. to Tenderers Para. 14	Random Rip Rap, at One dollar & thirty cents per cu. yd.	3,000	1	30	3900	00
10.	6.2.5 & Info. to Tenderers Para. 14	Hand Placed Rip Rap, at Eight dollars per cu. yd.	500	8	00	4000	00
11.	6.9.5(1) & Info. to Tenderers Para. 11	Conditioning Road Bed, at Two cents per sq. yd.	197,000	0	02	3940	00
12.	6.10.5	Vehicles for engineer's use, at Two hundred & fifty dollars per vehicle month	10	250	00	2500	00
13.	Info. to Tenderers Para. 11	Scarify, re-mix and re-lay M.C. 2 Road Mix, at Seven cents per sq. yd.	100,000	0	07	7000	00
14.	Supp. Specs. & Info. to Tenderers Para. 10	Bituminous Patching Mixture in Stock-pile, at Two dollars per ton	1,000	2	00	2000	00
15.	Info. to Tenderers Para. 16	Force Account Lump Sum	Lump Sum			30,000	00

TOTAL . 366,565.00.

TOTAL WRITTEN IN WORDS Three hundred & sixty-six thousand, five hundred and sixty-five dollars

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NOTE 1: The contractor shall list below the names of the suppliers of the following materials; the location of the fabrication or manufacturing plant; and date of delivery in weeks from date of contract award:

Bituminous Material : Name:
Plant Address:
Date of Delivery:

NOTE 2: ORIGIN OF MATERIALS: (My, Our) tender is based on the use of Canadian materials and/or equipment as specified in the General Conditions of the Contract with the exception of the following non-Canadian items:

Item	Country of Origin	Approximate Quantity	Rate	Amount	Canadian Product Amount
	N/A				

If Canadian materials and/or equipment for items listed above are required (my, our) Tender is to be increased by (Amount to be Written)

N/A

$_____ cts _____

NOTE 3: IMPORTANT

The tenderer or the person or persons duly authorized to sign on his behalf must initial and date each and every correction change, erasure or alteration contained in this completed tender document.

POOLE ENGINEERING (1958) LTD.

CONTRACTOR'S SIGNATURE J. E. Poole

DATED May 4th, 1962

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CONSTRUCTION PROGRAM AND EQUIPMENT STATEMENT

The Contractor shall in the spaces provided hereunder furnish a detailed outline of the construction program to be followed and a list and complete description of the plant and equipment available, if required, for the satisfactory prosecution of the work within the time limit specified in the "Information to Bidders". The Department reserves the right to inspect all equipment listed prior to the award of a contract.

CONSTRUCTION PROGRAM

We would commence crushing and stockpiling aggregate immediately followed by preparing of road, mixing & laying asphalt so as to finish in time allowed.

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EQUIPMENT STATEMENT

Description of Unit (Make, Model, Year)	Capacity, etc. (Size, Capacity and Horse Power Rating)	Auxiliary and/or Special Equipment (Power take-off, Power Control Units, etc.)	Condition	Present Location
1-Pioneer Asphalt Plant				Cold
Model 102-1958	130 T/HR	Complete	Good	Lake Alta.
1 - Paver				
Cedar Rapids	" "		"	"
4 - Rollers				
Tandem Steel	8-12 tons		"	"
1-No. 12 Motor Patrol				
Cat.	130 H.P.		"	"
1 - Crusher				
Cedar Rapids	Comdr - 150 T/HR		"	"
Plus complete camp and all necessary auxilliary equipment necessary.				

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EQUIPMENT RENTAL RATES MARCH, 1962

FOR FORCE ACCOUNT WORK IN ALBERTA NATIONAL PARKS

DEVELOPMENT ENGINEERING BRANCH

DEPARTMENT OF PUBLIC WORKS

GENERAL CONDITIONS

In the event that extra and force account work is required under the contract, the following equipment rental rates may be used by the Department in settling such accounts.

1. These rates include operators' and oilers' wages, fuel, lubricants, repairs, replacements, depreciation, interest, servicing, and other costs pertaining to operation of the equipment except where equipment only is specified.

2. Where equipment only is specified the rates as given include fuel, lubricants, repairs, replacements, depreciation, interest and servicing but the Department will pay the wage of the operator(s) when operator(s) are required by the Department.

3. Rate for sizes of equipment not shown shall be interpolated from the rates given for that class of equipment.

4. For purpose of payment 10 hours constitutes a day and where hourly and daily rates are both shown for a piece of equipment, the least expensive rate of combination of rates will be used for payment.

5. No transportation costs or standby time will be paid for by the Department.

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EQUIPMENT	RENTAL RATE HOUR	DAY	MONTH
AIR COMPRESSORS - Includes fuel, oil, repairs but not operator			
DIESEL			
Up to 185 c.f.m.	4.50		
185 - 210 c.f.m.	5.50		
211 - 365 c.f.m.	8.00		
366 - 600 c.f.m.	11.50		
GASOLINE			
Up to 105 c.f.m.	2.50		
106 - 125 c.f.m.	3.00		
126 - 210 c.f.m.	4.75		
211 - 365 c.f.m.	7.25		
366 - 600 c.f.m.	10.50		
AIR TOOLS AND ACCESSORIES			
Equipment Only			
Air Hose or Pipe, Line Oilers and Couplers per 50' length ($\frac{3}{4}$")		1.00	
Clay Diggers, 22 lb.		1.50	
Jack Hammer, 48 lb.		3.00	
Jack Hammer, 60 lb.		3.00	
Paving Breaker, 55 lb.		2.75	
Paving Breaker, 80 lb.		2.75	
Air Track Drill		21.50	
Rock Drill Steels per 100 ft. or fraction thereof		4.00	
Air Tamper 128 - 170 lb.		17.50	
MIXERS - Includes fuel, oil, repairs, but not operator			
$3\frac{1}{2}$ "S" Tilt Type	2.00		
6 and 7 "S" Non Tilt	2.85		
11 "S" Non Tilt with Power Loader	3.50		
14 "S" Non Tilt with Power Loader	3.85		
16 "S" Non Tilt with Power Loader	4.25		
VIBRATORS - Includes fuel, oil, repairs, but not operator			
2 H.P. Gas Driven 12' Flexible Shafting	1.60		
6 H.P. Gas Driven 21' Flexible Shafting	2.20		
PUMPS - Portable, Self-Priming, including suction hose and discharge hose			

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EQUIPMENT	RENTAL RATE HOUR	DAY	MONTH
Equipment Only			
1½" - 3 thousand gallons per hour		5.00	
2" - 7 to 10 thousand gals. per hour		6.50	
3" - 15 to 20 thousand gals. per hour		8.50	
4" - 30 to 40 thousand gals. per hour		12.50	
6" - 60 to 80 thousand gals. per hour		30.00	
PULVI-MIXER			
Self-Propelled	9.00		
WEIGH SCALES (Equipment Only)			
15 ton capacity			200.00
25 ton capacity			300.00
50 ton capacity			425.00
STEAM BOILERS (Equipment Only)			
20 - 34 H.P. Locomotive Type			200.00
35 - 49 H.P. Locomotive Type			250.00
50 and over			300.00
PILE DRIVER (Equipment Only)			
Drop Hammer and Leads		20.00	200.00
Pile Hammers (air or steam)			
7B		32.50	375.00
9B		53.75	700.00
Diesel Hammers			
D - 5		35.00	500.00
D - 13		50.00	800.00
Pile Extractors			
E - 2			285.00
E - 4			400.00

SELF-PROPELLED RUBBER-TIRED SCRAPER UNITS

Rates for units not shown to be classified in group where they fulfill requirements of both H.P. and capacity.

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EQUIPMENT			RENTAL RATE HOUR	DAY	MONTH
H.P. (Brake)	Current Models	Struck Cap. in. c.y.			
100 - 150	D W 10 Letourneau D Euclid S7 Wagner TR 9 Michigan 110	6 - 11	15.50		
151 - 220	D W 15 T S 200 T S 260 Tournapull C Euclid 70, 71FDT, S12 2 C800, 2T55 (IHC) Terra Cobra Michigan 210	12 - 15 &13 - 18	19.00		
221 - 250	D W 20 (21C) D W 21 (8W) TS 300, 360 2T 75 (IHC) Terra Cobra Euclid 23TDT	15 - 20	22.00		
251 - 400	D W 20 (21C) D W 21 (58C, 69C) Tournapull B Euclid S 18 Michigan 310	18 - 25	26.00		
Over 400	Euclid T S 18 T S 24 15, 16TDT	18 - 25	29.00		

RUBBER-TIRED PRIME MOVERS

Drawbar H.P.	
40 - 49	4.25
50 - 69	5.25
70 - 99	7.25
100 - 149	9.50
150 - 199	10.75
200 - 249	12.00
250 - 299	12.50
Over 300	13.00

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EQUIPMENT	RENTAL RATE HOUR	DAY	MONTH
Drawbar H.P. (Cont'd.)			
With Dozer add 15% of Prime Mover Price			
With Front End Loader add 15% of Prime Mover Price			
Both to be taken to nearest multiple of five cents.			
POWER GRADERS (including blades and teeth)			
H. P. (Brake)			
Under 75	7.50		
75 - 99	10.00		
100 - 129	11.50		
130 and over	12.50		
SCRAPERS (Equipment Only)			
6 - 8 cu. yd. capacity	2.20		
8 - 11 cu. yd. capacity	3.00		
12 - 15 cu. yd. capacity	4.25		
14 - 18 cu. yd. capacity	6.00		
15 - 20 cu. yd. capacity	7.25		
18 - 25 cu. yd. capacity	8.10		
CRANES - Max. Lifting Capacity			
3 - 6 tons	7.00		
7 - 10 tons	9.00		
11 - 15 tons	11.50		
16 - 20 tons	16.00		
21 - 25 tons	22.00		
Add 5% if Mobile Truck Mounted, to be taken to the nearest multiple of five cents.			
DRAGLINES, SHOVELS, BACKHOES (Crawler Mounted)			
Factory Rated Capacity as Shovel			
3/8 cu. yd.	8.00		
1/2 cu. yd.	10.00		
3/4 cu. yd.	12.00		
1 cu. yd.	14.25		
1 1/4 cu. yd.	16.50		
1 1/2 cu. yd.	18.00		
1 3/4 cu. yd.	19.50		
2 cu. yd.	21.50		
2 1/2 cu. yd.	27.00		
3 cu. yd.	33.00		
3 1/2 cu. yd.	42.00		
5 1/2 cu. yd.	72.50		
For units not listed interpolate on a rated capacity-yardage basis. To be taken to nearest multiple of .05.			

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EQUIPMENT		RENTAL RATE HOUR	DAY	MONTH
FRONT END LOADER				
Crawler Type				
Current Models	**Struck Cap. cu. yds.**			
International TC5, TDC5 Oliver OC-46	Under 1	8.00		
Allis Chalmers HD 5 G Caterpillar 933 F International TD6 (61) TD6 (62) Oliver OC-96	1 - 1 1/8	10.00		
Allis Chalmers HD6G Caterpillar 955E, 955F, 955H Eimco 123 International TD9 (91) TD9 (92) Oliver OC-126	1¼ - 1 7/8	13.50		
Allis Chalmers HD 9G, HD 11G Caterpillar 977E, 977H Eimco 105, 125, 126 International TD 14 (142) Oliver OC-156	2 - 2 7/8	16.50		
Allis Chalmers HD 15G, HD 16G International TD 18 (182)	3	19.50		
Allis Chalmers HD 20G, HD 21G	4	27.00		
Rubber Tired				
Allis Chalmers TL 6 Case W3, W5 Chaseside LM 800 TC, LM 700 Euclid L 7 Hough HA, HAH, HF, HFC, HFHC, H25 Hough H30, H30R Massey Ferguson Davis Pit Bull Massey Ferguson 406 Michigan 12B, 55A, 55B Scoopmobile H (old) Trojan LMH 75	Under 1	6.00		

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EQUIPMENT		RENTAL RATE HOUR	DAY	MONTH
Rubber Tired (Cont'd.)				
Current Models	Struck Cap. cu. yds.			
Allis Chalmers TL 10, TL11 Gas, TL11D Caterpillar 922 Hough H 50, HU Michigan 75A Scoopmobile H, HP, HPD, LD5F, LD5P Scoopmobile LD6P (old), LD5T Trojan 104, 114, 134	1 - 1 1/8	8.50		
Allis Chalmers TL 12, TL 14 Case W9 Chaseside LM 1, 000 Hough HM, HM Lorain ML 53, ML 153 Michigan 85A, 125A (old) Nelson 150 Oliver OL-175 Pettibone 125, 125D Scoopmobile LD5P, LD5PD, LD7, LD7D Scoopmobile LD8, LD9 (old) Trojan 124, 154, 164	1¼ - 1 5/8	10.00		
Allis Chalmers TL16, TL20D to 1958 Case W10, W12 Caterpillar 944 Euclid L20 Hough HD, H70 Lorain ML 156, ML 157 Michigan 125A New, 125A 1960 Nelson 200 Pettibone 175, 175D, PM240, PM240A Pettibone PM 340 Scoopmobile LD 7(1959), LD 7A Trojan 204, 254	1¾ - 2¼	13.00		
Allis Chalmers TL 20D, 1959 on Caterpillar 966 Hough H90, H90B Lorain ML 309 Michigan 175A Pettibone PM 440, 250, 250D Scoopmobile LD 12 (old) Trojan 304	2 3/8 - 2 7/8	16.00		

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EQUIPMENT		RENTAL RATE HOUR	DAY	MONTH
FRONT END LOADER - Rubber Tired (Cont'd.)				
Current Models	**Struck Cap. cu. yd.**			
Chaseside LM 3,000 Euclid L30 Pettibone PM 440H Scoopmobile LD8A, LD8AD	3 - 3½	19.00		
Hough H 120 Michigan 275A Scoopmobile LD 12AD, LD20 Trojan 404	3 5/8 - 4½	21.00		
Michigan 375A Scoopmobile LD 20 AD	Over 4½	24.00		

CRAWLER TRACTORS

Bare	**Extras to be Added**	
Up to 30 D.B.H.P		4.25
"	Blade	.50
"	Winch	.25
"	Loader	.75
"	Backhoe	.75
"	Ripper (Cable)	.50
"	" (Hydraulic)	.60
31 to 40 D.B.H.P.		5.25
"	Blade	.50
"	Winch	.50
"	Loader	1.00
"	Backhoe	1.00
"	Ripper (Cable)	.55
"	" (Hydraulic)	.65
41 to 60 D.B.H.P.		7.00
"	Blade	.75
"	Winch	.75
"	Loader	1.50
"	Backhoe	1.50
"	Ripper (Cable)	.60
"	(Hydraulic)	.75

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EQUIPMENT		RENTAL RATE HOUR	DAY	MONTH
CRAWLER TRACTOR (Cont'd.)				
Bare	**Extras to be Added**			
61 to 80 D.B.H.P.		9.00		
"	Blade	1.25		
"	Winch	1.25		
"	Loader	2.00		
"	Backhoe	2.00		
"	Ripper (Cable)	.65		
"	" (Hydraulic)	.75		
81 to 100 D.B.H.P.		10.25		
"	Blade	1.50		
"	Winch	1.50		
"	Loader	2.50		
"	Backhoe	2.50		
"	Ripper (Cable)	.85		
"	" (Hydraulic)	1.00		
101 to 120 D.B.H.P.		11.75		
"	Blade	1.50		
"	Winch	1.50		
"	Loader	2.50		
"	Backhoe	2.50		
"	Ripper (Cable)	.85		
"	" (Hydraulic)	1.00		
121 to 140 D.B.H.P.		12.75		
"	Blade	1.75		
"	Winch	1.75		
"	Loader	3.00		
"	Backhoe	3.00		
"	Ripper (Cable)	.85		
"	" (Hydraulic)	1.00		
141 to 160 D.B.H.P.		14.50		
"	Blade	2.00		
"	Winch	2.00		
"	Loader	3.50		
"	Backhoe	3.50		
"	Ripper (Cable)	1.00		
"	" (Hydraulic)	1.25		
161 to 180 D.B.H.P.		16.00		
"	Blade	2.00		
"	Winch	2.00		
"	Loader	3.50		
"	Backhoe	3.50		
"	Ripper (Cable)	1.00		
"	" (Hydraulic)	1.25		

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EQUIPMENT		HOUR	RENTAL RATE DAY	MONTH
CRAWLER TRACTORS (Cont'd.)				
Bare	**Extras to be Added**			
181 to 220 D.B.H.P.			19.00	
"	Blade		2.15	
"	Winch		2.15	
"	Loader		3.60	
"	Backhoe		3.60	
"	Ripper (Cable)		1.25	
	" (Hydraulic)		1.50	
221 to 260 D.B.H.P.			21.75	
"	Blade		2.35	
"	Winch		2.35	
"	Loader		3.70	
"	Backhoe		3.70	
"	Ripper (Cable)		1.45	
	" (Hydraulic)		1.75	
D 9			23.50	
"	Blade		2.50	
"	Winch		2.50	
"	Loader		3.75	
"	Backhoe		3.75	
"	Ripper (Cable)		1.65	
	" (Hydraulic)		2.00	
TC 12			24.00	
"	Blade		3.50	
"	Winch		3.50	
"	Loader		4.75	
"	Backhoe		4.75	
"	Ripper (Cable)		3.00	
	" (Hydraulic)		3.50	
WATER TANKS (Equipment Only)				
Truck Mounted with Spray Bars and Pressure System, Truck to be paid for separately				
1,000 to 1,200 gallons			.45	
1,201 to 1,500 gallons			.60	
1,501 to 1,800 gallons			.70	
1,801 to 2,400 gallons			.80	
TRUCKS				
½ ton pickup, 2 wheel drive			3.60	
½ ton pickup, 4 wheel drive			3.75	
½ ton panel, 2 wheel drive			3.60	
½ ton panel, 4 wheel drive			3.75	

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EQUIPMENT	RENTAL RATE HOUR	DAY	MONTH
TRUCKS (Cont'd.)			
¾ ton pickup, 2 wheel drive	3.75		
¾ ton pickup, 4 wheel drive	4.00		
¾ ton panel, 2 wheel drive	3.75		
¾ ton panel, 4 wheel drive	4.00		
1 ton pickup, 2 wheel drive	3.95		
1 ton pickup, 4 wheel drive	4.20		
1 ton panel, 2 wheel drive	3.95		
1 ton panel, 4 wheel drive	4.20		
1½ ton stake body, or flat deck, 2 wheel drive	4.10		
1½ ton stake body, or flat deck, 4 wheel drive	4.35		
2 ton stake body, or flat deck, 2 wheel drive	4.65		
2 ton stake body, or flat deck, 4 wheel drive	5.00		
2 ton dump, 2 wheel drive	5.15		
3 ton dump, 2 wheel drive	5.50		
3 ton stake or flat deck	5.15		
4 ton dump	6.25		
5 ton dump	6.85		
4 ton stake or flat deck	5.50		
5 ton stake or flat deck	6.50		
6 ton dump	7.50		
8 ton dump	9.25		
10 ton dump	10.75		
12 ton dump	12.00		
14 ton dump	13.50		
16 ton dump	16.00		

If winch required on Truck add 5% to rate. This 5% to be taken to nearest multiple of 5 cents.

Heavy Duty - Off Highway Dump Trucks

6.5	c.y.	8-10 ton	15.00
10	c.y.	15-18 ton	19.00
15-18	c.y.	22-24 ton	25.00
20	c.y.	30 ton	30.00
26	c.y.	40 ton	37.50
33	c.y.	55 ton	65.00

LOW BOY TRAILER AND TRUCK (Float and Tractor)

Capacity

5 ton	6.85
10 ton	9.75
15 ton	12.50
20 ton	15.00
25 ton	17.50
30 ton	20.00
40 ton	23.85

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EQUIPMENT	RENTAL RATE HOUR	DAY	MONTH
ASPHALT DISTRIBUTOR TRUCK COMPLETE			
Under 1,000 gallon capacity	9.75		
1,000-1,250 gallon capacity	10.50		
1,251-1,850 gallon capacity	11.00		
Over 1,850 gallon capacity	12.25		
COMPACTION EQUIPMENT (Equipment Only)			
Wobbly 9 wheel	1.25		
Wobbly 13 wheel	2.00		
Wobbly 15 wheel	2.50		
Sheepsfoot per drum (Complete) (40" - 42")	.75		
Grid Roller 8-15 ton	4.15		
Pneumatic-tired Vibratory 14 ton or more	11.25		
Steel Wheel Vibratory 4'	2.50		
Steel Wheel Vibratory 4½'	3.00		
Steel Wheel Vibratory 5' Heavy Duty	5.35		
Compaction Equipment			
Pneumatic-tired, self-propelled (11 wheel)	6.50		
3 wheel steel 5 - 8 ton	5.50		
3 wheel steel 8 - 14 ton	6.50		
Tandem Steel 5 - 8 ton	5.50		
Tandem Steel 8 - 12 ton	6.50		
Tandem Steel 12 - 18 ton	8.00		
MISCELLANEOUS EQUIPMENT			
Equipment Only			
Arch Welder and Electrodes	6.00		
Gas Cutting Equipment Complete, including gas	8.25		
Pulvi-mixer	5.00		
Auger Attachment for Tractor	.50		
Chain Saw 18"	1.00		
Chain Saw 20" and over	1.15		
One-way Disc Tiller	1.00		
Heavy Duty Cultivator	1.00		
Mechanical Tamper, Single	.45		
Mechanical Tamper, Triplex	1.75		
TRUCKS (Equipment Only)			
Notwithstanding items 4 and 5 of the General Conditions, 12 hours constitutes a day for these trucks and if used for a day or any part of a day; a day will be paid for by the Department.			
½ ton pickup, 2 wheel drive		17.00	
½ ton pickup, 4 wheel drive		21.00	

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EQUIPMENT	RENTAL RATE HOUR	DAY	MONTH
TRUCKS (Equipment Only) (Cont'd.)			
½ ton panel , 2 wheel drive		17.00	
½ ton panel , 4 wheel drive		21.00	
¾ ton pickup, 2 wheel drive		18.50	
¾ ton pickup, 4 wheel drive		23.75	
¾ ton panel , 2 wheel drive		21.00	
¾ ton panel , 4 wheel drive		25.50	
1 ton pickup, 2 wheel drive		21.00	
1 ton pickup, 4 wheel drive		25.00	
1 ton panel , 2 wheel drive		23.75	
1 ton panel , 4 wheel drive		27.75	

If winch required on truck add 5% to above rate. This 5% to be taken to nearest multiple of five cents.

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STATEMENT OF EXPERIENCE

The tenderer shall state below his experience on similar work to that, which is included in this tender. The date and place of work as well as the agency for whom the work was undertaken shall be clearly stated. Tenderers who have contract work STILL UNDERWAY for the Department of Public Works need not furnish this information.

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EMPLOYMENT OF SUB-CONTRACTORS

It is (my, our) intention to employ the following sub-contractors whom (I, we) believe, after investigation to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (me, us).

	Name and Address of Sub-Contractors	Description of Work to be Done by Sub-Contractors
1.	None	
2.		
3.		
4.		

It is agreed that (I, we) shall not sub-contract with any other individual or organisation or for any other work without the consent of the Minister of Public Works.

POOLE ENGINEERING (1958) LTD.

Contractor's Signature J. E. Poole

DATED May 4th. 1962

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NOTICE TO TENDERER

THE FOLLOWING INFORMATION IS REQUIRED FOR DEPARTMENTAL USE

PLEASE PRINT CLEARLY

---

1 - LIMITED COMPANY

If this tender is made by a limited company, then the full name of the company should be accurately PRINTED in the space provided for that purpose and its corporate seal, if any, affixed where indicated.

NAME OF COMPANY	SEAL
POOLE ENGINEERING (1958) LTD.	Company Crest

2 - PARTNERSHIP

If this tender is made by a partnership, then the firm name or the business name should be accurately PRINTED in the space provided and the name or names of the partners should be PRINTED where indicated

NAME OF PARTNERSHIP	LIST OF PARTNERS

3 - SOLE PROPRIETORSHIP

If this tender is made by an individual carrying on business under a name other than his own, then his business name should be PRINTED in the space provided and the name of the sole proprietor should be printed where indicated. In the event that the sole proprietor carries on business in his own name, he should merely PRINT his name where indicated.

BUSINESS NAME	NAME OF SOLE PROPRIETOR

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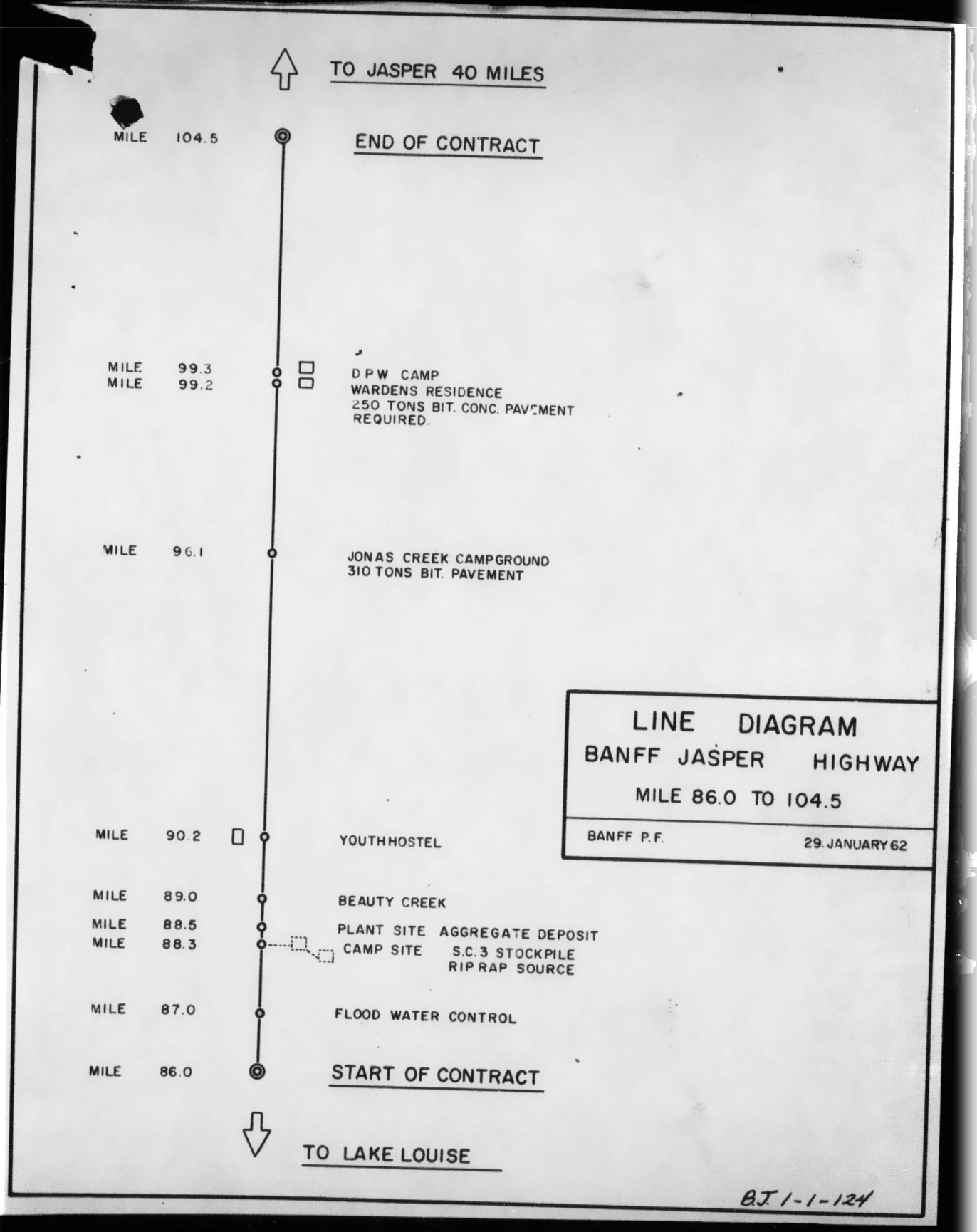

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This Indenture, MADE IN DUPLICATE

this day of

one thousand nine hundred and

BETWEEN

hereinafter called "the Contractor", of the first part;

And HER MAJESTY THE QUEEN, in the right of Canada represented by the Minister of Public Works of Canada, of the second part.

WHEREAS the party of the first part for the consideration hereinafter mentioned has agreed with the party of the second part to do, furnish and perform the works, materials, matters and things required to be done, furnished and performed, in the manner hereinafter described, in connection with the following work or works namely:— **Work to be done.**

Now this indenture witnesseth that the said parties hereto hereby covenant, promise and agree each with the other, as follows:—

1. In this contract the following words shall, unless the context requires a different meaning, have the following meanings, respectively, that is to say:— **Interpretation.**

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"Contractor" or other words relative thereto, or of like import, shall mean and include, irrespective of sex or number, the party or parties of the first part as above designated or described, jointly and severally, and their and each of their executors, administrators, curators, successors, or assigns.

"Her Majesty" or other words relative thereto, or of like import, shall mean and include the reigning Sovereign or the successors or assigns of the Sovereign.

"Minister" shall mean the person holding the position or acting in the capacity of the Minister of Public Works and shall include the person holding the position or acting in the capacity of the Deputy Minister of Public Works.

"Engineer" shall mean the Chief Engineer or Chief Architect or Director of Property and Building Management, as the case may be, of the Department of Public Works of Canada, having control over the work, and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer or Chief Architect or Director of Property and Building Management, and all instructions or directions, or certificates given, or decisions made by any one acting for the Chief Engineer or the Chief Architect or the Director of Property and Building Management shall be subject to the approval of the Chief Engineer or the Chief Architect or the Director of Property and Building Management and may be cancelled, altered, modified and changed as the Chief Engineer or Chief Architect or Director of Property and Building Management may see fit: Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer or the Chief Architect or Director of Property and Building Management in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or the Chief Architect or Director of Property and Building Management or by any one acting for such Chief Engineer or Chief Architect or Director of Property and Building Management shall be subject to the approval of or modification or cancellation by the Minister of the Department of Public works of Canada.

"Work or works" shall mean the whole of the work, materials, matters and things required to be done, furnished and performed by the Contractor, as above described, by this contract.

2. All the covenants and agreements in this contract binding on and all the provisions in this contract inuring to the benefit of the Contractor shall, respectively, be binding on and inure to the benefit of the executors, administrators, curators, successors and assigns of the Contractor and all the covenants and agreements in this contract binding upon and all the provisions in this contract inuring to the benefit of Her Majesty shall, respectively, be binding upon and inure to the benefit of the successors and assigns of Her Majesty.

Provision by contractor for completion of work.

3. The Contractor shall at his own expense (except as in this contract otherwise specifically provided) provide all and every kind of labour, superintendence, services, tools, implements, machinery, plant, materials, articles and things necessary for the due execution and completion of all and every the works set out or referred to in the specification hereto annexed, and in any special specification referred to therein and set out or referred to in the plans and drawings prepared and to be prepared for the purposes of the work, and shall forthwith commence the works and diligently execute and fully complete the respective portions thereof, and shall deliver the works complete in every particular to Her Majesty on or before the date or dates following, viz:—

Time for completion.

Time shall be deemed to be material and of the essence of this contract.

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MUNICIPAL PERMITS

3A (1) The contractor shall within one month from the date of this contract offer to the municipal authority an amount equal to all fees and charges which would be payable to the municipal authority in respect to building permits if the work were being constructed for a person other than Her Majesty.

(2) The contractor shall notify the Minister, within 10 days of the offer, the amount of the offer and whether or not the municipal authority accepted it.

(3) If the municipal authority did not accept the offer the contractor shall deliver to the Minister within the time limited by subsection (2) an amount equal to the offer.

(4) For the purposes of this section "municipal authority" means an authority which would have jurisdiction respecting permission to construct the work if the owner of the work were not Her Majesty.

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Quality.

4. The works shall be constructed by the Contractor, and under his personal supervision, of the best materials of their several kinds and finished in the best and most workmanlike manner and in the manner required by and in strict conformity with this contract, the said specifications and special specifications, and the plans and drawings relating thereto, and the working or detail drawings which may from time to time be furnished (which said specifications, and special specifications, plans and drawings are hereby declared to be part of this contract), and to the complete satisfaction of the Engineer.

Plans and specifications part of contract.

Execution of work directed by Engineer.

5. The work shall be commenced, carried on and prosecuted to completion by the Contractor in all its several parts in such manner and at such points and places as the Engineer shall from time to time direct, and to his satisfaction, but always according to the provisions of this contract, and if no direction is given by the Engineer, in a careful, prompt, and workmanlike manner.

Construction of contract.

6. The several parts of this contract shall be taken together to explain each other and to make the whole consistent; and, if it is found that anything has been omitted or misstated which is necessary for the proper performance or completion of any part of the work the Contractor shall, at his own expense, execute the same as though it had been inserted and propertly described, and the correction of any such omission or error shall not be deemed to be an addition to or deviation from the works herein described.

Extra work.

How treated.

Engineer's order and decision.

7. The Engineer may, in writing, at any time before the final acceptance of the works, order any additional work or materials or things not covered by the contract to be done or provided, or the whole or any portion of the works to be dispensed with, or any changes to be made which he may deem expedient in or in respect of the works hereby contracted for, or the plans, dimensions, character, quantity, quality, description, location or position of the works or any portion or portions thereof or in any materials or things connected therewith or used or intended to be used therein or in any other thing connected therewith or used or intended to be used therein or in any other thing connected with the works, whether or not the effect of such orders is to increase or diminish the work to be done or the materials or things to be provided or the cost of doing or providing the same, and the Engineer may in such order, or from time to time as he may see fit, specify the time or times within which each order shall, in whole or in part, be complied with. The Contractor shall comply with every such order of the Engineer. The decision of the Engineer as to whether the compliance with such order increases or diminishes the work to be done or the materials or things to be provided, or the cost of doing or providing the same and as to the amount to be paid or deducted, as the case may be, in respect thereof, shall be final. As a condition precedent to the right of the Contractor to payment in respect of any such order of the Engineer the Contractor shall obtain and produce the order, in writing, of the Engineer and a certificate in writing, of the Engineer showing compliance with such order and fixing the amount to be paid or deducted in respect thereof.

Covenants herein apply to extra work.

8. All the clauses of this contract shall apply to any changes, additions, deviations, or additional work, so ordered by the Engineer, in like manner and to the same extent as to the works contracted for.

No claim for anticipated profits.

9. If any change or deviation in or omission from the works be made by which the amount of work to be done shall be decreased, or if the whole or any portion of the works be dispensed with, no compensation shall be claimable by the Contractor for any loss of anticipated profits in respect thereof.

Engineer sole judge of work and materials.

10. The Engineer shall be the sole judge of the work and material, in respect of both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intention of this contract and as to the meaning or interpretations of the plans, drawings and specifications, shall be final, and no work under this contract shall be deemed to have been performed nor materials nor things provided so as to entitle the Contractor to payment therefor unless and until the Engineer is satisfied therewith, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor.

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Work subject to control of Engineer.

11. The work shall, in every particular, be under and subject to the control and supervision of the Engineer; and all orders, directions or instructions at any time given by the Engineer with respect thereto, or concerning the conduct thereof, shall by the Contractor promptly and efficiently be obeyed, performed and complied with to the satisfaction of the Engineer.

Descriptions of work. What items include.

12. The description or descriptions of the work and materials or any portion or portions of the works set out or referred to in or covered by any item or items for which a price or prices are given in this contract include not only the particular kinds of materials mentioned in the said item or items but also all and every kind of work, labour, tools, plant, materials, equipment, articles and things, whatsoever necessary for the full execution, completion and delivery, ready for use, of such respective portions of the works, in accordance with the plans, drawings and specifications, to the satisfaction of the Engineer. The said price or prices shall cover not only the particular descriptions of work and materials mentioned herein or in the specifications or plans but also all and every kind of work, labour, tools, plant, material, equipment, articles and things whatsoever necessary for the full execution, completion and delivery, ready for use, of the entire work as herein contracted for, to the satisfaction of the Engineer. In case of dispute as to what work, labour, tools, plant, material, equipment, articles and things are so included or covered the decision of the Engineer shall be final and conclusive with respect thereto.

Price, what it covers.

Foreman of the works.

13. A competent foreman shall be kept on the ground by the Contractor during all working hours to receive the orders of the Engineer. Such foreman shall be considered as the lawful representative of the Contractor and shall have full power to carry out all requisitions and instructions of the said Engineer, but this clause shall not relieve the Contractor from the duty of personally superintending the work.

Defective work or material.

14. Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twenty-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance by the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor.

Engineer may order removal or re-execution.

Non-compliance by Contractor.

Contractor's machinery, plant, etc.

Becomes property of H.M. until completion of work.

15. All machinery, tools, plants, materials, equipment, articles and things whatsoever provided by the Contractor or by the Engineer under the provisions of sections 14 and 16 for the works, and not rejected under the provisions of sections 14, shall from the time of their being so provided become and, until the final completion of the said work, be the property of Her Majesty for the purposes of the said works, and the same shall on no account be taken away, used, or disposed of, except for the purposes of the said works, without the consent in writing of the Engineer. Her Majesty shall not, however, be answerable for any loss or damage whatsoever which may at any time happen to such machinery, tools, plants, materials, equipment, articles or things. Upon the completion of the works and upon payment by the Contractor of all such moneys, loss, costs and damages, if any, as shall be due from the Contractor to Her Majesty, or chargeable against the Contractor under this contract, such of the said machinery, tools, plants, materials, equipment, articles and things as shall not have been used and converted in the works or disposed of by Her Majesty under powers conferred in this contract, shall be delivered up to the Contractor in such condition as they may then be in.

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16. If the Engineer shall at any time consider the number of workmen, horses, quantity of machinery, tools, plant or equipment, or of proper materials, articles or things, employed or provided by the Contractor on or for the said works to be insufficient for the advancement of such works or any part thereof towards completion within the time limited in respect thereof, or that the works are, or some part thereof, is not being carried on with due diligence, then the Engineer may, in writing, order the Contractor to employ or provide such additional workmen, horses, machinery, tools, plants, equipment, materials, articles and things as the Engineer may think necessary, and in case the Contractor shall not within three days, or such other longer period as may be fixed by any such order, in all respects comply therewith the Engineer may employ and provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as he may think proper and may pay such additional workmen such wages, and for such additional horses, machinery, tools, plant, equipment, materials, articles and things, any such prices as he may think proper, and all such amounts so paid shall, on demand, be repaid to Her Majesty by the Contractor, or the same may be retained or deducted from any sum that may then or thereafter be or become due from Her Majesty to the Contractor. The Contractor shall employ the additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things so provided and employed by the Engineer in the diligent advancement of the works; the workmen and horses so provided shall, however, be thereafter subject to discharge by the Contractor, but only with the consent and approval of the Engineer.

Insufficient workmen, plant, etc.

Work not proceeding with due diligence.

Engineer may provide additional equipment, etc., at Contractor's expense.

Repayment by Contractor.

17. Her Majesty may, at any time, and without payment therefor, send and employ on, in and about the works other contractors and workmen, with such horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may deem necessary to do any work not comprised in this contract, and the Contractor shall afford to them all reasonable facilities, to the satisfaction of the Engineer, for doing such work, the work of the Contractor being interfered with as little as the Engineer may deem practicable.

Work not comprised in contract.

The taking of possession of the whole or any part of the works of the Contractor for such purpose shall not be deemed an acceptance by or on behalf of Her Majesty of the whole or any portion of the works comprised in this contract.

18. That whenever and so often as it may be necessary for the Contractor to co-operate with other contractors on this work, the Contractor shall diligently and under the directions of the Engineer perform all such works as shall be requisite and proper on the part of the Contractor herein for such co-operation and for securing and placing in proper position the portion necessary herein and hereby contracted to be constructed and erected for the proposed work in a proper and secure mode, and to prevent the possibility of any accident therefrom, without any extra charge therefor, and shall be bound in all things to conform to the direction of the Minister or the Engineer touching such co-operation and work.

19. In case the Contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the Engineer, the Engineer may give a general notice to the Contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the Engineer to the Contractor or should the Contractor make default in the completion of the works, or any portion thereof within the time limited with respect thereto in or under this contract, or should the Contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the Contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the Contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the Contractor of the works, and no objection or claim shall be raised or made by the Contractor by reason or on account of the ultimate cost of

Default or delay by Contractor.

Notice by Engineer.

Minister may take work out of Contractor's hands.

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the works so taken over for any reason proving greater than, in the opinion of the Contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired, possessed or provided by the Contractor for the purposes of the work, or by the Engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the Contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the Contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Damages arising from non-completion.

20. Whenever in this contract power or authority is given to Her Majesty, the Minister, the Engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the Contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the Contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to further proceed with the execution of the works.

Power to take action on default of Contractor.

21. The Contract shall be at the risk of the Contractor who shall bear all loss or damage whatsoever, from whatsoever cause arising, which may occur to the works or any part thereof, until the same be finally accepted by the Minister, and if any such loss or damage occur before such final acceptance the Contractor shall immediately, at his own expense, repair, restore and re-execute the work so damaged so that the whole works, or the respective portions thereof, shall be completed within the time limited for completion thereof and any delay occasioned by the Contractor to the other contractors on the work or any interference by the Contractor with the operation which may be a cause of delay or damage shall be rectified at the cost and the claim for damage or delay (if any) shall be at the charge of the Contractor.

Damages to work in progress, Contractor assumes risk.

22. The Contractor shall, during the period of one year after the date of the final certificate of the completion of the work, at the sole cost of the Contractor, and to the satisfaction of the Engineer, rectify any defects in the works caused by faulty workmanship or materials of which he shall have received notice from the Engineer. The Contractor shall be responsible for and shall reimburse Her Majesty with respect to any loss or damage sustained by Her Majesty and shall save harmless and indemnify Her Majesty from and against all claims, demands or actions based upon or arising out of the negligence of the Contractor, his officers, servants or agents during the rectification of the said defects. This clause shall not in anyway affect the rights of Her Majesty under any other agreement, deed or bond pursuant to which the works or any portion thereof are guaranteed free of defects or are to be repaired or replaced by the Contractor or any other person.

23. The Contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever, occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the Contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of

Damages to persons or property.

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any such damage, injury or infringement, and to prevent the interruption of or any danger or menace to the traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the Contractor shall indemnify and save harmless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable to any such damage, injury or infringement.

Contractor assumes liabilities.

24. The Contractor shall, upon the completion of the works, remove all temporary structures and clear away all rubbish and surplus and waste materials remaining on or about the works and place the premises in a neat and tidy condition, satisfactory to the Engineer.

Contractor to clean premises on completion.

25. The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions.

Precautions as to fire.

26. The Contractor shall insure buildings, structures and materials in accordance with the provisions of the specification in respect thereto.

27. The Contractor shall not assign or sublet this contract without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any moneys due to any sub-contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for.

Assignments.

28. Pursuant to the provisions of the Statute in such case made and provided, no Member of the House of Commons of Canada shall be admitted to any share or part of this contract or to any benefit to arise therefrom.

Members of H. of C. not to benefit.

29. The Contractor shall not allow any public ceremony in connection with the work without having previously obtained the written permission of the Minister.

No public ceremony.

30. No work whatever shall at any time or place be carried on during Sunday and the Contractor shall take all necessary steps for preventing any foreman or agent or men from working or employing others on that day.

No work on Sunday.

31. The Contractor shall promptly pay for all labour, services and materials in or about the construction of the works, and all payments for such purposes shall be made by the Contractor at least as often as payments are made to the Contractor by Her Majesty under this contract, and in the event of failure by the Contractor at any time so to do, or if any sum due for labour of any foreman or workman, or for hire of horses, teams or carts upon or in respect of the works or any part thereof remains in arrear or unpaid, or if there be at any time found to exist any claims against the Contractor, or any sub-contractor, for labour, teams, tools, plant, equipment, materials, articles or things employed, hired or supplied upon or for the works or any part thereof, or if the Minister has reason to believe that any such payments, sums or claims will not be promptly made or paid, the Minister may, in addition to or in lieu of exercising any powers confered by the Fair Wages Clause, at his option, retain out of any moneys due or to become due to the Contractor from Her Majesty such amount or amounts as the Minister may deem sufficient to satisfy the same, or pay the Contractor the moneys due him in instalments, giving him from time to time such sums as the Minister or the Engineer deems sufficient to meet such payments, sums or claims or any of them, and withholding the balance until the same are satisfied, or may pay

Payment by Contractor for labour, etc.

Power to retain money on default of Contractor paying for labour, etc.

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all or any of such payments, sums or claims, rendering to the Contractor the balance due him after deducting the payments so made. The Contractor shall be stopped from denying the accuracy and correctness of any and all payments so made by the Minister.

Books, etc., of Contractor open for inspection.

The Contractor's pay-rolls, time-books, books of account, invoices and statements shall at all times be open for inspection and extract by the Engineer and any authorized representative of the Minister, or either of them, who shall be assisted in every possible way by the Contractor, to enable the Engineer and such representative to ascertain, as far as possible, the exact payment, sums or claims so due and remaining unpaid by the Contractor.

Work to be free from all encumbrances.

32. Before making any payment on any progress or final estimate the Minister may require the Contractor to satisfy the Engineer, or other authorized representative of Her Majesty, that all work performed and material supplied and all structures built for which payment is being made are free and clear from all lawful claims or liens under any law of labour, workmanship, materials or otherwise; the Contractor shall indemnify and hold harmless Her Majesty from and against any and all kinds of claims or liens accurring from labour and services performed and material furnished, or otherwise, and any of the same in or about the works.

Sanitation.

33. The Contractor shall comply with and the works shall be carried on subject to all regulations made by any lawful authority and applicable to said works and all orders given by the Engineer with respect to sanitation or preservation of health on the work. The Contractor shall, at his own expense make adequate arrangements, to the satisfaction of the Engineer, for the medical and sanitary supervision of all his employees.

Engineer's stakes or other marks not to be removed.

34. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes, buoys and other marks placed on or about the said works by the Engineer or his assistants and shall furnish the necessary assistance to correct or replace any stake, buoy or mark which through any cause may have been removed or destroyed.

Notice; how given.

35. Any notice, order, direction or other communication given to the Contractor under any of the provisions of this contract shall be sufficiently given if delivered to the Contractor personally, or to his foreman, or left at the Contractor's office, or mailed at any post office to the Contractor or foreman, addressed to the address mentioned in this contract, or to the Contractor's last known place of business or residence. Every such notice, order, direction or communication shall be sufficient which expresses in general language and without detail the matters required or communicated, or which follows the general language of the section or sections of this contract under which it is given, and no objection shall be taken to the form thereof.

Payment by Her Majesty.

36. Her Majesty, in consideration of the premises, and subject to the performance and observation on the part of the Contractor of all the covenants, provisos and conditions in this contract contained, will pay to the Contractor for and in respect of the works in manner hereinafter stated, viz:—

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Payment for additional work.

And for any work or additional work done or materials or things provided, under the written orders of the Engineer, for which no price or prices are named herein, Her Majesty, in consideration and subject as aforesaid, will pay to the Contractor the actual and reasonable cost as determined by the Engineer of such work, materials and things, with an additional ten per cent thereon for the use of tools, Contractor's plant, superintendence and profits.

Approximate quantities.

37. The quantities (if any) given are approximate only and no claim shall be made by the Contractor against Her Majesty on account of any excess or deficiency, absolute or relative, in the same.

Prices to be accepted as full compensation.

38. The said price or prices shall be accepted by the Contractor as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not included in the items hereinabove mentioned, and also for all loss or damage arising out of the nature of the works or the action of the weather, tides, elements, or any unforseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the works, and for all expenses incurred by or in connection with the works, and for all works, and for all expenses incurred by or in consequence of any delay or suspension or discontinuance of the work as herein specified, and for well and faithfully completing the works as in this contract provided.

Progress payments.

Ninety per cent.

Ten per cent retained until completed.

39. Cash payments equal to about ninety per cent of the value of the work done estimated from progress measurements and computed at the price or prices agreed upon or determined under the provisions of this contract will be made to the Contractor monthly, if practicable, on the written certificate of the Engineer stating that the work for or on account of which the certificate is granted has been done, and stating the value of such work completed as above mentioned; and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent or any part thereof. The remaining ten per cent shall be retained till the final completion of the whole work to the satisfaction of the Engineer and will be paid within two months after such completion. The written certificate of the said Engineer certifying to the final completion of the said works to his satisfaction shall be a condition precedent to the right of the Contractor to receive or to be paid the remaining ten per cent or any part thereof.

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Engineer in certifying values for progress payments may disregard price-list.

40. Provided always that where in the opinion of the Engineer the work done is not sufficiently finished or is not of sufficient value to justify payment at the price or prices agreed upon or determined under the provisions of this contract, the Engineer may, for the purpose of such payment, disregard the price or prices agreed upon or determined and may estimate the proportionate value payable in respect of such work and issue a certificate accordingly; in which case the Contractor shall only be entitled to receive ninety per cent of such estimated proportionate value as stated in such certificate and shall not be paid the ninety per cent of the price or prices agreed upon or determined under the provisions of this contract until such time as the Engineer, by reason of the performance of additional work, shall certify that the Contractor is entitled thereto.

Full prices when obtainable. Claims under progress certificate.

41. It is intended that every allowance to which the Contractor is fairly entitled will be embraced in the Engineer's monthly certificate, but should the Contractor at any time have claims of any description which he considers are not included in the progress certificates such claims must be made in writing to the Engineer within thirty days after the date of the delivery to him of the certificate from which he considers the items of such claims to have been omitted, but in no case beyond the period of sixty days from the date of the practical completion of that portion of the work to which such claims apply. And in default of the presentation of such claims within the time or times so limited the Minister may treat such claims as absolutely barred.

Limitation of time for presentation of claims.

Claims evidence of accuracy.

42. The Contractor in presenting claims of the kind referred to in the last preceding clause must accompany them with satisfactory evidence of their accuracy and the reason why he thinks they should be allowed.

Progress measurements and certificates not binding.

43. The progress measurements and progress certificates shall not in any respect be taken as binding upon the Engineer, or as final measurements or as fixing final amounts; they are to be subject to the revision of the Engineer in making up his final certificate and they shall not in any respect be taken as an acceptance of the work or as a release of the Contractor from responsibility in respect thereof.

Delays.

44. The Contractor shall not have nor make any claim or demand nor bring any action or suit or petition against Her Majesty for any damage which may be sustained by reason of any delay or delays from whatever cause arising in the progress of the work.

Contract is express contract.

45. It is distinctly declared that no implied contract of any kind whatsoever by or on behalf of Her Majesty shall arise or be implied from anything in this contract contained, or from any position or situation of the parties at any time, it being clearly understood and agreed that the express contracts, covenants and agreements herein contained and made by Her Majesty are and shall be the only contracts, covenants and agreements upon which any rights against Her Majesty are to be founded.

Parliamentary appropriations exhausted.

46. Should the amount voted by Parliament and applicable towards payment for the work hereby contracted for be at any time expended previous to the completion of the works the Minister or the Engineer may give the Contractor written notice to that effect. And, upon receiving such notice, the Contractor may, if he thinks fit, stop the work, but in any case shall not be entitled to any payment for work done beyond the amount voted and applicable as aforesaid unless and until the necessary funds shall have been voted by Parliament in that behalf. And in no event shall the Contractor have or make any claim on Her Majesty for any damages or compensation by reason of the suspension of payment, or by reason of any delay or loss caused by the stoppage of work. And in the event of the Contractor electing to proceed or proceeding with such work after such notice and before additional funds are voted, no action of the Engineer or of any other person on behalf of Her Majesty in giving orders, directions or instructions or otherwise acting with respect to such work shall be taken or considered as in any manner improving the rights of the Contractor or as waiving in any particular any of the provisions of this section.

Contractor proceeds at own risk.

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47. The Minister may, from time to time and for such period as he may deem expedient, delay or suspend, in whole or in part operations under this contract, either upon the whole of the works or at any particular point or points. Should any such delay or suspension, or the stoppage of the works under the last preceding clause of this contract, or should any delay caused by any circumstances which, in the opinion of the Engineer is beyond the control of or not the fault of the Contractor, unreasonably limit the time for the completion of the works within the time specified by this contract, the Minister, as often as the case occurs, shall allow such additional time as to him may seem sufficient in the extension of such time for completion; but no such delay, suspension or stoppage shall vitiate or void this contract or any part thereof, or any security or obligation for the performance thereof, nor shall the Contractor be entitled to make any claim for damages by reason thereof. Upon the termination of such delay, suspension or stoppage, or upon the removal of the cause thereof, or upon the Contractor receiving notice from the Minister or Engineer requiring him to resume the work, he shall at once resume operations and diligently carry on the same.

Minister may suspend work.

No compensation to contractor for delay.

48. The Contractor shall not bring nor permit to be brought anywhere on or, as far as the Contractor can prevent the same, near the works any spirituous or intoxicating liquor; and if any person employed on the works be in the opinion of the Engineer intemperate, disorderly, incompetent, wilfully negligent or dishonest in the performance of his duties, he shall on the direction of the Engineer be forthwith discharged and the Contractor shall not employ or permit to remain on the work any person who shall have been discharged for any or all of said causes.

Liquors.

49. All orders, directions, instructions or notices to be given or issued by the Engineer under and pursuant to any section in this contract may be given or issued by a duly and expressly authorized agent or agents of the Engineer.

Orders by Engineer's agent.

50. The decision of the Minister as to what additional time, if any, beyond the time specified for the completion of the works may be allowed to the Contractor for such completion and as to the reasonableness or sufficiency thereof shall be final.

Extension of time.

If any additional time for such completion is so allowed the Contractor shall, if and to such extent as the Minister requires, pay to Her Majesty all salaries and wages paid by Her Majesty to the person or persons superintending the work during the additional time so allowed and all other costs, expenses and damages incurred by Her Majesty as a result of the allowance of such additional time for completion. Any extension of time that may be granted to the Contractor shall not affect any rights of Her Majesty under this contract, and no assent thereto on the part of the Contractor shall be necessary.

51. The Contractor hereby and herewith deposits with and delivers to Her Majesty as security for the due fulfilment of his contract the sum of

Security deposit.

upon the express understanding that the same shall be held and retained by Her Majesty as security for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this contract contained, on the part of the Contractor to be observed, performed and complied with. Provided always and it is understood and agreed that the Contractor assumes the risk and must bear any loss in respect of the security deposited as aforesaid occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid.

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52. If at any time hereafter the said Contractor should make default under the said contract, or if Her Majesty acting under the powers reserved in the said contract shall determine that the said works or any portion thereof remaining to be done should be taken out of the hands of the Contractor and be completed in any other manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay any subcontractors or any salaries or wages or any accounts for materials due by the said Contractor for work done or materials supplied by any person in connection with the said work, Her Majesty may, in either case, dispose of said security and of the interest which may have accrued thereon for the carrying out of the construction and completion of the work of the contract, or for paying any subcontractors or salaries or wages for work done, or any accounts for materials supplied for the said works, that may be left unpaid by the said Contractor.

Repayment of security deposit.

53. Upon the due and faithful performance, observance and fulfilment by the Contractor of all and every the terms, provisions, covenants, agreements, conditions and reservations hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Contractor shall be entitled to be repaid or to receive again the money so deposited, together with so much interest upon such money as Her Majesty may, during her retention or possession of the same actually receive by reason thereof; it being, however, understood that Her Majesty shall not be under any obligation to cause the said money to be placed at interest, or to earn, or to endeavour to earn, interest thereon.

Interest on security deposit.

54. In the event of any breach, default, or non-performance being made or suffered by the Contractor in or in respect of any of the terms or conditions, covenants, provisos, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said money and interest thereon so delivered to or deposited with Her Majesty, or by Her received in respect thereof shall, by the Contractor, be forfeited absolutely to Her Majesty.

Forfeit of security.

55. No condoning, excusing, or overlooking by Her Majesty or any person acting on her behalf, on previous occasions of breaches or defaults similar to that for which any action is taken or power exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken to operate as a waiver of any provision of this contract, nor to defeat or prejudice in any way the right of Her Majesty hereunder.

Waiver negatived. Contractor to investigate every condition of work before execution of contract.

56. This contract is made and entered into between the Contractor and Her Majesty on the distinct understanding that the Contractor has, before execution, investigated and satisfied himself of everything and of every condition affecting the works to be executed and the labour and material to be provided, and that the execution of this contract by the Contractor is founded and based upon his own examination, knowledge, information and judgment, and not upon any statement, representation, or information made or given, or upon any information derived from any quantities, dimensions, tests, specifications, plans, maps or profiles, given or furnished by Her Majesty or any of Her officers, employees or agents, and that any such statement, representation or information, if so made, given or furnished, was made, given or furnished merely for the general information of bidders and is not anywise warranted or guaranteed by or on behalf of Her Majesty; and that no extra allowance will be made to the Contractor by Her Majesty and the Contractor will make no claim against Her Majesty for any loss or damage sustained in consequence of or by reason of any such statement, representation or information being incorrect or inaccurate, or on account of unforseen difficulties of any kind.

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57. In the event of any inconsistency between the provisions of this contract and the provisions of the specifications forming part hereof the provisions of the contract shall prevail. Inconsistency between contract and specification.

IN WITNESS whereof the respective parties hereto have executed these presents on the day, month and year first above written.

Signed, sealed and delivered by the Contractor in the presence of:

.....
Deputy Minister of Public Works.

.....
Secretary—Dept. of Public Works.

The Queen's Printer and Controller of Stationery, Ottawa, 1960

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No. .....

Date 19

DEPT. OF PUBLIC WORKS OF CANADA

AGREEMENT

AND

Her Majesty the Queen, represented by the Minister of Public Works of Canada.

For

Amount:

Date of Completion:

File No.

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000938

DEPARTMENT OF LABOUR

Our Ref. PWD 14594 OTTAWA, CANADA

LABOUR CONDITIONS (A-1)

The following schedule of labour conditions is applicable to the work of bituminous concrete pavement, mile 86.0 to mile 104.5
Banff-Jasper Highway
AP Jasper National Park, Alta.

to be undertaken for the Department of Public Works

Classifications, Wages and Hours

(1) (a) All persons in the employ of the contractor, subcontractor, or any person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour. Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week.

(b) Application for permission to exceed 8 hours per day and 44 hours per week on this contract shall be made to the Minister of the Contracting Department for reference to the Minister of Labour.

(c) Every person in the employ of the contractor or subcontractor shall, except where the Minister of Labour otherwise orders, be paid for hours worked in excess of 44 hours per week at a rate of not less than one and one-half times the wages required to be paid under this contract; and where the Minister or Labour so orders, be paid at the same overtime rate for hours worked in excess of 8 hours per day.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Asphalt tampers, smoothers & spreaders	$ 1.60
Carpenters & joiners	2.45
Compressor operators	1.70
Drill runners	1.65
Firemen	1.70
Grader operators	2.10
Labourers	1.60
Oilers (construction equipment)	1.70
Operators (draglines, cranes, shovels & pile drivers)	2.40
Powdermen	1.65
Pump operators	1.70
Roller operators	1.75
Tractor operators (large)	2.10
Tractor operators (small)	1.75
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	2.05
Tractor operators (farm)	1.70
Truck Driver (Heavy duty)	1.70

(See next page)

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Labour Conditions (A-1)

Minister of Labour to Determine Proper Classifications of Labour

(2) Where there are special circumstances, which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision.

Schedule to be Posted

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

Contractor to Keep Records Which are to be Open for Inspection

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

Departmental Requirements Before Payments Made to Contractor

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

Authority to Pay Wages in Event of Default by Contractor

(6) All cases of default in the payment of wages to employees by the contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

Conditions of Subcontracting

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contract shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

Workmen to be Residents of Canada

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

Non-Discrimination in Hiring and Employment of Labour

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DIVISION 1

GENERAL CONDITIONS OF THE CONTRACT

Section

1 Definitions and Terms

2 Scope of Work

3 Control of Work

4 Control of Materials

5 Legal Relations and Responsibility to Public

6 Prosecution and Progress

7 Measurement and Payment

8 Wages and Conditions of Employment

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GENERAL CONDITIONS OF THE CONTRACT

(These Conditions are Supplemental to the Indenture)

SECTION 1. DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.S.H.O.	American Association of State Highway Officials
A.S.T.M.	American Society for Testing Materials
C.S.A.	Canadian Standards Association
C.G.S.B.	Canadian Government Specifications Board

Bridge - A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the centre of roadway of more than 20 feet between under-copings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening.

Length - The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end of the bridge floor; but in no case less than the total clear opening of the structure.

Roadway Width - The clear width measured at right angles to the longitudinal centreline of the bridge between the bottom of curbs or guard timbers or in the case of multiple height curbs, between the bottoms of the lower risers.

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

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Section 1 (Cont'd)

Contract- Time or Completion Date - The number of working or calendar days shown in the proposal indicating the time allowed for the completion of the work contemplated in the contract.

In case a calendar date of completion is shown in the proposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

Culvert - Any structure not classified as a bridge which provides an opening under any roadway.

Density - Shall mean the maximum dry density in pounds per cubic foot as determined by the standard method of test for the compaction of soils A.A.S.H.O. designation T.99-49.

Employee- Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control of or receives compensation from the Contractor or Subcontractor.

Engineer- Shall mean the Chief Engineer of the Development Engineering Branch of the Department of Public Works of Canada, having control over the work and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any one acting for the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Inspector- The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified in the tender form.

Profile Grade - Line representing the surface elevation as shown on the Standard Plan along the longitudinal centreline of the proposed wearing surface. Profile grade means either elevation or gradient of such trace according to the context.

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Right of Way - (a) The land secured and reserved to the public for highway purposes.

(b) The lines shown on the plan (or as indicated by the Engineer) roughly parallel to the centreline of the highway showing the area reserved for highway purposes.

Roadway - The portion of the right-of-way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structures.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Substructure - All of that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and footings of rigid frames, except as noted above for substructure.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

Working Drawings - Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2 - SCOPE OF WORK

1.2.1 Intent of Contract

See Indenture Article 8 and 12.

The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract.

1.2.2 Special Work

Should any construction or conditions which are not covered by the plans or these specifications be anticipated, special provisions for such work will be prepared by the Engineer, stated on or attached

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1.2.2 Special Work (Cont'd)

to the tender form, and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications or supplements thereto, the special provisions shall govern.

1.2.3 Alterations of Plans or of Character of Work and Extra Work

See Indenture Article 7, 8, 9 and 10

1.2.4 Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

1.2.5 Provision for Traffic

(1) Unless otherwise provided, the Contractor shall be responsible for the provision of a safe road for traffic between the extreme limits of his contract and for the maintenance of this road to the satisfaction of the Engineer.

(2) The Contractor shall at all times carry on the work in a manner that will create the least interference with traffic, consistent with the faithful performance of the work. He shall not close any portion of the existing road nor divert traffic outside the limits of the right-of-way except by written order of the Engineer.

(3) The Contractor shall construct and maintain at his own expense a safe road for traffic in every case where traffic is maintained within the limits of the right-of-way or carried on detours, deemed to be a part of the work under this contract. He shall make provisions, acceptable to the Engineer, for the handling of traffic.

(4) The Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the contract.

See also Article 1.6.8 of these Specifications "Barricades and Warning Signs and Project Sign Boards".

1.2.6 Temporary Structures

(1) In bridge contracts, the Contractor will not be required to construct or maintain temporary structures unless the construction and maintenance of such structures are stipulated in the contract or ordered as extra work by the Engineer.

(2) Plans for temporary structures and procedure for moving existing structures to temporary location, when not provided by the Engineer, shall be subject to his approval.

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1.2.7 Removal and Disposal of Structures and Obstructions

(1) All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the Contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, which the Engineer may order salvaged, shall be carefully removed and shall become the property of the Department.

(2) Payment for this work shall be made under the pay items identified for such work in the tender, except that when the work is of minor consequence, it shall be considered as incidental to and included in other items.

1.2.8 Rights In and Use of Materials Found on the Work

(1) The Contractor, with the approval of the Engineer, may use in the proposed construction such stone, gravel, sand, or other material as may be found in the excavation. The Contractor will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material, all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills, approaches or otherwise. No charge for the materials so used will be made against the Contractor. The Contractor shall not excavate or remove any material from within the right-of-way which is not within the excavation, as indicated by the slope and grade lines, without written authorization from the Engineer.

(2) Unless otherwise provided, the material from any existing old structure may be used temporarily by the Contractor in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the Engineer.

1.2.9 Final Cleaning Up

See Indenture Article 24.

SECTION 3 - CONTROL OF THE WORK

1.3.1 Authority of the Engineer

See Indenture Article 10 and 11

1.3.2 Plans

Plans consisting of general drawings and showing such details as are necessary to indicate the construction contemplated, will be furnished by the Department. Roadway plans will show alignment, profile grade and typical cross sections.

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1.3.3 Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions and adjustments shown on the approved plans, except as modified by written orders of the Engineer. The crown or rise of the finished surfaces of the roadway, from the curb side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves, or at other places where deemed necessary, the Contractor will be required to widen, superelevate and spiral the roadway according to Departmental standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the Engineer in writing.

1.3.4 Coordination of Plans, Specifications, Supplemental Specifications and Special Provisions

These specifications, the supplemental specifications, the plans, Special Provisions and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

See also Indenture Article 57.

1.3.5 Cooperation by Contractor

See Indenture Article 13.

1.3.6 Cooperation with Utilities

(1) It shall be the responsibility of the Contractor to notify the Department's Officer when necessary adjustments of public or private utility fixtures, pipelines and other appurtenances within or adjacent to the limits of the construction are required.

(2) It shall be the Department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

(3) Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners under agreement with the Department except as otherwise provided for in the special provisions or as noted on the plans.

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1.3.6 Cooperation with Utilities (Cont'd)

(4) It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

(5) At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

(6) The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication or rearrangement of work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

1.3.7 Cooperation between Contractors

See Indenture Article 17 and 18.

1.3.8 Construction Stakes, Lines and Grades

See Indenture Article 34.

(1) Highways and Roads

The Engineer will set construction stakes establishing lines, slopes and continuous profile-grade in road work, for culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work.

(2) Structures

The Engineer will set stakes and establish bench marks necessary to mark properly the locations, alignment and reference elevations for bridge piers and abutments. The Contractor shall completely check the Engineer's layout, before commencement of the work, after which he shall assume responsibility for detail dimensions and elevations measured from the lines and elevations thus established.

(3) Preservation of Stakes

The Contractor is responsible for the preservation of Construction Stakes.

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1.3.9 Authority and Duties of Inspector

(1) Inspectors, employed by the Department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to alter or waive the provisions of these specifications.

(2) An Inspector is placed on the work to keep the Engineer informed as to the progress of the work and the manner in which it is being done; also to call the Contractor's attention to any non-conformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and specifications. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

(3) The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

1.3.10 Inspection of Work

(1) All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

(2) If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

(3) Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

1.3.11 Defective and Unauthorized Work or Materials

See Indenture Article 14

(1) The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

(2) No work shall be done without lines and grades having been given by the Engineer.

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1.3.12 Maintenance of Work During Construction

(1) The Contractor shall maintain the work during construction. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer.

(2) All cost of maintenance of the work during construction shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

(3) In the event that the Contractor's work is ordered shut-down for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract is terminated.

(4) In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

1.3.13 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Articles 1.2.5 and 1.3.12 above, will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

1.3.14 Tentative Acceptance

(1) At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract: provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor in the manner provided hereinafter in Article 1.7.3. Any damage to the highway that may occur on such section not attributable to traffic, shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

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1.3.14 Tentative Acceptance (Cont'd)

(2) If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

1.3.15 Claims for Adjustment and Disputes

See Indenture Article 41 and 42.

In any case where the Contractor deems that extra compensation is due to him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra as defined herein, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost as defined for force account, then the Contractor hereby agrees to waive the claim for such extra compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost as aforesaid shall not in any way be construed as proving the validity of the claim. Nothing in this Article shall be construed as establishing any claim contrary to the terms of Indenture Articles 7, 8, 9 and 10.

1.3.16 Final Acceptance

(1) Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

(2) Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer shall make a semi-final inspection and if at such semi-final inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

(3) If, however, at any semi-final inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the Contractor the necessary instructions as to replacement of material and performance or re-performance of work necessary and pre-requisite to final completion and acceptance, and the Contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or re-performance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

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SECTION 4 - CONTROL OF MATERIAL

1.4.1 Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. Tenderers shall state in their tender the country or origin of items where such items originate in countries other than Canada. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

1.4.2 Source of Supply and Quality Requirements

The materials supplied by the Contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other approved sources.

1.4.3 Designated Local Material Sources

(1) The Department will acquire and make available to the Contractor the right to take materials from sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads.

(2) The quality of material in such deposits will be acceptable in general, but the Contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications and whether blending with other materials will be necessary. It shall be understood that it is not feasible to ascertain from samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

(3) If the Contractor desires to use material from sources other than those designated, he shall do so only on written authority of the Engineer. The Engineer may, if he deems it practical and desirable, authorize the use of such sources, only after samples have been submitted under the direction of the Engineer. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

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1.4.3 Designated Local Material Sources (Cont'd)

(4) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

1.4.4 Field Office and Laboratory

Wherever indicated in the contract, the Contractor shall provide a field office and/or laboratory.

1.4.5 Delivery and Storage of Materials

(1) Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

(2) Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

(3) Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the Contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

(4) During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. C.S.A. standard practice shall govern the storage of materials unless otherwise provided.

1.4.6 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

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1.4.7 Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

1.4.8 Materials Inspection

In order to expedite the inspection and testing of materials, the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources of supply.

1.4.9 Department Furnished Material

(1) The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

(2) The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

(3) The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

(4) The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returned to the supplier which are surplus to contract requirements for any cause whatsoever.

SECTION 5 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1.5.1 Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

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1.5.2 Permits, Licenses and Taxes

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

1.5.3 Patented Devices, Materials and Processes

If the Contractor is required or desires to use any design, device, material or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Department; if no such agreement is made or filed as noted, the Contractor and the surety shall indemnify and save harmless, the Department, any affected railroad or railway company, or political subsdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the Department, any costs, expenses, and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

1.5.4 Restoration of Surfaces Opened by Permit

(1) The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time is hereby expressly reserved by the Department for the proper authorities of the municipality in which the work is done and the Contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

(2) Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department, and the Contractor s hall not allow any person or persons to make an opening unless a duly authorized permit of the Department is presented. The Engineer may authorize the Contractor to allow parties bearing such permits to make openings in the highway. The Contractor shall, when ordered by the Engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work shall be paid for as extra work, as provided in these specifications and shall be subject to the same conditions as original work performed.

1.5.5 Health and Sanitary Provisions

See Indenture Article 33.

1.5.6 Railway - Highway Separation

(1) In case the Contractor is required to haul materials across the tracks of any railway, or elects to do so, he shall make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing.

(2) All work to be performed by the Contractor in the construction of railway - highway separation structures on the railroad right-of-way shall be done in a manner satisfactory to the Engineer of the railway company and shall be performed at such times and in such manner as not

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1.5.6 Railway - Highway Separation (Cont'd)

to unnecessarily interfere with the movement of trains or traffic upon the track of the railway company. The Contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property.

1.5.7 Impeding Navigation

In all matters connected with the prosecution of the works, the transportation or delivery of materials of any kind required for them and in making arrangements for these purposes, the Contractor must be governed by the laws and rules of navigation and the interpretation put upon them by the Officer entrusted to enforce them, and he must use every precaution to guard against interrupting, impeding or in any way interfering with the navigation, as he will be held strictly and legally liable for all damage, loss or detention that any vessel may sustain from any of his acts, whether such may result from a desire to prosecute the works or any other cause.

1.5.8 Barricades and Warning Signs and Project Sign Boards

(1) The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

(2) The Contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished or as required by local ordinances.

(3) The Contractor shall, at his own expense, provide and erect project sign boards at either or both ends of the contract, at locations approved by the Engineer. The sign boards shall be appropriately lettered in accordance with Standard Plan.

1.5.9 Use of Explosives

(1) When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.

(2) All explosives shall be stored in a secure manner, in compliance with laws, ordinances and regulations and all such storage shall be marked clearly "DANGEROUS - EXPLOSIVES".

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1.5.9 Use of Explosives (Cont'd)

(3) The Contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the Contractor of responsibility for any damage resulting from his blasting operations.

1.5.10 Damage to Property and Persons

See Indenture Article 23 and 25.

1.5.11 Insurance

Unless specifically excepted in the special provisions, no payment will be made under a contract for the construction of a bridge or bridges as defined in Section 1 of these General Conditions until the Contractor deposits with the Chief of Legal Services, Department of Public Works, Ottawa, an insurance policy that complies with the following conditions:

(i) All money payable by the Insurer under the policy shall be payable to Her Majesty the Queen in Right of Canada and the Contractor jointly.

(ii) The policy shall cover all structures to be constructed whether temporary or not and all materials provided by the Contractor for the work while on property owned or leased by the Crown.

(iii) The policy shall be enforced until the work is completed and accepted by the Crown.

(iv) The policy shall ensure against loss equal in amount to the total value of the contract.

(v) The policy shall be a Bridge Builders All Risk Policy.

(vi) The policy shall provide that in event of loss the amount of such loss shall be automatically reinstated.

(vii) The policy shall provide for a deductible amount of one thousand dollars ($1,000.00) in respect of every claim.

1.5.12 Camps

In carrying out work within or adjacent to Forests, the Contractor shall comply with all of the regulations of the Provincial or Federal Forestry Department, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep all the areas in an orderly condition, dispose of all refuse and obtain approval of the Engineer for the construction of camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the forest protection agency.

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1.5.13 Contractor's Responsibility for Work

See Indenture Article 21.

1.5.14 Furnishing Right-of-Way

The Department will be responsible for the securing of all necessary rights-of-way in advance of construction.

1.5.15 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-Contractor or caused in whole or in part by an act or omission of the Contractor, any Sub-Contractor, or any officer, servant or agent of the Contractor or of any Sub-Contractor whether or not such act or omission was negligent.

SECTION 6 - PROSECUTION AND PROGRESS

1.6.1 Subletting of Contract

See Indenture Article 27.

1.6.2 Prosecution of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

1.6.3. Limitation of Operations

The Contractor shall not open up work to the prejudice of work already started and he may be required by the Engineer to finish a section on which work is in progress before work is started on any additional section.

1.6.4 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work wholly or in part by written oder, for such period as he may deem necessary due to unsuitable weather, to conditions, considered unfavourable for the suitable prosecution of the work, or to failure

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1.6.4 Temporary Suspension of Work (Cont'd)

on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

1.6.5 Extension of Time

See Indenture Article 20 and 50.

1.6.6 Default and Annulment of Contract

See Indenture Article 19.

SECTION 7 - MEASUREMENT AND PAYMENT

1.7.1 Measurement of Quantities

(1) General

All work completed under the contract shall be measured by the Engineer according to British standard measure.

(2) Linear and Area

(a) All longitudinal and transverse measurements for areas will be measured horizontally.

(b) Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

(c) All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

(3) Volume and Weight

(a) In computing volumes of excavation, embankment and borrow, the average end area method will be used.

(b) The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible indentification mark.

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1.7.1 Measurement of Quantities (Cont'd)

(c) All materials for which measurements are obtained by the cubic yard, "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

(d) When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(e) The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(f) The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(4) Materials

(a) Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

(b) The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

(c) Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the Contractor.

(d) Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

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1.7.1 Measurement of Quantities (Cont'd)

(5) Time

Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions make some other method of measurement desirable.

(6) Lump Sum

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

1.7.2 Scope of Payment

See Indenture Article 12 and 38.

1.7.3 Extra and Force Account Work

(1) General

For extra work performed in accordance with Article 7 of the Indenture, the detailed method of payment shall be either at the unit price or lump sum stipulated in a supplemental agreement or in lieu of such agreement, the Department will require the Contractor to do such work on a force account basis to be compensated in the following manner:

(2) Labour

For all labour and teams and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labour, teams and foremen are actually engaged in such work, to which cost shall be added an amount equal to 10 percent of the sum thereof.

(3) Bond, Insurance and Tax

For property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions on the force account work, the Contractor shall receive the actual cost, to which no percentage shall be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and tax.

(4) Materials

For materials accepted by the Engineer, and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost shall be added an amount equal to 10 percent of the sum thereof.

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1.7.3 Extra and Force Account Work (Cont'd)

(5) Equipment

For any machinery or special equipment, (other than small tools) the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum no percentage shall be added.

(6) Superintendence

No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(7) Compensation

The compensation as set forth above shall be received by the Contractor as payment in full for extra work done on a force account basis. At the end of each day the Contractor's representative and the Inspector shall compare records of the cost of work done as ordered on a force account basis.

(8) Statements

No payment will be made for work performed on a force account basis until the Contractor shall furnish to the Engineer duplicate itemized statements of the cost of such force account work detailed as to the following:

(i) Name, classification, date, daily hours, total hours, rate and extension for such labourer, foreman and team.

(ii) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(iii) Quantities of materials, prices and extensions.

(iv) Transportation on materials.

(v) Cost of property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions. Such statements shall be accompanied and supported by original receipted invoices for all materials used and transportation charges, provided that, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

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1.7.4 Progress Payments

See Indenture Article 39 and 40.

1.7.5 Payment for Material Delivered on Project

(1) Partial payments may be made to the extent of 75 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the Department, or leased by the Contractor and transferred to the Department providing such is done to the satisfaction of the Engineer. If requested to do so, the Contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

(2) No payment shall be made upon fuels, supplies, form lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

(3) In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

1.7.6 Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the Engineer as provided in Article 1.3.16 the Engineer shall prepare the final estimate of the quantities of the various classes of work performed, and after the approval of such final estimate by the Minister, there shall be paid to the Contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

SECTION 8 - WAGES AND CONDITIONS OF EMPLOYMENT

1.8.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) by the Contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by sub-contract.

1.8.2 Labour Conditions

(1) The Contractor's attention is directed particularly to the provisions and requirements of the Province's Workmen's Compensation Act and to Statutes regulating the hours of employment on public work.

(2) In addition to the Provincial Laws restricting the hours of labour, and minimum wage rates, the Contractor shall abide by the Labour Conditions of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

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1.8.3 Employment of Canadian Labour

In engaging labour for the work contemplated by this contract as far as practicable and consistent with reasonable efficiency and economy, only Canadian residents shall be used and first consideration shall be given to the employment of available and competent workmen who are most in need and are resident in the district in which the works are to be performed. Preference is to be given to veterans of the Armed Forces of Canada and to married men and single men with dependants.

1.8.4 Records

The Contractor shall maintain and keep available for inspection by the Minister, a record of the names and addresses of ex-servicemen employed on this work, together with a record of the steps taken to implement this requirement.

1.8.5 Labour and Materials Payment Bonds

Where a Labour and Materials Payment Bond has been provided, the Contractor shall post and keep posted in a conspicuous place on the site of the work, information to the effect that a Labour and Materials Payment Bond has been provided, the name and address of the surety, a definition of those items covered by the Bond, and a brief outline of the procedures for submitting a claim.

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SECTION 3 - EMBANKMENT CONSTRUCTION

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2.3.1 DESCRIPTION

Scope: This item shall include the placing in embankments and cuts of suitable materials obtained from the various scheduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross sections and dimensions shown on the plans or as staked by the Engineer.

2.3.2 MATERIALS

(1) Materials used for embankments shall be free from muck, wood, brush, roots, sods, ashes, rubbish, top soil and other organic matter.

(2) The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All material shall be approved by the Engineer prior to incorporation. In embankments adjacent to abutments and other structures, where shown on the plans, the material shall be granular in nature and approved by the Engineer.

2.3.3 CONSTRUCTION

(1) Embankment Foundation

(a) The foundation for the embankments shall be prepared by removing unsuitable materials as specified in Article 2.3.3 (3) and (4) of the Specification "Roadway Excavation".

(b) When the sub-grade elevation of the new embankment is less than 1 foot above an existing pavement, the pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

(2) Side Hill Construction

When an embankment is to be constructed on a slope or against an existing embankment, the entire sloping surface on which the embankment is to be placed shall be ploughed, benched or broken up in such a manner that the new material will bond with the resulting surface. The specific method employed shall be subject to the approval of the Engineer.

(3) Placing Embankment

(a) Material shall not be placed while frozen nor shall it be placed on a frozen surface.

(b) The embankment shall be constructed to the cross-section shown in the Standard Plans. A crown shall be maintained at all times during construction to ensure ready run-off of surface water.

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(c) The embankment material will be placed in successive uniform layers across the entire area of the embankment as follows:

(i) Material containing less than 25 percent by volume of stone larger than 4 inches shall be placed in 6 inch compacted layers.

(ii) Material containing 25 percent or more in volume of stone or ledge rock larger than 4 inches shall be placed in layers not to exceed the maximum size of the rock or stone in thickness but in no case shall the thickness of the layer exceed 2 feet. Stone larger than 4 inches shall not be placed within 6 inches of the sub-grade elevation.

(iii) In embankments composed principally of material obtained from rock cuts, the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. Such embankments shall be constructed in layers having a maximum height of 3 feet. Even though the thickness of the layers is limited as provided above, the placing of individual rocks and boulders of a size not exceeding 5 feet in least dimension will be permitted provided they are carefully distributed and the interstices filled with finer material to form a dense and compact mass. Each layers, before starting the next shall be levelled and smoothed by means of power driven graders, bulldozers, or other suitable equipment. Hauling and spreading equipment shall be operated over the full width of each layer.

(iv) The top of the rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(4) Compaction

(a) The material shall be spread in layers. Each layer shall be thoroughly compacted by approved compaction equipment for the full width of the layer and to the required degree of compaction before successive layers are placed.

(b) The embankment shall be compacted to not less than 95 percent of the maximum density except that the top 6 inches below the subgrade shall be compacted to a dry density of 100 percent of the maximum density.

(c) The Engineer shall specify the type of compaction units to be used during construction.

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(d) During compaction operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank, or other suitable indicating gauge approved by the Engineer. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated or work shall cease temporarily while the material is brought to approximately the optimum moisture content.

(e) On each embankment at least one approved compactor shall be in continuous operation while material is being placed. Additional units shall be used only as directed by the Engineer.

(5) Embankment Adjacent to Structures

(a) Embankment on Bridge Approaches. The permission of the Engineer must be obtained before any fill is placed against concrete abutments or wing walls. Approach fills within the lines shown on the plan or as directed shall be constructed of approved granular material placed in 6" layers and compacted to 100% maximum density. Where approach fill is to be placed on ground sloping toward an abutment or wing wall, the Engineer may require the slope to be benched to prevent wedging action against the structure. The puddling method for placing any part of an approach fill will not be permitted. In the case of rigid frame structures the embankment shall be placed in approximately equal lifts on both sides of the structure and the compacted height shall be maintained at approximately the same elevation.

(b) Embankments at Culverts. Embankment around culverts shall consist of approved granular material placed to the limits shown on Standard Plan "Installation of Culverts". Material shall be placed in 6" layers alternately on each side of the culvert so as not to displace it during installation and shall be compacted to 100% maximum density. Special care shall be taken to obtain the required compaction under the haunches of pipe and pipe arch culverts.

(c) Fill - Retaining Walls. The fill behind the wall shall be of approved granular material as indicated on the plans, placed in layers not exceeding 6 inches in thickness and tamped or consolidated as directed by the Engineer. In the case of cell type retaining walls the fill behind the wall shall be tamped and kept near but not above the level of the compacted material within the cells. Where fill is to be placed on a sloping surface, the surface must be benched to reduce the load on the retaining structure. The puddling method of filling will not be permitted.

(6) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

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(a) Sheepsfoot compactors shall consist of two drum units, each drum having a minimum length of 4 feet. The length of the tamping feet shall not be less than 7 inches. Under working conditions, the compactor shall be of such weight that the minimum load upon each tamper foot will not be less than 250 pounds per square inch of cross sectional area. The sheepsfoot compactor shall be of the self-cleaning type and so constructed that each drum will oscillate independently of the other.

(b) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(c) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(d) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(e) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(f) Vibratory Compactors shall be of a design approved by the Engineer with weight variable, depending on the application but not to exceed 16 tons.

(g) Prime movers shall be capable of pulling compaction units at a minimum of 3 miles per hour, and each prime mover shall have an hour meter of approved design installed.

(h) Where directed by the Engineer additional compaction units shall be hauled in tandem.

(i) Self-powered hand-operated tamping units for compaction of back-fill and/or embankments contiguous to structures shall be of the vibratory or ramming type of approved design and weighing not less than 100 pounds.

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(j) Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of standard units required in the Specifications.

(7) Trimming

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown in the plans and profiles or as staked by the Engineer. Where in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand trimming may be called for.

(8) Maintenance of Roadbed

The finished roadbed shall be maintained continuously in a condition suitable for traffic until the next course, if any, of material is placed or until the final completion of the work as the case may be.

2.3.4 MEASUREMENT

(1) Embankment shall not be measured for direct payment.

(2) Compaction

(a) The quantity of compaction for which payment will be made shall be the actual number of hours that the equipment worked, as recorded on the installed hour meter of the hauling unit.

(b) In the case of hand-operated tamping units the quantity for which payment will be made will be the actual number of hours worked.

(3) Watering

The quantity of water for which payment will be made shall be measured in units of 1,000 gallons for quantities authorized by the Engineer.

2.3.5 PAYMENT

(1) Payment for construction of embankment, as above described, including granular fill at abutment, and elsewhere, is not payable directly but shall be considered as a subsidiary obligation of the contractor, covered under the contract unit prices for performance of work under the various scheduled excavation items except as provided below.

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(2) Payment for compaction will be made for the number of hours, as above determined, at the contract unit prices for the individual units of compaction equipment, which prices shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided. No payment will be allowed for interruptions or down-time of any kind.

(3) Payment for watering shall be made at the contract unit price for the number of 1000 gallon units authorized by the Engineer, which price shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) When more than one compaction unit is driven by a single prime mover payment will be made for the additional unit(s) at the contract unit price for the compaction unit only i.e. "Compaction (Tamping Roller only)". No additional compensation will be allowed for an increase in the size of the machinery supplying the motive power.

(5) When granular material is used as directed by the Engineer, for the work detailed in Article 2.3.3 paragraph 5, payment will be made at the contract unit price for one of the various scheduled item.

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DIVISION 3

SECTION 1 - BASE COURSE (CLASS 1) AND SUB-BASE COURSES (CLASS 2) AND (CLASS 3)

3.1.1 DESCRIPTION

This item shall consist of crushing and screening gravel or stone and placing in stockpile(s) or on the road in accordance with these specifications.

3.1.2 MATERIALS

(1) Base Course Class 1

(a) This material shall consist of crushed stone or crushed gravel meeting the requirements of Tables 1 and 2. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 1

Physical Requirements for Coarse Aggregate (Material Retained on No.4 Sieve)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	35	35
(b) Crushed fragments, min. % by wt.	-	50
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Method T-104-46	15	15

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

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TABLE 2

Physical Requirements - Deleterious Materials

Description	Stone	Gravel
1. Shales	4%	4%
2. Siltstones	1	1
3. Chert	2	2
4. Ochre	1	1
5. Clay ball	1	1
Max. allowable total % by weight of deleterious material	8	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

(b) Gradation

The aggregate shall conform within the limits specified in Table 3. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 3

Base Course (Class 1)

Sieve No.	Percent Passing
3/4"	100%
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

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(2) Sub-Base Course (Class 2)

This material shall consist of crushed stone or crushed gravel, meeting the gradation requirements of Table 4. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 4

Sub-Base Course (Class 2)

Sieve No.	Percent Passing
2"	100%
1"	70 - 100
½"	50 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuation from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

(3) Sub-Base Course (Class 3)

This material shall consist of gravel, talus rock, desintegrated granite, sand, or other granular materials meeting the gradation requirements of Table 5. It shall be composed of clean, hard particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 5

Sub-Base Course (Class 3)

Sieve No.	Percent Passing
4"	100%
1"	60 - 100%
No. 4	25 - 100%
No. 10	12 - 85%
No. 40	5 - 40%
No. 200	0 - 8%

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The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

(4) General - Base Course (Class 1) and Sub-Base Courses (Class 2 and 3

(a) The portion of the material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

(b) Even though particle sizes are within the limits of the grading sizes herein provided, materials will be considered unsuitable, if particle shapes are thin or elongated or exhibit other characteristics precluding satisfactory compaction and a roadbed acceptable to the Engineer.

(c) The source of supply for the Base Course and Sub-Base Courses shall be in accordance with Section 1.4.2. "Source of Supply and Quality Requirements".

3.1.3 CONSTRUCTION

(1) Clearing and Grubbing

The clearing and grubbing of deposits from which these materials are obtained, stockpile sites and access roads thereto, shall be carried out as specified in Article 2.1.3 - "Clearing and Grubbing".

(2) Stripping

The pits from which these materials are obtained shall be stripped of all overburden, and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

(3) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, will be specified by the Engineer.

(4) Blending Aggregates

It shall be permissible to blend or mix two or more materials to meet the gradation requirements. When two or more materials are blended, they shall be thoroughly mixed by mechanical means.

(5) Preparation of Surface Prior to Placing

Each course shall be placed on a surface which shall be clean, dry, free from frost, snow, and loose or adhering deleterious materials, properly shaped and compacted. Any damage to a finished surface shall be repaired by the Contractor at his own expense and to the satisfaction of the Engineer, before the next course is placed.

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(6) Spreading and Compacting Base Course (Class 1)

The granular material shall be laid so as to avoid segregation in layers of not more than three (3) inches in compacted thickness or as directed by the Engineer. Tail-gating will not be permitted. Immediately following spreading and smoothing of each layer, all the material shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, rubber tired rollers or vibratory compactors, meeting the requirements of Item 2.3.3(6) of the "Specification for Embankment Construction". All compacting shall start at the edges and progress towards the centre, so that each succeeding pass will uniformly overlap the previous one. While compacting progresses, the entire surface of each layer shall be shaped and dressed with a motor grader, having a blade at least twelve (12) feet in length, to maintain a uniformly smooth surface conforming to the required lines and grades.

Any irregularities in the completed surface of each lift that exceed 3/8 inch from the template grade for that lift when tested with a 10 foot straight edge shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Additional material when required shall be paid for at the contract unit price for base course material.

Each layer shall be compacted to at least 100% maximum density. During compaction, the base course shall be maintained at the optimum moisture content. Water, when required, shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank.

(7) Placing, Spreading and Compacting Sub-base (Class 2 and Class 3)

This material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer. The placing, spreading and compacting shall be done in accordance with Articles 2.3.3(3) and 2.3.3(4) - "Embankment Construction".

(8) Stockpiling

The stockpile site(s) shall be cleaned of all deleterious material and shall be firm and level. The stockpile(s) shall be constructed in layers not exceeding three feet and be built to eliminate coning and segregation of aggregate sizes. During winter operations, stockpile(s) shall be kept free of ice and snow to the satisfaction of the Engineer.

3.1.4 MEASUREMENT

(1) The quantity of base course for which payment will be made, shall be the number of tons (2000 lbs) of base course or sub-base course material, placed and accepted in the completed work. The weight measurements shall be made by a weighmaster provided by the Department using scales provided by the contractor. These scales shall be of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested

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for accuracy as often as may be required by the Engineer. The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as often as required.

(2) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course or sub-base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(3) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

(4) The quantity for which payment will be made for the compaction of the base course or the sub-base course, shall be the actual number of hours as recorded on the installed hour meter on the hauling unit of the particular equipment for the time of operation approved by the Engineer.

(5) The quantity of clearing and/or grubbing of borrow areas, stockpile sites and access roads thereto for which payment will be made, shall be measured as specified in Article 2.1.4 "Clearing and Grubbing".

(6) The quantity of stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

(7) The quantity of work and materials required for the construction of access roads, will be measured as specified under the various scheduled items.

3.1.5 PAYMENT

(1) Payment for base course or sub-base course will be made for the quantities as above determined, measured in tons (2000 lbs) at the contract unit price for "Base Course" or "Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Payment for hauling base course or sub-base course material will be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course" or "Hauling Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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(3) Payment for watering will be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all other work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(4) Payment for compaction will be made for the quantities above determined, measured in hours for a particular unit at the contract unit price or prices for "Compaction" which price or prices and payment shall constitute full compensation for performing the work specified and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which payment is not elsewhere provided. No payment will be allowed for interruption or down time of any kind.

(5) Payment for clearing and/or grubbing borrow areas, stockpile sites and access roads thereto, will be made as specified in Article 2.1.5 "Clearing and Grubbing".

(6) Payment for stripping of borrow areas will be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping of Borrow Areas", which price and payment shall be full compensation for all labour, equipment, tools, excavation and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(7) Payment for work and materials required for the construction of access roads will be made as specified under the various scheduled items.

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SECTION 1 - BITUMINOUS CONCRETE PAVEMENT

TYPE "A", "B" AND "C"

FEBRUARY 1960

4.1.1 DESCRIPTION

(1) This item shall consist of bituminous concrete composed of coarse and fine aggregate, mineral filler where required and hot bituminous material, mixed in a central plant, placed and compacted on a prepared roadbed in accordance with these specifications and in conformity with the cross-sections shown on the standard plans and to the lines and grades staked by the Engineer.

(2) The pavement shall be constructed in two layers, consisting of a wearing course and a binder course unless one course construction is called for on the plans or in the "Information to Bidders".

4.1.2 MATERIALS

(1) General

Samples of all materials which are to be used under these specifications shall be submitted to the Department Testing Laboratory for analysis and for the preparation of trial mixes to determine the job formula.

(2) Aggregate

(a) Coarse Aggregate shall consist of crushed stone or crushed gravel of approved quality, free from coatings of clay, silt, dust or organic material. The portion of the material retained on the No. 4 sieve shall be known as coarse aggregate.

(b) Fine aggregate shall consist of natural sand, gravel sand, screenings or a combination thereof of approved quality, and conforming to the limits specified in Table 3. It shall be composed of clean, hard, angular particles, free from clay lumps, cementation and organic material.

(c) Mineral Filler shall consist of dry limestone dust or other inert mineral matter, of approved quality, and conforming to the limits specified in Table 5. As delivered to the mixer, it shall be free from lumps and loosely bonded aggregations.

(3) Bituminous Material

Bituminous material shall be an asphalt cement conforming to Canadian Government Specifications Board specification 16-GP-3. The grade of the bitumen will be specified in the "Information to Bidders". The Contractor shall obtain from the manufacturer and

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furnish in tabular or graphical form, the temperature - viscosity relationship of the bituminous material to be used.

(4) General Composition of Mixture

The coarse aggregate, fine aggregate and mineral filler, when required, shall be combined in proportions specified by the Engineer, within the limits set out in Table 4. Any aggregate gradation which shows extreme variation between allowable limits will not be acceptable. To this composite blended aggregate shall be added bituminous material within the percentage limits set forth in Table 4.

(5) Formula for Job-Mix

(a) The general composition limits prescribed above are extreme ranges of tolerance to govern mixtures made from any raw materials meeting the specifications, and they are maximum and minimum in all cases. A closer control appropriate to the job materials used will be required. The Engineer shall establish a job-mix formula for each mixture to be used on the project, to which the Contractor shall conform within the tolerance specified below. The formula shall establish a single definite percentage of aggregate passing each required sieve size, a single definite percentage of asphalt cement to be added to the aggregate, and a single definite design temperature.

(b) The design temperature shall be such that the bituminous material will have a Saybolt Furol Viscosity of 112.5 seconds.

(c) After the job-mix formula is established as prescribed above, the mixtures furnished for the project shall conform thereto within the following ranges of tolerances.

Passing ½ inch and larger sieves	± 5%
Passing sieves between ½ inch and No. 200 sieve	± 3%
Passing No. 200 sieve	± 2%
Asphalt Cement	± .30%
Temperature of Asphalt Cement on mixing	± 10°F
Temperature of Aggregates on mixing	± 15°F
Temperature of mixture when emptied from mixer	± 15°F
Temperature of mixture on delivery to road	+ 15°F, - 20°F

(d) Samples of the actual mixture in use will be taken as many times daily as the Engineer considers necessary, for checking the uniformity of the mixture, and the mixture must be maintained uniform within the above tolerances. Mixtures which are not within the above tolerances shall be removed from the job and disposed of at the Contractor's expense. No change in the job-

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mix formula shall be made without the approval of the Engineer. Should a change in sources of materials be made, a new job-mix formula shall be established before the mixture containing the new materials is produced.

(6) Design Criteria

(a) The laboratory - compacted mixtures when compacted by the "Marshall Test Procedure" (75 blows per face), shall have the following test properties:

	Type "A" Min.	Max.	Type "B" Min.	Max.	Type "C" Min.	Max.
Marshall Stability lbs. at 140°F	1000	-	800	-	600	-
* Flow index (in hundredths of an inch)	10	15	10	15	10	18
** Air voids in Mixture (%)	3	5	3	5	3	6
*** Voids in Mineral Aggregate	15	-	15	-	14	-

* Measured at point where load just begins to decrease.

** Portion of asphalt cement absorbed into aggregate to be allowed for when calculating Air Voids.

*** Voids in Mineral Aggregate to be calculated on basis of A.S.T.M. bulk specific gravity.

(b) The amount of asphalt used for a particular gradation (the design asphalt content) shall be determined by averaging the quantities of asphalt which have been necessary to obtain the following results in laboratory tests:

(i) Maximum Stability

(ii) Maximum Density

(iii) Median for the limits for per cent air voids.

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TABLE 1

PHYSICAL REQUIREMENTS FOR COARSE AGGREGATES

Test	Type "A"		Type "B" and "C"	
	Stone	Gravel	Stone	Gravel
(a) Soundness Test, Magnesium Sulphate max. % loss by weight, 5 cycles A.A.S.H.O. method T-104-46	15	15	20	20
(b) Los Angeles Rattler Test max. % loss by weight at 500 rev. A.A.S.H.O. Method T-96-49	25	25	35	35
(c) Thin and elongated particles max. % by weight	5	5	8	8
(d) Crushed fragments min. % by weight-combined sizes	-	65	-	50
(e) Absorption Test max. % by weight A.A.S.H.O. Method T-85-45	1.0	1.0	1.5	1.5
(f) Loss by washing max. % by weight A.A.S.H.O. Method T-11-49	-	1.5	-	2.0

1. Thin and elongated particles are fragments whose average thickness or depth is less than one-fifth the length or greatest dimension.

2. Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

3. Stripping Test - (For special cases involving hydrophylic aggregates)

The fine or coarse aggregate, or a composite mixture, shall show no detrimental amount of stripping when tested in the following manner. A test sample comprising the aggregate and bitumen to be used in the paving mixture shall be mixed at the temperature specified herein. The sample shall then be spread in a thin, loose layer and allowed to cure for 24 hours before testing. A portion of the sample, not over one-half the capacity of the jar, shall be placed in a glass jar and be completely covered with distilled water. The jar shall then be fitted with a tight screw cap and allowed to stand for a period of 24 hours. The jar shall then be vigorously shaken for a period of 15 minutes, and the sample of the mixture shall then be examined for stripping. If stripping occurs, the aggregate shall be rejected or an approved

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method of treating shall be specified to change the aggregate from a hydrophylic to hydrophobic state as directed by the Engineer.

TABLE 2

PHYSICAL REQUIREMENTS - DELETERIOUS MATERIALS

Description	Type "A"		Type "B" & "C"	
	Stone	Gravel	Stone	Gravel
1. Limestone				
Shaley	Max.2%	Max.2%	Max.2%	Max.2%
Clayey	2	2	2	2
Sandy	1	1	3	3
2. Shales -				
Thin Bedded	1	1	2	2
Thick Bedded	1	1	2	2
3. Siltstones	1	1	1	1
4. Sandstones -				
Friable	2	2	2	2
Loosely Bonded	2	2	2	2
5. Chert	2	2	5	5
6. Clayball	-	0.5	-	1
7. Marble	*	*	*	*
8. Slate	1	1	2	2
9. Ochre	1	1	1	1
10. Quartzite	*	*	*	*
Max. allowable total % by weight of deleterious and objectionable material	5	5	12	12

Note: The percentage of deleterious and objectionable materials, as listed in Table 2, which are contained in any aggregate shall be determined by the petrographic analysis.

* The percentages of marble and quartzite which are contained in any aggregate shall be kept within limits specified by the Engineer.

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TABLE 3

FINE AGGREGATE

Sieve No. *	Percentage Passing	
	Type "A" & "B"	Type "C"
3/8	100	100
4	100	95-100
10	75-98	55-100
20	45-80	25-85
40	23-55	15-60
80	7-20	5-20
200	0-5	0-5

* U.S. Sieve sizes specified

Note: In lieu of adding mineral filler the percent passing the No. 200 sieve may be increased where in the opinion of the Engineer this material is required in the mix. In the fine aggregate not more than 20% of the material passing the No. 200 sieve shall be finer than 0.002 m.m. in size.

TABLE 4

ASPHALT AGGREGATE MIXTURES

TOTAL PASSING EACH LABORATORY SIEVE, PER CENT BY WEIGHT

* Sieve Size	Percentage by weight passing				
	1" Max.	7/8" Max.	¾" Max.	5/8" Max.	½" Max.
1"	100	-	-	-	-
7/8"	-	100	-	-	-
¾"	80-100	88-100	100	-	-
5/8"	-	-	-	100	-
½"	66-82	73-90	80-100	90-100	100
3/8"	-	62-78	65-85	76-88	85-100
No. 4	40-58	42-62	45-70	55-73	55-70
10	25-42	25-47	30-55	35-55	40-60
20	15-30	15-33	18-40	22-40	30-50
40	10-22	10-24	12-27	15-29	20-35

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* Sieve Size	Percentage by weight passing				
	1" Max.	7/8" Max.	¾" Max.	5/8" Max.	½" Max.
80	5-14	5-15	5-15	7-17	7-17
200	0-8	0-8	0-8	3-8	3-8
Asphalt Cement % by weight	4.0-6.0	4.0-6.5	4.5-6.5	5.0-7.0	5.0-7.5

* U.S. Sieve sizes specified

Note: The mix shall also meet the design criteria as specified under Section 4.1.2 (6).

TABLE 5

MINERAL FILLER

Sieve No.*	Percent Passing
30	100
80	95-100
200	65-100

* U.S. Sieve sizes specified.

4.1.3 CONSTRUCTION

(1) Equipment

Equipment shall conform to the requirements specified in Division 4 Section 5 of the Specifications.

(2) Clearing and Grubbing

Clearing and grubbing of granular deposits from which paving aggregates are obtained will be carried out in accordance with Article 2.1.1 - "Clearing and Grubbing".

(3) Stripping

Granular deposits from which paving aggregates are obtained shall be stripped of all overburden to a distance of at least 25 feet from the working face, and this overburden shall be disposed of in stockpiles, access road construction, or as directed by the Engineer.

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(4) Production and Handling of Aggregates

(a) Aggregates shall be processed to meet the requirements of Tables 3 and 4. Fine and coarse aggregate shall be crushed, screened and separated with approved equipment. The fine aggregate (minus No. 4 material) content in the coarse aggregate shall not exceed 20%.

(b) The separated aggregates and aggregates secured from different sources shall be placed in separate stockpiles.

(c) The site of stockpiles shall be cleaned of all foreign material and shall be reasonably firm and level. Stockpiles shall be constructed in layers not exceeding 3 feet and be built to eliminate coning and segregation of aggregate sizes. During winter operations the stockpiles shall be kept free of ice and snow to the satisfaction of the Engineer.

(d) At least 2000 tons of material must be stockpiled before paving operations are begun.

(5) Access Roads

The Engineer shall locate all necessary access roads and other facilities which may be required for hauling materials to and over the right-of-way. Any work and materials required for the construction of such access roads shall be specified by the Engineer.

(6) Preparation of Surface

The area to be surfaced shall be cleaned of all dirt and other objectionable material by means of power brooming supplemented by hand brooming if necessary. When specified in the "Information to Bidders" tack coat shall be applied in accordance with Article 4.4.3 "Bituminous Tack Coat".

(7) Preparation of Bituminous Material

The bituminous material shall be heated to the specified temperature by equipment meeting the requirements of Article 4.5.2(2)(c). Provision shall be made for a continuous supply of bituminous material to the mixer at a uniform temperature at all times.

(8) Preparation of Mineral Aggregates

(a) The plant shall include cold feed bins of sufficient capacity to supply the mixer when it is operating at full capacity. Bins shall be divided into at least 3 compartments and shall be arranged to ensure separate and adequate storage of appropriate fractions of the aggregate. The different aggregate sizes shall be kept separated until they have been delivered, without segregation to the cold feed bins. Bulldozer feed to a bulkhead will not be permitted.

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(b) The mineral aggregates shall be dried and heated to the specified temperature by equipment meeting the requirements of Article 4.5.2 (2) (e). The moisture content of the aggregate shall be below that which will cause foaming, steaming or bubbling in the mixture and shall not in any case exceed 0.5%.

(9) Preparation and Composition of Mixture

(a) Each size of hot aggregate, mineral filler if required, and the asphalt cement shall be measured separately and accurately in the proportions in which they are to be mixed. When the mixture is prepared in a twin-pug mixer, the volume of the mix shall not be so great as to extend above the tips of the mixer blades in a vertical position. In batch mixing, after the hot aggregate and mineral filler have been charged into the mixer and thoroughly mixed for a period of not less than 15 seconds, the asphalt cement shall be added and the mixing continued for a period of at least 20 seconds, or longer if necessary, to produce a homogeneous mixture in which all particles of the mineral aggregate are coated uniformly. In continuous mixing, the mixing shall continue for at least 30 seconds, and for such longer periods as may be necessary to coat all the particles.

(b) The constituents of each course shall be combined in such proportions as to produce a mixture conforming to the composition specified by the Engineer and within the specified tolerances.

(10) Inspection of Paving Plant Operations

For checking the adequacy of the equipment in use, inspecting the conditions and operations of the plant, for the verification of weights or proportions and character of materials, and for the determination and checking of temperatures being maintained in the preparation of the mixtures, the Engineer or his authorized representative shall have access at all times to any part of the paving plant.

(11) Transportation and Delivery of Mixtures

(a) The mixtures shall be transported from the mixing plant to the point of use in vehicles conforming to the requirements of Article 4.5.2 (6).

(b) No loads shall be sent out so late in the day as to prevent completion of the spreading and rolling of the mixture during daylight, unless artificial light satisfactory to the Engineer is provided.

(12) Weather Limitations

Bituminous concrete mixtures shall not be placed when the air temperature is below 40°F or when the weather is foggy or rainy, or when the conditions otherwise may be unfavourable in the opinion of the Engineer.

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(13) Spreading and Finishing

(a) Upon arrival at the point of use, the mixture shall be spread and struck off to the profile grade, elevation and cross-section specified. For this purpose, asphaltic concrete pavers conforming to the requirements of Article 4.5.2 (5) shall be used to distribute the mixture over the full width of a single lane.

(b) Bituminous mixtures shall be laid in courses in lifts as determined by the Engineer but the depth of a single lift shall be not less than nor more than that produced by the weights given in the following table for each square yard of mixture laid.

Size of Aggregate	Minimum weight per sq.yd.	Maxmimum weight per sq.
1"	220	330
7/8"	190	285
3/4"	165	250
5/8"	135	220
1/2"	110	165

(c) The Contractor shall endeavour to have paving operations proceed toward the plant so that the trucks will not interfere with rolling, or in any other way damage the surface being placed.

(d) If, during construction, it is found that the spreading and finishing equipment in operation leaves tracks or indented areas that are not satisfactorily corrected by the scheduled operations, or if it produces other permanent blemishes, the use of such equipment shall be discontinued and other satisfactory spreading and finishing equipment shall be provided by the Contractor.

(e) Immediately after any course is screeded and before roller compaction is started, the surface shall be checked, any irregularities adjusted, all fat sandy accumulations from the screed removed by a rake or hoe, and all fat spots in any course removed and replaced with a satisfactory material. Irregularities in alignment and grade along the outside edge shall also be corrected by the addition or removal of mixture before the edge is rolled.

(f) The Contractor shall provide competent workmen who are capable of performing the work incidental to the correction of all pavement irregularities. Immediately following the rolling, the surface of each course shall be checked with a straightedge, and any irregularities exceeding the depth or surface tolerances specified shall be immediately corrected.

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(g) In irregular sections, intersections, turnouts, or other locations where it is impractical to spread and finish the first or second lift of mixture by machine methods, the Contractor may use approved spreading equipment or acceptable hand methods.

(h) When the mixture is to be spread by hand, it shall be dumped upon steel dump boards outside of the areas on which it is to be spread. Immediately thereafter, it shall be distributed into place by means of hot shovels and spread with hot rakes in a loose layer of uniform density and correct depth. Tines of the rakes shall be not less than ½ inch longer than the loose depth of mixture, and spaces between tines shall be not less than the maximum diameter of aggregate particle except that in no case shall the spaces be less than 1 inch. Loads shall not be dumped any faster than they can be properly handled by the shovelers. The shovelers shall not distribute the dumped load faster than it can be handled by the rakers. The rakers will not be permitted to stand in the hot mixture while raking, except where necessary to correct errors in the first raking, in which case they shall be equipped with stilt sandals. The raking must be carefully and skillfully done in such a manner that, after the first passage of the roller over the raked mixture, a minimum amount of back patching will be required.

(i) The Contractor shall provide suitable means for keeping all small tools clean and free from accumulations of bituminous material. He shall provide and have ready for use at all times enough tarpaulins or covers, as may be directed by the Engineer, for use in any emergency such as rain, chilling wind, or unavoidable delay, for the purpose of covering or protecting any material that may be dumped and not spread.

(14) Joints

(a) Joints between old and new pavements or between successive days' work shall be made in such a manner as to ensure a thorough and continuous bond between the old and new surface.

(i) Transverse or Construction Joints

Except when a bulkhead is used to form the transverse joints the edge of the previously laid course shall be cut back to its full depth so as to expose a fresh vertical face, clean of any broken or loose material. The joint shall be painted with a thin, uniform coating of hot asphalt cement, asphalt cement dissolved in naptha or emulsified asphalt and the hot mixture shall then be placed in contact with it, raked to a proper depth and graded and rolled to its maximum density. The joint shall be checked with a 10 foot straight-edge and any deviations from the allowable tolerances for surface requirements shall be corrected before the paver proceeds.

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(ii) Longitudinal Joints

All longitudinal joints will be formed vertically and adjacent strips of pavement formed by overlapping the joints with the pavers to ensure a uniformly tight bond with the previously placed material. The overlapped portion of the joint shall be properly "set-up" with the back of a rake, an approved light steel broom or similar tools at the proper height and level to receive the maximum compression under rolling. The work of "setting-up" this joints shall be performed always by competent workmen, who are capable of making a correct, clean and neat joint.

(b) When mixtures are laid in more than one course the bottom course shall be laid in adjacent strips to a width as directed by the Engineer so that the longitudinal joints are offset from the longitudinal joints of the following courses by not less than 1 foot. The top course shall be laid in adjacent strips of uniform widths so that the centre joint is longitudinal with the centre line of the pavement.

(c) All joints along curbs, gutters, headers, manholes, etc., shall be painted with a thin uniform coating of hot asphalt cement, asphalt cement dissolved in naptha or emulsified asphalt.

(15) Rolling

(a) After spreading, the mixture shall be thoroughly and uniformly rolled, as soon after being spread as it will bear the roller without checking or undue displacement. The type of rollers used shall conform to Article 4.5.2 (7). The minimum number of rollers required for the various tonnage per hour of hot-mix produced shall meet the following requirements:

Tons of Mix Produced per hour	Minimum Number of Rollers
0-80	2
81-120	3
121-150	4
151-180	5

When the temperature in the shade is less than 50°F, one additional roller will be required.

(b) On production of 81 tons per hour and more, one of the rollers shall be a pneumatic tired straight wheel roller weighing at least 9 tons and providing a compression of not less than 300 pounds per inch of effective rolling width. At least 50% of the rollers shall weigh not less than 10 tons.

(c) Rolling shall start longitudinally at the sides and proceed toward the centre, except that on superelevated curves rolling shall progress from the lower to the upper edge, parallel with the centre line of the road and overlapping on successive trips by at least one-half the width of the rear wheel. Alternate trips of the roller shall be of slightly different lengths.

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(d) The speed of the roller shall not exceed 3 miles per hour and shall at all times be slow enough to avoid displacement of the hot mixture, and any displacements occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected. Rolling shall proceed continuously until the specified density is reached and all roller marks are eliminated. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but excess of either water or oil will not be permitted.

(e) Along curbs, headers, manholes and similar structures, and at all places not accessible to the roller, thorough compaction must be secured, by means of hot tampers, and at all contacts of this character the joints between these structures and the mixture must be effectively sealed.

(f) After final rolling, the completed course shall, at no point, have a density of less than 96 percent of the laboratory compacted density if placed up to September 1st and 98 percent of the laboratory compacted density if placed after September 1st.

(16) Surface Requirements

(a) The surface of each finished course shall be free from waves or irregularities so that when a straight-edge 10 feet long is laid on the surface parallel to the centreline of the highway, the surface shall, in no place, vary from the lower edge of the straight edge more than 1/8" for Type "A", 3/16" for Type "B" and ¼" for Type "C".

(b) Tests for conformity with the specified crown shall be made by or under the supervision of the Engineer. Any variations beyond those specified above shall be satisfactorily eliminated.

(17) Pavement Samples

When and as directed by the Engineer, the Contractor shall cut samples from the completed course which will be used for determining composition and density. The Contractor shall patch the sampled area with fresh, hot mixture and thoroughly compact and bond the new material to the surrounding pavement. No additional compensation will be allowed for furnishing such tests samples and replacing the areas with new pavement.

4.1.4 MEASUREMENT

(1)

(a) The quantity of Bituminous Concrete Pavement, for which payment will be made, shall be the number of tons (2,000 pounds) of Bituminous Concrete material, placed, compacted and accepted in the completed pavement.

(b) The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor.

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(2) The quantity of bituminous material for which payment will be made shall be the number of tons (2,000 pounds) of bituminous material actually incorporated into the bituminous concrete mixture used in the accepted work.

(3) The quantity of stripping of aggregate deposit areas for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

(4) The quantity of clearing and grubbing for which payment will be made shall be measured in accordance with Article 2.1.4 "Clearing and Grubbing".

4.1.5 PAYMENT

(1) Payment for bituminous concrete pavement will be made for the quantities as above determined, measured in tons (2,000 pounds) at the contract unit price for "Bituminous Concrete Pavement" which price and payment will constitute full compensation for processing, handling, mixing, hauling and placing all materials, for shaping, compacting, rolling and finishing, furnishing scales and weigh house and for all labour, equipment and tools, and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Payment for bituminous material will be made for the quantities as above determined, measured in tons (2,000 pounds) at the contract unit price for "Bituminous Material", which price and payment shall constitute full compensation for supplying the bituminous material, delivery (including all freight, demurrage and storage charges), and for all labour and equipment necessary for incorporating the bituminous material into the bituminous concrete and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(3) Payment for stripping of aggregate deposit areas will be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping Aggregate Deposit Areas", which price and payment shall constitute full compensation for all labour, equipment, tools, excavation and hauling, disposal in suitable locations, the trimming and restoration of the aggregate deposit area, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) Payment for Clearing and Grubbing will be made in accordance with Article 2.1.5 "Clearing and Grubbing".

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SECTION 5 - EQUIPMENT FOR BITUMINOUS STABILIZED BASE AND PAVING OPERATIONS

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4.5.1 DESCRIPTION

This item is to describe the general requirements of the equipment and tools that are required for producing and laying hot plant mixed bituminous stabilized base courses and bituminous concrete pavements. No pay items are involved in this specification.

4.5.2 GENERAL REQUIREMENTS

(1) The equipment used by the Contractor shall include:

Bituminous mixing plant.
Bituminous paver.
Rollers.
Vehicles for transporting bituminous mixtures.
Truck scales.
Small tools and all other equipment required to complete the construction as indicated or directed.

The type, condition and quantity of equipment shall be such as may be necessary for the proper execution of the work within the time limit specified. All equipment furnished shall be maintained in good condition and shall be subject to the approval of the Engineer prior to and during its use.

(2) Requirements for all Plants

(a) Uniformity

Plants used in the preparation of bituminous paving mixtures shall be of sufficient capacity and shall be designed and coordinated so as to handle the proposed construction within the specified job-mix tolerances.

(b) Plant Scales

Scales for any weighbox or hopper may be either of the beam or springless-dial type and shall be of a standard make and design, sensitive to one-half of 1 percent of the maximum load that may be required. When of the beam type, there shall be a separate beam for each size aggregate with "tell-tale" actuated for each separate beam, and a tare beam for balancing the hopper.

(c) Equipment for Preparation of Asphalt

Tanks for storage of asphalt shall be capable of heating the materials, under effective and positive control at all times, to the temperature requirements set forth in the specifications.

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Heating shall be accomplished by steam coils, electricity or other means such that no flame shall come in contact with the heating tank. A circulating system shall be provided, of adequate size to ensure the proper and continuous circulation of the asphalt between storage tank and mixer during the entire operating period. All pipelines and fittings shall be steam jacketed or otherwise properly insulated to prevent heat loss. Storage tank capacity shall be sufficient for at least one day's run.

(d) Feeder for Dryer

(i) The plant shall be provided with an accurate mechanical means for uniformly feeding the mineral aggregate into the dryer so that a uniform production and a uniform temperature may be secured.

(ii) For Bituminous Stabilized Base Course production a cold bin may not be required and feed to the dryer may be accomplished by means of a bulkhead and reciprocating or vibrating type feeder providing segregation of aggregates is avoided and the requirements of Article 4.5.2 (2)(d)(i) above are met.

(iii) For Bituminous Concrete production (Types A, B and C) a cold feed bin divided into at least 3 compartments will be required. Each compartment shall be equipped with an individual gate control so as to enable the proportioning of the various sizes of cold aggregate.

(e) Dryer

A rotary dryer of a satisfactory design for drying and heating the mineral aggregates shall be provided. The dryer shall be capable of drying and heating the mineral aggregate to the temperature requirements set forth in the specifications. Flames used for drying and heating shall be adjusted properly to avoid injury to the aggregate and to avoid forming a coating of carbon or unburnt fuel oil on the aggregate. The aggregate shall be heated to the temperature specified as determined at the discharge chute of the dryer.

(f) Screens

Plant screens, capable of screening all aggregates to the sizes required for proportioning, and having normal capacities in excess of the full capacity of the mixer, shall be provided.

(g) Hot Bins

The plant shall include hot storage bins of sufficient capacity to supply the mixer when it is operating at full capacity. The bins shall be divided into at least 3 compartments so arranged as to ensure separate and adequate storage of the different aggregate fractions required to produce the design mix. Separate dry storage shall be provided for mineral filler if required.

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Each compartment shall be provided with an overflow pipe, located so as to prevent backing up of material into other bins. The bin shall have a "tailing pipe", for rejections. The discharge points of overflow and "tailing" shall be located so that they will not create a hazard nor discomfort. Each compartment shall be provided with an individual outlet gate, designed and constructed so that when closed there will be no leakage. The gates shall cut off quickly and completely and when used in conjuction with a continuous type plant shall be calibrated and capable of being locked into position at an approved setting. Each bin shall be equipped with a visual indicator to show when the bin is empty.

(h) Asphalt Control Unit

Satisfactory means, either by weighing, metering, or volumetric measurements shall be provided to obtain the proper amount of asphalt. All measuring devices shall be sensitive to a 2 percent variation above or below the actual weight in pounds required. Suitable means shall be provided, either by steam jacketing or other insulating, for maintaining the specified temperature of the asphalt in the pipelines, meters, weigh buckets, spray bars and other containers or flow lines.

(i) Thermometric Equipment

An armoured thermometer reading from 200°F to 400°F shall be fixed in the asphalt feed line at a suitable location near the discharge valve at the mixer unit. The plant shall be further equipped with an approved dial scale mercury actuated thermometer, an electric pyrometer, or other approved theremometric instrument so placed at the discharge chute of the dryer as to register automatically or indicate the temperature of the heated aggregate.

(j) Control of Mixing Time

The plant shall be equipped with positive means to govern the time of mixing.

(k) Dust Collectors

When plants are located in any vicinity where dust may be objectionable or when dust interferes with the efficient operation of the plant, proper housings, mixer covers, or dust collecting systems shall be installed. Provisions shall be made to waste the material so collected or to return it uniformly to the mixture as the Engineer may direct.

(l) Safety Requirements

Adequate and safe stairways to the mixer platform and guarded ladders to other plant units shall be placed at all points required for accessibility to all plant operations. All gears, pulleys, chains, sprockets and other dangerous moving parts shall be thoroughly guarded and protected. Ample and unobstructed space shall be provided on the mixing platform. A clear and unobstructed

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passage shall be maintained at all times in and around the truck loading space. This space shall be kept free from drippings from the mixing platform.

(3) Special Requirements for Batching Plants

(a) Weighbox or Hopper

The equipment shall include a means for accurately weighing each bin size of aggregate in a weighbox or hopper, suspended on scales, ample in size to hold a full batch without hand raking or running over. The weighbox or hopper shall be supported on fulcrums and knife edges so constructed that they will not be easily thrown out of alignment or adjustment. Gates on both bins and hopper shall be so constructed as to prevent leakage when they are closed.

(b) Asphalt Bucket

If an asphalt bucket is used for weighing the bituminous material it shall have sufficient capacity to hold not less than 20 percent of the weight of aggregate required for one batch. It shall be steam jacketed or equipped with properly insulated electric heating units and shall be suspended on dial scales or beam scales so that the tare weight of the bucket will be shown for each weighing. A tell-tale shall be provided by means of which the net weight of the bituminous material added to the mix may be controlled accurately to within 2 percent above or below the actual weight in pounds required. The bucket shall be so arranged that it will deliver the hot bituminous material in a thin uniform sheet or in multiple streams the full width of the mixer, excepting in the case of a rotary mixer where the bituminous material is sprayed.

(c) Mixer Unit for Batch Method

The plant shall include a batch mixer of an approved twin pugmill type, rotary drum type, or any other type capable of producing a uniform mixture within the job-mix tolerances fixed by the contract. It shall have a batch capacity of not less than 2,000 pounds. If of the pugmill type, the clearance of the blades from all fixed and moving parts shall not exceed $\frac{3}{4}$ inch unless the maximum diameter of aggregate particle exceeds $1\frac{1}{2}$ inches. If not enclosed, the mixer box shall be equipped with a dust hood to prevent loss of dust by dispersion. The mixer shall be so constructed as to prevent leakage of contents until the batch is to be discharged.

(4) Special Requirements for Continuous Mixing Plant

(a) Gradation Control Unit

The plant shall include a means for accurately proportioning each bin size of aggregate either by weighing or by volumetric measurement. When proportioning is by volume, the unit shall include a feeder mounted under the compartment bins. Each bin shall have an accurately controlled individual gate to form an orifice

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for volumetrically measuring the material drawn from each respective bin compartment. The orifice shall be rectangular, of dimensions about 8" x 9", with one dimension adjustable by positive mechanical means provided with a lock. Indicators shall be provided on each gate to show the gate opening in inches. Mineral filler, if specified, shall be proportioned separately.

(b) Weight Calibration of Aggregate Feed

The plant shall include a means for calibration of gate openings by means of weight test samples. The materials fed out of the bins through individual orifices shall be by-passed to a suitable test box, each compartment material confined in a separate box section. The plant shall be equipped to handle conveniently such test samples weighing up to 800 pounds and to weigh them on accurate scales.

(c) Synchronization of Aggregate and Asphalt Feed

Satisfactory means shall be provided to afford positive interlocking control between the flow of aggregate from the bins and the flow of asphalt from the meter or other proportioning source. This control shall be accomplished by interlocking mechanical means or any positive method under the control of the Engineer.

(d) Mixer Unit for Continuous Method

The plant shall include a continuous mixer of an approved twin pugmill type, or any other type that has proved itself capable of producing a uniform mixture within the job-mix tolerance fixed by the contract. The paddles shall be of a type adjustable for angular position on the shafts and reversible to retard the flow of the mix. The mixer shall carry a manufacturer's plate giving the net volumetric contents of the mixer at the several heights inscribed on a permanent gauge and also giving the rate of feed of aggregate per minute, at plant operating speed. Unless otherwise required, determination of mixing time shall be by weight method under the following formula. The weights shall be determined for the job by tests made by the Engineer.

Mixing time in seconds =

$$\frac{\text{Pugmill dead capacity in pounds}}{\text{Pugmill output in pounds per second}}$$

(e) Discharge Hopper

All continuous mix plants shall be equipped with a controlled discharge storage hopper of not less than 1 ton capacity. This hopper is to be kept in operating condition at all times to prevent the segregation of the mixture.

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(5) Mechanical Pavers

(a) Mechanical pavers shall be self-contained, power propelled units, provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing courses in not less than 12½ foot widths, and from ¾ inch to 6 inches in depth true to the line, grade and crown required.

(b) The receiving hopper shall have sufficient capacity so as not to cause unnecessary delay of dump trucks during spreading operations. The hoppers shall be equipped with distribution screws to evenly place the mixture in front of the screeds.

(c) The paver shall have sufficient power and traction to operate efficiently on all grades encountered on the work.

(d) Pavers shall employ compensating devices to adjust the grade line so that minor changes in grade elevations will not be reflected immediately in the finished surface, and shall also confine the edges of the mixture to true lines.

(e) The screed or strike-off assembly shall operate by cutting, crowding or other practical action which is effective on mixtures without tearing, shaving or gouging at the temperature specified, and which produces a finished surface without segregation and of the eveness and texture specified. The screed shall be adjustable as to level and crown, and when required, shall have an indicating level attached thereto in full view of the operator.

(f) The pavers shall be equipped with blending or joint levelling devices for smoothing and adjusting all longitudinal joints between adjacent strips of asphaltic concrete.

(g) The pavers shall be capable of being operated, when laying mixtures, at forward speeds varying from 5 to 45 feet per minute, consistent with the satisfactory laying of the mixtures, and shall be equipped with a quick and efficient steering device.

(6) Vehicles for Bituminous Mixtures

Trucks for hauling bituminous mixtures, shall have tight, clean and smooth metal beds that have been sprayed with a minimum amount of thin fuel oil to prevent the mixture from adhering to the beds. Each truck shall be covered with a canvas or other suitable material of such size as to protect the mixture from the weather. Any truck causing excessive segregation of material by its spring suspension or other contributing factors, or that shows oil leaks of any magnitude, or that causes undue delays shall upon direction of the Engineer be discharged from the work until such conditions are corrected. When the length of haul tends to excessive loss of heat of mixture, or when directed by the Engineer, the vehicle shall be insulated to maintain a workable temperature for the mixture, and all covers shall be securely fastened.

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(7) Rollers

(a) All rollers shall be self-propelled, in good mechanical condition, smooth running and capable of reversing without back lash. They shall be either three-wheel, tandem steel wheel or pneumatic tired rollers meeting the following requirements:-

(i) Three-wheel rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of width.

(ii) Tandem steel wheel rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of width.

(iii) Pneumatic tired straight wheel rollers shall weigh at least 9 tons, and shall provide a compression of not less than 300 pounds per inch of effective rolling width.

(b) The wheels of all rollers shall be equipped with adjustable scrapers, water tanks, and sprinkling apparatus, which shall be used to keep the wheels wet and thus prevent the bituminous mixture from adhering to the wheels.

(8) Power Blowers and Power Brooms

Blowers and brooms shall be of the power type and shall be suitable for cleaning the surface to be paved.

(9) Scales

Scales shall be standard truck scales of the double beam type. The scales shall be of sufficient size and capacity to accommodate all trucks to be used by the Contractor in handling bituminous mixtures. The scales shall be inspected and tested for accuracy as often as may be required by the Engineer. The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(10) Weigh House

The weigh house shall be weather-proof and shall be constructed in a manner that will afford adequate protection for the recording devices of the scales. It shall be a suitable size and shall have one sliding window facing the scale platform, one end window, and a shelf desk at least 2 feet wide and 6 feet long. Doors shall not open onto the scale platform.

(11) Small Tools

The small tolls shall consist of rakes, shovels, tampers, smoothing irons, pavement cutters and other small tools as may be required. Sufficient number of small tools shall be available at

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all times to efficiently construct the bituminous pavements.

(12) Laboratory

The Contractor shall provide and maintain, near the site of each paving plant, a suitable weather-tight field laboratory building in which to house and use the testing equipment, said building being for the sole use of the Engineer. It shall be not less than 10 feet by 12 feet and 7 feet high, floored and roofed watertight containing not less than 2 windows and 1 door suitably screened and locked, and a workbench 3 feet wide and 6 feet long. The building shall also contain an instrument locker, 2 feet by 3 feet by 4 feet with adjustable shelves and equipped with a lock. The building shall be so located that the details of the plant are in full view and plainly visible from at least one window. When required on account of cold weather, the building shall be fitted with a small stove and the necessary fuel shall be furnished by the Contractor. Lights shall be provided by the Contractor when the plant is being operated in other than daylight hours. The building shall remain the property of the Contractor and on completion of the work shall be removed from the project site.

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DIVISION 6 — 6.1.1

SECTION 1 (A) RANDOM RIP-RAP
(B) ARMOUR RIP-RAP — FEBRUARY, 1960

6.1.1 DESCRIPTION

This item shall consist of stone rip-rap for bank protection furnished and constructed in accordance with these specifications at the locations indicated and in conformity with lines, grades and dimensions shown on the plans or required by the Engineer.

6.1.2 MATERIALS

The Contractor shall supply all materials. The stones for the rip-rap shall be hard, angular and of such quality that they will not readily disintegrate on exposure to water or weather. The source of the material must be approved by the Engineer.

(a) RANDOM RIP-RAP

In random rip-rap the stones shall weigh between 20 and 400 pounds. Not less than 25% of the individual stones shall weigh over 200 pounds.

(b) ARMOUR RIP-RAP

In armour rip-rap 60% of the individual stones shall weigh between 1200 and 2000 pounds each and an additional 20% shall weigh between 400 and 1200 pounds. The remaining 20% shall not weigh less than 200 pounds.

6.1.3 CONSTRUCTION

When shown on the plans and as directed by the Engineer, the Contractor shall excavate an adequate foundation bed upon which the bottom of the rip-rap shall rest. The stones shall be handled or dumped into place so as to form the required cross-sections. Stone above the low water line shall form a uniform surface free from humps or depressions with no excessively large individual stones projecting from the general surface. Armour rip-rap stone excessively large and tending to extend beyond the average general surface shall be embedded into the surface or broken down or discarded.

6.1.4 MEASUREMENT

The quantity for which payment will be made shall be the quantity measured in cubic yards in place and computed by the average end area method for materials satisfactorily incorporated into the work.

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6.1.5 PAYMENT

Payment for rip-rap will be made for the quantities as above determined, measured in cubic yards at the contract unit prices per cubic yard for "Random Rip-Rap" and "Armour Rip-Rap", which prices and payment shall constitute full compensation for excavating, blasting, selecting, transporting and placing all stones, excavating and preparing the foundation bed and for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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SECTION 2 (A) HAND-PLACED RIP-RAP
(B) GROUTED HAND-PLACED RIP-RAP

FEBRUARY, 1960

6.2.1 DESCRIPTION

This item shall consist of constructing hand-placed rip-rap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.2.2 MATERIAL

(1) General

The Contractor shall supply all materials.

(2) Rock

(a) Stone for rip-rap shall be of approved quality sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects.

(b) For wall construction no stone shall be less than ½ cubic foot in volume and 75 percent of the stones shall be at least 1 cubic foot in volume.

(c) For gutter construction stones shall not be less than 4 inches and not more than 6 inches in thickness with approximately flat surfaces with widths of not less than 2 inches and lengths of not less than 6 inches.

(d) Spalls shall be supplied to fill open joints.

(3) Sand

Sand for mortar shall conform to the C.S.A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(4) Cement

Cement for mortar shall be Portland Cement conforming to the requirements of the C.S.A. Specification A5-1951.

6.2.3 CONSTRUCTION

(1) Excavation

(a) HAND-PLACED RIP-RAP

Where shown on the plans and as directed by the Engineer the

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Contractor shall excavate so as to provide for an adequate foundation upon which the bottom of the rip-rap shall rest and he shall fine grade to a uniform and even surface the whole area to be rip-rapped. Depressions shall be filled and thoroughly compacted.

(b) GROUTED HAND-PLACED RIP-RAP

Excavation shall be performed as for (a) above.

(2) Placing

(a) HAND-PLACED RIP-RAP

Unless laid to form a flat apron, the rip-rap shall commence in a trench below the toe of the slope. Stones shall be placed at the locations and to the required dimensions and cross-section shown on the plans and as directed by the Engineer. Stone shall be laid with close broken joints and shall be firmly bedded into the slope and against adjoining stones. The larger stones shall be placed in the lower courses and all shall be thoroughly compacted as construction progresses. Spalls shall be used to fill voids.

(b) GROUTED HAND-PLACED RIP-RAP

The placing of the stones shall be as required under (a) above. The space between the stone shall be filled with cement mortar composed of one part Portland Cement to three parts fine aggregate, and shall be of such consistency that it can be placed with a mason's trowel. Before applying mortar the surfaces of the stones shall be amply wetted. Mortar shall be placed from the bottom to top, and worked with suitable tools to completely fill all voids except that the outer faces of the stones shall be left exposed. Grouted hand-laid rip-rap shall be cured in accordance with the curing requirements of the C.S.A. Standard Specifications for Concrete and Reinforced Concrete A23-1942 and amendments thereto.

6.2.4 MEASUREMENT

The quantity of Hand-placed Rip-rap and Grouted Hand-placed Rip-rap for which payment will be made shall be the number of cubic yards measured in place and accepted in the completed work.

6.2.5 PAYMENT

Payment for Hand-placed Rip-rap and for Grouted Hand-placed Rip-rap will be made for the quantities as above determined, at the contract prices per cubic yard for "Hand-placed Rip-rap" and "Grouted Hand-placed Rip-rap" which prices and payment shall constitute full compensation for excavating the bed, for trimming and consolidating the foundation as directed, for excavating, selecting and transporting all stones, for placing stones by hand, for backfilling and grouting when required, and for all labour, materials, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 9 - CONDITIONING OF ROAD BED

MARCH 1960

6.9.1 DESCRIPTION

This item shall consist of preparing the surface of an existing road bed in accordance with these specifications and to the line and grade and cross-section shown on the plans or as staked by the Engineer.

6.9.2 MATERIALS

Not applicable.

6.9.3 CONSTRUCTION

(1) The surface, including shoulders, shall be scarified to a depth of approximately 3 inches and shaped to the dimensions shown on the plans. All lumps shall be broken down to aggregate size by manipulation with a grader or by other approved mechanical means.

(2) After shaping has been completed the material shall be brought to the optimum moisture content and compacted by steel wheel, pneumatic tired or vibratory compactors meeting the requirements of Article 2.3.3 (6).

(3) The reshaped and compacted surface shall be free from waves and irregularities so that when it is tested by means of a 10 foot straightedge the surface shall, in no place, vary from the lower edge of the straightedge by more than one-half inch.

6.9.4 MEASUREMENT

(1) The quantity of conditioning of road bed for which payment will be made shall be the number of square yards of surface actually conditioned in accordance with these specifications.

(2) The quantity of compaction for which payment will be made shall be the actual number of hours the equipment worked as recorded on the installed hour meter of the hauling unit of the particular equipment for the time of operation approved by the Engineer.

(3) The quantity of water for which payment will be made, shall be the number of 1,000 gallon units of water supplied and distributed on the work.

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6.9.5 PAYMENT

(1) Payment for conditioning of the road bed will be made for the quantities as above determined, at the contract unit price for "Conditioning of Road Bed", which price and payment shall constitute full compensation for all labour, equipment and tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Payment for compaction will be made for the number of hours, as above determined at the contract unit price for the individual units of compaction equipment, which prices and payments shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided. No payment will be allowed for interruptions or down-time of any kind.

(3) Payment for watering will be made at the contract unit price for the number of 1000 gallon units authorized by the Engineer, which price shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) When more than one compaction unit is driven by a single prime mover payment will be made for the additional unit(s) at the contract unit price for the compaction unit only i.e. "Compaction (Pneumatic Tired Roller only)". No additional compensation will be allowed for an increase in the size of the machinery supplying the motive power.

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SECTION 10 - RENTAL VEHICLES

MARCH 1960

6.10.1 DESCRIPTION

This item consists of supplying vehicles for the use of the Engineer and his representatives in relation to the work.

6.10.2 VEHICLES

(1) Type and Equipment

All vehicles shall be, and be kept, in good running order and equipped with heater, defroster, right and left hand mirrors, permanent type anti-freeze, a spare wheel, all weather mud and snow tires on the rear and spare wheels, directional signals with two-way flasher and safety equipment in accordance with provincial regulations, full width front seat and required licensing and shall be of the type and number specified in the "Information to Bidders".

(2) Delivery and Return of Vehicles

(a) The vehicles are to be delivered to a location designated by the Engineer, and from the time the vehicles are so delivered, they shall be deemed to be in the possession of the Crown until returned to the Contractor, as hereunder provided.

(b) The Engineer may, at any time or times, return any or all of the vehicles to the Contractor by advising the Contractor's representative in writing that a specified vehicle is not required. From the date of such advice to the Contractor's representative the specified vehicle shall be deemed to be in the possession of the Contractor until redelivered to the Engineer upon his request.

(c) The Contractor will upon written request from the Engineer redeliver to him any vehicle returned to the Contractor as aforesaid.

(d) The Engineer may require the Contractor to furnish vehicles until final measurements have been completed.

6.10.3 RENTAL CONDITIONS

(1) Damage and Repairs

(a) All vehicles supplied pursuant to this contract are at the risk of the Contractor whether in the possession of the Contractor or the Crown, and the Contractor shall not make any claim or demand, or bring any action or other legal proceedings against the Crown in respect of damage to any such vehicle, including

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damage caused by the negligence of an officer or servant of the Crown while acting within the scope of his duties or employment.

(b) All repairs to vehicles supplied under this contract will be performed expeditiously by the Contractor.

(2) Protection

The Contractor, for himself, his heirs, executors and administrators, hereby undertakes to indemnify and save harmless, the Crown, and officers, servants and agents of the Crown from and against all manner of actions, causes of action, suits, debts, duties, agreements, claims and demands whatsoever which may hereafter exist or be made for or by reason of any cause, matter or thing whatsoever arising out of these terms of rental and the transportation or operation of equipment herein referred to.

6.10.4 MEASUREMENT

The quantity for which payment will be made shall be the actual months or fractions thereof the vehicles are in the possession of the Crown.

6.10.5 PAYMENT

Payment will be made for the quantities as above determined at the contract unit prices for "Vehicles for the Use of the Engineer", which prices and payment shall be compensation in full for supplying, repairing and maintaining the vehicles excepting the cost of fuel and lubricants.

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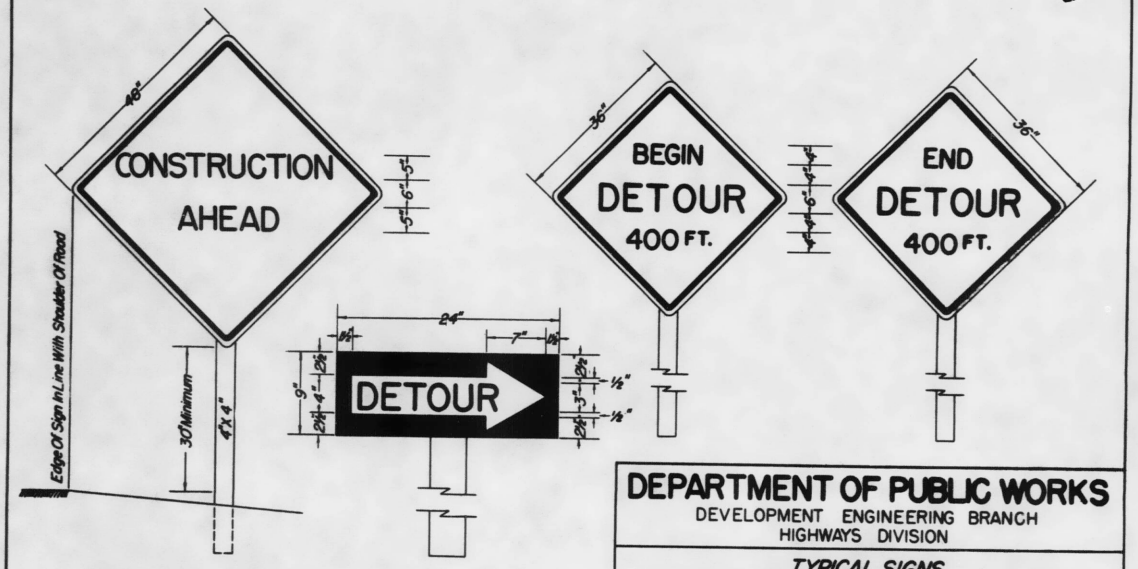

Note:
1. Colouring - Black Lettering & Trim On Yellow Background
2. Mounting Posts For All Signs Similar To That Shown By Construction Ahead
3. Corner Radii - 1½".

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL SIGNS
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 1

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 2

National Archives of Canada
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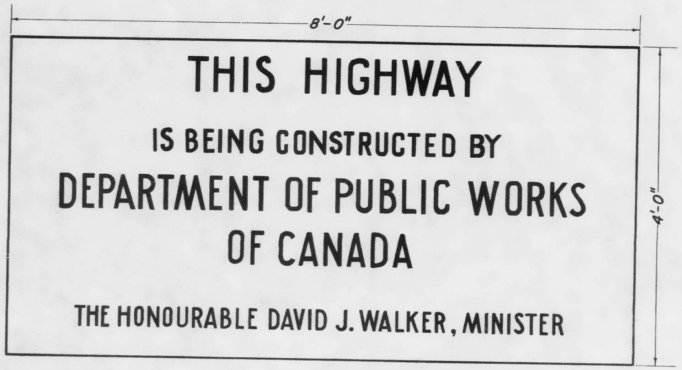

Note:
Colour - Black Letters On White Background

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

STYLE OF LETTERING FOR
PROJECT SIGN BOARDS
STANDARD DRAWING NO. F 2-A

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

REV. No. 1, JAN. 1961

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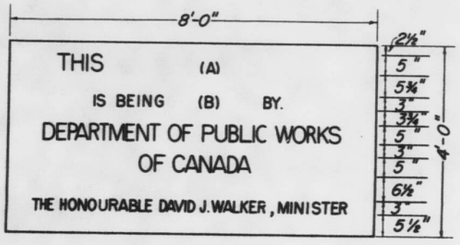
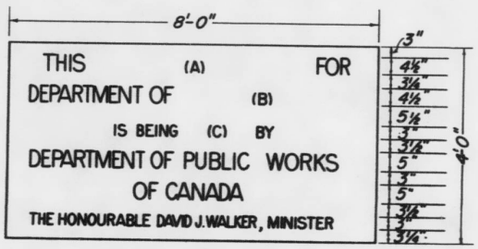
CONSTRUCTION SIGN FOR PUBLIC WORKS PROJECTS



(A) INSERT APPROPRIATE WORDING, E.G:
HIGHWAY – BRIDGE
(B) INSERT APPROPRIATE WORDING, E.G:
CONSTRUCTED – ERECTED – PAVED

Note:
Colour - Black Letters On White Background

CONSTRUCTION SIGN FOR PROJECTS UNDERTAKEN BY PUBLIC WORKS FOR OTHER DEPARTMENTS



(A) INSERT APPROPRIATE WORDING, E.G:
HIGHWAY – BRIDGE
(B) INSERT APPROPRIATE WORDING, E.G:
NATIONAL REVENUE – TRANSPORT – NORTHERN AFFAIRS & NATIONAL RESOURCES
(C) INSERT APPROPRIATE WORDING, E.G:
CONSTRUCTED – ERECTED – PAVED

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

PROJECT
SIGN BOARDS
STANDARD DRAWING NO. F2-B

DRAWN BY *B. Nicol* CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

REV. No. 1, JAN. 1961

1960

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pt 2

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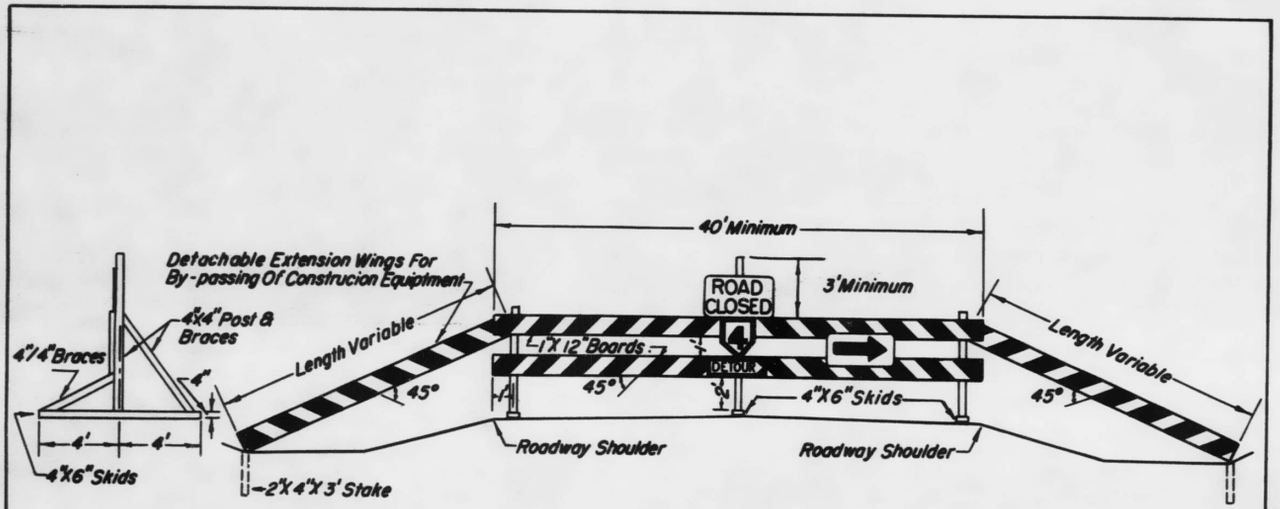
00 10 10



Notes:
1. The Various Types & Combinations Of Approved Signs For Barricades Required For Each Project Will Be Governed By Field Conditions & Subject To Approval By The Engineer
2. All Barricades To Be 1" X 12" Lumber Painted 8" Alternate Black & Yellow Strips
3. All Skids, Braces & Posts To Be Painted White & Nailed Together With No. 20d Nails
4. Bases To Be Weighted Where Necessary To Provide Stability

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE TO BE USED BY CONTRACTOR ON CONSTRUCTION STANDARD DRAWING NO. F 3

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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File/dossier J60-23
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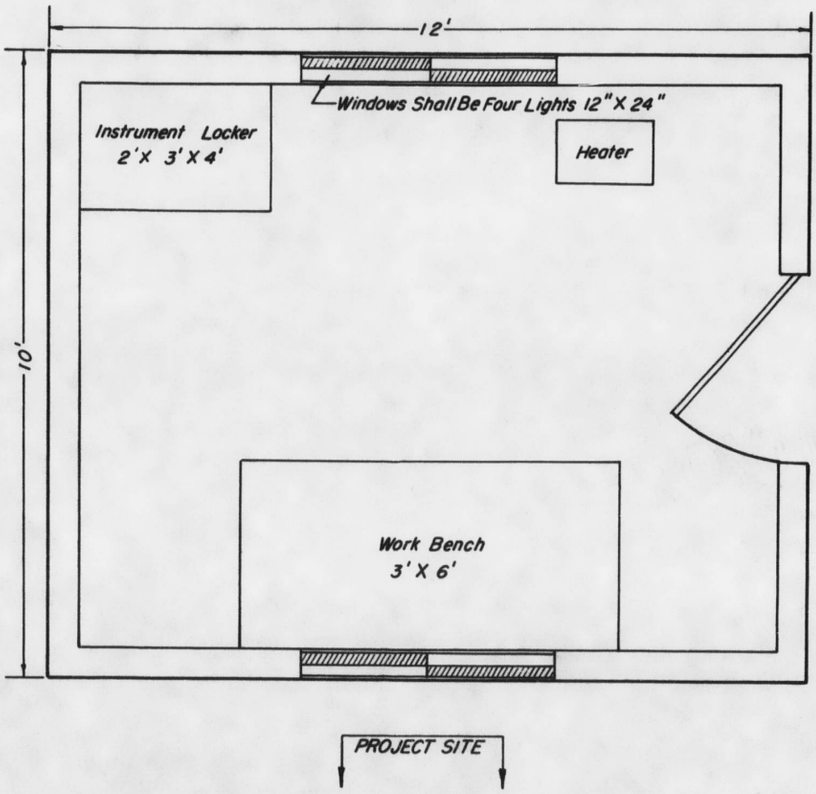

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

FIELD LABORATORY
AT PROJECT SITE
STANDARD DRAWING NO. G9

DRAWN BY B.Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

0010112

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pt 2

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SUPPLEMENTARY SPECIFICATION
FOR
BITUMINOUS PATCHING MIXTURE IN STOCKPILE

1. DESCRIPTION

This item shall consist of a bituminous mixture composed of coarse and fine aggregate and an asphalt binder, mixed in a central plant and stockpiled.

2. MATERIALS

(1) General

Samples of all materials which are to be used under these specifications shall be submitted to the Department Testing Laboratory for analysis and quality testing.

(2) Aggregate

(a) Coarse and fine aggregate shall conform to the specifications for bituminous concrete aggregates.

(b) The maximum size of aggregate to be used shall be 5/8".

(3) Bituminous Material

The bituminous binding material shall be an S.C.3, slow curing cut back asphalt and shall conform to the Canadian Government Specifications Board Specification 16-GP-1b.

(4) Anti-Stripping Agent

An anti-stripping agent as designated by the Engineer shall be added to the bituminous material before it is used in the patching mixture. The anti-stripping agent shall be added in the quantity recommended by the supplier of the specific material used.

(5) General Composition of Mixture

The coarse and fine aggregates and bituminous binder shall be combined in proportions specified by the Engineer.

3. CONSTRUCTION

(1) Preparation of Bituminous Material

Anti-stripping addatives to the bituminous material must be thoroughly mixed before the bitumen is used. This may be done either at the producing refinery or in tank trucks equipped with circulatory systems or by other means satisfactory to the Engineer.

. . . . 2

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3. CONSTRUCTION (Cont'd.)

(2) Preparation of Patching Mixture

Patching mixture shall be prepared in a plant meeting the requirements of Division 4, Section 5 of the Specifications. The constituents of the mixture shall be combined in such proportions as to produce a mixture conforming to the composition specified by the Engineer.

The aggregate and bitumen shall be heated so as to produce a mixture having a maximum temperature of 200°F. and a minimum temperature of 150°F. with a recommended mixing temperature of 150 - 175°F.

Mixing shall not proceed when the aggregates contain more moisture than is normally found in stockpiled aggregate at least 24 hours after a rainstorm.

(3) Stockpiling

The prepared patching mixture shall be stockpiled to a height not greater than 10 feet. Equipment used in stockpiling, including hauling trucks, shall not run on the mixture or in any way compress the mixture. To obtain height above that of the truck dump the material shall be lifted and placed by front end loader or clam shell, etc. to the allowable maximum height.

4. METHOD OF MEASUREMENT

(1) The quantity of Bituminous Patching Mixture for which payment will be made shall be the number of tons (2,000 pounds) of Bituminous Patching Mixture mixed, stockpiled and accepted.

(2) The quantity of bituminous material for which payment will be made shall be the number of tons of bituminous material and anti-stripping agent combined in recommended proportions, actually incorporated into the bituminous patching mixture acceptably stockpiled.

5. PAYMENT

(1) Payment for bituminous patching mixture will be made for the quantity as above-determined, measured in tons (2,000 pounds) at the contract unit price for "Bituminous Patching Mixture", which price and payment shall constitute full compensation for processing, handling, mixing, hauling and stockpiling and for all labour, equipment, tools, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

. . . 3

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5. PAYMENT (Cont'd.)

(2) Payment for bituminous material will be made for the quantity as above-determined, measured in tons at the contract unit price for "Bituminous Material for Patching", which price and payment shall constitute full compensation for supplying the bituminous material, the anti-stripping agent, mixing, delivery and for all labour, tools, equipment, necessary for incorporating the bituminous material into the mixture and for all other work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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pt 2

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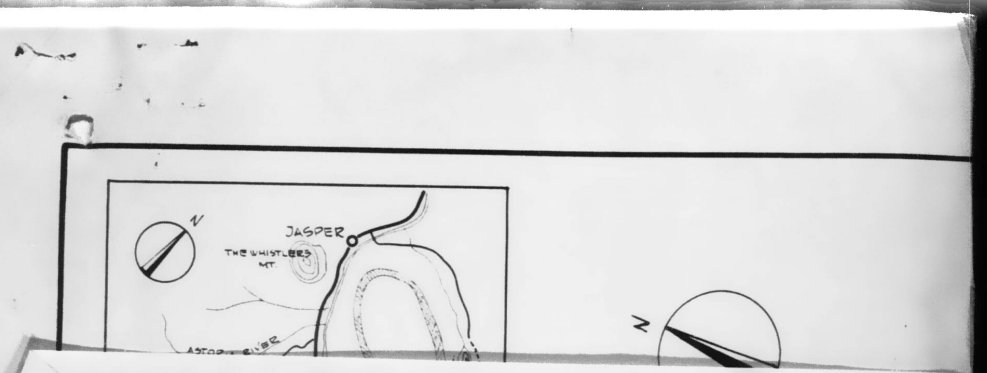

NORLITE BUILDING
JUN 26 1962
Dept. of Northern Affairs & National Resources

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File/dossier J60-23
pt 2

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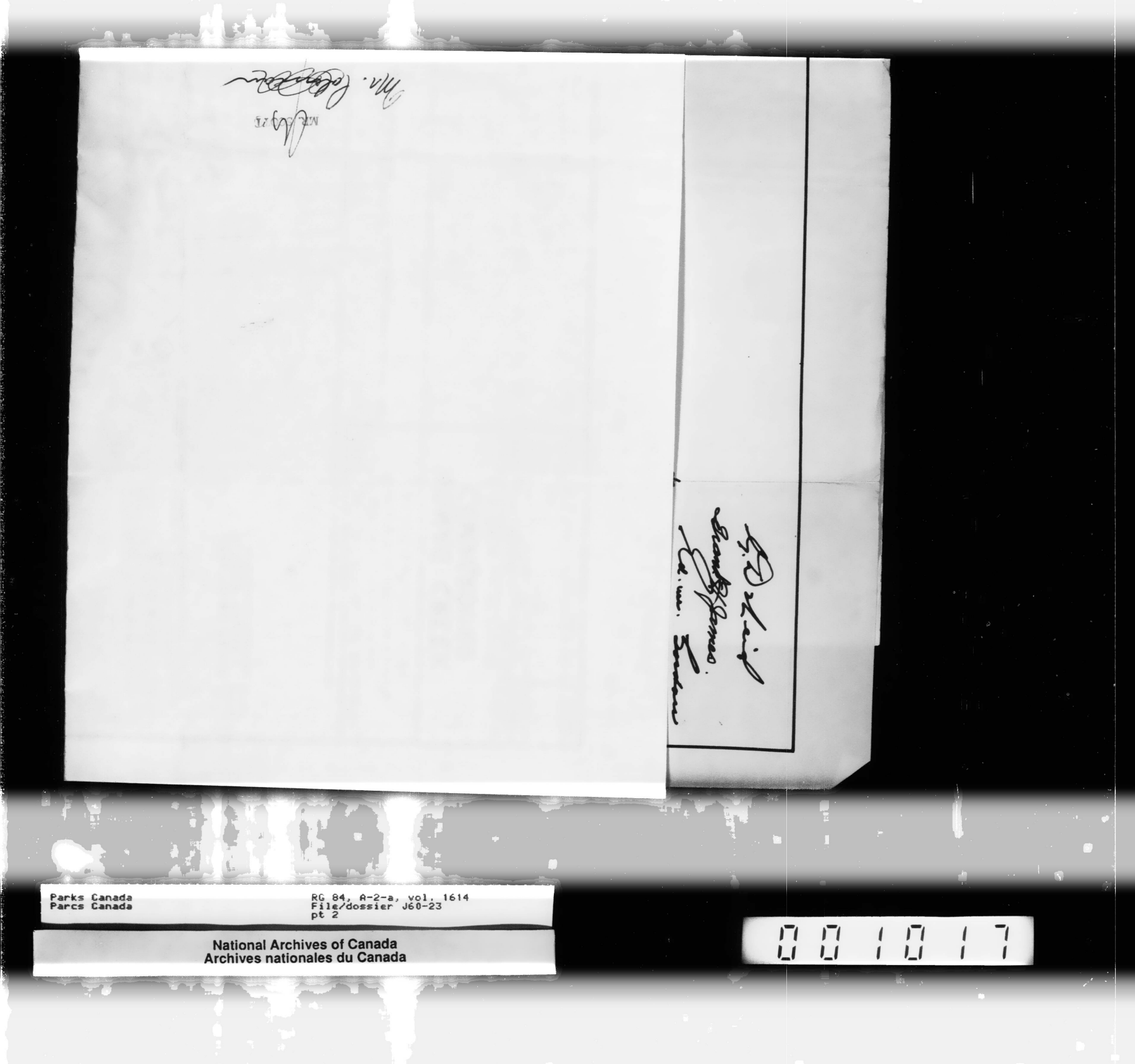

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File/dossier J60-23
pt 2

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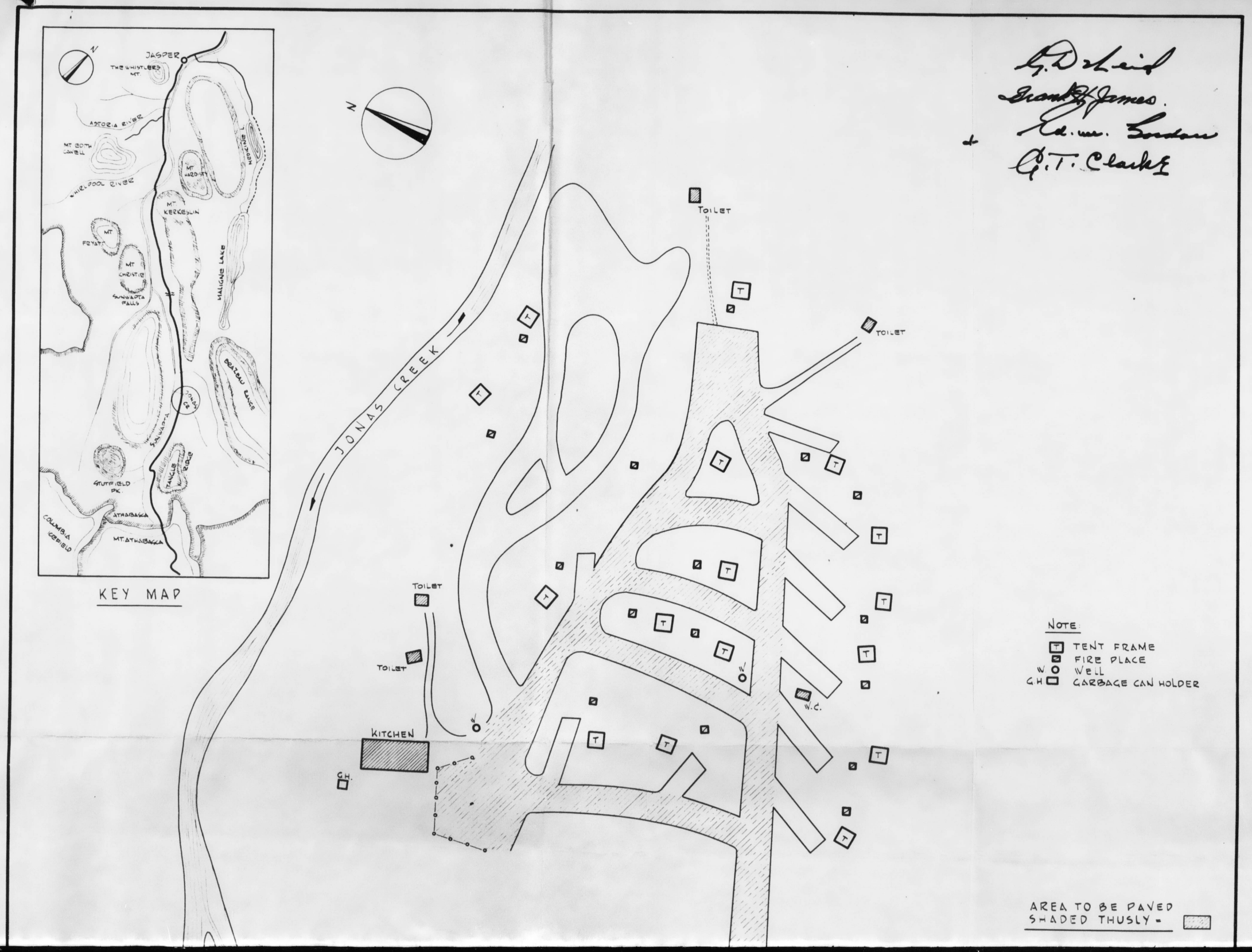

G. D. Reid
Frank H. James
Ed. W. Gordon
G. T. Clarke

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Parcs Canada
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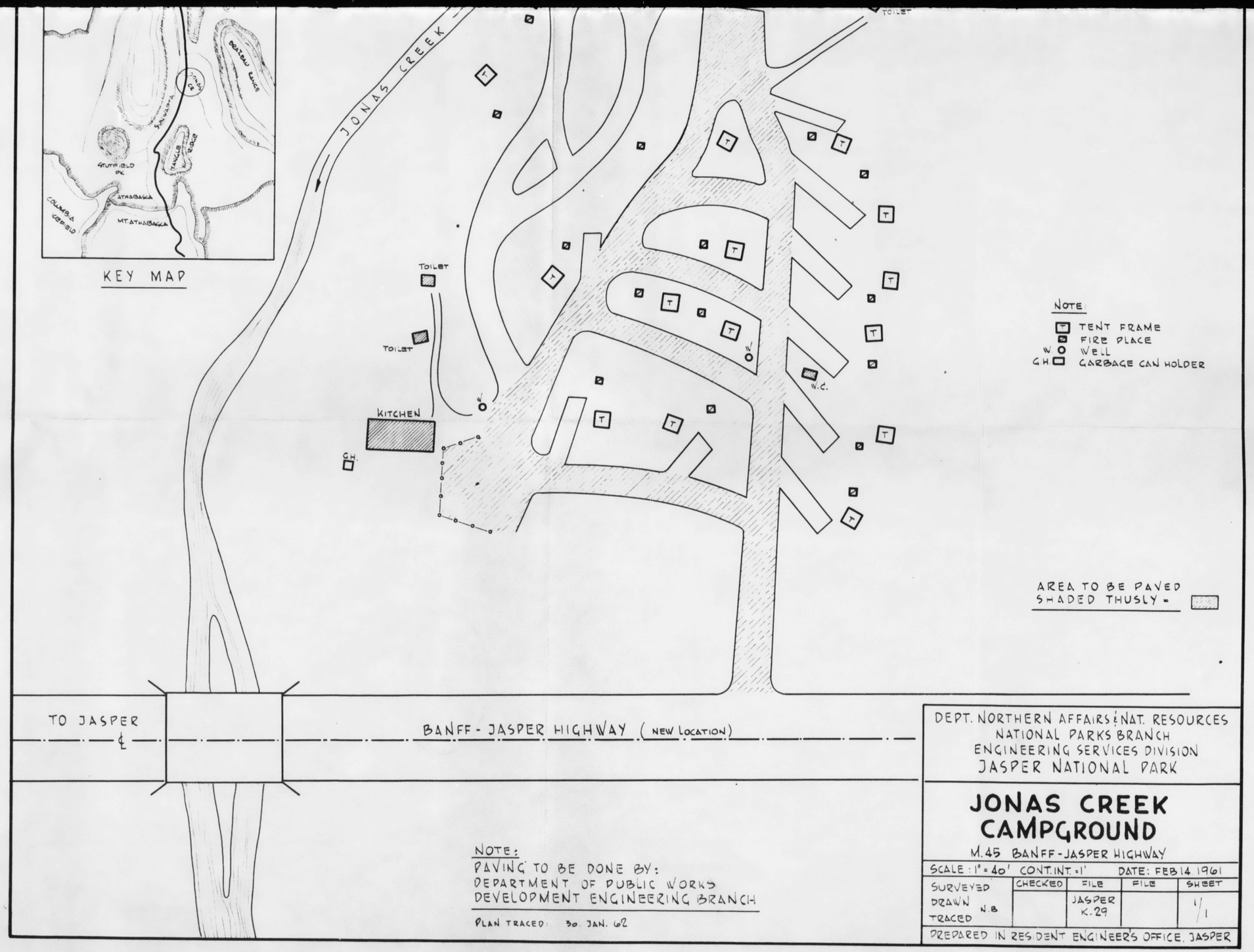

DEPT. NORTHERN AFFAIRS & NAT. RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION
JASPER NATIONAL PARK

JONAS CREEK CAMPGROUND

M.45 BANFF-JASPER HIGHWAY

SCALE: 1" = 40' CONT. INT. = 1' DATE: FEB 14 1961

SURVEYED / DRAWN / TRACED	CHECKED	FILE	FILE	SHEET
N.B		JASPER K.29		1/1

PREPARED IN RESIDENT ENGINEER'S OFFICE, JASPER

B.J 1-1-123

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Detached from
Letter: May 23/62
G.H.L. Kemp

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File/dossier J60-23
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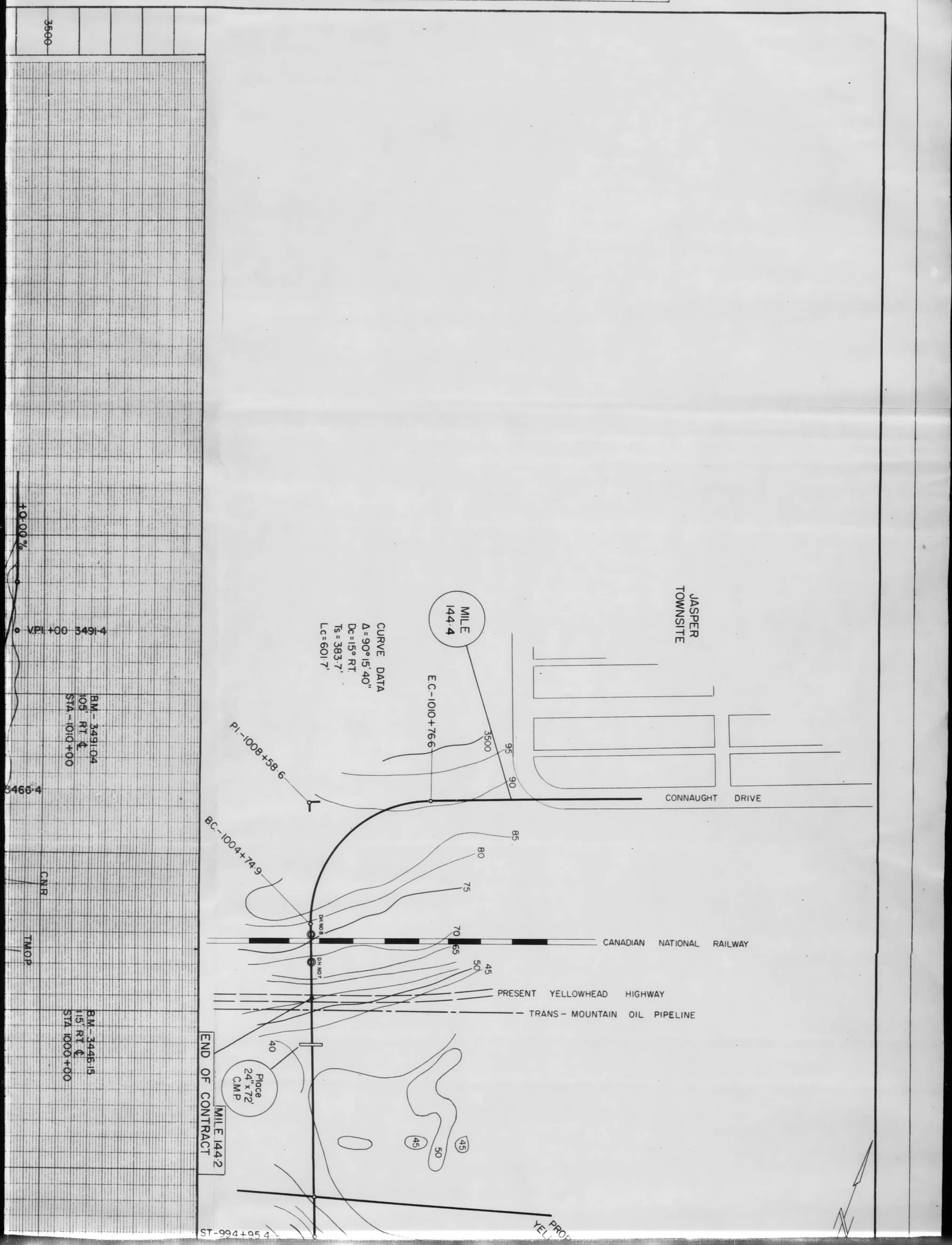
001020

	DATE

PLAN		BY	DATE
NOTE BOOK NO.	SURVEYED		
	PLOTTED		
	ALIGNMENT CHECKED		
	RT OF WAY CHECKED		

3500



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Parcs Canada

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001021

CONNAUGHT DRIVE

CANADIAN NATIONAL RAILWAY

PRESENT YELLOWHEAD HIGHWAY

TRANS - MOUNTAIN OIL PIPELINE

PROPOSED YELLOWHEAD LOCATION

CURVE DATA
Δ = 36° 52'
Δc = 21° 52'
Dc = 5° RT.
Ts = 532.9'
Lc = 437.3'
Ls = 300'

MILE 144

MILE 144.2
END OF CONTRACT

PI-1008+58.6

BC-1004+74.9

DH. NO. 8

DH. NO. 7

Place 24"x72' C.M.P

ST-994+95.4

Place 24"x72' C.M.P

CS-991+95.4

P.I. 989+91.0

SC-887+58.1

TS-884+58.1

METTE RIVER

Place 24"x90' C.M.P

PROPOSED RIVER DIVERSION

Sand

Sand

Sand

B.M.- 3491.04
105' RT. ℄
STA.-1010+00

B.M.- 3446.15
115' RT. ℄
STA. 1000+00

B.M.- 3434.66
110' RT. ℄
STA. 990+00

C.N.R.

T.M.O.P.

PROPOSED

PLAN
SURVEYED
PLOTTED
NOTE BOOK
GRADES CHECKED
B.M.'S NOTED
NO.
STRUCTURE NOTATNS CHKD.

CURVE DATA
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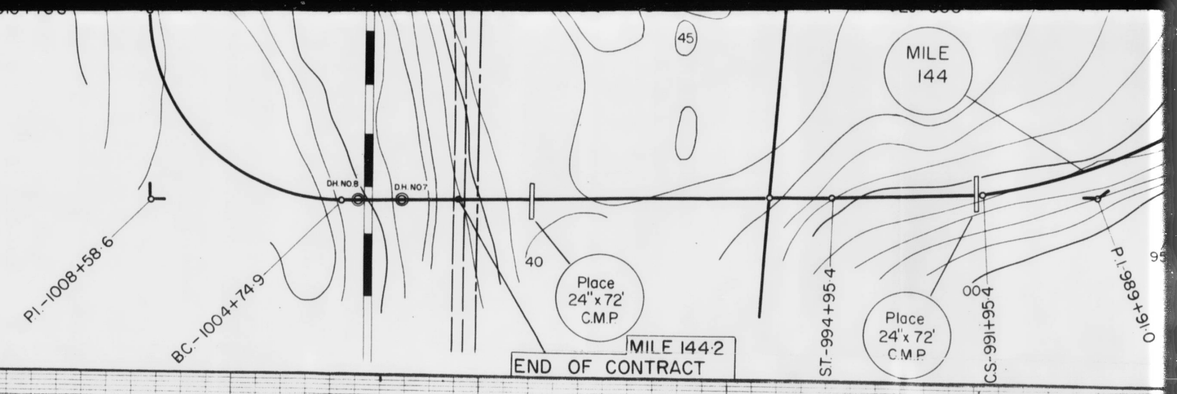
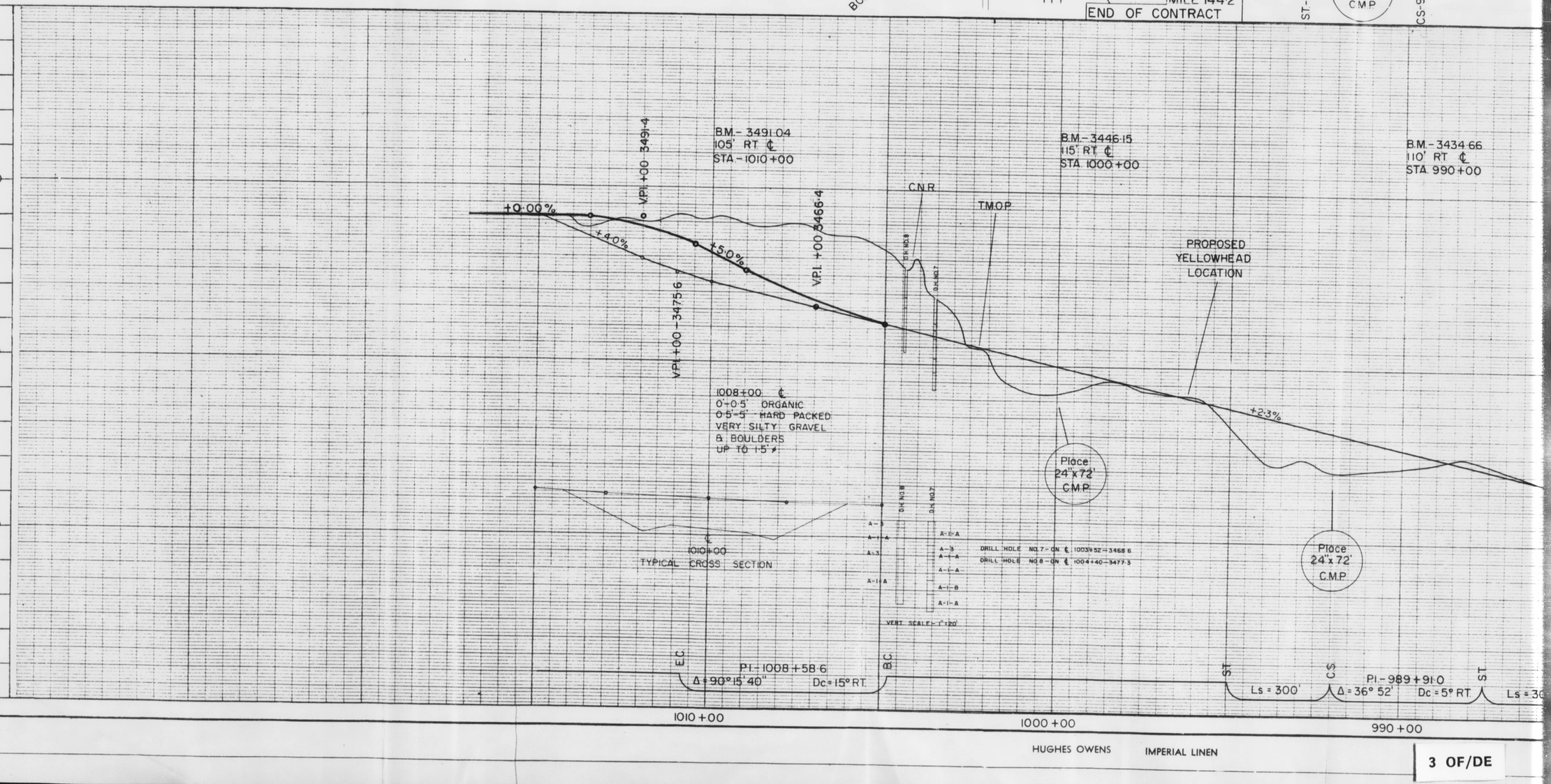
Dc = 15° RT.
Ts = 383.7'
Lc = 601.7'



PROFILE
SURVEYED
PLOTTED
NOTE BOOK
GRADES CHECKED
B.M.'S NOTED
NO.
STRUCTURE NOTATNS CHKD.



HUGHES OWENS IMPERIAL LINEN

3 OF/DE

ATA
40"

MILE 144

DIVERSION

Sand

Sand

T.S-884+58.1

SC-887+58.1

P.I.989+91.0

95

00

DH NO.8

DH NO.7

P.I-1008+58.6

BC-1004+74.9

40

Place 24"x72' C.M.P

MILE 144.2

END OF CONTRACT

ST-994+95.4

Place 24"x72' C.M.P

CS-991+95.4

B.M.-3491.04
105' RT ℄
STA-1010+00

B.M.-3446.15
115' RT ℄
STA. 1000+00

B.M.-3434.66
110' RT ℄
STA. 990+00

C.N.R

T.M.O.P

V.P.I. +00-3466.4

+5.0%

PROPOSED YELLOWHEAD LOCATION

DH NO.8

DH NO.7

1008+00 ℄
0'-0.5' ORGANIC
0.5'-5' HARD PACKED VERY SILTY GRAVEL & BOULDERS UP TO 1.5'ø

℄
1010+00
CROSS SECTION

A-2-A
A-1-A
A-3
A-1-A
A-1-B
A-1-A

DRILL HOLE NO.7-ON ℄ 1003+52-3468.6
DRILL HOLE NO.8-ON ℄ 1004+40-3477.3

VERT SCALE-1"=20'

+2.3%

Place 24"x72' C.M.P.

Place 24"x72' C.M.P.

V.P.I. +00-3408.9

+0.8%

MIETTE RIVER

Place 24"x90' C.M.P.

P.I-1008+58.6
Δ=90°15'40" Dc=15° RT

BC

ST
Ls=300'

CS
P.I-989+91.0
Δ=36° 52' Dc=5° RT

ST
Ls=300'

TS

ST

3500
3450
3400

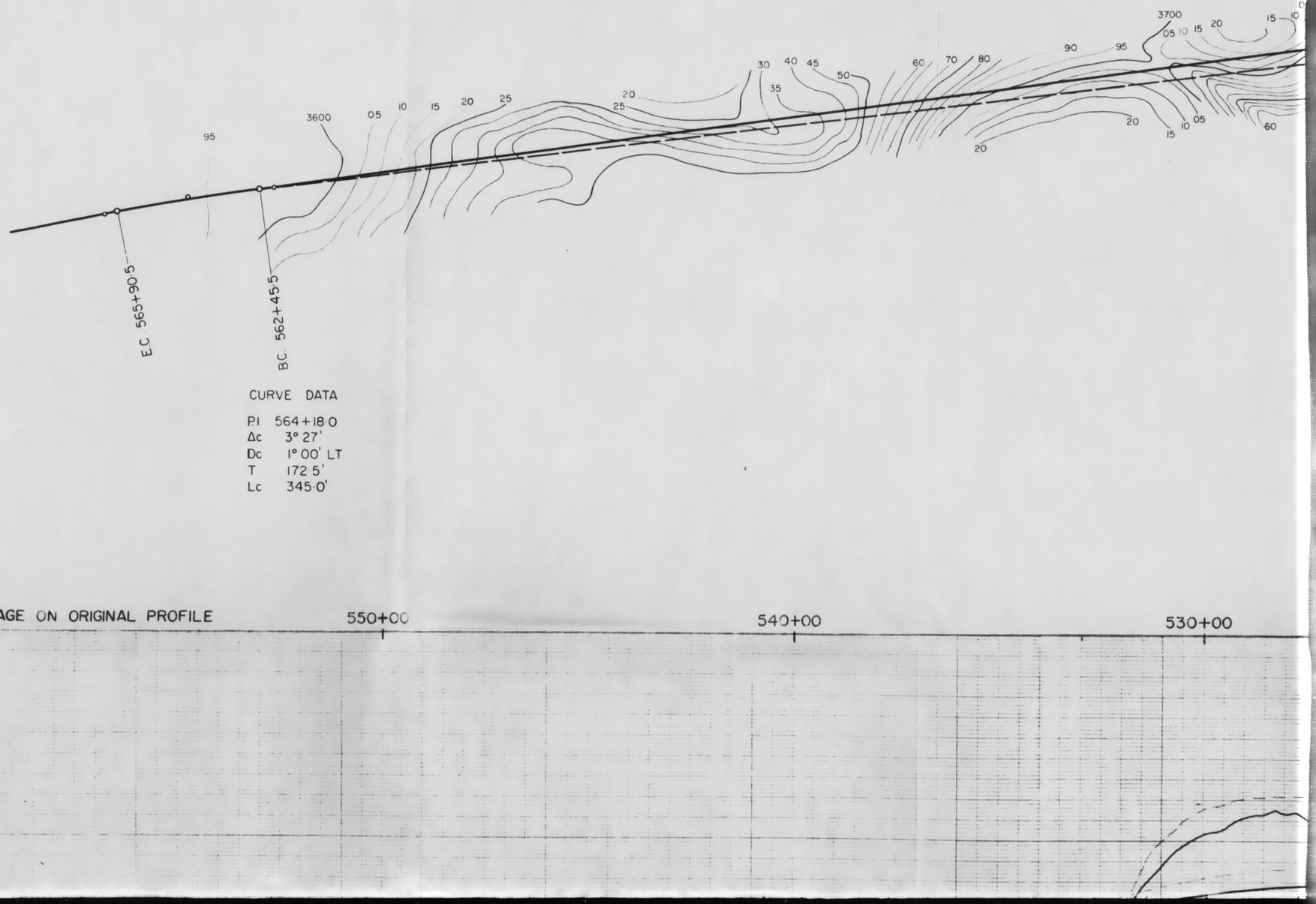
+00
1000+00
990+00
980+00
970+00

HUGHES OWENS IMPERIAL LINEN

LINE REVISION FROM STA. 516+

CONTRACT NO. 7-61-

LOCATION - MILE 125·0 TO 139·4 BA



CURVE DATA

P.I. 564+18·0
Δc 3° 27'
Dc 1° 00' LT
T 172·5'
Lc 345·0'

CHAINAGE ON ORIGINAL PROFILE

550+00 540+00 530+00

3700

PLAN
SURVEYED
PLOTTED
NOTE BOOK ALIGNMENT CHECKED
PROFILE CHECKED
No.

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 2

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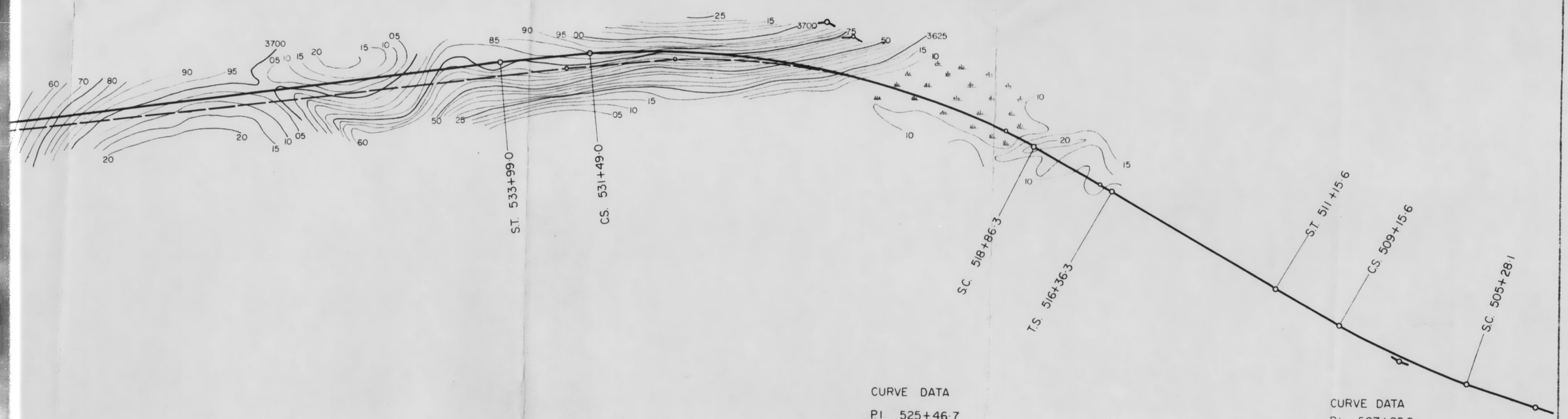
VERT. SCALE 1" = 20' | HORIZ. SCALE 1" = 200' | SHEET NO. 1 | TOTAL SHEETS 1

NE REVISION FROM STA. 516+00 TO 570+00

CONTRACT NO. 7-61-B-J
LOCATION - MILE 125·0 TO 139·4 BANFF-JASPER HWY.



CURVE DATA

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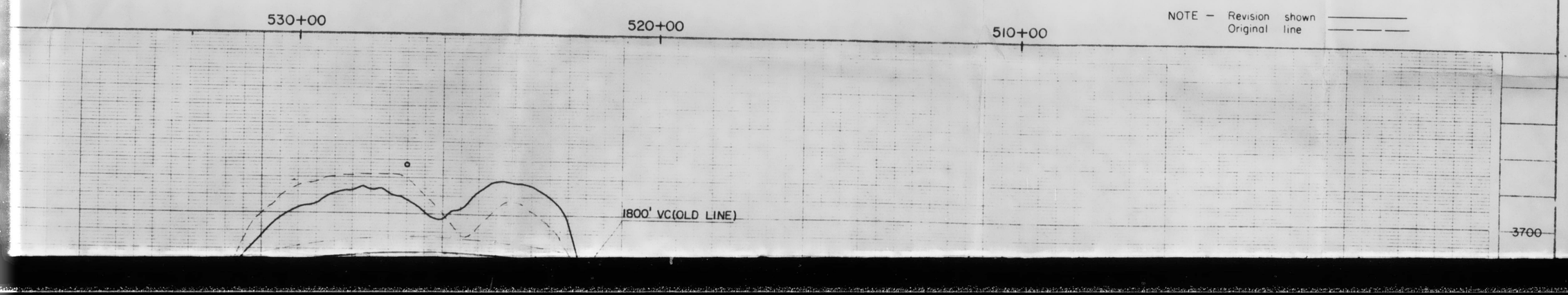
Δc 31° 34'
Dc 2° 30' LT.
Ts 910·4'
Lc 1262·7'
θs 3° 07' 30"
Ls 250·0'

CURVE DATA

PI. 507+22·9
Δ 11° 45'
Δc 7° 45'
Dc 2° 00' RT.
Ts 394·8'
Lc 387·5'
θs 2° 00'
Ls 200'

NOTE — Revision shown ————
Original line — — —



2

CURVE DATA

PI 564+18·0
Δc 3° 27'
Dc 1° 00' LT
T 172·5'
Lc 345·0'

CHAINAGE ON ORIGINAL PROFILE

550+00 540+00 530+00

3700
3650
3600

V.P.I. – 566+00 – 3595·60

-4·724%

L.V.C. = 800'

-0·408%

L.V.C. = 2200' (NEW LINE)

542+00

OLD LINE NEW LINE

ESTIMATED ROCK LINE

V.P.I. – 541+00 – 3713·70

NEW LINE

OLD LINE

550+00

E.C. B.C.

CONSTRUCTION CHAINAGE 570+00 560+00 550+00 540+00

HUGHES OWENS IMPERIAL LINEN

3 OF/DE

CURVE DATA

P.I 525+46·7
Δ 37° 49'
Δc 31° 34'
Dc 2° 30' LT
Ts 910·4'
Lc 1262·7'
θs 3° 07' 30"
Ls 250·0'

CURVE DATA

P.I. 507+22·9
Δ 11° 45'
Δc 7° 45'
Dc 2° 00' RT.
Ts 394·8'
Lc 387·5'
θs 2° 00'
Ls 200'

NOTE — Revision shown ———
Original line — — —

530+00 520+00 510+00

1800' VC (OLD LINE)

L.V.C. = 2200' (NEW LINE)

542+00

OLD LINE NEW LINE

ESTIMATED ROCK LINE

VPI – 541+00 – 3713·70

NEW LINE

OLD LINE

NEW LINE ROCK

OLD LINE

532+00

+4·2%

VPI – 516+00 – 3608·70

L.V.C. = 800'

-0·7%

3700

3650

3600

OLD LINE

550+00

S.T. C.S.

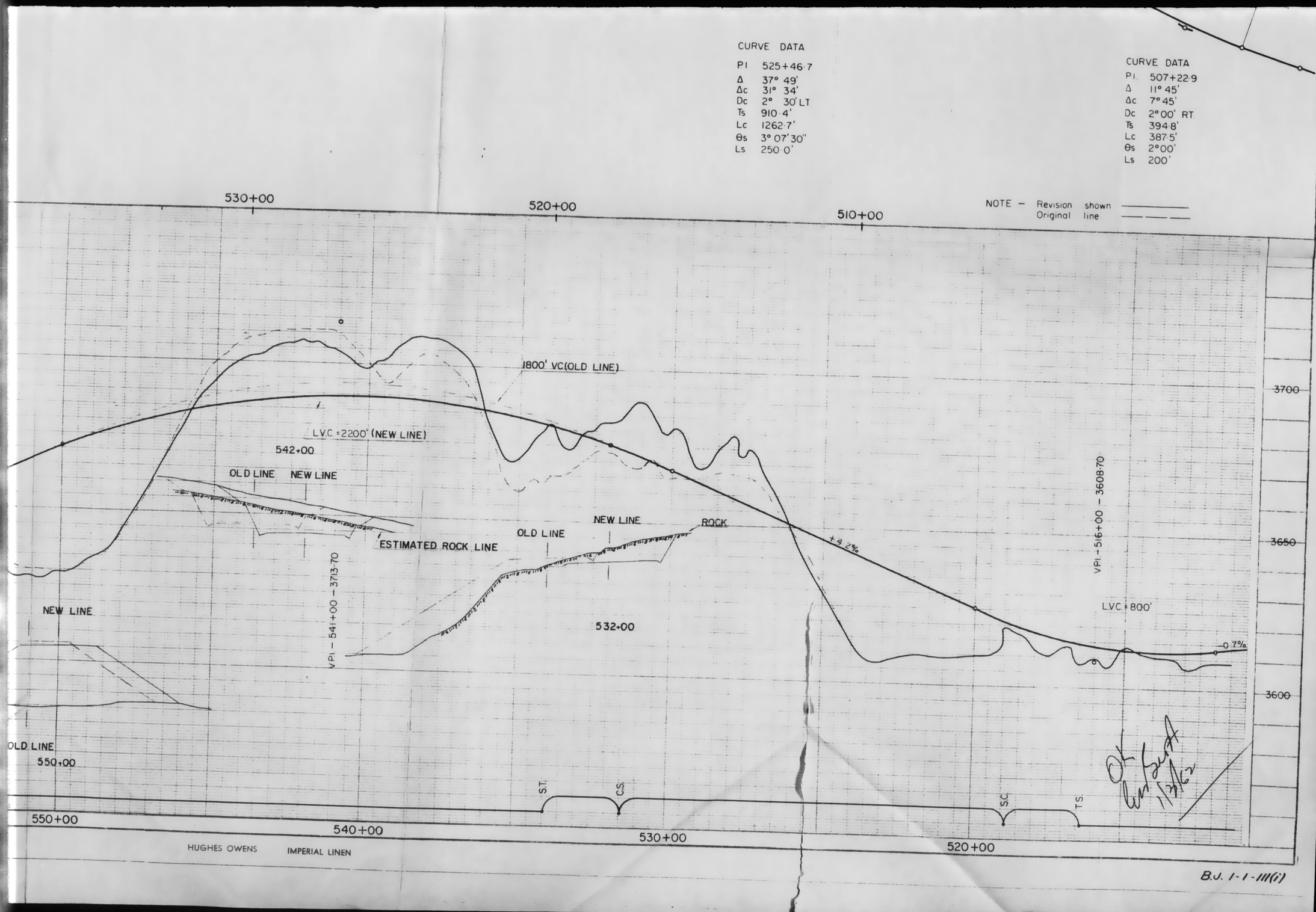
S.C. T.S.

550+00 540+00 530+00 520+00

HUGHES OWENS IMPERIAL LINEN

B.J. 1-1-111(i)

4


CURVE DATA
P.I. 525+46.7
Δ 37° 49'
Δc 31° 34'
Dc 2° 30' LT.
Ts 910.4'
Lc 1262.7'
θs 3° 07' 30"
Ls 250.0'
CURVE DATA
P.I. 507+22.9
Δ 11° 45'
Δc 7° 45'
Dc 2° 00' RT.
Ts 394.8'
Lc 387.5'
θs 2° 00'
Ls 200'
NOTE – Revision shown
Original line
530+00
520+00
510+00
1800' VC(OLD LINE)
L.V.C. = 2200' (NEW LINE)
542+00
OLD LINE
NEW LINE
ESTIMATED ROCK LINE
OLD LINE
NEW LINE
ROCK
+4.2%
VPI. – 541+00 – 3713.70
VPI. – 516+00 – 3608.70
L.V.C. = 800'
0.7%
NEW LINE
532+00
OLD LINE
550+00
3700
3650
3600
S.T.
C.S.
S.C.
T.S.
550+00
540+00
530+00
520+00
HUGHES OWENS
IMPERIAL LINEN
B.J. 1-1-111(i)

File

J 60-23 Plans & Specs

Detached from letter
Dated March 1/62

0010030

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Parcs Canada

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File/dossier J60-23
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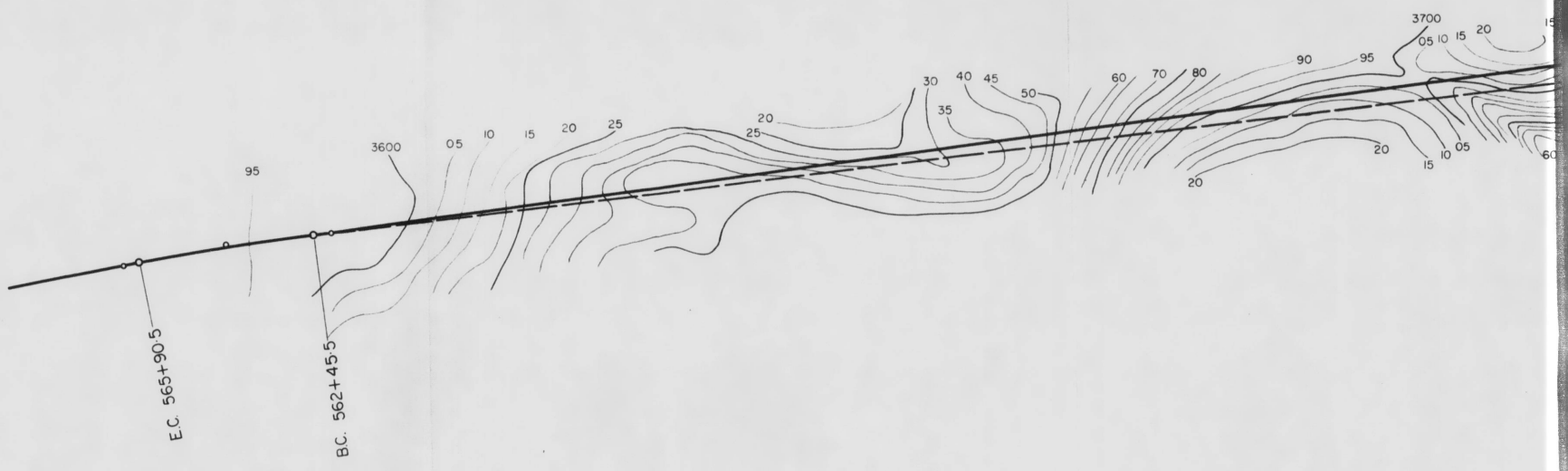
LINE REVISION FROM STA. 51

CONTRACT NO. 7-6

LOCATION - MILE 125·0 TO 139·4



CURVE DATA

PI 564+18·0
Δc 3° 27'
Dc 1° 00' LT.
T 172·5'
Lc 345·0'

PLAN
SURVEYED
PLOTTED
NOTE BOOK
ALIGNMENT CHECKED
PT. OF MAY CHECKED
NO.
BY

CHAINAGE ON ORIGINAL PROFILE

550+00

540+00

530+00

3700

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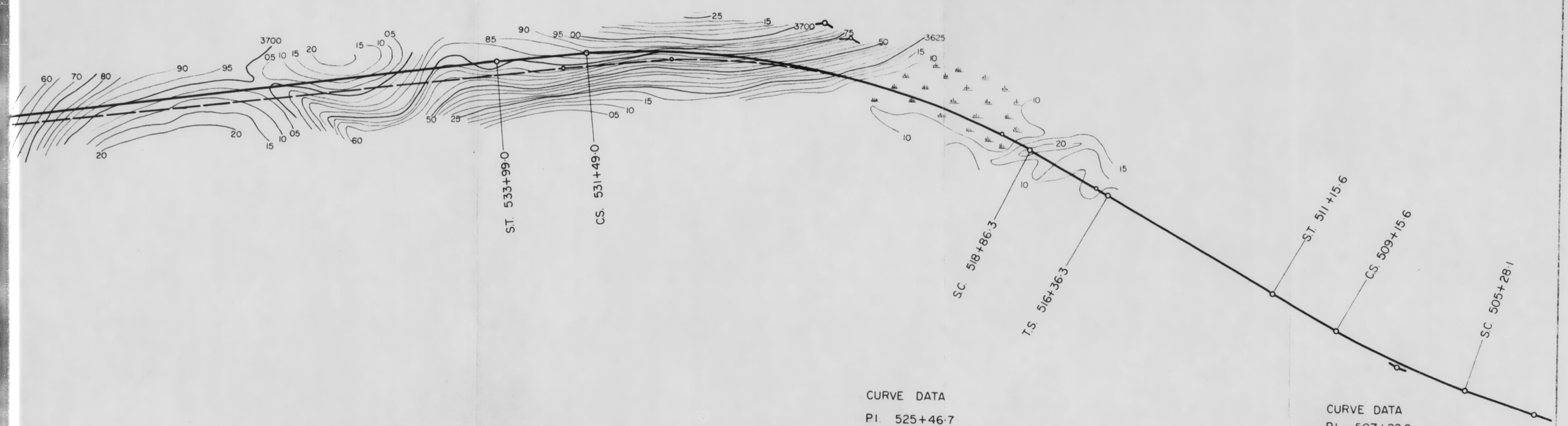
NE REVISION FROM STA. 516+00 TO 570+00

CONTRACT NO. 7-61-B-J
LOCATION - MILE 125·0 TO 139·4 BANFF-JASPER HWY.

VERT. SCALE	HORIZ. SCALE	SHEET NO.	TOTAL SHEETS
1" = 20'	1" = 200'	1	1



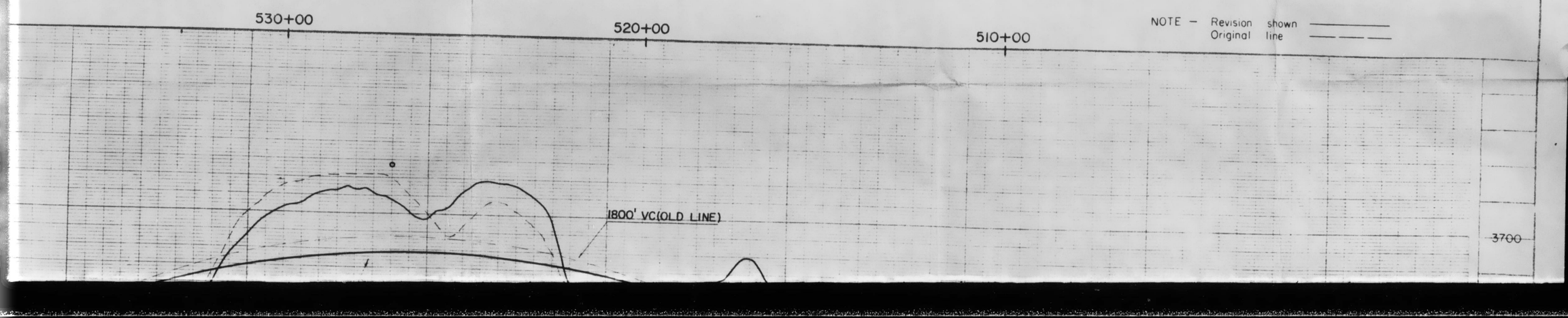
CURVE DATA

PI 525+46·7
Δ 37° 49'
Δc 31° 34'
Dc 2° 30' LT
Ts 910·4'
Lc 1262·7'
θs 3° 07' 30"
Ls 250·0'

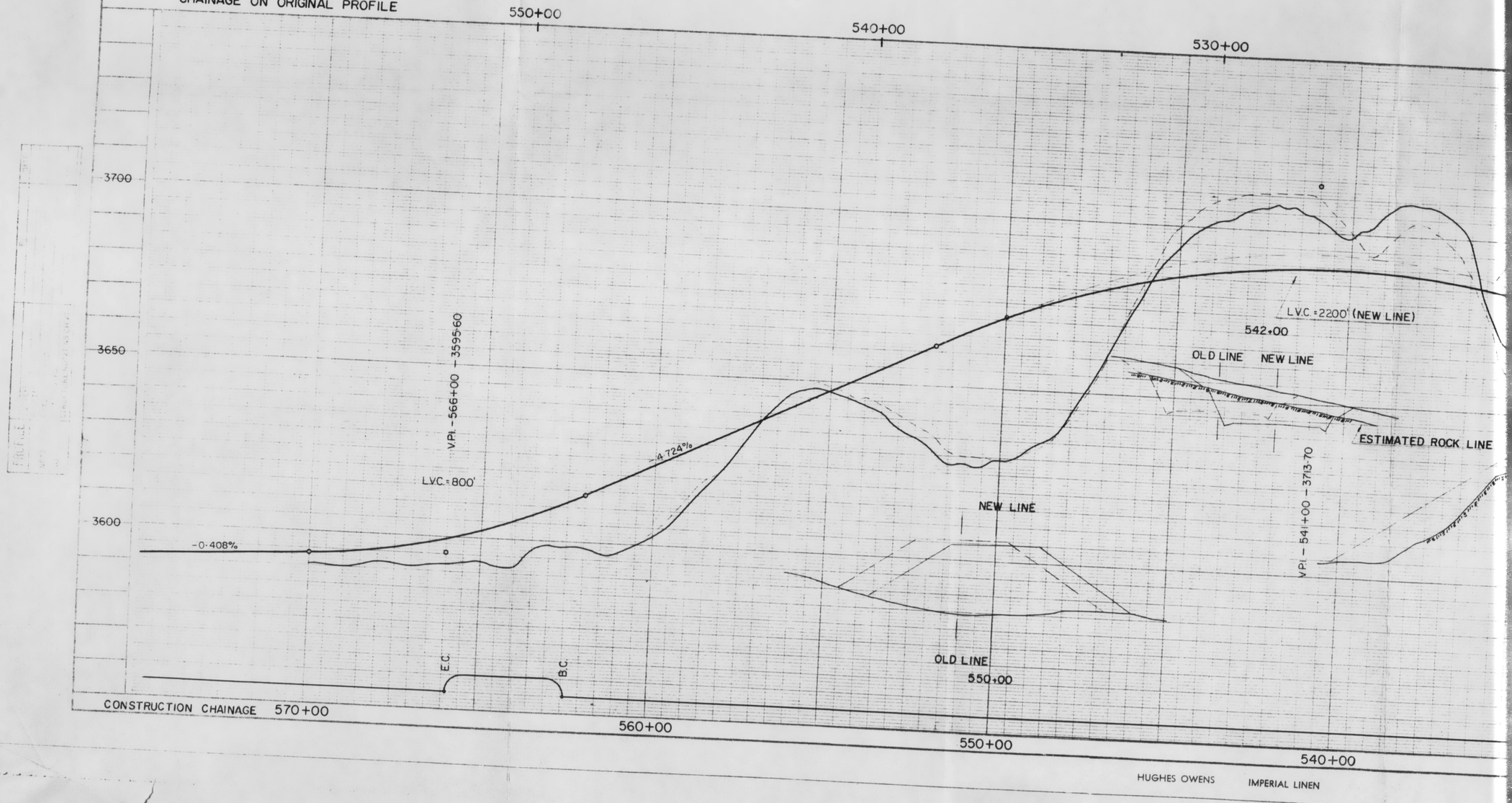
CURVE DATA

PI 507+22·9
Δ 11° 45'
Δc 7° 45'
Dc 2° 00' RT.
Ts 394·8'
Lc 387·5'
θs 2° 00'
Ls 200'

NOTE – Revision shown ————
Original line — — —



Dc 1° 00' LT
T 172·5'
Lc 345·0'



3 OF/DE

CURVE DATA

PI 525+46·7
Δ 37° 49'
Δc 31° 34'
Dc 2° 30' LT
Ts 910·4'
Lc 1262·7'
θs 3° 07' 30"
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CURVE DATA

PI 507+22·9
Δ 11° 45'
Δc 7° 45'
Dc 2° 00' RT
Ts 394·8'
Lc 387·5'
θs 2° 00'
Ls 200'

NOTE – Revision shown ————
Original line — — —

530+00 520+00 510+00

1800' VC (OLD LINE)

L.V.C. = 2200' (NEW LINE)

542+00

OLD LINE NEW LINE

ESTIMATED ROCK LINE

NEW LINE OLD LINE NEW LINE ROCK

VPI – 541+00 – 3713·70

532+00

+4·2%

VPI – 516+00 – 3608·70

L.V.C. = 800'

-0·7%

3700 3650 3600

NEW LINE

OLD LINE

550+00

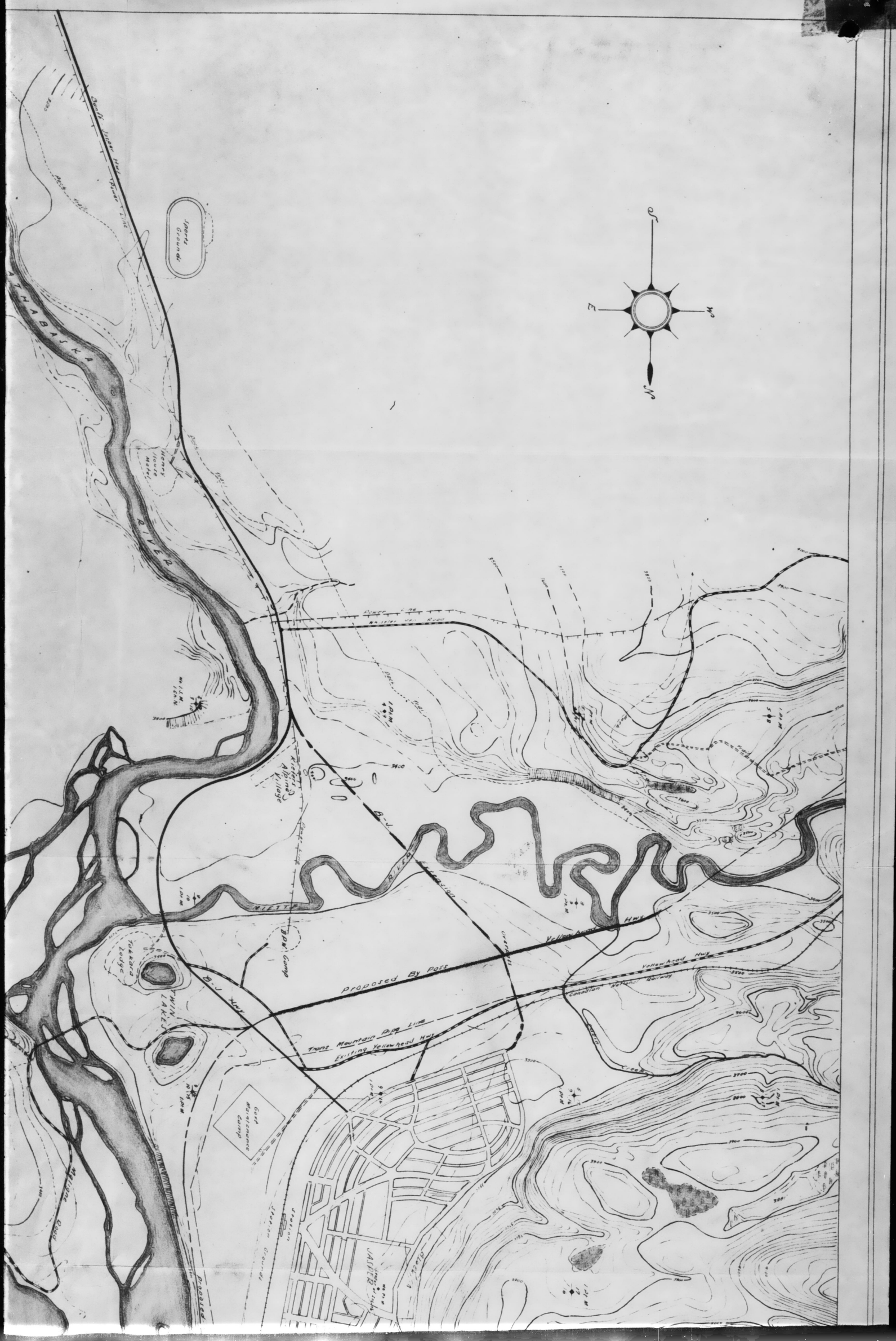
S.T. C.S. S.C. T.S.

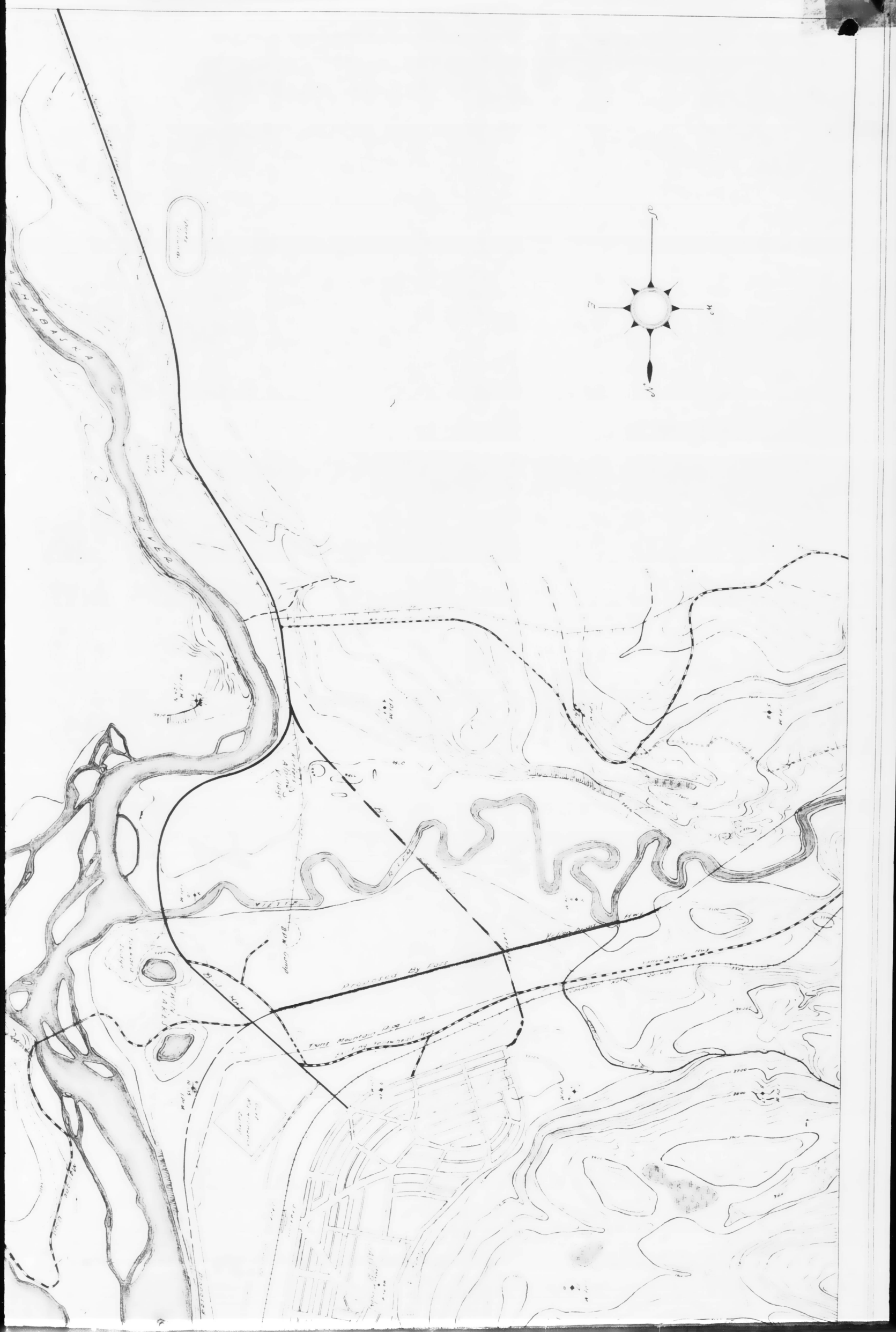
550+00 540+00 530+00 520+00

HUGHES OWENS IMPERIAL LINEN

B.J. 1-1-111(i)

4


N
E
W
S
Airport Ground
ATHABASKA
RIVER
Proposed By Pass
Trans Mountain Pipe Line
Existing Yellowhead Hwy
Yellowhead Hwy
Canadian National Railway
Jasper Park Lodge
Park Gate
Gate Maintenance Camp
TWIN LAKES
Whistler Creek
Pyramid Creek
JASPER
Miette River
Miette Hot Springs
Athabaska Falls
Maligne Lake Road
Jasper Park Golf Course
Jasper Park Information Bureau
Jasper Park Warden Service
Jasper Park Administration Building
Jasper Park Museum
Jasper Park Post Office
Jasper Park Railway Station
Jasper Park Bus Depot
Jasper Park Garage
Jasper Park Stables
Jasper Park Swimming Pool
Jasper Park Tennis Courts
Jasper Park Golf Course
Jasper Park Golf Course Clubhouse
Jasper Park Golf Course Pro Shop
Jasper Park Golf Course Maintenance Shop
Jasper Park Golf Course Caddy House
Jasper Park Golf Course Caddy Shelter
Jasper Park Golf Course Caddy Shelter
Jasper Park Golf Course Caddy Shelter



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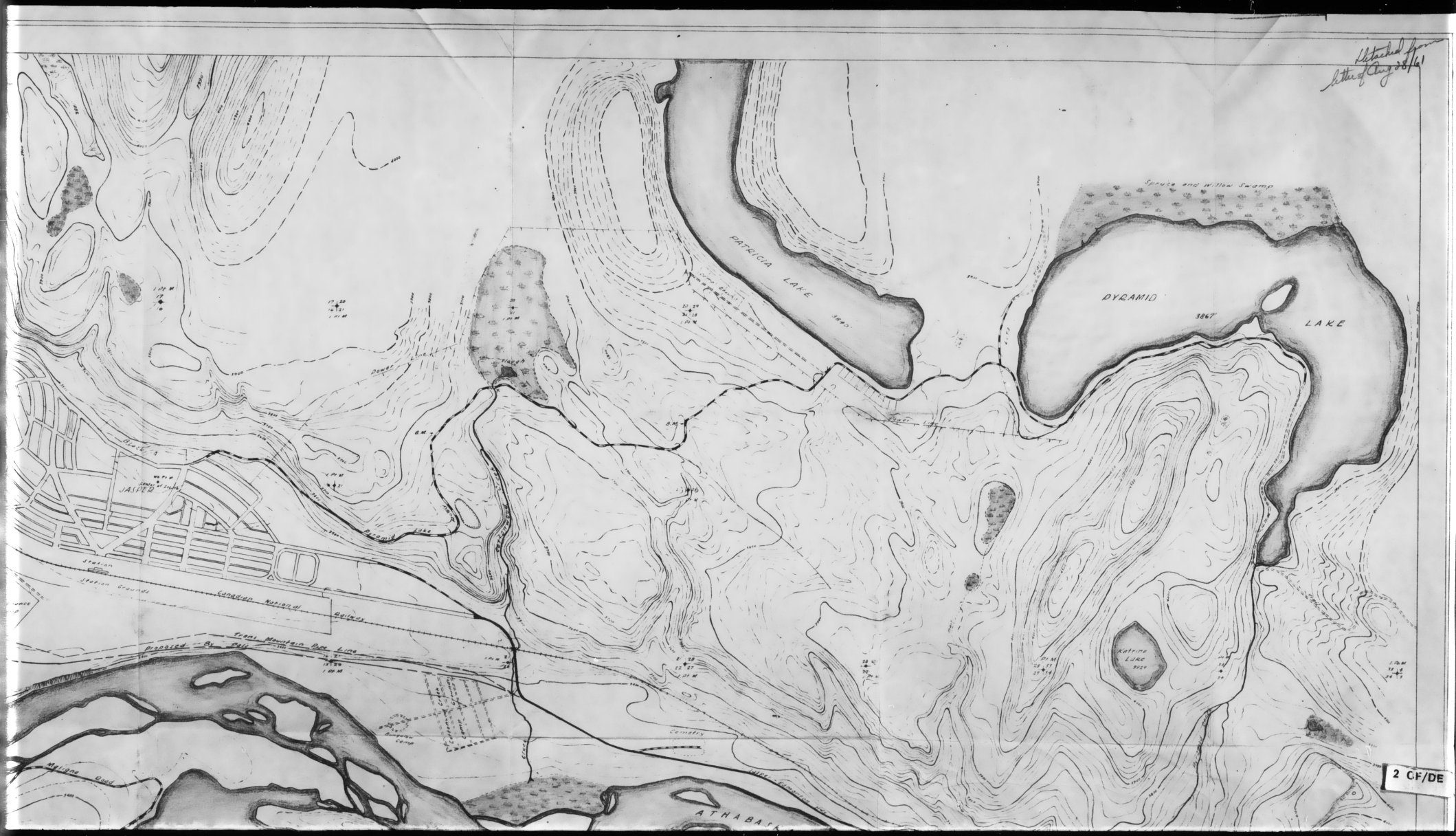
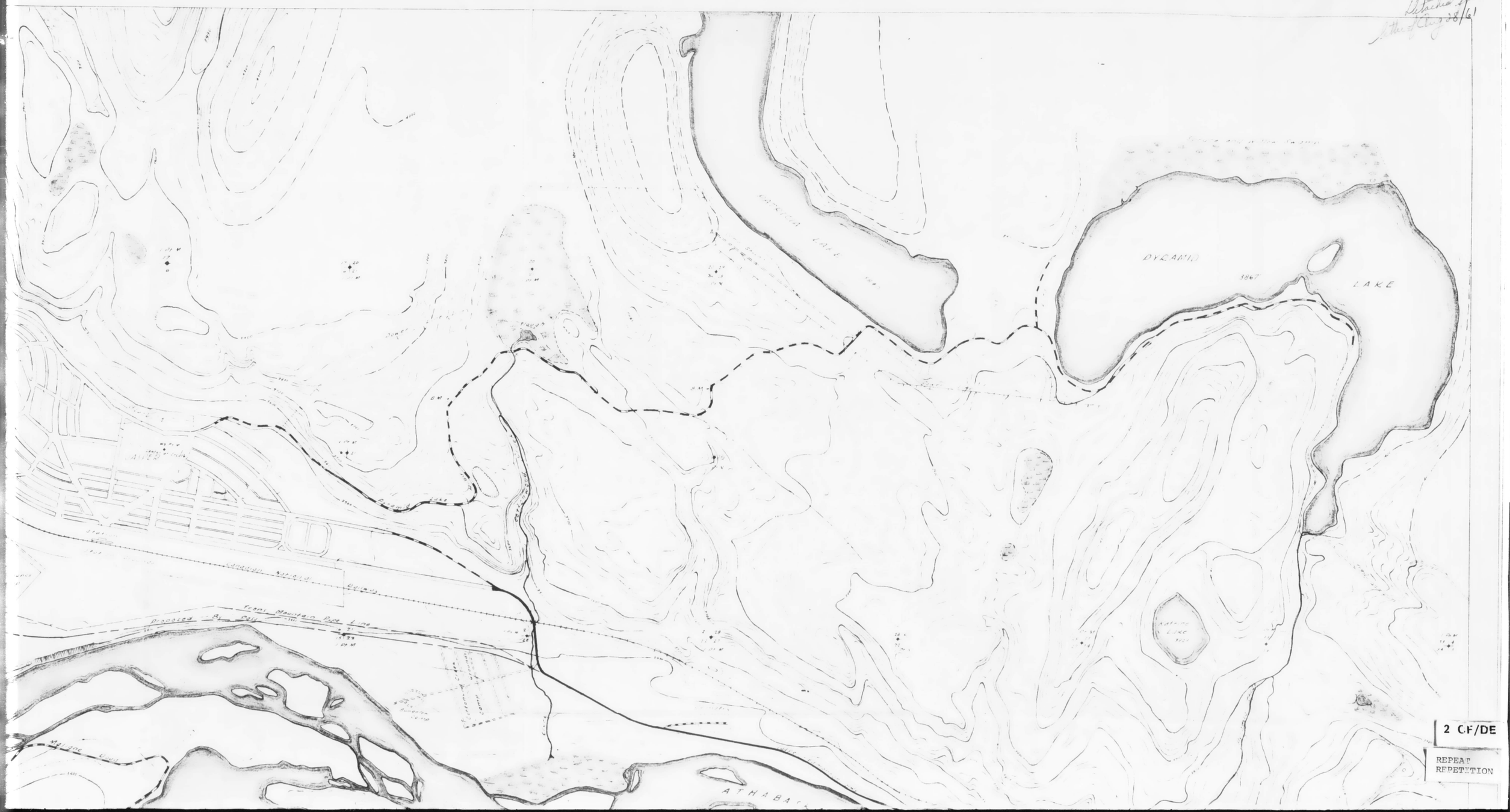
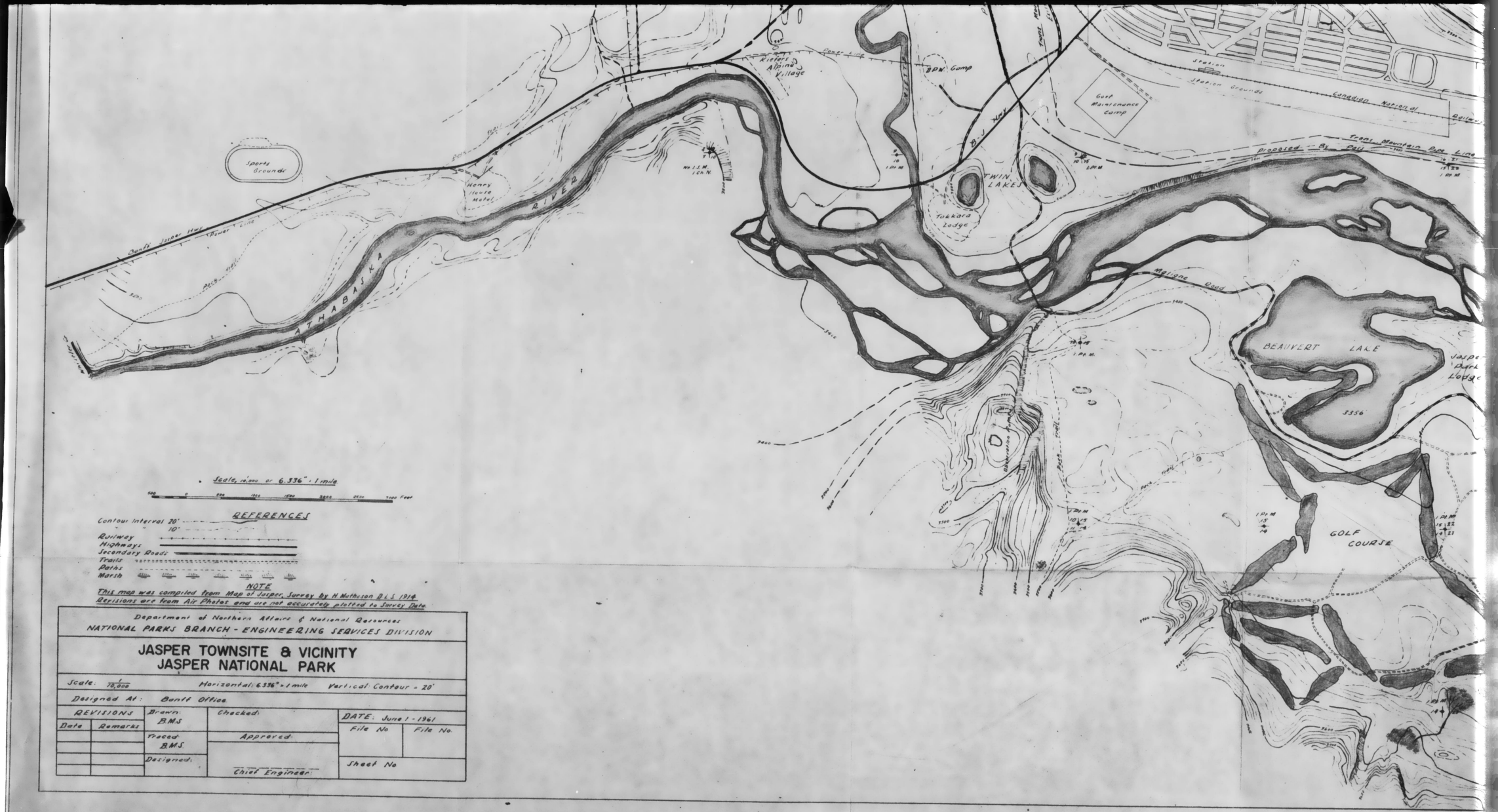
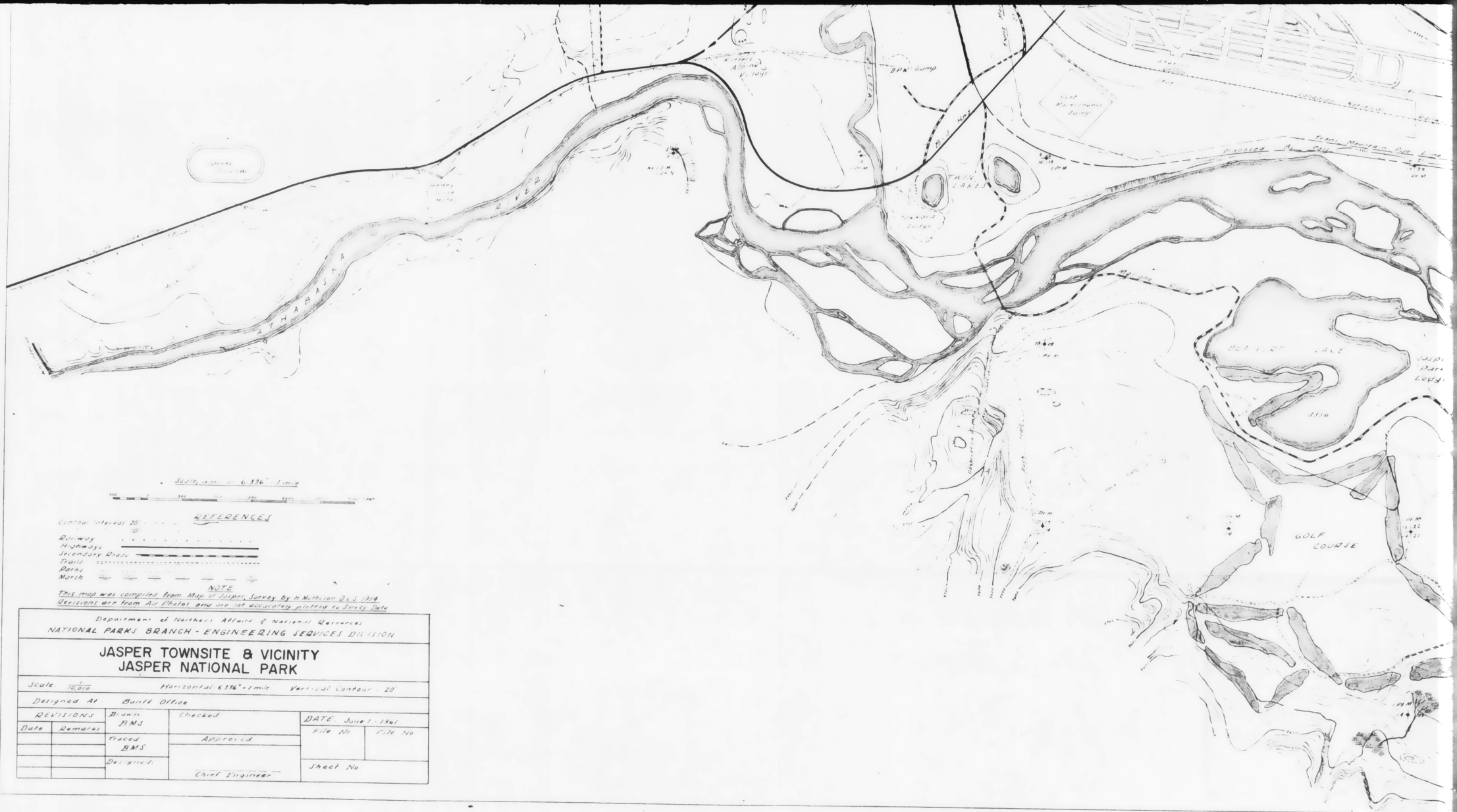

Detached from letter of Aug 28/61
Spruce and Willow Swamp
PATRICIA LAKE
3840'
PYRAMID
3867'
LAKE
Power Line
Slough
Pyramid Lake
JASPER
Station
Station Grounds
Canadian National Railway
Trans Mountain Pipe Line
Proposed By Pass
Katrine Lake
3929
Cemetery
Maligne Road
ATHABASCA
2 CF/DE


Detached from letter of Aug 28/61
PYRAMID
LAKE
3867
Canadian National Railway
Trans Mountain Pipe Line
Proposed By Pass
Maligne Road
ATHABA
2 CF/DE
REPEAT
REPETITION

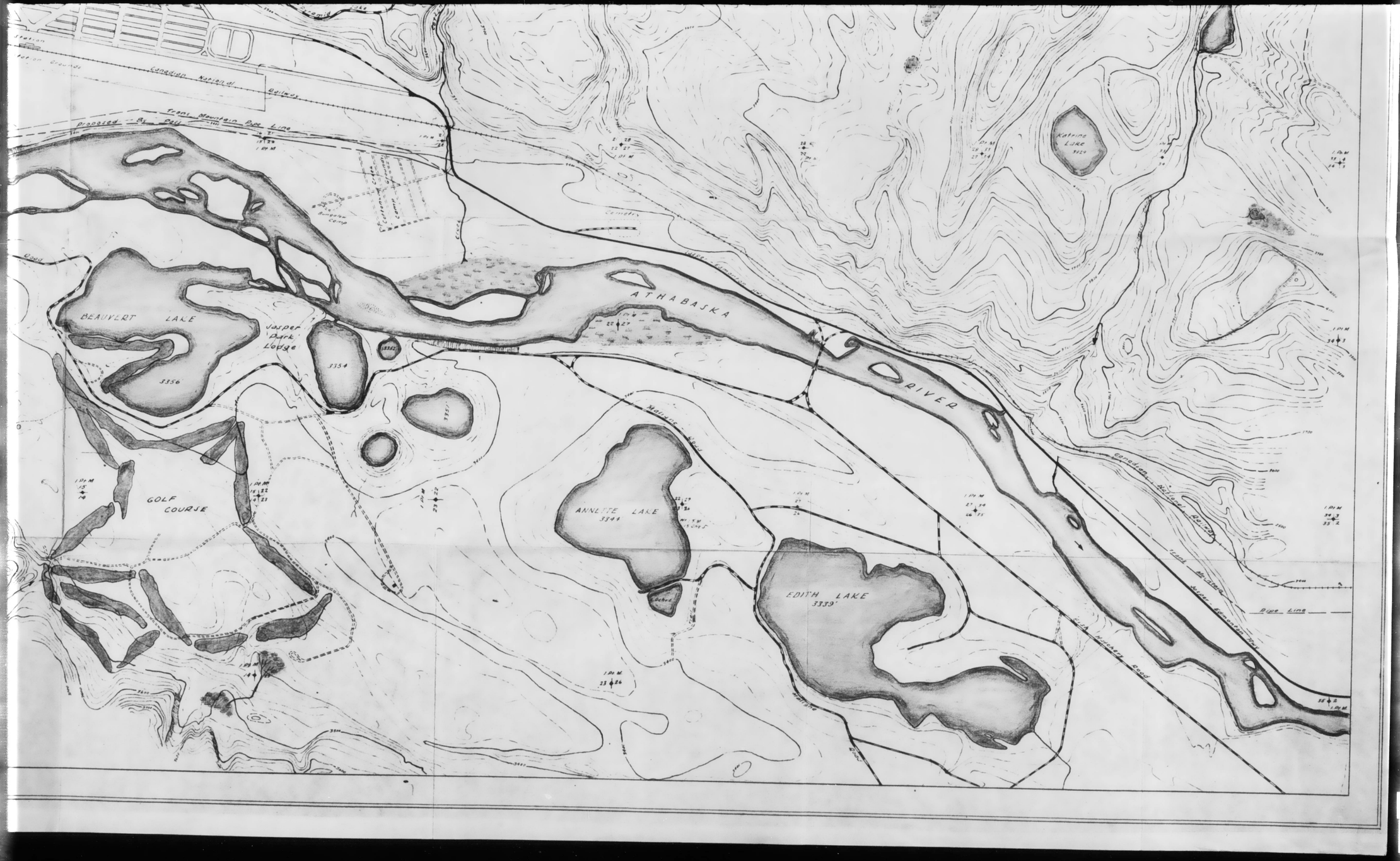

Sports Grounds
Henry House Motel
Banff Jasper Hwy
Power Line
ATHABASKA RIVER
Rieters Alpine Village
Power Line
B.P.W. Camp
B-J Hwy
Govt Maintenance Camp
Station
Station Grounds
Canadian National Railway
Trans Mountain Pipe Line
Proposed By Pass
TWIN LAKES
Takkara Lodge
Maligne Road
BEAUVERT LAKE
3356
Jasper Park Lodge
GOLF COURSE
Scale, 1/10,000 or 6.336" = 1 mile
500 0 500 1000 1500 2000 2500 3000 Feet
REFERENCES
Contour Interval 20'
" " 10'
Railway
Highways
Secondary Roads
Trails
Paths
Marsh
NOTE
This map was compiled from Map of Jasper, Survey by H. Matheson D.L.S. 1914
Revisions are from Air Photos and are not accurately plotted to Survey Data.
Department of Northern Affairs & National Resources
NATIONAL PARKS BRANCH - ENGINEERING SERVICES DIVISION
JASPER TOWNSITE & VICINITY
JASPER NATIONAL PARK
Scale: 1/10,000
Horizontal: 6.336" = 1 mile
Vertical: Contour = 20'
Designed At: Banff Office
REVISIONS
Date
Remarks
Drawn: B.M.S
Traced: B.M.S
Designed:
Checked:
Approved:
Chief Engineer:
DATE: June 1 - 1961
File No
File No.
Sheet No

3 OF/DE

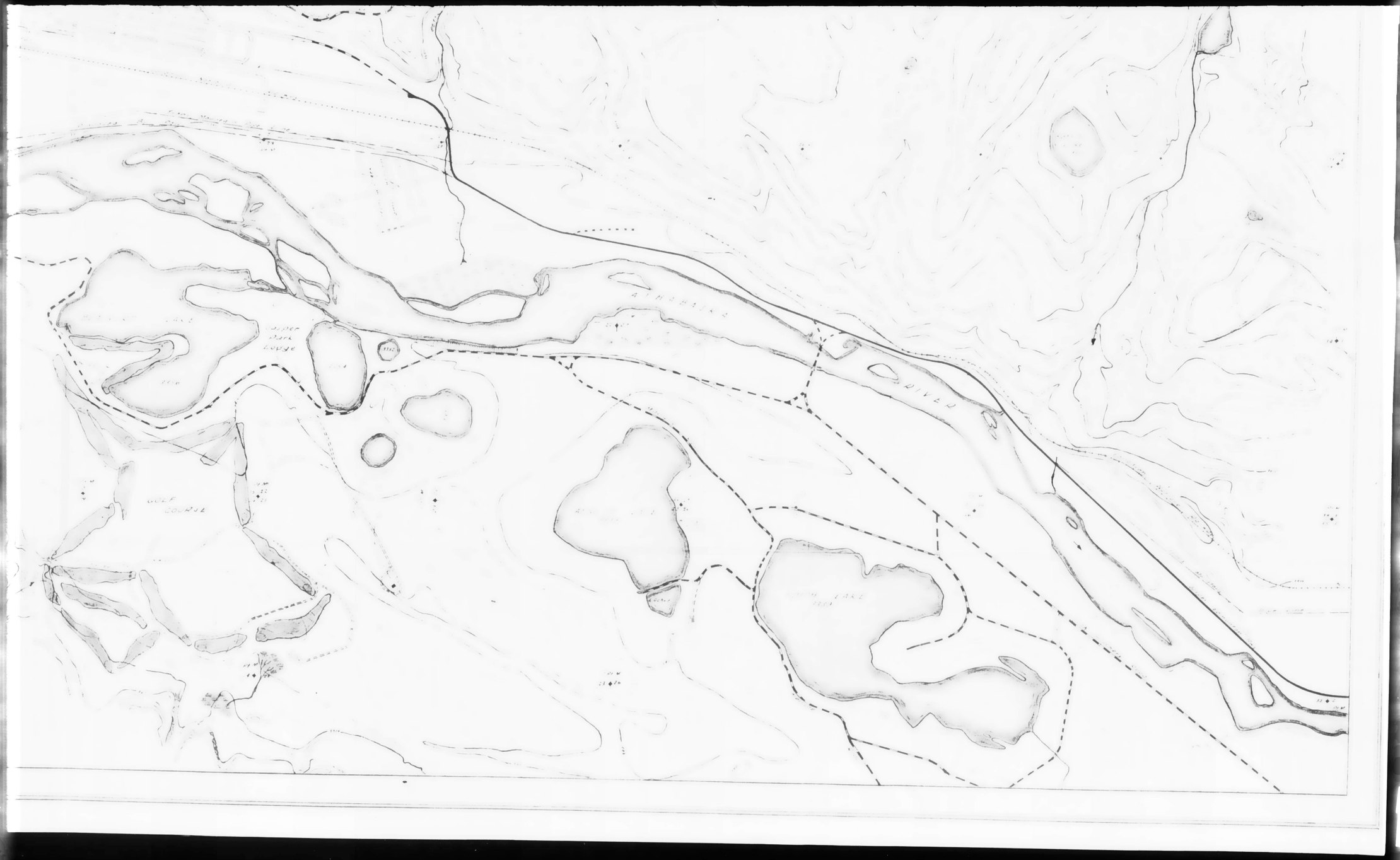


3 OF/DE

REPEAT
REPETITION



Station
Station Grounds
Canadian National Railway
Trans Mountain Pipe Line
Proposed By Pass
Bungalow Camp
Cemetery
Jasper - Edmonton Hwy
Road
BEAUVERT LAKE
3356
Jasper Park Lodge
3354
ATHABASKA
RIVER
Katrine Lake
3929
GOLF COURSE
ANNETTE LAKE
3344
EDITH LAKE
3339'
Malaine Road
Canadian National Railway
Trans Mountain
Jasper - Edmonton Hwy
Pipe Line
Fish Hatchery Road


Jasper Park Lodge
GOLF COURSE
ATHABASKA
RIVER

0001049

File

DEPARTMENT OF

PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

CONTRACT
AND
SPECIFICATIONS

FOR

GRADING, CULVERTS AND GRANULAR BASE COURSE

MILE 125 TO MILE 139.2

BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALTA.

CONTRACT NO. 7/61/B-J

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

TENDER FORM

FOR

CONTRACT NO. 7/61/B-J

GRADING, CULVERTS AND GRANULAR BASE COURSE

MILE 125 TO MILE 139.2

BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALTA.

Instruction to Bidders

(1) Pages 2, 3(a), 5(f), 9 & 10 inclusive must be duly executed.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

INSTRUCTIONS TO BIDDERS DECEMBER, 1960

PART 1 - BIDDING REQUIREMENTS AND CONDITIONS

1.1 Qualifications of Bidders

The bidder will be required to show that he is capable of performing the class of work contemplated and shall submit with the tender on questionnaire forms supplied by the Department:-

(a) A Declaration of Equipment giving a description of the various units, their capacity, condition, age and present location that the bidder will definitely assign to the project being tendered on for its duration.

(b) A statement of his experience in performing work of the type or character for which his bid is submitted.

The bidder may be required to submit such additional evidence of his qualifications as may be deemed necessary by the Department.

1.2 Contents of Tender Forms

All papers bound with or attached to the tender forms are necessary parts thereof and must not be detached or altered.

All plans, specifications and other documents, designated in the tender form, will be considered a part of the tender whether attached or not.

The bidder will be required to deposit with the Department the sum stated in the notice to contractors for each copy of tender form and plans.

1.3 Interpretation of Quantities in Bid Schedule

The quantities appearing in the prepared bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the contract, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased, diminished, or omitted as hereinafter provided without in any way invalidating the unit prices bid.

1.4 Examination of Plans, Specifications, Special Provisions, and Site of Work

The bidder is required to examine carefully the site of the proposed work, the tender, plans, specifications, special provisions, and contract forms before submitting a tender. It is mutually agreed that submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the

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conditions to be encountered in performing the work and as to the requirements of the plans, specifications, supplemental specifications, special provisions, and contract.

1.5 Preparation of Tender

The bidder shall submit his tender upon the blank forms furnished by the Department. The bidder shall specify a unit price, in both words and figures, for each pay item for which a quantity is given, and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, and the total amount of the tender obtained by adding the amounts of the several items.

All words and figures shall be in ink. In case of a discrepancy between the prices written in words and those written in figures, the written words shall govern.

The bidder's tender shall be signed with ink by the individual, by one or more members of the partnership, or by one or more of the officers of the corporation submitting it. If the tender is made by an individual his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the proposal must show the name of the province under the laws of which the corporation was chartered and the names, titles, and business addresses of the president, vice president, secretary and treasurer.

1.6 Irregular Tenders

Tenders shall be considered irregular and may be rejected for the following reasons:-

(a) If the tender form furnished by the Department is not used or is altered.

(b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the tender incomplete, indefinite, or ambiguous as to its meaning.

(c) If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

(d) If the unit prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values.

(e) If they fail to contain a unit price for every pay item indicated.

1.7 Security

Each tender must be accompanied by security as specified in the tender form.

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1.8 Interest

Tenderers are notified that they must make their own arrangements with their bankers as to the payment of interest, if any, on the amount of any certified cheque accompanying their tender. The Government of Canada will not pay interest on said cheque pending the awarding of the contract, nor be responsible for the payment of interest under any arrangements made by the tenderers. The cheque of the tenderer to whom the contract has been awarded will forthwith be deposited in the Department of Finance and interest on the amount thereof at the prevailing rate of interest under the regulations governing deposits in Post Office Savings Banks will be allowed.

1.9 Delivery of Tenders

Each tender must when possible be submitted in a special envelope furnished by the Department and the blank spaces on the envelope must be filled in correctly so as to clearly indicate its contents. When an envelope other than the special one furnished by the Department is used it must be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail the sealed tender must be addressed to the Department at the address and in the care of the official in whose office the bids are to be received. All tenders shall be filed prior to the time and at the place specified in the notice to Contractors. Tenders received after the time for opening of bids will be returned to the bidder unopened.

1.10 Withdrawal or Revision of Tenders

A bidder may, without prejudice to himself, withdraw a tender after it has been deposited with the Department, provided the request for such withdrawal is received by the Department, in writing or by telegram, before the time set for opening tenders. The bidder may then submit a revised tender provided it is received prior to the time set for opening tenders.

1.11 Material Guaranty

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

1.12 Insurance

Tenderers shall take note that insurance of the type specified in Clause 1.5.11 of the General Conditions will be required for all contracts for the construction of a bridge or bridges and all such other work as may, from time to time, be especially provided for in the Information to Tenderers.

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PART 2 - AWARD AND EXECUTION OF CONTRACT

2.1 Consideration of Tenders

After the tenders are opened and read, they will be compared on the basis of the summation of the products of the approximate quantities shown in the bid schedule by the unit bid prices. In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern.

The right is reserved to reject any or all tenders, to waive technicalities, to advertise for new tenders or to proceed to do the work otherwise, if in the judgment of the awarding authority the best interests of Canada will be promoted thereby.

2.2 Award of Contract

The successful bidder will be notified, by letter mailed to the address shown on his tender, that his bid has been accepted and that he has been awarded the contract. The Contractor's Security Deposit may be forfeited if the tenderer declines to enter into a contract when called upon to do so, or if he, as a Contractor, fails to complete the contract.

2.3 Return of Tender Security

All tender securities will be returned except that of the successful bidder, which will be retained until the contract has been successfully completed and accepted.

2.4 Execution of Contract

The Contractor who submitted the successful bid will be required to sign a contract similar to the Indenture exhibited at the same time as the plans and specifications.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

TENDER FORM

FOR

CONTRACT NO. 7/61/B-J

FOR: Grading, Culverts, and Granular Base Course

LOCATION: Mile 125 to Mile 139.2, Banff-Jasper Highway
Jasper National Park, Alta.

The Undersigned, hereby offer to the Honourable the Minister of Public Works, to furnish all necessary machinery, tools, apparatus, and other means of construction, do all the work, furnish all the material except as otherwise specified and, for the prices named in the attached itemized Bid Schedule, to complete the work herein described in strict accordance with the plans, profiles and specifications therefor and such other special provisions and supplemental specifications listed in the Schedule of Plans and Specifications which are provided by the Department for the performance of this work.

The Undersigned, hereby certify that (I, we) have visited and examined the site of the proposed work or have caused it to be visited and examined by a competent person on (my, our) behalf and have made all enquiries relative to the amount of work and value of the materials and plant required for this work.

The Undersigned, understands that the quantities shown on the Bid Schedule are to be considered as approximate only and the Department reserves the right of increasing or diminishing any or all of the items. However, the bids will be compared on the basis of estimated quantities of work to be done as given on the attached Bid Schedule.

The Undersigned herewith enclose:

(a) a security deposit equal to 10% of the tender, or $25,000 plus 5% of the amount by which the tender exceeds $250,000, in one or more of the following forms:

(i) a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act, payable to the Receiver General of Canada;

(ii) Government of Canada bonds payable to bearer, with unmatured coupons attached if coupon bonds;

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(iii) Bonds issued by Canadian National Railways or its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada and payable to bearer, with unmatured coupons attached if coupon bonds.

OR

(b) a bid bond in an approved form equal to at least 10% of the tender.

The Undersigned understands that before a contract is awarded, the successful tenderer must furnish either a security deposit as described in (a) above, or a Performance Bond and a Labour and Material Payment Bond in approved forms, each bond being equal to 50% of the tender. A successful tenderer, who has furnished a Security Deposit with the tender and substitutes a Performance Bond and a Labour and Material Payment Bond upon award of the contract, will have the Security Deposit returned. Bid Bonds, Performance Bonds, and Labour and Material Payment Bonds must be issued by a surety company approved by the Department of Insurance. A list of approximately 100 approved companies may be obtained from any office of the Department of Public Works.

Envelopes containing this tender are to be endorsed:

"Tenders for Contract 7/61/B-J "

and addressed to the Secretary of the Department of Public Works, Ottawa.

The signature(s) of the person(s) tendering must be in their respective handwriting.

In the case of partnerships, the signature, post office address and occupation of each partner must be given.

By my/our signature hereunder, I/we hereby identify this as the tender for Contract 7/61/B-J executed by me/us and bearing date the EIGHT day of APRIL 19 61

WITNESS H. Blain ?

ADDRESS H. Blain ?
10719 - 65 Avenue
Edmonton, Alta.

SIGNATURE SQUARE M CONSTRUCTION LIMITED
W.J. Missiaen, President
COLEMAN COLLIERIES LIMITED
W.J. Missiaen, Director

ADDRESS Box 4456
Edmonton, Alta.

JOINT TENDER

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Schedule of Documents, Plans and Specifications

Provided by the Department

for

Tender Submission

Contract No. 7/61/B-J

1. Instruction to Bidders
2. Information to Tenderers — Page 4 - 4(a)
3. Bid Schedule — Page 5 - 5(f)
4. Construction Program and Equipment Statement — Page 6 - 6(a)
5. Schedule of Equipment Rental Rates Alberta National Parks — Page 7
6. Statement of Experience — Page 8
7. Employment of Sub-Contractors — Page 9
8. Notice to Tenderers — Page 10
9. Indenture
10. Labour Conditions
11. Plans and Specifications

(a) General Specifications

	Division	Section
(i)	General Conditions	1 - 8 incl.
(ii)	Earthwork	1, 2, 3, 4, 6
(iii)	Base Course	1
(vi)	Incidental Construction	1, 2, 3, 4, 10

(b) Standard Plans

A1, A2, A3, A4, B1, B2, B3, D1, F1, F2-A, F2-B, F3

(c) Plan and Profile

Line Diagram
Road Plan Mile 125 - 133
Road Plan Mile 133 - 139.2
Roadway Profile Mile 125 - 139.2
Soils Profile Mile 125 - 133
Soils Profile Mile 133 - 139.2

(d) Supplemental Specifications

Supplemental Specification for Construction of Flumes

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By my/our signature hereunder, I/we hereby identify this as the Schedule of Plans and Specifications provided by the Department of Public Works for the performance of the work under and forming part of this Contract No. 7/61/B-J executed by me/us and bearing date

the EIGHT day of APRIL, 1960

WITNESS H. Blain ?

ADDRESS H. Blain ?
10719 - 65 Avenue
Edmonton, Alta.

SIGNATURE SQUARE M CONSTRUCTION LIMITED
W.J. Missiaen, President
COLEMAN COLLIERIES LIMITED
W. J. Missiaen, Director

ADDRESS Box 4456
Edmonton, Alta.

JOINT TENDER

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INFORMATION TO TENDERERS
FOR
CONTRACT NO. 7/61/B-J

1. Description

The work to be done under this contract consists of grading, culverts and granular base course on the Banff-Jasper Highway from Mile 125 to Mile 139.2 on the east side of the Athabasca River, Jasper National Park.

2. Completion Date

November 30, 1962.

3. Nearest Railway Siding

Jasper, Alberta. Approximately 20 miles from the south end of the contract.

4. Nearest Post Office

Jasper, Alberta.

5. Snow Plowing

No winter maintenance of this section will be carried out by the Government of Canada. Any arrangements made by the contractor to keep this section open shall be at his own expense and shall require the approval of the Engineer.

6. Excavation, Common

The Bid Schedule item for Roadway and Borrow Excavation, Common includes approximately 10,000 cubic yards of select granular borrow which will be used for bedding and backfill at culvert and underdrain installations.

The select granular borrow shall be clean pitrun gravel with 100 per cent passing a 4" square mesh sieve and not more than 8 per cent passing No. 200 mesh sieve.

7. Sources of Aggregate

Suitable aggregate for the production of Base Course Class 1 and Sub-Base Class 2 may be obtained from deposits located at Miles 126.5, 131.0 and 135.5.

8. Force Account

A sum of $40,000.00 is included in the tender for supplying and installing angle junction connecting 108" culvert and flume and for cleaning out and repairing ditches or slopes damaged due to slides only on sections on which grading has been completed and any incidental work as may be directed by the Engineer.

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8. Force Account (Cont'd)

This amount is to be added to the sums of other items of the Bid Schedule in arriving at the total tender amount.

Extra Work Orders will be issued against this item as required and payment will be made only for work so completed in accordance with Article 1.7.3 of the Specifications

9. Vehicles for the Use of the Engineer

The contractor shall supply the following vehicles for the use of the Engineer:

(1) 2 - Standard ½ ton pick-up trucks

(2) 2 - Standard ½ ton panel trucks

10. Vibratory Compactors

Vibratory compactors may be either a type mounted on pneumatic tires and weighing from 12 to 16 tons or a type mounted on a steel drum weighing at least 3½ tons.

11. Stripping

All authorized stripping of areas for embankment borrow and base course aggregates will be classified and paid for as Excavation, Common.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 7/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price	Total Amount
1.	2.1.5	Clearing, at One Hundred Dollars per acre	40	100 00	4,000 00
2.	2.1.5	Grubbing, at Forty Dollars per acre	210	40 00	8,400 00
3.	2.2.5 & Info. to Tenderers Para. 11	Excavation, Common, at Twenty Eight Cents per cu.yd.	1,275,000	28	357,000 00
4.	2.2.5 (a)	Excavation, Rock at One Dollar and Eighteen Cents per cu.yd.	375,000	1 18	442,500 00
5.	2.3.5(2) 3.1.5(4)	Pneumatic tired roller complete unit, at Five Dollars and Twenty Cents per hour	1,100	5 20	5,720 00
6.	2.3.5(4)	Pneumatic tired roller only, at Two Dollars per hour	300	2 00	600 00
7.	2.3.5(2)	Compaction Grid Roller at least 15 tons at Ten Dollars per hour	2,500	10 00	25,000 00
8.	2.3.5(2) 3.1.5(4) & Info. to Tenderers Para.10	Vibratory Type Compactor, at Nine Dollars per hour	6,300	9 00	56,700 00

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DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 7/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
9.	2.3.5(2)	Self Powered Hand Operated Compactor, at Four Dollars per hour	150	4	00	600	00
10.	2.3.5(3) 3.1.5(3)	Water for Compaction, at Two Dollars per 1000 gal unit	8,000	2	00	16,000	00
11.	2.6.5	Overhaul (1000 ft. free), at Ten Cents per cu.yd.mile	400,000		10	40,000	00
12.	2.4.5	Channel Excavation, Common, at Thirty Six Cents per cu.yd.	20,000		36	7,200	00
13.	2.4.5	Channel Excavation, Rock, at One Dollar and Fifty Cents per cu.yd.	2,500	1	50	3,750	00
14.	3.1.5(1)	Base Course Class 1, at Sixty Five Cents per ton	66,000		65	42,900	00
15.	3.1.5(1)	Sub-Base Course Class 2, at Thirty Seven Cents per ton	145,000		37	53,650	00
16.	3.1.5(2)	Hauling Base Course Class 1, at Ten Cents per ton mile	175,000		10	17,500	00

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BID SCHEDULE

CONTRACT NO. 7/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
17.	3.1.5(2)	Hauling Sub-Base Course Class 2, at Ten Cents per ton mile	360,000		10	36,000	00
18.	6.1.5	Random Rip Rap, at Two Dollars per cu.yd.	500	2	00	1,000	00
19.	6.2.5	Hand Placed Rip Rap, at Five Dollars per cu.yd.	800	5	00	4,000	00
20.	6.3.5(1)(a)	Supply and Deliver Plain Galvanized Metal Pipe Culverts					
		24" diam., 14 gauge, at Four Dollars & Thirty Seven Cents per lin.ft.	8,000	4	37	34,960	00
		24" diam., 12 gauge, at Five Dollars and Eighty Six Cents per lin.ft.	200	5	86	1,172	00
		30" diam., 14 gauge, at Five Dollars and Thirty Cents per lin.ft.	200	5	30	1,060	00
		30" diam., 12 gauge, at Seven Dollars and Ten Cents per lin.ft.	275	7	10	1,952	50

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DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 7/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
		36" diam., 12 gauge, at Eight Dollars and Sixty Three Cents per lin.ft.	400	8	63	3,452	00
		36" diam., 8 gauge, at Twelve Dollars and Forty Three Cents per lin.ft.	200	12	43	2,486	00
		42" diam., 12 gauge, at Ten Dollars and Thirty Four Cents per lin.ft.	125	10	34	1,292	50
		48" diam., 12 gauge, at Twelve Dollars and Eight Cents per lin.ft.	200	12	08	2,416	00
		48" diam., 8 gauge, at Seventeen Dollars and Twenty Eight Cents per lin.ft.	175	17	28	3,024	00
21.	6.3.5(1)(a)	Supply and Deliver Structural Plate Pipe, 108" diam. 1 gauge at Ninety Two Dollars and Twenty One Cents per lin.ft.	300	92	21	27,663	00
22.	Supplemental Specification	Supply and Deliver Half Round Flume, 108" diam., 1 gauge, at Forty Five Dollars and Thirty Six Cents per lin.ft.	60	45	36	2,721	60
23.	"	Install Half Round Flume 108" diam., at Four Dollars and Fifty Cents per lin.ft.	60	4	50	270	00

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BID SCHEDULE

CONTRACT NO. 7/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
24.	6.3.5(1) (a)	Supply and Deliver Structural Plate Pipe Arch 10'3" x 6'9", 8 gauge, at Sixty Four Dollars and Eight Cents per lin.ft.	150	64	08	9,612	00
25.	6.3.5(2) (a)	Installation of Plain Galvanized Corrugated Metal Pipe Culverts,					
		24" diam., at One Dollar and Twenty Five Cents per lin.ft.	8200	1	25	10,250	00
		30" diam., at One Dollar and Fifty Cents per lin.ft.	475	1	50	712	50
		36" diam., at Two Dollars per lin.ft.	600	2	00	1,200	00
		42" diam., at Three Dollars per lin.ft.	125	3	00	375	00
		48" diam., at Three Dollars and Fifty Cents per lin.ft.	375	3	50	1,312	50
26.	6.3.5(2) (a)	Installation of Structural Plate Pipe 108" diam., at Eleven Dollars per lin.ft.	300	11	00	3,300	00

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BID SCHEDULE

CONTRACT NO. 7/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
27.	6.3.5(2)(a)	Installation of Structural Plate Pipe Arch 10'3" x 6'9", at Ten Dollars per lin.ft.	150	10	00	1,500	00
28.	6.4.5(1)	Excavation for underdrains, at One Dollar and Forty Cents per cu.yd.	1000	1	40	1,400	00
29.	6.4.5(2)	Supply and Deliver Perforated Pipe Underdrains 8" diam., 16 gauge, at One Dollar & Fifty Five Cents per lin.ft.	1,200	1	55	1,860	00
30.	6.4.5(3)	Installation of 8" Underdrains, at Forty Cents per lin.ft.	1,200		40	480	00
31.	6.10.5 & Info. to Tenderers Para. 9	Supply 2 - ½ ton panel trucks, at Two Hundred and Fifteen Dollars per veh.mth.	24	215	00	5,160	00
32.	6.10.5 & Info. to Tenderers Para. 9	Supply 2 - ½ ton pick-up trucks, at Two Hundred and Thirty Five Dollars per veh.mth.	24	235	00	5,640	00
33.	Info. to Tenderers Para. 8	Force Account	As ordered by the Engineer			40,000	00

TOTAL ... $1,291,166.60

TOTAL WRITTEN IN WORDS One Million Two Hundred and Ninety One Thousand One Hundred and Sixty Six Dollars and Sixty Cents

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NOTE 1: The contractor shall list below the names and addresses of the supplier of the following materials:

Culvert Material: Name: Armco Drainage & Metal Products Ltd.

Address: Edmonton, Alta.

Fluming: Name: Armco Drainage & Metal Products Ltd.

Address: Edmonton, Alta.

Underdrains: Name: Armco Drainage & Metal Products Ltd.

Address: Edmonton, Alta.

NOTE 2: IMPORTANT

The tenderer or the person or persons duly authorized to sign on his behalf must initial and date each and every correction, change, erasure or alteration contained in this completed tender document.

CONTRACTOR'S SIGNATURE SQUARE M CONSTRUCTION LIMITED
W. J. Missiaen, President
COLEMAN COLLIERIES LIMITED
W. J. Missiaen, Director

DATED 8th April 1961

JOINT TENDER

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CONSTRUCTION PROGRAM AND EQUIPMENT STATEMENT

The Contractor shall in the spaces provided hereunder furnish a detailed outline of the construction program to be followed and a list and complete description of the plant and equipment available, if required, for the satisfactory prosecution of the work within the time limit specified in the "Information to Bidders". The Department reserves the right to inspect all equipment listed prior to the award of a contract.

CONSTRUCTION PROGRAM

1. Move in on award of contract.
2. Start grubbing, stripping and excavating operations on Stations 0 - 220
3. Clear and strip borrow pits.
4. Place culverts.
5. Start drilling as soon as rock is exposed.
6. Continue excavation and embankment to completion of subgrade.
7. Apply base course in 1962 as the subgrade is completed.

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EQUIPMENT STATEMENT

Description of Unit (Make, Model, Year)	Capacity, etc. (Size, Capacity and Horse Power Rating)	Auxiliary and/or Special Equipment (Power take-off, Power Control Units, etc.)	Condition	Present Location
1-1961 Dominion #600	3 c.y.	Shovel	New	Edmonton
1-1956 Northwest 80D	2½ c.y.	Shovel	Good	Jasper
1-1950 Northwest #6	1½ c.y.	Shovel & Dragline	Good	Jasper
1-1955 Bucyrus #22B	¾ c.y.	Shovel & Dragline	Good	Edmonton
9-1950-56 Euclid	18 - 22 ton	Rear Dumps	Good	Jasper
3-1957 Letourneau "C"	13 - 18 c.y.	Motor Scrapers	Good	Edmonton
2-1957 Adams	115 H.P.	Motor Graders	Good	Edmonton
2-1958 Cat. D.7	Tractors	Dozers	Good	Edmonton
1-1957 A-C	H.D. 21	Dozer Ripper	Good	Edmonton
2-1960 Caterpillar	D.8 Tractors	Dozers	Good	Waterton
2-1958 Cat.	18 - 25 c.y.	Scrapers	Good	Waterton
1-1957 Cat.	D.8	Dozer	Good	Rogers
2-1959 Gardner	Air Track DH 123	Drills	Good	Edmonton
2-1959 Gardner	600 CFM Compressors		Good	Edmonton
1-1958 Cedar Rapids	200 Ton	Crusher	Good	Calgary
1-1958 Hyster Grid Roller	15 ton		Good	Edmonton
1-1960 Tampo Vibratory Roller			Good	Edmonton
1-1958 Grace	11 wheel pneumatic rollers		Good	Edmonton
All incidental equipment necessary to complete on time				

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EQUIPMENT RENTAL RATES

FOR FORCE ACCOUNT WORK IN ALBERTA NATIONAL PARKS

HIGHWAYS DIVISION, DEPARTMENT OF PUBLIC WORKS

GENERAL CONDITIONS

In the event that extra and force account work is required under the contract, the following equipment rental rates may be used by the Department in settling such accounts.

1. These rates include operators' and oilers' wages, fuel, lubricants, repairs, replacements, depreciation, interest, servicing, and other costs pertaining to operation of the equipment except where equipment only is specified.

2. Where equipment only is specified the rates as given include fuel, lubricants, repairs, replacements, depreciation, interest and servicing but the Department will pay the wage of the operator(s) when operator(s) are required by the Department.

3. Rates for equipment not shown shall be interpolated from the rates given for that class of equipment.

4. For purpose of payment 10 hours constitutes a day and where hourly and daily rates are both shown for a piece of equipment, the least expensive rate or combination of rates will be used for payment.

5. No transportation costs or standby time will be paid for by the Department.

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EQUIPMENT	HOURLY RENTAL RATE
AIR COMPRESSOR	
DIESEL	
185 cfm.	4.50
210 cfm.	5.50
365 cfm.	7.50
600 cfm.	11.50
GASOLINE	
105 cfm.	2.50
125 cfm.	3.00
210 cfm.	4.80
365 cfm.	7.30
600 cfm.	10.50
AIR TOOLS AND ACCESSORIES (EQUIPMENT ONLY)	
Air hose or pipe, line oilers and couplers per 50 ft.	.15
Clay digger 22 lbs.	.25
Jackhammer 48 lbs.	.40
Jackhammer 60 lbs.	.40
Paving breaker 55 lbs.	.35
Paving breaker 80 lbs.	.40
Wagon Drill Model DR 34	1.35
MIXERS	
3½ "S" Tilt Type	2.00
6 & 7 "S" Non-Tilt	2.75
11 "S" Non-Tilt Power Loader	3.40
14 "S" Non-Tilt Power Loader	3.70
16 "S" Non-Tilt Power Loader	4.00
VIBRATORS	
2 H.P. Gas Driven, 12' Flexible Shaft	1.60
6 H.P. Gas, 21' Flexible Shafting	2.20
EUCLID EQUIPMENT	
91 F.D. Reardump 10 c.y. or 15 tons	16.00
31 T.D. Reardump 14.8 c.y. or 22 tons	20.00
36 T.D. 45-46-53 Reardump 14.8 c.y. or 22 tons	21.00
4 F.FD. Reardump 20.0 c.y. or 34 tons	30.00
70 FDT-71 FDT-89W. Bottom Dump 13 c.y. or 20 tons	17.00

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EQUIPMENT	HOURLY RENTAL RATE
POWER GRADERS	
(Grader Blades to be included under "All Found")	
Gradall	18.50
80 to 90 h.p.	12.60
90 to 100 h.p.	14.00
SCRAPERS (EQUIPMENT ONLY)	**DAILY RENTAL RATE**
6 to 8 cu. yds.	30.00
8 to 11 cu. yds.	40.00
12 to 15 cu. yds.	42.00
14 to 18 cu. yds.	65.00
25 cu. yds.	85.00
SCRAPERS SELF-PROPELLED	**HOURLY RENTAL RATE**
D Tournapull E9 and Scraper 8 c.y. 9 tons 122 h.p.	15.00
C Tournapull and Scraper 14.7 cu. yds. 22 tons 206 h.p.	19.00
B Tournapull and Scraper 23 cu. yds. 294 h.p.	27.00
2T55-2S55, 10-13 cu. yds. 165 h.p.	20.00
2T75-2S75, 15-20 cu. yds. 262 h.p.	25.00
TH 200, 15 cu. yds. 176 h.p.	19.50
TH 0142, 14-18 cu. yds. 225 h.p.	24.00
DW 21, 25 cu. yds. 300 h.p.	26.00
GRADALL with Remote Control	16.00
SHOVELS	
N.B. The Lessor will provide all Maintenance, Operator, Fuel, and Grease, Cables, Shovel Teeth, Welding Repairs to Dippers and Crawlers. Padmen not Included.	
3/8 Yard	9.00
1/2 Yard	11.00
3/4 Yard	14.00
1 Yard	19.00
1 1/2 Yard	25.00
1 3/4 Yard	30.00

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EQUIPMENT	HOURLY RENTAL RATE
2 Yard	33.00
2 1/2 Yard	36.00
3 Yard	40.00
3 1/2 Yard	52.00
5 1/2 Yard	94.00

TRACTORS "BARE"

N.B. The Lessor will build up Crawlers on "All Found" Rates.

Prior to 1948

D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	7.75

1948 to 1953

D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	8.20

1956

D6, 66 h.p. TD 14A 78 h.p. HD 11B, 85 h.p.	10.00

Prior to 1948

D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	9.50

1948 to 1953

D7, 81 h.p. TD 18A, 89 h.p. HD 13A, 124 h.p.	10.25

1956

D7, 81 h.p. TD 18, 103 h.p. RD 16A, 141 h.p.	12.60

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EQUIPMENT	HOURLY RENTAL RATE
TRACTORS "BARE"-Cont'd	
Prior to 1948	
D8 130 h.p.	11.25
1948 to 1953	
D8, 130 h.p.	13.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, 104 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 20, 175 h.p.	12.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	15.00
1956	
D9, 286 h.p.	23.00
TRACTORS WITH BLADE	
Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 11B, 66 h.p.	8.70
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	10.00
1956	
D6, 75 h.p. TD 14A, 66 h.p. HD 11B, 86 h.p.	12.00

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EQUIPMENT	HOURLY RENTAL RATE
TRACTORS WITH BLADE-Cont'd	
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 15A, 124 h.p.	11.10
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	12.25
1956	
D7, 102 h.p. TD 18A, 103 h.p. HD 16A, 125 h.p.	15.25
Prior to 1948	
D8, 130 h.p.	13.00
1948 to 1953	
D8, 130 h.p.	15.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, AC 204 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 19, 175 h.p.	14.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	16.50
1956	
D9, 230 h.p.	26.50
TRUCKS	
1/2 Ton Light Delivery	2.50
3/4 " " "	2.75
1 " " "	3.00

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EQUIPMENT	HOURLY RENTAL RATE
TRUCKS-Cont'd.	
1/2 Ton Panel	3.00
3/4 " "	3.25
1 " Flat Deck	3.00
1 1/2 Ton Flat Deck	3.25
2 " " "	4.00
3 " " "	4.50
4 " " "	5.00
5 " " "	6.50
2 Ton Dump	4.50
3 " "	5.00
4 " "	6.00
5 " "	7.00
6 " "	8.00
8 " "	10.50
10 " "	12.00
12 " "	15.00
14 " "	17.00
16 " (4 Wheel Tandem) (Includes use of Winch)	20.00
LOW-BOY TRAILER AND TRUCK	
5 Ton	7.00
10 "	10.00
15 "	13.00
20 "	16.00
25 "	19.00
30 "	24.00
40 "	30.00
PILE DRIVER	
Steam Power	9.00
Gasoline Power	8.00
FRONT END LOADERS	
No. 933 Traxcavator 50 h.p.	8.50
1 1/3 H.D. 60, 45 h.p.	10.00
No. 955 Traxcavator, 70 h.p.	11.00
No. 6 " ,100 h.p.	14.00
2 1/4 c.y. H.D. 116, 75 h.p.	15.00
DUMPTOR	
Koehring 60, 6 c.y.	14.50

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STATEMENT OF EXPERIENCE

The tenderer shall state below his experience on similar work to that, which is included in this tender. The date and place of work as well as the agency for whom the work was undertaken shall be clearly stated. Tenderers who have contract work STILL UNDERWAY for the Department of Public Works need not furnish this information.

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EMPLOYMENT OF SUB-CONTRACTORS

It is (my, our) intention to employ the following sub-contractors whom (I, we) believe, after investigation to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (me, us).

	Name and Address of Sub-Contractors	Description of Work to be Done by Sub-Contractors
1.	Mallett Contracting Co. Ltd., 5519 - 6th Street, S.E. Calgary, Alta.	Items 14, 15, 16, 17
2.		
3.		
4.		

It is agreed that (I, we) shall not sub-contract with any other individual or organization or for any other work without the consent of the Minister of Public Works.

JOINT TENDER

SQUARE M CONSTRUCTION LIMITED
W.J. Missiaen, President
COLEMAN COLLIERIES LIMITED

Contractor's Signature W.J. Missiaen, Director

DATED 8th April 1961

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NOTICE TO TENDERER

THE FOLLOWING INFORMATION IS REQUIRED FOR DEPARTMENTAL USE

PLEASE PRINT CLEARLY

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1 - LIMITED COMPANY

If this tender is made by a limited company, then the full name of the company should be accurately PRINTED in the space provided for that purpose and its corporate seal, if any, affixed where indicated.

NAME OF COMPANY	SEAL
SQUARE M CONSTRUCTION LIMITED	COMPANY'S SEAL
COLEMAN COLLIERIES LIMITED	COMPANY'S SEAL
JOINT TENDER	

2 - PARTNERSHIP

If this tender is made by a partnership, then the firm name or the business name should be accurately PRINTED in the space provided and the name or names of the partners should be PRINTED where indicated

NAME OF PARTNERSHIP	LIST OF PARTNERS

3 - SOLE PROPRIETORSHIP

If this tender is made by an individual carrying on business under a name other than his own, then his business name should be PRINTED in the space provided and the name of the sole proprietor should be printed where indicated. In the event that the sole proprietor carries on business in his own name, he should merely PRINT his name where indicated.

BUSINESS NAME	NAME OF SOLE PROPRIETOR

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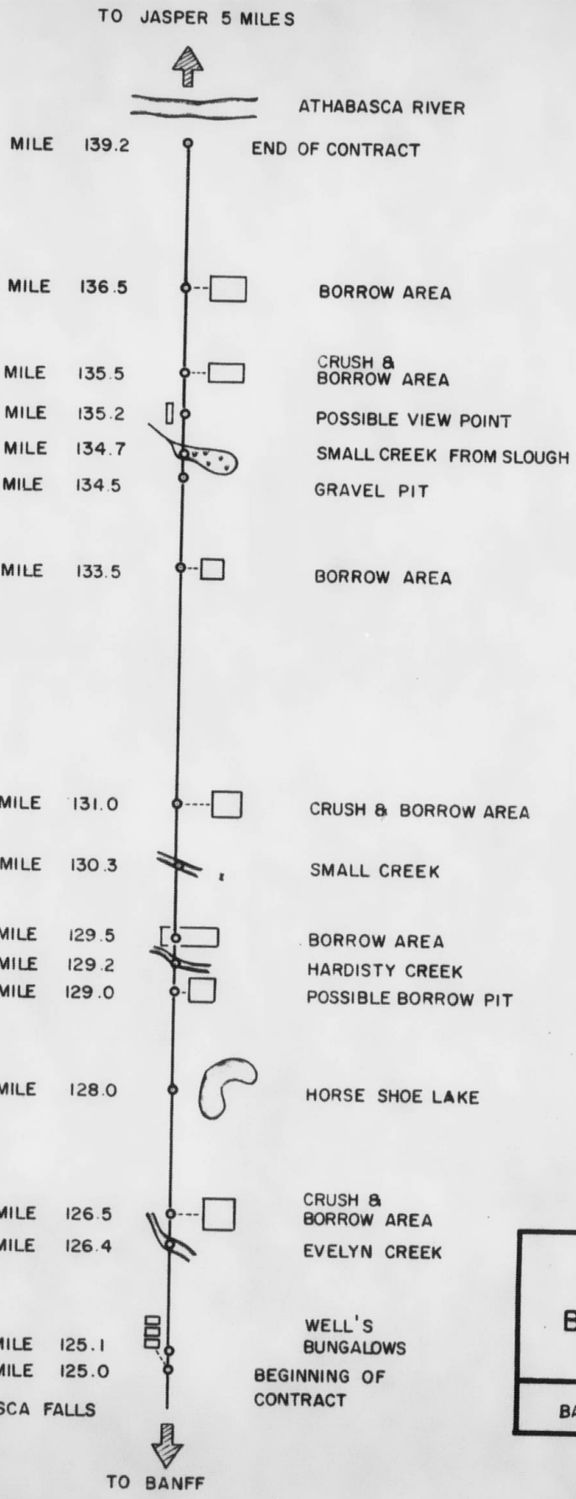

LINE DIAGRAM

BANFF-JASPER HIGHWAY
MILE 125.0 -139.2

BANFF P.F. DEC. 1960

B.J. 1-1-114

P1-00-00

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This Indenture, MADE IN DUPLICATE

this day of

one thousand nine hundred and

BETWEEN

hereinafter called "the Contractor", of the first part;

And HER MAJESTY THE QUEEN, in the right of Canada represented by the Minister of Public Works of Canada, of the second part.

WHEREAS the party of the first part for the consideration hereinafter mentioned has agreed with the party of the second part to do, furnish and perform the works, materials, matters and things required to be done, furnished and performed, in the manner hereinafter described, in connection with the following work or works namely:— **Work to be done.**

Now this indenture witnesseth that the said parties hereto hereby covenant, promise and agree each with the other, as follows:—

1. In this contract the following words shall, unless the context requires a different meaning, have the following meanings, respectively, that is to say:— **Interpretation.**

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"Contractor" or other words relative thereto, or of like import, shall mean and include, irrespective of sex or number, the party or parties of the first part as above designated or described, jointly and severally, and their and each of their executors, administrators, curators, successors, or assigns.

"Her Majesty" or other words relative thereto, or of like import, shall mean and include the reigning Sovereign or the successors or assigns of the Sovereign.

"Minister" shall mean the person holding the position or acting in the capacity of the Minister of Public Works and shall include the person holding the position or acting in the capacity of the Deputy Minister of Public Works.

"Engineer" shall mean the Chief Engineer or Chief Architect or Director of Property and Building Management, as the case may be, of the Department of Public Works of Canada, having control over the work, and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer or Chief Architect or Director of Property and Building Management, and all instructions or directions, or certificates given, or decisions made by any one acting for the Chief Engineer or the Chief Architect or the Director of Property and Building Management shall be subject to the approval of the Chief Engineer or the Chief Architect or the Director of Property and Building Management and may be cancelled, altered, modified and changed as the Chief Engineer or Chief Architect or Director of Property and Building Management may see fit: Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer or the Chief Architect or Director of Property and Building Management in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or the Chief Architect or Director of Property and Building Management or by any one acting for such Chief Engineer or Chief Architect or Director of Property and Building Management shall be subject to the approval of or modification or cancellation by the Minister of the Department of Public works of Canada.

"Work or works" shall mean the whole of the work, materials, matters and things required to be done, furnished and performed by the Contractor, as above described, by this contract.

2. All the covenants and agreements in this contract binding on and all the provisions in this contract inuring to the benefit of the Contractor shall, respectively, be binding on and inure to the benefit of the executors, administrators, curators, successors and assigns of the Contractor and all the covenants and agreements in this contract binding upon and all the provisions in this contract inuring to the benefit of Her Majesty shall, respectively, be binding upon and inure to the benefit of the successors and assigns of Her Majesty.

Provision by contractor for completion of work.

3. The Contractor shall at his own expense (except as in this contract otherwise specifically provided) provide all and every kind of labour, superintendence, services, tools, implements, machinery, plant, materials, articles and things necessary for the due execution and completion of all and every the works set out or referred to in the specification hereto annexed, and in any special specification referred to therein and set out or referred to in the plans and drawings prepared and to be prepared for the purposes of the work, and shall forthwith commence the works and diligently execute and fully complete the respective portions thereof, and shall deliver the works complete in every particular to Her Majesty on or before the date or dates following, viz:—

Time for completion.

Time shall be deemed to be material and of the essence of this contract.

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MUNICIPAL PERMITS

3A (1) The contractor shall within one month from the date of this contract offer to the municipal authority an amount equal to all fees and charges which would be payable to the municipal authority in respect to building permits if the work were being constructed for a person other than Her Majesty.

(2) The contractor shall notify the Minister, within 10 days of the offer, the amount of the offer and whether or not the municipal authority accepted it.

(3) If the municipal authority did not accept the offer the contractor shall deliver to the Minister within the time limited by subsection (2) an amount equal to the offer.

(4) For the purposes of this section "municipal authority" means an authority which would have jurisdiction respecting permission to construct the work if the owner of the work were not Her Majesty.

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Quality.

4. The works shall be constructed by the Contractor, and under his personal supervision, of the best materials of their several kinds and finished in the best and most workmanlike manner and in the manner required by and in strict conformity with this contract, the said specifications and special specifications, and the plans and drawings relating thereto, and the working or detail drawings which may from time to time be furnished (which said specifications, and special specifications, plans and drawings are hereby declared to be part of this contract), and to the complete satisfaction of the Engineer.

Plans and specifications part of contract.

Execution of work directed by Engineer.

5. The work shall be commenced, carried on and prosecuted to completion by the Contractor in all its several parts in such manner and at such points and places as the Engineer shall from time to time direct, and to his satisfaction, but always according to the provisions of this contract, and if no direction is given by the Engineer, in a careful, prompt, and workmanlike manner.

Construction of contract.

6. The several parts of this contract shall be taken together to explain each other and to make the whole consistent; and, if it is found that anything has been omitted or misstated which is necessary for the proper performance or completion of any part of the work the Contractor shall, at his own expense, execute the same as though it had been inserted and propertly described, and the correction of any such omission or error shall not be deemed to be an addition to or deviation from the works herein described.

Extra work.

How treated.

7. The Engineer may, in writing, at any time before the final acceptance of the works, order any additional work or materials or things not covered by the contract to be done or provided, or the whole or any portion of the works to be dispensed with, or any changes to be made which he may deem expedient in or in respect of the works hereby contracted for, or the plans, dimensions, character, quantity, quality, description, location or position of the works or any portion or portions thereof or in any materials or things connected therewith or used or intended to be used therein or in any other thing connected therewith or used or intended to be used therein or in any other thing connected with the works, whether or not the effect of such orders is to increase or diminish the work to be done or the materials or things to be provided or the cost of doing or providing the same, and the Engineer may in such order, or from time to time as he may see fit, specify the time or times within which each order shall, in whole or in part, be complied with. The Contractor shall comply with every such order of the Engineer. The decision of the Engineer as to whether the compliance with such order increases or diminishes the work to be done or the materials or things to be provided, or the cost of doing or providing the same and as to the amount to be paid or deducted, as the case may be, in respect thereof, shall be final. As a condition precedent to the right of the Contractor to payment in respect of any such order of the Engineer the Contractor shall obtain and produce the order, in writing, of the Engineer and a certificate in writing, of the Engineer showing compliance with such order and fixing the amount to be paid or deducted in respect thereof.

Engineer's order and decision.

Covenants herein apply to extra work.

8. All the clauses of this contract shall apply to any changes, additions, deviations, or additional work, so ordered by the Engineer, in like manner and to the same extent as to the works contracted for.

No claim for anticipated profits.

9. If any change or deviation in or omission from the works be made by which the amount of work to be done shall be decreased, or if the whole or any portion of the works be dispensed with, no compensation shall be claimable by the Contractor for any loss of anticipated profits in respect thereof.

Engineer sole judge of work and materials.

10. The Engineer shall be the sole judge of the work and material, in respect of both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intention of this contract and as to the meaning or interpretations of the plans, drawings and specifications, shall be final, and no work under this contract shall be deemed to have been performed nor materials nor things provided so as to entitle the Contractor to payment therefor unless and until the Engineer is satisfied therewith, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor.

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Work subject to control of Engineer.

11. The work shall, in every particular, be under and subject to the control and supervision of the Engineer; and all orders, directions or instructions at any time given by the Engineer with respect thereto, or concerning the conduct thereof, shall by the Contractor promptly and efficiently be obeyed, performed and complied with to the satisfaction of the Engineer.

Descriptions of work. What items include.

12. The description or descriptions of the work and materials or any portion or portions of the works set out or referred to in or covered by any item or items for which a price or prices are given in this contract include not only the particular kinds of materials mentioned in the said item or items but also all and every kind of work, labour, tools, plant, materials, equipment, articles and things, whatsoever necessary for the full execution, completion and delivery, ready for use, of such respective portions of the works, in accordance with the plans, drawings and specifications, to the satisfaction of the Engineer. The said price or prices shall cover not only the particular descriptions of work and materials mentioned herein or in the specifications or plans but also all and every kind of work, labour, tools, plant, material, equipment, articles and things whatsoever necessary for the full execution, completion and delivery, ready for use, of the entire work as herein contracted for, to the satisfaction of the Engineer. In case of dispute as to what work, labour, tools, plant, material, equipment, articles and things are so included or covered the decision of the Engineer shall be final and conclusive with respect thereto.

Price, what it covers.

Foreman of the works.

13. A competent foreman shall be kept on the ground by the Contractor during all working hours to receive the orders of the Engineer. Such foreman shall be considered as the lawful representative of the Contractor and shall have full power to carry out all requisitions and instructions of the said Engineer, but this clause shall not relieve the Contractor from the duty of personally superintending the work.

Defective work or material.

Engineer may order removal or re-execution.

14. Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twenty-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance by the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor.

Non-compliance by Contractor.

Contractor's machinery, plant, etc.

Becomes property of H.M. until completion of work.

15. All machinery, tools, plants, materials, equipment, articles and things whatsoever provided by the Contractor or by the Engineer under the provisions of sections 14 and 16 for the works, and not rejected under the provisions of sections 14, shall from the time of their being so provided become and, until the final completion of the said work, be the property of Her Majesty for the purposes of the said works, and the same shall on no account be taken away, used, or disposed of, except for the purposes of the said works, without the consent in writing of the Engineer. Her Majesty shall not, however, be answerable for any loss or damage whatsoever which may at any time happen to such machinery, tools, plants, materials, equipment, articles or things. Upon the completion of the works and upon payment by the Contractor of all such moneys, loss, costs and damages, if any, as shall be due from the Contractor to Her Majesty, or chargeable against the Contractor under this contract, such of the said machinery, tools, plants, materials, equipment, articles and things as shall not have been used and converted in the works or disposed of by Her Majesty under powers conferred in this contract, shall be delivered up to the Contractor in such condition as they may then be in.

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Insufficient workmen, plant, etc.

16. If the Engineer shall at any time consider the number of workmen, horses, quantity of machinery, tools, plant or equipment, or of proper materials, articles or things, employed or provided by the Contractor on or for the said works to be insufficient for the advancement of such works or any part thereof towards completion within the time limited in respect thereof, or that the works are, or some part thereof, is not being carried on with due diligence, then the Engineer may, in writing, order the Contractor to employ or provide such additional workmen, horses, machinery, tools, plants, equipment, materials, articles and things as the Engineer may think necessary, and in case the Contractor shall not within three days, or such other longer period as may be fixed by any such order, in all respects comply therewith the Engineer may employ and provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as he may think proper and may pay such additional workmen such wages, and for such additional horses, machinery, tools, plant, equipment, materials, articles and things, any such prices as he may think proper, and all such amounts so paid shall, on demand, be repaid to Her Majesty by the Contractor, or the same may be retained or deducted from any sum that may then or thereafter be or become due from Her Majesty to the Contractor. The Contractor shall employ the additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things so provided and employed by the Engineer in the diligent advancement of the works; the workmen and horses so provided shall, however, be thereafter subject to discharge by the Contractor, but only with the consent and approval of the Engineer.

Work not proceeding with due diligence.

Engineer may provide additional equipment, etc., at Contractor's expense.

Repayment by Contractor.

Work not comprised in contract.

17. Her Majesty may, at any time, and without payment therefor, send and employ on, in and about the works other contractors and workmen, with such horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may deem necessary to do any work not comprised in this contract, and the Contractor shall afford to them all reasonable facilities, to the satisfaction of the Engineer, for doing such work, the work of the Contractor being interfered with as little as the Engineer may deem practicable.

The taking of possession of the whole or any part of the works of the Contractor for such purpose shall not be deemed an acceptance by or on behalf of Her Majesty of the whole or any portion of the works comprised in this contract.

18. That whenever and so often as it may be necessary for the Contractor to co-operate with other contractors on this work, the Contractor shall diligently and under the directions of the Engineer perform all such works as shall be requisite and proper on the part of the Contractor herein for such co-operation and for securing and placing in proper position the portion necessary herein and hereby contracted to be constructed and erected for the proposed work in a proper and secure mode, and to prevent the possibility of any accident therefrom, without any extra charge therefor, and shall be bound in all things to conform to the direction of the Minister or the Engineer touching such co-operation and work.

Default or delay by Contractor.

Notice by Engineer.

Minister may take work out of Contractor's hands.

19. In case the Contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the Engineer, the Engineer may give a general notice to the Contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the Engineer to the Contractor or should the Contractor make default in the completion of the works, or any portion thereof within the time limited with respect thereto in or under this contract, or should the Contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the Contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the Contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the Contractor of the works, and no objection or claim shall be raised or made by the Contractor by reason or on account of the ultimate cost of

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the works so taken over for any reason proving greater than, in the opinion of the Contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired, possessed or provided by the Contractor for the purposes of the work, or by the Engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the Contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the Contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Damages arising from non-completion.

20. Whenever in this contract power or authority is given to Her Majesty, the Minister, the Engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the Contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the Contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to further proceed with the execution of the works.

Power to take action on default of Contractor.

21. The Contract shall be at the risk of the Contractor who shall bear all loss or damage whatsoever, from whatsoever cause arising, which may occur to the works or any part thereof, until the same be finally accepted by the Minister, and if any such loss or damage occur before such final acceptance the Contractor shall immediately, at his own expense, repair, restore and re-execute the work so damaged so that the whole works, or the respective portions thereof, shall be completed within the time limited for completion thereof and any delay occasioned by the Contractor to the other contractors on the work or any interference by the Contractor with the operation which may be a cause of delay or damage shall be rectified at the cost and the claim for damage or delay (if any) shall be at the charge of the Contractor.

Damages to work in progress, Contractor assumes risk.

22. The Contractor shall, during the period of one year after the date of the final certificate of the completion of the work, at the sole cost of the Contractor, and to the satisfaction of the Engineer, rectify any defects in the works caused by faulty workmanship or materials of which he shall have received notice from the Engineer. The Contractor shall be responsible for and shall reimburse Her Majesty with respect to any loss or damage sustained by Her Majesty and shall save harmless and indemnify Her Majesty from and against all claims, demands or actions based upon or arising out of the negligence of the Contractor, his officers, servants or agents during the rectification of the said defects. This clause shall not in anyway affect the rights of Her Majesty under any other agreement, deed or bond pursuant to which the works or any portion thereof are guaranteed free of defects or are to be repaired or replaced by the Contractor or any other person.

23. The Contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever, occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the Contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of

Damages to persons or property.

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any such damage, injury or infringement, and to prevent the interruption of or any danger or menace to the traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the Contractor shall indemnify and save harmless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable to any such damage, injury or infringement. **Contractor assumes liabilities.**

24. The Contractor shall, upon the completion of the works, remove all temporary structures and clear away all rubbish and surplus and waste materials remaining on or about the works and place the premises in a neat and tidy condition, satisfactory to the Engineer. **Contractor to clean premises on completion.**

25. The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions. **Precautions as to fire.**

26. The Contractor shall insure buildings, structures and materials in accordance with the provisions of the specification in respect thereto.

27. The Contractor shall not assign or sublet this contrat without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any moneys due to any sub-contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for. **Assignments.**

28. Pursuant to the provisions of the Statute in such case made and provided, no Member of the House of Commons of Canada shall be admitted to any share or part of this contract or to any benefit to arise therefrom. **Members of H. of C. not to benefit.**

29. The Contractor shall not allow any public ceremony in connection with the work without having previously obtained the written permission of the Minister. **No public ceremony.**

30. No work whatever shall at any time or place be carried on during Sunday and the Contractor shall take all necessary steps for preventing any foreman or agent or men from working or employing others on that day. **No work on Sunday.**

31. The Contractor shall promptly pay for all labour, services and materials in or about the construction of the works, and all payments for such purposes shall be made by the Contractor at least as often as payments are made to the Contractor by Her Majesty under this contract, and in the event of failure by the Contractor at any time so to do, or if any sum due for labour of any foreman or workman, or for hire of horses, teams or carts upon or in respect of the works or any part thereof remains in arrear or unpaid, or if there be at any time found to exist any claims against the Contractor, or any sub-contractor, for labour, teams, tools, plant, equipment, materials, articles or things employed, hired or supplied upon or for the works or any part thereof, or if the Minister has reason to believe that any such payments, sums or claims will not be promptly made or paid, the Minister may, in addition to or in lieu of exercising any powers confered by the Fair Wages Clause, at his option, retain out of any moneys due or to become due to the Contractor from Her Majesty such amount or amounts as the Minister may deem sufficient to satisfy the same, or pay the Contractor the moneys due him in instalments, giving him from time to time such sums as the Minister or the Engineer deems sufficient to meet such payments, sums or claims or any of them, and withholding the balance until the same are satisfied, or may pay **Payment by Contractor for labour, etc.** **Power to retain money on default of Contractor paying for labour, etc.**

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all or any of such payments, sums or claims, rendering to the Contractor the balance due him after deducting the payments so made. The Contractor shall be stopped from denying the accuracy and correctness of any and all payments so made by the Minister.

Books, etc., of Contractor open for inspection.

The Contractor's pay-rolls, time-books, books of account, invoices and statements shall at all times be open for inspection and extract by the Engineer and any authorized representative of the Minister, or either of them, who shall be assisted in every possible way by the Contractor, to enable the Engineer and such representative to ascertain, as far as possible, the exact payment, sums or claims so due and remaining unpaid by the Contractor.

Work to be free from all encumbrances.

32. Before making any payment on any progress or final estimate the Minister may require the Contractor to satisfy the Engineer, or other authorized representative of Her Majesty, that all work performed and material supplied and all structures built for which payment is being made are free and clear from all lawful claims or liens under any law of labour, workmanship, materials or otherwise; the Contractor shall indemnify and hold harmless Her Majesty from and against any and all kinds of claims or liens accurring from labour and services performed and material furnished, or otherwise, and any of the same in or about the works.

Sanitation.

33. The Contractor shall comply with and the works shall be carried on subject to all regulations made by any lawful authority and applicable to said works and all orders given by the Engineer with respect to sanitation or preservation of health on the work. The Contractor shall, at his own expense make adequate arrangements, to the satisfaction of the Engineer, for the medical and sanitary supervision of all his employees.

Engineer's stakes or other marks not to be removed.

34. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes, buoys and other marks placed on or about the said works by the Engineer or his assistants and shall furnish the necessary assistance to correct or replace any stake, buoy or mark which through any cause may have been removed or destroyed.

Notice; how given.

35. Any notice, order, direction or other communication given to the Contractor under any of the provisions of this contract shall be sufficiently given if delivered to the Contractor personally, or to his foreman, or left at the Contractor's office, or mailed at any post office to the Contractor or foreman, addressed to the address mentioned in this contract, or to the Contractor's last known place of business or residence. Every such notice, order, direction or communication shall be sufficient which expresses in general language and without detail the matters required or communicated, or which follows the general language of the section or sections of this contract under which it is given, and no objection shall be taken to the form thereof.

Payment by Her Majesty.

36. Her Majesty, in consideration of the premises, and subject to the performance and observation on the part of the Contractor of all the covenants, provisos and conditions in this contract contained, will pay to the Contractor for and in respect of the works in manner hereinafter stated, viz:—

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Payment for additional work.

And for any work or additional work done or materials or things provided, under the written orders of the Engineer, for which no price or prices are named herein, Her Majesty, in consideration and subject as aforesaid, will pay to the Contractor the actual and reasonable cost as determined by the Engineer of such work, materials and things, with an additional ten per cent thereon for the use of tools, Contractor's plant, superintendence and profits.

Approximate quantities.

37. The quantities (if any) given are approximate only and no claim shall be made by the Contractor against Her Majesty on account of any excess or deficiency, absolute or relative, in the same.

Prices to be accepted as full compensation.

38. The said price or prices shall be accepted by the Contractor as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not included in the items hereinabove mentioned, and also for all loss or damage arising out of the nature of the works or the action of the weather, tides, elements, or any unforseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the works, and for all expenses incurred by or in connection with the works, and for all works, and for all expenses incurred by or in consequence of any delay or suspension or discontinuance of the work as herein specified, and for well and faithfully completing the works as in this contract provided.

Progress payments.

Ninety per cent.

Ten per cent retained until completed.

39. Cash payments equal to about ninety per cent of the value of the work done estimated from progress measurements and computed at the price or prices agreed upon or determined under the provisions of this contract will be made to the Contractor monthly, if practicable, on the written certificate of the Engineer stating that the work for or on account of which the certificate is granted has been done, and stating the value of such work completed as above mentioned; and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent or any part thereof. The remaining ten per cent shall be retained till the final completion of the whole work to the satisfaction of the Engineer and will be paid within two months after such completion. The written certificate of the said Engineer certifying to the final completion of the said works to his satisfaction shall be a condition precedent to the right of the Contractor to receive or to be paid the remaining ten per cent or any part thereof.

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Engineer in certifying values for progress payments may disregard price-list.

40. Provided always that where in the opinion of the Engineer the work done is not sufficiently finished or is not of sufficient value to justify payment at the price or prices agreed upon or determined under the provisions of this contract, the Engineer may, for the purpose of such payment, disregard the price or prices agreed upon or determined and may estimate the proportionate value payable in respect of such work and issue a certificate accordingly; in which case the Contractor shall only be entitled to receive ninety per cent of such estimated proportionate value as stated in such certificate and shall not be paid the ninety per cent of the price or prices agreed upon or determined under the provisions of this contract until such time as the Engineer, by reason of the performance of additional work, shall certify that the Contractor is entitled thereto.

Full prices when obtainable. Claims under progress certificate.

41. It is intended that every allowance to which the Contractor is fairly entitled will be embraced in the Engineer's monthly certificate, but should the Contractor at any time have claims of any description which he considers are not included in the progress certificates such claims must be made in writing to the Engineer within thirty days after the date of the delivery to him of the certificate from which he considers the items of such claims to have been omitted, but in no case beyond the period of sixty days from the date of the practical completion of that portion of the work to which such claims apply. And in default of the presentation of such claims within the time or times so limited the Minister may treat such claims as absolutely barred.

Limitation of time for presentation of claims.

Claims evidence of accuracy.

42. The Contractor in presenting claims of the kind referred to in the last preceding clause must accompany them with satisfactory evidence of their accuracy and the reason why he thinks they should be allowed.

Progress measurements and certificates not binding.

43. The progress measurements and progress certificates shall not in any respect be taken as binding upon the Engineer, or as final measurements or as fixing final amounts; they are to be subject to the revision of the Engineer in making up his final certificate and they shall not in any respect be taken as an acceptance of the work or as a release of the Contractor from responsibility in respect thereof.

Delays.

44. The Contractor shall not have nor make any claim or demand nor bring any action or suit or petition against Her Majesty for any damage which may be sustained by reason of any delay or delays from whatever cause arising in the progress of the work.

Contract is express contract.

45. It is distinctly declared that no implied contract of any kind whatsoever by or on behalf of Her Majesty shall arise or be implied from anything in this contract contained, or from any position or situation of the parties at any time, it being clearly understood and agreed that the express contracts, covenants and agreements herein contained and made by Her Majesty are and shall be the only contracts, covenants and agreements upon which any rights against Her Majesty are to be founded.

Parliamentary appropriations exhausted.

Contractor proceeds at own risk.

46. Should the amount voted by Parliament and applicable towards payment for the work hereby contracted for be at any time expended previous to the completion of the works the Minister or the Engineer may give the Contractor written notice to that effect. And, upon receiving such notice, the Contractor may, if he thinks fit, stop the work, but in any case shall not be entitled to any payment for work done beyond the amount voted and applicable as aforesaid unless and until the necessary funds shall have been voted by Parliament in that behalf. And in no event shall the Contractor have or make any claim on Her Majesty for any damages or compensation by reason of the suspension of payment, or by reason of any delay or loss caused by the stoppage of work. And in the event of the Contractor electing to proceed or proceeding with such work after such notice and before additional funds are voted, no action of the Engineer or of any other person on behalf of Her Majesty in giving orders, directions or instructions or otherwise acting with respect to such work shall be taken or considered as in any manner improving the rights of the Contractor or as waiving in any particular any of the provisions of this section.

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Minister may suspend work.

47. The Minister may, from time to time and for such period as he may deem expedient, delay or suspend, in whole or in part operations under this contract, either upon the whole of the works or at any particular point or points. Should any such delay or suspension, or the stoppage of the works under the last preceding clause of this contract, or should any delay caused by any circumstances which, in the opinion of the Engineer is beyond the control of or not the fault of the Contractor, unreasonably limit the time for the completion of the works within the time specified by this contract, the Minister, as often as the case occurs, shall allow such additional time as to him may seem sufficient in the extension of such time for completion; but no such delay, suspension or stoppage shall vitiate or void this contract or any part thereof, or any security or obligation for the performance thereof, nor shall the Contractor be entitled to make any claim for damages by reason thereof. Upon the termination of such delay, suspension or stoppage, or upon the removal of the cause thereof, or upon the Contractor receiving notice from the Minister or Engineer requiring him to resume the work, he shall at once resume operations and diligently carry on the same.

No compensation to contractor for delay.

Liquors.

48. The Contractor shall not bring nor permit to be brought anywhere on or, as far as the Contractor can prevent the same, near the works any spirituous or intoxicating liquor; and if any person employed on the works be in the opinion of the Engineer intemperate, disorderly, incompetent, wilfully negligent or dishonest in the performance of his duties, he shall on the direction of the Engineer be forthwith discharged and the Contractor shall not employ or permit to remain on the work any person who shall have been discharged for any or all of said causes.

Orders by Engineer's agent.

49. All orders, directions, instructions or notices to be given or issued by the Engineer under and pursuant to any section in this contract may be given or issued by a duly and expressly authorized agent or agents of the Engineer.

Extension of time.

50. The decision of the Minister as to what additional time, if any, beyond the time specified for the completion of the works may be allowed to the Contractor for such completion and as to the reasonableness or sufficiency thereof shall be final.

If any additional time for such completion is so allowed the Contractor shall, if and to such extent as the Minister requires, pay to Her Majesty all salaries and wages paid by Her Majesty to the person or persons superintending the work during the additional time so allowed and all other costs, expenses and damages incurred by Her Majesty as a result of the allowance of such additional time for completion. Any extension of time that may be granted to the Contractor shall not affect any rights of Her Majesty under this contract, and no assent thereto on the part of the Contractor shall be necessary.

Security deposit.

51. The Contractor hereby and herewith deposits with and delivers to Her Majesty as security for the due fulfilment of his contract the sum of

upon the express understanding that the same shall be held and retained by Her Majesty as security for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this contract contained, on the part of the Contractor to be observed, performed and complied with. Provided always and it is understood and agreed that the Contractor assumes the risk and must bear any loss in respect of the security deposited as aforesaid occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid.

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52. If at any time hereafter the said Contractor should make default under the said contract, or if Her Majesty acting under the powers reserved in the said contract shall determine that the said works or any portion thereof remaining to be done should be taken out of the hands of the Contractor and be completed in any other manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay any salaries or wages or any accounts for materials due by the said Contractor for work done or materials supplied by any person in connection with the said work, Her Majesty may, in either case, dispose of said security and of the interest which may have accrued thereon for the carrying out of the construction and completion of the work of the contract, or for paying any salaries or wages for work done, or any accounts for materials supplied for the said works that may be left unpaid by the said Contractor.

53. Upon the due and faithful performance, observance and fulfilment by the Contractor of all and every the terms, provisions, covenants, agreements, conditions and reservations hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Contractor shall be entitled to be repaid or to receive again the money so deposited, together with so much interest upon such money as Her Majesty may, during her retention or possession of the same actually receive by reason thereof; it being, however, understood that Her Majesty shall not be under any obligation to cause the said money to be placed at interest, or to earn, or to endeavour to earn, interest thereon. Repayment of security deposit.

54. In the event of any breach, default, or non-performance being made or suffered by the Contractor in or in respect of any of the terms or conditions, covenants, provisos, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said money and interest thereon so delivered to or deposited with Her Majesty, or by Her received in respect thereof shall, by the Contractor, be forfeited absolutely to Her Majesty. Interest on security deposit.

55. No condoning, excusing, or overlooking by Her Majesty or any person acting on her behalf, on previous occasions of breaches or defaults similar to that for which any action is taken or power exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken to operate as a waiver of any provision of this contract, nor to defeat or prejudice in any way the right of Her Majesty hereunder. Forfeit of security.

56. This contract is made and entered into between the Contractor and Her Majesty on the distinct understanding that the Contractor has, before execution, investigated and satisfied himself of everything and of every condition affecting the works to be executed and the labour and material to be provided, and that the execution of this contract by the Contractor is founded and based upon his own examination, knowledge, information and judgment, and not upon any statement, representation, or information made or given, or upon any information derived from any quantities, dimensions, tests, specifications, plans, maps or profiles, given or furnished by Her Majesty or any of Her officers, employees or agents; and that any such statement, representation or information, if so made, given or furnished, was made, given or furnished merely for the general information of bidders and is not anywise warranted or guaranteed by or on behalf of Her Majesty; and that no extra allowance will be made to the Contractor by Her Majesty and the Contractor will make no claim against Her Majesty for any loss or damage sustained in consequence of or by reason of any such statement, representation or information being incorrect or inaccurate, or on account of unforseen difficulties of any kind. Waiver negatived. Contractor to investigate every condition of work before execution of contract.

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57. In the event of any inconsistency between the provisions of this contract and the provisions of the specifications forming part hereof the provisions of the contract shall prevail. Inconsistency between contract and specification.

IN WITNESS whereof the respective parties hereto have executed these presents on the day, month and year first above written.

Signed, sealed and delivered by the Contractor in the presence of:

.....
Deputy Minister of Public Works.

.....
Secretary—Dept. of Public Works.

The Queen's Printer and Controller of Stationery, Ottawa, 1960

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No. .....

Date 19

DEPT. OF PUBLIC WORKS OF CANADA

AGREEMENT

AND

Her Majesty the Queen, represented by the Minister of Public Works of Canada.

For

Amount:

Date of Completion:

File No.

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001090

DEPARTMENT OF LABOUR

Ref: PWD 13484 OTTAWA, CANADA

LABOUR CONDITIONS (A-1)

The following schedule of labour conditions is applicable to the work of grading, culverts, & granular base course, Mile 125 to 139.2 Banff-Jasper Highway,
AT Jasper National Park, Alta.

to be undertaken for the Department of Public Works

Classifications, Wages and Hours

(1) (a) All persons in the employ of the contractor, subcontractor, or any person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour. Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week.

(b) Application for permission to exceed 8 hours per day and 44 hours per week on this contract shall be made to the Minister of the Contracting Department for reference to the Minister of Labour.

(c) Every person in the employ of the contractor or subcontractor shall, except where the Minister of Labour otherwise orders, be paid for hours worked in excess of 44 hours per week at a rate of not less than one and one-half times the wages required to be paid under this contract; and where the Minister or Labour so orders, be paid at the same overtime rate for hours worked in excess of 8 hours per day.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Carpenters & joiners	$ 2.45
Compressor operators	1.65
Drill runners	1.65
Firemen	1.60
Grader operators	2.00
Labourers	1.60
Oilers (construction equipment)	1.60
Operators (draglines, cranes, shovels, etc.)	2.30
Powdermen	1.65
Pump operators	1.60
Roller operators	1.65
Timbermen & cribmen	1.70
Tractor operators (large)	2.00
Tractor operators (small)	1.65
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	1.95

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(See next page)

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LABOUR CONDITIONS (1)
MINISTER OF LABOUR TO DETERMINE PROPER CLASSIFICATIONS OF LABOUR

(2) Where there are special circumstances, which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision.

SCHEDULE TO BE POSTED

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

CONTRACTOR TO KEEP RECORDS WHICH ARE TO BE OPEN FOR INSPECTION

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

DEPARTMENTAL REQUIREMENTS BEFORE PAYMENTS MADE TO CONTRACTOR

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

AUTHORITY TO PAY WAGES IN EVENT OF DEFAULT BY CONTRACTOR

(6) All cases of default in the payment of wages to employees by the Contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

CONDITIONS OF SUBCONTRACTING

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contractor shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

WORKMEN TO BE RESIDENTS OF CANADA

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

NON-DISCRIMINATION IN HIRING AND EMPLOYMENT OF LABOUR

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The Contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purpose of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DIVISION 1

GENERAL CONDITIONS OF THE CONTRACT

Section

1 Definitions and Terms

2 Scope of Work

3 Control of Work

4 Control of Materials

5 Legal Relations and Responsibility to Public

6 Prosecution and Progress

7 Measurement and Payment

8 Wages and Conditions of Employment

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GENERAL CONDITIONS OF THE CONTRACT

(These Conditions are Supplemental to the Indenture)

SECTION 1. DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.S.H.O.	American Association of State Highway Officials
A.S.T.M.	American Society for Testing Materials
C.S.A.	Canadian Standards Association
C.G.S.B.	Canadian Government Specifications Board

Bridge - A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the centre of roadway of more than 20 feet between under-copings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening.

Length - The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end of the bridge floor; but in no case less than the total clear opening of the structure.

Roadway Width - The clear width measured at right angles to the longitudinal centreline of the bridge between the bottom of curbs or guard timbers or in the case of multiple height curbs, between the bottoms of the lower risers.

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

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Contract Time or Completion Date - The number of working or calendar days shown in the proposal indicating the time allowed for the completion of the work contemplated in the contract.

In case a calendar date of completion is shown in the preposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

Culvert - Any structure not classified as a bridge which provides an opening under any roadway.

Density - Shall mean the maximum dry density in pounds per cubic foot as determined by the standard method of test for the compaction and soils A.A.S.H.O. designation T.99-49.

Employee - Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control or receives compensation from the Contractor or Subcontractor.

Engineer - Shall mean the Chief Engineer of the Development Engineering Branch of the Department of Public Works of Canada, having control over the work and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any one acting for the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Inspector - The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified in the tender form.

Profile Grade - Line representing the surface elevation as shown on the Standard Plan along the longitudinal centreline of the proposed wearing surface. Profile grade means either elevation or gradient of such trace according to the context.

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Right of Way - (a) The land secured and reserved to the public for highway purposes.

(b) The lines shown on the plan (or as indicated by the Engineer) roughly parallel to the centreline of the highway showing the area reserved for highway purposes.

Roadway - The portion of the right-of-way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structures.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Substructure - All of that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and footings of rigid frames, except as noted above for substructure.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

Working Drawings - Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2 - SCOPE OF WORK

1.2.1 Intent of Contract

See Indenture Article 8 and 12.

The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract.

1.2.2 Special Work

Should any construction or conditions which are not covered by the plans or these specifications be anticipated, special provisions for such work will be prepared by the Engineer, stated on or attached

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1.2.2 Special Work (Cont'd)

to the tender form, and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications or supplements thereto, the special provisions shall govern.

1.2.3 Alterations of Plans or of Character of Work and Extra Work

See Indenture Article 7, 8, 9 and 10

1.2.4 Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

1.2.5 Provision for Traffic

(1) Unless otherwise provided, the Contractor shall be responsible for the provision of a safe road for traffic between the extreme limits of his contract and for the maintenance of this road to the satisfaction of the Engineer.

(2) The Contractor shall at all times carry on the work in a manner that will create the least interference with traffic, consistent with the faithful performance of the work. He shall not close any portion of the existing road nor divert traffic outside the limits of the right-of-way except by written order of the Engineer.

(3) The Contractor shall construct and maintain at his own expense a safe road for traffic in every case where traffic is maintained within the limits of the right-of-way or carried on detours, deemed to be a part of the work under this contract. He shall make provisions, acceptable to the Engineer, for the handling of traffic.

(4) The Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the contract.

See also Article 1.5.8 of these Specifications "Barricades and Warning Signs and Project Sign Boards".

1.2.6 Temporary Structures

(1) In bridge contracts, the Contractor will not be required to construct or maintain temporary structures unless the construction and maintenance of such structures are stipulated in the contract or ordered as extra work by the Engineer.

(2) Plans for temporary structures and procedure for moving existing structures to temporary location, when not provided by the Engineer, shall be subject to his approval.

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1.2.7 Removal and Disposal of Structures and Obstructions

(1) All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the Contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, which the Engineer may order salvaged, shall be carefully removed and shall become the property of the Department.

(2) Payment for this work shall be made under the pay items identified for such work in the tender, except that when the work is of minor consequence, it shall be considered as incidental to and included in other items.

1.2.8 Rights In and Use of Materials Found on the Work

(1) The Contractor, with the approval of the Engineer, may use in the proposed construction such stone, gravel, sand, or other material as may be found in the excavation. The Contractor will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material, all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills, approaches or otherwise. No charge for the materials so used will be made against the Contractor. The Contractor shall not excavate or remove any material from within the right-of-way which is not within the excavation, as indicated by the slope and grade lines, without written authorization from the Engineer.

(2) Unless otherwise provided, the material from any existing old structure may be used temporarily by the Contractor in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the Engineer.

1.2.9 Final Cleaning Up

See Indenture Article 24.

SECTION 3 - CONTROL OF THE WORK

1.3.1 Authority of the Engineer

See Indenture Article 10 and 11

1.3.2 Plans

Plans consisting of general drawings and showing such details as are necessary to indicate the construction contemplated, will be furnished by the Department. Roadway plans will show alignment, profile grade and typical cross sections.

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1.3.3 Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions and adjustments shown on the approved plans, except as modified by written orders of the Engineer. The crown or rise of the finished surfaces of the roadway, from the curb side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves, or at other places where deemed necessary, the Contractor will be required to widen, superelevate and spiral the roadway according to Departmental standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the Engineer in writing.

1.3.4 Coordination of Plans, Specifications, Supplemental Specifications and Special Provisions

These specifications, the supplemental specifications, the plans, Special Provisions and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

See also Indenture Article 57.

1.3.5 Cooperation by Contractor

See Indenture Article 13.

1.3.6 Cooperation with Utilities

(1) It shall be the responsibility of the Contractor to notify the Department's Officer when necessary adjustments of public or private utility fixtures, pipelines and other appurtenances within or adjacent to the limits of the construction are required.

(2) It shall be the Department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

(3) Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners under agreement with the Department except as otherwise provided for in the special provisions or as noted on the plans.

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1.3.6 Cooperation with Utilities (Cont'd)

(4) It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

(5) At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

(6) The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication or rearrangement of work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

1.3.7 Cooperation between Contractors

See Indenture Article 17 and 18.

1.3.8 Construction Stakes, Lines and Grades

See Indenture Article 34.

(1) Highways and Roads

The Engineer will set construction stakes establishing lines, slopes and continuous profile-grade in road work, for culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work.

(2) Structures

The Engineer will set stakes and establish bench marks necessary to mark properly the locations, alignment and reference elevations for bridge piers and abutments. The Contractor shall completely check the Engineer's layout, before commencement of the work, after which he shall assume responsibility for detail dimensions and elevations measured from the lines and elevations thus established.

(3) Preservation of Stakes

The Contractor is responsible for the preservation of Construction Stakes.

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1.3.9 Authority and Duties of Inspector

(1) Inspectors, employed by the Department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to alter or waive the provisions of these specifications.

(2) An Inspector is placed on the work to keep the Engineer informed as to the progress of the work and the manner in which it is being done; also to call the Contractor's attention to any non-conformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and specifications. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

(3) The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

1.3.10 Inspection of Work

(1) All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

(2) If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

(3) Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

1.3.11 Defective and Unauthorized Work or Materials

See Indenture Article 14

(1) The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

(2) No work shall be done without lines and grades having been given by the Engineer.

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1.3.12 Maintenance of Work During Construction

(1) The Contractor shall maintain the work during construction. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer.

(2) All cost of maintenance of the work during construction shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

(3) In the event that the Contractor's work is ordered shut-down for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract is terminated.

(4) In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

1.3.13 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Articles 1.2.5 and 1.3.12 above, will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

1.3.14 Tentative Acceptance

(1) At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract: provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor in the manner provided hereinafter in Article 1.7.3. Any damage to the highway that may occur on such section not attributable to traffic, shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

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1.3.14 Tentative Acceptance (Cont'd)

(2) If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

1.3.15 Claims for Adjustment and Disputes

See Indenture Article 41 and 42.

In any case where the Contractor deems that extra compensation is due to him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra as defined herein, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost as defined for force account, then the Contractor hereby agrees to waive the claim for such extra compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost as aforesaid shall not in any way be construed as proving the validity of the claim. Nothing in this Article shall be construed as establishing any claim contrary to the terms of Indenture Articles 7, 8, 9 and 10.

1.3.16 Final Acceptance

(1) Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

(2) Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer shall make a semi-final inspection and if at such semi-final inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

(3) If, however, at any semi-final inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the Contractor the necessary instructions as to replacement of material and performance or re-performance of work necessary and pre-requisite to final completion and acceptance, and the Contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or re-performance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

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SECTION 4 - CONTROL OF MATERIAL

1.4.1 Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. Tenderers shall state in their tender the country or origin of items where such items originate in countries other than Canada. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

1.4.2 Source of Supply and Quality Requirements

The materials supplied by the Contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other approved sources.

1.4.3 Designated Local Material Sources

(1) The Department will acquire and make available to the Contractor the right to take materials from sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads.

(2) The quality of material in such deposits will be acceptable in general, but the Contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications and whether blending with other materials will be necessary. It shall be understood that it is not feasible to ascertain from samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

(3) If the Contractor desires to use material from sources other than those designated, he shall do so only on written authority of the Engineer. The Engineer may, if he deems it practical and desirable, authorize the use of such sources, only after samples have been submitted under the direction of the Engineer. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

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1.4.3 Designated Local Material Sources (Cont'd)

(4) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

1.4.4 Field Office and Laboratory

Wherever indicated in the contract, the Contractor shall provide a field office and/or laboratory.

1.4.5 Delivery and Storage of Materials

(1) Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

(2) Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

(3) Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the Contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

(4) During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. C.S.A. standard practice shall govern the storage of materials unless otherwise provided.

1.4.6 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

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1.4.7 Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

1.4.8 Materials Inspection

In order to expedite the inspection and testing of materials, the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources of supply.

1.4.9 Department Furnished Material

(1) The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

(2) The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

(3) The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

(4) The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returned to the supplier which are surplus to contract requirements for any cause whatsoever.

SECTION 5 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1.5.1 Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

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1.5.2 Permits, Licenses and Taxes

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

1.5.3 Patented Devices, Materials and Processes

If the Contractor is required or desires to use any design, device, material or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Department; if no such agreement is made or filed as noted, the Contractor and the surety shall indemnify and save harmless, the Department, any affected railroad or railway company, or political subsdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the Department, any costs, expenses, and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

1.5.4 Restoration of Surfaces Opened by Permit

(1) The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time is hereby expressly reserved by the Department for the proper authorities of the municipality in which the work is done and the Contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

(2) Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department, and the Contractor s hall not allow any person or persons to make an opening unless a duly authorized permit of the Department is presented. The Engineer may authorize the Contractor to allow parties bearing such permits to make openings in the highway. The Contractor shall, when ordered by the Engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work shall be paid for as extra work, as provided in these specifications and shall be subject to the same conditions as original work performed.

1.5.5 Health and Sanitary Provisions

See Indenture Article 33.

1.5.6 Railway - Highway Separation

(1) In case the Contractor is required to haul materials across the tracks of any railway, or elects to do so, he shall make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing.

(2) All work to be performed by the Contractor in the construction of railway - highway separation structures on the railroad right-of-way shall be done in a manner satisfactory to the Engineer of the railway company and shall be performed at such times and in such manner as not

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1.5.6 Railway - Highway Separation (Cont'd)

to unnecessarily interfere with the movement of trains or traffic upon the track of the railway company. The Contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property.

1.5.7 Impeding Navigation

In all matters connected with the prosecution of the works, the transportation or delivery of materials of any kind required for them and in making arrangements for these purposes, the Contractor must be governed by the laws and rules of navigation and the interpretation put upon them by the Officer entrusted to enforce them, and he must use every precaution to guard against interrupting, impeding or in any way interfering with the navigation, as he will be held strictly and legally liable for all damage, loss or detention that any vessel may sustain from any of his acts, whether such may result from a desire to prosecute the works or any other cause.

1.5.8 Barricades and Warning Signs and Project Sign Boards

(1) The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

(2) The Contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished or as required by local ordinances.

(3) The Contractor shall, at his own expense, provide and erect project sign boards at either or both ends of the contract, at locations approved by the Engineer. The sign boards shall be appropriately lettered in accordance with Standard Plan.

1.5.9 Use of Explosives

(1) When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.

(2) All explosives shall be stored in a secure manner, in compliance with laws, ordinances and regulations and all such storage shall be marked clearly "DANGEROUS - EXPLOSIVES".

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1.5.9 Use of Explosives (Cont'd)

(3) The Contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the Contractor of responsibility for any damage resulting from his blasting operations.

1.5.10 Damage to Property and Persons

See Indenture Article 23 and 25.

1.5.11 Insurance

Unless specifically excepted in the special provisions, no payment will be made under a contract for the construction of a bridge or bridges as defined in Section 1 of these General Conditions until the Contractor deposits with the Chief of Legal Services, Department of Public Works, Ottawa, an insurance policy that complies with the following conditions:

(i) All money payable by the Insurer under the policy shall be payable to Her Majesty the Queen in Right of Canada and the Contractor jointly.

(ii) The policy shall cover all structures to be constructed whether temporary or not and all materials provided by the Contractor for the work while on property owned or leased by the Crown.

(iii) The policy shall be enforced until the work is completed and accepted by the Crown.

(iv) The policy shall ensure against loss equal in amount to the total value of the contract.

(v) The policy shall be a Bridge Builders All Risk Policy.

(vi) The policy shall provide that in event of loss the amount of such loss shall be automatically reinstated.

(vii) The policy shall provide for a deductible amount of one thousand dollars ($1,000.00) in respect of every claim.

1.5.12 Camps

In carrying out work within or adjacent to Forests, the Contractor shall comply with all of the regulations of the Provincial or Federal Forestry Department, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep all the areas in an orderly condition, dispose of all refuse and obtain approval of the Engineer for the construction of camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the forest protection agency.

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1.5.13 Contractor's Responsibility for Work

See Indenture Article 21.

1.5.14 Furnishing Right-of-Way

The Department will be responsible for the securing of all necessary rights-of-way in advance of construction.

1.5.15 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-Contractor or caused in whole or in part by an act or omission of the Contractor, any Sub-Contractor, or any officer, servant or agent of the Contractor or of any Sub-Contractor whether or not such act or omission was negligent.

SECTION 6 - PROSECUTION AND PROGRESS

1.6.1 Subletting of Contract

See Indenture Article 27.

1.6.2 Prosecution of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

1.6.3. Limitation of Operations

The Contractor shall not open up work to the prejudice of work already started and he may be required by the Engineer to finish a section on which work is in progress before work is started on any additional section.

1.6.4 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work wholly or in part by written oder, for such period as he may deem necessary due to unsuitable weather, to conditions, considered unfavourable for the suitable prosecution of the work, or to failure

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1.6.4 Temporary Suspension of Work (Cont'd)

on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

1.6.5 Extension of Time

See Indenture Article 20 and 50.

1.6.6 Default and Annulment of Contract

See Indenture Article 19.

SECTION 7 - MEASUREMENT AND PAYMENT

1.7.1 Measurement of Quantities

(1) General

All work completed under the contract shall be measured by the Engineer according to British standard measure.

(2) Linear and Area

(a) All longitudinal and transverse measurements for areas will be measured horizontally.

(b) Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

(c) All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

(3) Volume and Weight

(a) In computing volumes of excavation, embankment and borrow, the average end area method will be used.

(b) The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible indentification mark.

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1.7.1 Measurement of Quantities (Cont'd)

(c) All materials for which measurements are obtained by the cubic yard, "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

(d) When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(e) The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(f) The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(4) Materials

(a) Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

(b) The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

(c) Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the Contractor.

(d) Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

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1.7.1 Measurement of Quantities (Cont'd)

(5) Time

Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions make some other method of measurement desirable.

(6) Lump Sum

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

1.7.2 Scope of Payment

See Indenture Article 12 and 38.

1.7.3 Extra and Force Account Work

(1) General

For extra work performed in accordance with Article 7 of the Indenture, the detailed method of payment shall be either at the unit price or lump sum stipulated in a supplemental agreement or in lieu of such agreement, the Department will require the Contractor to do such work on a force account basis to be compensated in the following manner:

(2) Labour

For all labour and teams and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labour, teams and foremen are actually engaged in such work, to which cost shall be added an amount equal to 10 percent of the sum thereof.

(3) Bond, Insurance and Tax

For property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions on the force account work, the Contractor shall receive the actual cost, to which no percentage shall be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and tax.

(4) Materials

For materials accepted by the Engineer, and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost shall be added an amount equal to 10 percent of the sum thereof.

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1.7.3 Extra and Force Account Work (Cont'd)

(5) Equipment

For any machinery or special equipment, (other than small tools) the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum no percentage shall be added.

(6) Superintendence

No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(7) Compensation

The compensation as set forth above shall be received by the Contractor as payment in full for extra work done on a force account basis. At the end of each day the Contractor's representative and the Inspector shall compare records of the cost of work done as ordered on a force account basis.

(8) Statements

No payment will be made for work performed on a force account basis until the Contractor shall furnish to the Engineer duplicate itemized statements of the cost of such force account work detailed as to the following:

(i) Name, classification, date, daily hours, total hours, rate and extension for such labourer, foreman and team.

(ii) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(iii) Quantities of materials, prices and extensions.

(iv) Transportation on materials.

(v) Cost of property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions. Such statements shall be accompanied and supported by original receipted invoices for all materials used and transportation charges, provided that, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

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1.7.4 Progress Payments

See Indenture Article 39 and 40.

1.7.5 Payment for Material Delivered on Project

(1) Partial payments may be made to the extent of 75 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the Department, or leased by the Contractor and transferred to the Department providing such is done to the satisfaction of the Engineer. If requested to do so, the Contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

(2) No payment shall be made upon fuels, supplies, form lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

(3) In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

1.7.6 Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the Engineer as provided in Article 1.3.16 the Engineer shall prepare the final estimate of the quantities of the various classes of work performed, and after the approval of such final estimate by the Minister, there shall be paid to the Contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

SECTION 8 - WAGES AND CONDITIONS OF EMPLOYMENT

1.8.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) by the Contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by sub-contract.

1.8.2 Labour Conditions

(1) The Contractor's attention is directed particularly to the provisions and requirements of the Province's Workmen's Compensation Act and to Statutes regulating the hours of employment on public work.

(2) In addition to the Provincial Laws restricting the hours of labour, and minimum wage rates, the Contractor shall abide by the Labour Conditions of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

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1.8.3 Employment of Canadian Labour

In engaging labour for the work contemplated by this contract as far as practicable and consistent with reasonable efficiency and economy, only Canadian residents shall be used and first consideration shall be given to the employment of available and competent workmen who are most in need and are resident in the district in which the works are to be performed. Preference is to be given to veterans of the Armed Forces of Canada and to married men and single men with dependants.

1.8.4 Records

The Contractor shall maintain and keep available for inspection by the Minister, a record of the names and addresses of ex-servicemen employed on this work, together with a record of the steps taken to implement this requirement.

January 1960.

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 2

EARTHWORK

Section 1 - Clearing and Grubbing

" 2 - Roadway and Borrow Excavation

" 3 - Embankment Construction

" 4 - Channel Excavation

" 5 - Excavation for Structures

" 6 - Overhaul

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SECTION 1 - CLEARING AND GRUBBING

SEPTEMBER 1959

2.1.1 DESCRIPTION

This item shall consist of the complete removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans as well as any other areas which may be designated by the Engineer.

2.1.2 MATERIALS

No materials are involved.

2.1.3 CONSTRUCTION

(1) Clearing

(a) Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush, windfalls and other fallen timber, stumps and rubbish except such trees and shrubs as may be designated for preservation by the Engineer. Such designated trees and shrubs shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, all trees, roots and existing stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging and off the right-of-way, shall be removed.

(b) Clearing shall be completed at least one-half mile in advance of grading operations.

(2) Salvage

All merchantable timber shall become the property of the Contractor and may be disposed of at his discretion, provided it be removed from the site of the work before the completion date of the contract.

(3) Grubbing

Grubbing shall include the removal and disposal of all roots 2 inches in diameter and larger and stumps, imbedded logs, and other objectionable debris.

(4) Disposal

All timber, logs, trees, stumps, brush and other rubbish

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shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

(5) Excavation

If the Contractor clears or grubs in a manner such that excavation is removed during the operation, payment will not be made for the excavation so removed. Cross-sectioning for excavation quantities will be done after clearing and/or grubbing operations have been completed.

2.1.4 MEASUREMENT

The quantity to be paid for under this item shall be the number of acres, and fractions thereof, of land actually cleared and/or grubbed in accordance with these specifications and completed to the satisfaction of the Engineer.

2.1.5 PAYMENT

Clearing and grubbing shall be considered as separate items. The acreage, determined as provided above, will be paid for at the contract unit price per acre for clearing and the contract unit price per acre for grubbing, which price and payment shall constitute full compensation for all labour, equipment, tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 2 - ROADWAY AND BORROW EXCAVATION

SEPTEMBER 1959

2.2.1 DESCRIPTION

(1) Scope

This item consists of the excavation and disposal of all materials in conformity with the lines and grades or dimensions indicated on the plans or as staked or directed by the Engineer, and includes:

(a) All roadway and borrow excavation.

(b) Excavation for all culverts and other drainage installations not requiring footings.

(c) Formation of side ditches, embankments, permanent access and connecting roads, approaches, entrances, parking areas, berms and any other earthworks necessary for the proper construction of the road.

(d) Removal and disposal of unsuitable materials from excavation, embankment and borrow areas.

(e) Transportation of excavated materials for the freehaul distance.

(f) Trimming and rounding of slopes.

(g) Maintenance of the work set forth under this section in a finished condition until it or any portion thereof has been accepted as completed by the Engineer.

(2) Classification

(a) Excavation Common will include the excavation of all materials not hereinafter classified as Excavation Rock.

(b) Excavation Rock will include the excavation of all boulders more than $\frac{1}{2}$ cubic yard in volume, all stone fences and masonry walls, all concrete or masonry structures, concrete pavements and all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. Excavation Rock will not apply to bituminous pavement, gravel, or broken stone which will be classified as Excavation Common.

2.2.2 MATERIALS

Not applicable.

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2.2.3 CONSTRUCTION

(1) Utilization of Excavated Materials

All suitable materials removed by excavation from the roadway shall be used as far as practicable, in the formation of embankments before any material from Borrow Excavation shall be used, except as otherwise directed by the Engineer.

(2) Location of Borrow Pits

The Engineer will locate and the Department will furnish all borrow pits. The Contractor shall notify the Engineer sufficiently in advance of opening any approved borrow pits, so the necessary measurements may be made.

(3) Unsuitable Materials

When unsuitable material is encountered in areas on which an embankment is to be constructed, or below the subgrade in cuts, the material shall be removed to the lateral limits and depths specified by the Engineer. Any material removed in excess of approved limits and depths will not be measured for payment and the Contractor will be required to provide at his own expense, the material, properly compacted, necessary to replace the excess material which has been excavated.

(4) Swamp Treatment

Where the roadway crosses deposits of peat, muck, muskeg or swamp, the unsuitable material shall be excavated to a firm foundation and to the width indicated on the Standard Plans unless otherwise indicated. In such cases supplementary specifications and plans will be supplied to the Contractor.

(5) Clearing and Grubbing

Clearing and Grubbing will be measured and paid for as stated in Division 2, Section 1 - "Clearing and Grubbing". Original measurements for all excavation shall be taken after Clearing and/or Grubbing operations are complete.

(6) Stripping and Conserving Topsoil

Prior to the excavation of embankment materials the ground surface shall be stripped of all unsuitable material. Where material is suitable for top soiling the Engineer may direct that it be stock-piled at approved locations.

(7) Trimming and Restoration of Borrow Pits

All borrow pits shall be trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or remain therein. Upon completion of the hauling, the Contractor shall restore the sites which were disturbed by such operation to a satisfactory and sightly condition.

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(8) Construction in Roadway Cuts

(a) Where the subgrade is on transition from excavation to embankment the ground slopes at the grade point shall be treated in accordance with the Standard Plan "Earth Cut and Fill Construction Method at Grade Point."

(b) Where there is no subexcavation in cuts the area from inslope to inslope of ditches shall be treated as follows:

(i) Where granular sub-base is not provided the basement soil shall be sub-excavated one foot and replaced in 6 inch layers compacted to 100% of maximum density.

(ii) When granular sub-base is provided the basement soil shall be scarified to a depth of 6 inches and compacted to 100% of maximum density.

(c) Where unsuitable materials are sub-excavated, as detailed in (3) above, the excavated areas shall be back-filled in 6 inch layers with approved materials and to the elevations indicated by the Engineer and compacted to 95% of maximum density except that the top 12 inches shall be compacted to 100% of maximum density.

(d) In rock cuts the rock shall be removed to the subgrade elevation as shown on the standard plan and the exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface.

(9) Rock Excavation

(a) If, during excavation, material appearing to conform to the classification for Excavation Rock is encountered, the Contractor shall notify the Engineer and shall provide ample opportunity for him to investigate and make such measurements as are necessary to determine the volume of the material in question.

(b) Rock Excavation in roadway cuts shall be carried out in accordance with the Standard Plans.

(c) The Contractor shall collect and place in the embankment, all the material dislodged by blasting.

(d) In order to obtain uniform shattering drilling shall be carried out to a plane parallel to and at a minimum of 2 feet below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to

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the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both ends of cuts on level gradients, to a point at least 3 feet below sub-grade or correspondingly lower if this minimum drilling in the cut has been exceeded. See Standard Plan "Rock Cut Construction". All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(e) Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the limits of the staked sections.

(10) Drainage

Side ditches shall be constructed to the depths and widths indicated on the plans, to permit ready run-off of surface water.

(11) Rounding and Finishing Slopes

The top surface and side slopes of cuts shall be left in a neat condition and true to the lines and grades shown in the Plans. When boulders are encountered in cut slopes they shall be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

When in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand finishing may be called for.

2.2.4 MEASUREMENT

(1) Excavation Common

(a) The quantity of Excavation Common for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for materials acceptably excavated. The measurement will include subexcavation of unacceptable material, surface boulders less than ½ cubic yard in volume and the authorized stripping of excavation and embankment areas.

(b) In cut section where material is removed and replaced (Item 2.2.3 (8) (b) of this Specification), the volume for which payment will be made shall be considered as twice the volume contained in a prism having a depth of 12 inches and an area equal to the top area of the replaced material. There will be no measurement for scarifying the 6 inches under Item 2.2.3 (8) (b).

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(c) Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material, due to slides, which is necessary to move in order to complete the roadway but only when such slides are not attributable to the negligence of the Contractor.

(2) Excavation Rock

(a) The quantity of Excavation Rock for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for material including surface boulders greater than ½ cubic yard in volume which is acceptably excavated.

(b) Where in the opinion of the Engineer unavoidable overbreak occurs payment will be made for the actual quantity involved but not to exceed 10 percent of the volume of the individual cut as staked by the Engineer.

(c) All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position as for Excavation Rock and paid for at the unit price for Excavation Common.

2.2.5 PAYMENT

(a) Payment for Excavation Common (roadway and borrow) and Excavation Rock will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment shall include full compensation for all labour, equipment, tools, explosives, excavation and hauling (except overhaul), scarifying in earth cuts, benching or scarifying slopes, scarifying or breaking up old pavement, shattering rock below grade in rock cuts, the formation of embankments, stockpiling stripped material for topsoiling, trimming and finishing slopes and top surfaces, disposal of surplus or unsuitable materials, maintaining the work until acceptance, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Additional payment at the contract unit price for Excavation Common will be made for topsoil material taken from the stockpile and placed as directed by the Engineer.

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SECTION 3 - EMBANKMENT CONSTRUCTION

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2.3.1 DESCRIPTION

Scope: This item shall include the placing in embankments and cuts of suitable materials obtained from the various scheduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross sections and dimensions shown on the plans or as staked by the Engineer.

2.3.2 MATERIALS

(1) Materials used for embankments shall be free from muck, wood, brush, roots, sods, ashes, rubbish, top soil and other organic matter.

(2) The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All material shall be approved by the Engineer prior to incorporation. In embankments adjacent to abutments and other structures, where shown on the plans, the material shall be granular in nature and approved by the Engineer.

2.3.3 CONSTRUCTION

(1) Embankment Foundation

(a) The foundation for the embankments shall be prepared by removing unsuitable materials as specified in Article 2.3.3 (3) and (4) of the Specification "Roadway Excavation".

(b) When the sub-grade elevation of the new embankment is less than 1 foot above an existing pavement, the pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

(2) Side Hill Construction

When an embankment is to be constructed on a slope or against an existing embankment, the entire sloping surface on which the embankment is to be placed shall be ploughed, benched or broken up in such a manner that the new material will bond with the resulting surface. The specific method employed shall be subject to the approval of the Engineer.

(3) Placing Embankment

(a) Material shall not be placed while frozen nor shall it be placed on a frozen surface.

(b) The embankment shall be constructed to the cross-section shown in the Standard Plans. A crown shall be maintained at all times during construction to ensure ready run-off of surface water.

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(c) The embankment material will be placed in successive uniform layers across the entire area of the embankment as follows:

(i) Material containing less than 25 percent by volume of stone larger than 4 inches shall be placed in 6 inch compacted layers.

(ii) Material containing 25 percent or more in volume of stone or ledge rock larger than 4 inches shall be placed in layers not to exceed the maximum size of the rock or stone in thickness but in no case shall the thickness of the layer exceed 2 feet. Stone larger than 4 inches shall not be placed within 6 inches of the sub-grade elevation.

(iii) In embankments composed principally of material obtained from rock cuts, the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. Such embankments shall be constructed in layers having a maximum height of 3 feet. Even though the thickness of the layers is limited as provided above, the placing of individual rocks and boulders of a size not exceeding 5 feet in least dimension will be permitted provided they are carefully distributed and the interstices filled with finer material to form a dense and compact mass. Each layers, before starting the next shall be levelled and smoothed by means of power driven graders, bulldozers, or other suitable equipment. Hauling and spreading equipment shall be operated over the full width of each layer.

(iv) The top of the rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(4) Compaction

(a) The material shall be spread in layers. Each layer shall be thoroughly compacted by approved compaction equipment for the full width of the layer and to the required degree of compaction before successive layers are placed.

(b) The embankment shall be compacted to not less than 95 percent of the maximum density except that the top 6 inches below the subgrade shall be compacted to a dry density of 100 percent of the maximum density.

(c) The Engineer shall specify the type of compaction units to be used during construction.

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(d) During compaction operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank, or other suitable indicating gauge approved by the Engineer. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated or work shall cease temporarily while the material is brought to approximately the optimum moisture content.

(e) On each embankment at least one approved compactor shall be in continuous operation while material is being placed. Additional units shall be used only as directed by the Engineer.

(5) Embankment Adjacent to Structures

(a) Embankment on Bridge Approaches. The permission of the Engineer must be obtained before any fill is placed against concrete abutments or wing walls. Approach fills within the lines shown on the plan or as directed shall be constructed of approved granular material placed in 6" layers and compacted to 100% maximum density. Where approach fill is to be placed on ground sloping toward an abutment or wing wall, the Engineer may require the slope to be benched to prevent wedging action against the structure. The puddling method for placing any part of an approach fill will not be permitted. In the case of rigid frame structures the embankment shall be placed in approximately equal lifts on both sides of the structure and the compacted height shall be maintained at approximately the same elevation.

(b) Embankments at Culverts. Embankment around culverts shall consist of approved granular material placed to the limits shown on Standard Plan "Installation of Culverts". Material shall be placed in 6" layers alternately on each side of the culvert so as not to displace it during installation and shall be compacted to 100% maximum density. Special care shall be taken to obtain the required compaction under the haunches of pipe and pipe arch culverts.

(c) Fill - Retaining Walls. The fill behind the wall shall be of approved granular material as indicated on the plans, placed in layers not exceeding 6 inches in thickness and tamped or consolidated as directed by the Engineer. In the case of cell type retaining walls the fill behind the wall shall be tamped and kept near but not above the level of the compacted material within the cells. Where fill is to be placed on a sloping surface, the surface must be benched to reduce the load on the retaining structure. The puddling method of filling will not be permitted.

(6) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

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(a) Sheepsfoot compactors shall consist of two drum units, each drum having a minimum length of 4 feet. The length of the tamping feet shall not be less than 7 inches. Under working conditions, the compactor shall be of such weight that the minimum load upon each tamper foot will not be less than 250 pounds per square inch of cross sectional area. The sheepsfoot compactor shall be of the self-cleaning type and so constructed that each drum will oscillate independently of the other.

(b) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(c) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(d) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(e) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(f) Vibratory Compactors shall be of a design approved by the Engineer with weight variable, depending on the application but not to exceed 16 tons.

(g) Prime movers shall be capable of pulling compaction units at a minimum of 3 miles per hour, and each prime mover shall have an hour meter of approved design installed.

(h) Where directed by the Engineer additional compaction units shall be hauled in tandem.

(i) Self-powered hand-operated tamping units for compaction of backfill and/or embankments contiguous to structures shall be of the vibratory or ramming type of approved design and weighing not less than 100 pounds.

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(j) Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of standard units required in the Specifications.

(7) Trimming

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown in the plans and profiles or as staked by the Engineer. Where in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand trimming may be called for.

(8) Maintenance of Roadbed

The finished roadbed shall be maintained continuously in a condition suitable for traffic until the next course, if any, of material is placed or until the final completion of the work as the case may be.

2.3.4 MEASUREMENT

(1) Embankment shall not be measured for direct payment.

(2) Compaction

(a) The quantity of compaction for which payment will be made shall be the actual number of hours that the equipment worked, as recorded on the installed hour meter of the hauling unit.

(b) In the case of hand-operated tamping units the quantity for which payment will be made will be the actual number of hours worked.

(3) Watering

The quantity of water for which payment will be made shall be measured in units of 1,000 gallons for quantities authorized by the Engineer.

2.3.5 PAYMENT

(1) Payment for construction of embankment, as above described, including granular fill at abutment, and elsewhere, is not payable directly but shall be considered as a subsidiary obligation of the contractor, covered under the contract unit prices for performance of work under the various scheduled excavation items except as provided below.

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(2) Payment for compaction will be made for the number of hours, as above determined, at the contract unit prices for the individual units of compaction equipment, which prices shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided. No payment will be allowed for interruptions or down-time of any kind.

(3) Payment for watering shall be made at the contract unit price for the number of 1000 gallon units authorized by the Engineer, which price shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) When more than one compaction unit is driven by a single prime mover payment will be made for the additional unit(s) at the contract unit price for the compaction unit only i.e. "Compaction (Tamping Roller only)". No additional compensation will be allowed for an increase in the size of the machinery supplying the motive power.

(5) When granular material is used as directed by the Engineer, for the work detailed in Article 2.3.3 paragraph 5, payment will be made at the contract unit price for one of the various scheduled item.

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SECTION 4 - CHANNEL EXCAVATION

SEPTEMBER 1959

2.4.1 DESCRIPTION

This item shall include the excavation required for deepening, widening and relocating water channels, and the construction of ditches other than roadway side ditches, to the lines and grades, and at the locations shown on the plans or designated and staked by the Engineer.

2.4.2 MATERIALS

No materials are involved.

2.4.3 CONSTRUCTION

Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.4.4 MEASUREMENT

The quantity of Channel Excavation for which payment will be made will be the volume, measured in its original position, computed by the method of average end areas, removed within the neat lines of Channel Excavation shown on the plans or as staked by the Engineer. The material shall be classified as Channel Excavation Common, or Channel Excavation Rock, in accordance with Item (2), Article 2.2.1.

2.4.5 PAYMENT

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, Common, and Channel Excavation, Rock, which prices shall include full compensation for all labour, equipment, tools, explosives, excavating and hauling materials (except overhaul), placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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No materials are involved.

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Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

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2.4.5 PAYMENT

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, Common, and Channel Excavation, Rock, which prices shall include full compensation for all labour, equipment, tools, explosives, excavating and hauling materials (except overhaul), placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 6 - OVERHAUL

SEPTEMBER 1959

2.6.1 DESCRIPTION

This item shall consist of authorized hauling in excess of the free haul distance of 1000 feet of any material paid for under one of the various classes of excavation, and disposed of as required under the various items prescribed for the disposal of such material.

2.6.2 MATERIALS

Not applicable.

2.6.3 CONSTRUCTION

Not applicable.

2.6.4 MEASUREMENT

(1) The quantity of Overhaul, measured in cubic-yard-miles, to be paid for shall be the product of the volume of the overhauled material, measured in its original position, in cubic yards, by the overhaul distance in miles and fractions thereof.

(2) The overhaul distance shall be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of 1000 feet. The haul distance shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment shall be based on the haul distance measured along the route designated by the Engineer.

(3) In calculating Overhaul for Roadway Excavation, the Mass Diagram method will be used by the Engineer. In this method the limits of free haul will be determined by fixing on the profile two points 1000 feet apart, one on each side of the neutral grade point, selected in such a way that the included quantities of excavation will balance the included quantities of embankment plus the proper allowance for shrinkage or swell. All material within the balance points beyond this limit of 1000 feet will be calculated and payment will be made on the basis of the following method of computation:

(a) All material within the limits of the 1000 feet will be eliminated from further consideration in overhaul compensation.

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(b) The overhaul distance will be the distance between the centre of gravity of the remaining mass of excavation and the centre of gravity of the resulting embankments, measured in miles or fractions thereof, less 1000 feet free haul.

(c) The amount of overhaul to be paid for shall be obtained by multiplying the overhaul distance in miles by the quantity of the remaining mass of excavation in cubic yards and shall be expressed in units of cubic-yard-miles.

2.6.5 PAYMENT

Payment for Overhaul will be made for the quantities as above determined, measured in cubic-yard-miles, at the contract unit price for Overhaul, which price and payment shall be full compensation for all labour, equipment and tools necessary to complete the hauling operations satisfactorily, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 3

BASE COURSE

Section 1 - Base Course (Class 1) and Sub-base Course (Class 2) and (Class 3)

" 2 - Bituminous Stabilized Base Course (Plant Mixed)

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DIVISION 3

SECTION 1 - BASE COURSE (CLASS 1) AND SUB-BASE COURSES (CLASS 2) AND (CLASS 3)

3.1.1 DESCRIPTION

This item shall consist of crushing and screening gravel or stone and placing in stockpile(s) or on the road in accordance with these specifications.

3.1.2 MATERIALS

(1) Base Course Class 1

(a) This material shall consist of crushed stone or crushed gravel meeting the requirements of Tables 1 and 2. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 1

Physical Requirements for Coarse Aggregate (Material Retained on No.4 Sieve)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	35	35
(b) Crushed fragments, min. % by wt.	-	50
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Method T-104-46	15	15

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

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TABLE 2

Physical Requirements - Deleterious Materials

Description	Stone	Gravel
1. Shales	4%	4%
2. Siltstones	1	1
3. Chert	2	2
4. Ochre	1	1
5. Clay ball	1	1
Max. allowable total % by weight of deleterious material	8	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

(b) Gradation

The aggregate shall conform within the limits specified in Table 3. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 3

Base Course (Class 1)

Sieve No.	Percent Passing
3/4"	100%
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

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(2) Sub-Base Course (Class 2)

This material shall consist of crushed stone or crushed gravel, meeting the gradation requirements of Table 4. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 4

Sub-Base Course (Class 2)

Sieve No.	Percent Passing
2"	100%
1"	70 - 100
½"	50 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

(3) Sub-Base Course (Class 3)

This material shall consist of gravel, talus rock, desintegrated granite, sand, or other granular materials meeting the gradation requirements of Table 5. It shall be composed of clean, hard particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 5

Sub-Base Course (Class 3)

Sieve No.	Percent Passing
4"	100%
1"	60 - 100%
No. 4	25 - 100%
No. 10	12 - 85%
No. 40	5 - 40%
No. 200	0 - 8%

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3.1.3

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

(4) General - Base Course (Class 1) and Sub-Base Courses (Classes 2 and 3)

(a) The portion of the material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

(b) Even though particle sizes are within the limits of the grading sizes herein provided, materials will be considered unsuitable, if particle shapes are thin or elongated or exhibit other characteristics precluding satisfactory compaction and a roadbed acceptable to the Engineer.

(c) The source of supply for the Base Course and Sub-Base Courses shall be in accordance with Section 1.4.2. "Source of Supply and Quality Requirements".

3.1.3 CONSTRUCTION

(1) Clearing and Grubbing

The clearing and grubbing of deposits from which these materials are obtained, stockpile sites and access roads thereto, shall be carried out as specified in Article 2.1.3 - "Clearing and Grubbing".

(2) Stripping

The pits from which these materials are obtained shall be stripped of all overburden, and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

(3) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, will be specified by the Engineer.

(4) Blending Aggregates

It shall be permissible to blend or mix two or more materials to meet the gradation requirements. When two or more materials are blended, they shall be thoroughly mixed by mechanical means.

(5) Preparation of Surface Prior to Placing

Each course shall be placed on a surface which shall be clean, dry, free from frost, snow, and loose or adhering deleterious materials, properly shaped and compacted. Any damage to a finished surface shall be repaired by the Contractor at his own expense and to the satisfaction of the Engineer, before the next course is placed.

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(6) Spreading and Compacting Base Course (Class 1)

The granular material shall be laid so as to avoid segregation in layers of not more than three (3) inches in compacted thickness or as directed by the Engineer. Tail-gating will not be permitted. Immediately following spreading and smoothing of each layer, all the material shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, rubber tired rollers or vibratory compactors, meeting the requirements of Item 2.3.3(6) of the "Specification for Embankment Construction". All compacting shall start at the edges and progress towards the centre, so that each succeeding pass will uniformly overlap the previous one. While compacting progresses, the entire surface of each layer shall be shaped and dressed with a motor grader, having a blade at least twelve (12) feet in length, to maintain a uniformly smooth surface conforming to the required lines and grades.

Any irregularities in the completed surface of each lift that exceed 3/8 inch from the template grade for that lift when tested with a 10 foot straight edge shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Additional material when required shall be paid for at the contract unit price for base course material.

Each layer shall be compacted to at least 100% maximum density. During compaction, the base course shall be maintained at the optimum moisture content. Water, when required, shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank.

(7) Placing, Spreading and Compacting Sub-base (Class 2 and Class 3)

This material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer. The placing, spreading and compacting shall be done in accordance with Articles 2.3.3(3) and 2.3.3(4) - "Embankment Construction".

(8) Stockpiling

The stockpile site(s) shall be cleaned of all deleterious material and shall be firm and level. The stockpile(s) shall be constructed in layers not exceeding three feet and be built to eliminate coning and segregation of aggregate sizes. During winter operations, stockpile(s) shall be kept free of ice and snow to the satisfaction of the Engineer.

3.1.4 MEASUREMENT

(1) The quantity of base course for which payment will be made, shall be the number of tons (2000 lbs) of base course or sub-base course material, placed and accepted in the completed work. The weight measurements shall be made by a weighmaster provided by the Department using scales provided by the contractor. These scales shall be of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested

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for accuracy as often as may be required by the Engineer. The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as often as required.

(2) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course or sub-base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(3) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

(4) The quantity for which payment will be made for the compaction of the base course or the sub-base course, shall be the actual number of hours as recorded on the installed hour meter on the hauling unit of the particular equipment for the time of operation approved by the Engineer.

(5) The quantity of clearing and/or grubbing of borrow areas, stockpile sites and access roads thereto for which payment will be made, shall be measured as specified in Article 2.1.4 "Clearing and Grubbing".

(6) The quantity of stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

(7) The quantity of work and materials required for the construction of access roads, will be measured as specified under the various scheduled items.

3.1.5 PAYMENT

(1) Payment for base course or sub-base course will be made for the quantities as above determined, measured in tons (2000 lbs) at the contract unit price for "Base Course" or "Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Payment for hauling base course or sub-base course material will be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course" or "Hauling Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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(3) Payment for watering will be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all other work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(4) Payment for compaction will be made for the quantities above determined, measured in hours for a particular unit at the contract unit price or prices for "Compaction" which price or prices and payment shall constitute full compensation for performing the work specified and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which payment is not elsewhere provided. No payment will be allowed for interruption or down time of any kind.

(5) Payment for clearing and/or grubbing borrow areas, stockpile sites and access roads thereto, will be made as specified in Article 2.1.5 "Clearing and Grubbing".

(6) Payment for stripping of borrow areas will be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping of Borrow Areas", which price and payment shall be full compensation for all labour, equipment, tools, excavation and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(7) Payment for work and materials required for the construction of access roads will be made as specified under the various scheduled items.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 6

INCIDENTAL CONSTRUCTION

Section 1 - (A) Random Rip-Rap
(B) Armour Rip-Rap

" 2 - (A) Hand-Placed Rip-Rap
(B) Grouted Hand-Plant Rip-Rap

" 3 - Culverts

" 4 - Underdrains

" 5 - Guide Fence and Guide Posts

" 6 -

" 7 - Metal Type Retaining Wall

" 8 - Dust Control

" 9 - Conditioning of Roadbed

" 10 - Rental Vehicles

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6.1.1 DESCRIPTION

This item shall consist of stone rip-rap for bank protection furnished and constructed in accordance with these specifications at the locations indicated and in conformity with lines, grades and dimensions shown on the plans or required by the Engineer.

6.1.2 MATERIALS

The Contractor shall supply all materials. The stones for the rip-rap shall be hard, angular and of such quality that they will not readily disintegrate on exposure to water or weather. The source of the material must be approved by the Engineer.

(a) RANDOM RIP-RAP

In random rip-rap the stones shall weigh between 20 and 400 pounds. Not less than 25% of the individual stones shall weigh over 200 pounds.

(b) ARMOUR RIP-RAP

In armour rip-rap 60% of the individual stones shall weigh between 1200 and 2000 pounds each and an additional 20% shall weigh between 400 and 1200 pounds. The remaining 20% shall not weigh less than 200 pounds.

6.1.3 CONSTRUCTION

When shown on the plans and as directed by the Engineer, the Contractor shall excavate an adequate foundation bed upon which the bottom of the rip-rap shall rest. The stones shall be handled or dumped into place so as to form the required cross-sections. Stone above the low water line shall form a uniform surface free from humps or depressions with no excessively large individual stones projecting from the general surface. Armour rip-rap stone excessively large and tending to extend beyond the average general surface shall be embedded into the surface or broken down or discarded.

6.1.4 MEASUREMENT

The quantity for which payment will be made shall be the quantity measured in cubic yards in place and computed by the average end area method for materials satisfactorily incorporated into the work.

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SECTION 2 (A) HAND-PLACED RIP-RAP
(B) GROUTED HAND-PLACED RIP-RAP

FEBRUARY, 1960

6.2.1 DESCRIPTION

This item shall consist of constructing hand-placed rip-rap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.2.2 MATERIAL

(1) General

The Contractor shall supply all materials.

(2) Rock

(a) Stone for rip-rap shall be of approved quality sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects.

(b) For wall construction no stone shall be less than ½ cubic foot in volume and 75 percent of the stones shall be at least 1 cubic foot in volume.

(c) For gutter construction stones shall not be less than 4 inches and not more than 6 inches in thickness with approximately flat surfaces with widths of not less than 2 inches and lengths of not less than 6 inches.

(d) Spalls shall be supplied to fill open joints.

(3) Sand

Sand for mortar shall conform to the C.S.A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(4) Cement

Cement for mortar shall be Portland Cement conforming to the requirements of the C.S.A. Specification A5-1951.

6.2.3 CONSTRUCTION

(1) Excavation

(a) HAND-PLACED RIP-RAP

Where shown on the plans and as directed by the Engineer the

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DIVISION 6

SECTION 3 - CULVERTS

FEBRUARY, 1960

6.3.1 DESCRIPTION

This item consists of the supply and/or installation of corrugated metal, structural plate, and reinforced concrete pipe or pipe arch culverts in accordance with the specifications and to the lines and grades shown on the plans or as directed by the Engineer.

6.3.2 MATERIALS

(1)

(a) All corrugated metal pipe or pipe arch culverts shall meet the requirements of the A.A.S.H.O. Specification M - 36 - 53, or subsequent revisions thereof.

(b) All structural plate pipe or pipe-arch culverts, shall meet the requirements of the A.A.S.H.O. Standard Specification for Highway Bridges, 1957 - Division 2, Section 23, or subsequent revision thereof.

(c) All reinforced concrete pipe or pipe-arch culverts shall meet the requirements of the A.A.S.H.O. Specification M 41 - 55, or subsequent revision thereof.

(d) Where specified, corrugated metal and structural plate pipe and pipe arch culverts shall be fully coated inside and outside with asphalt cement of approved quality not less than 0.05" thick at the crest of the corrugations. The coating shall adhere firmly to the galvanized metal and shall be moisture and erosion resistant.

(e) Where specified, corrugated metal and structural plate pipe and pipe arch culverts shall be asbestos fused by pressing asbestos fibres into the molten metallic zinc during the manufacturing process.

(f) Where specified, corrugated metal pipe and pipe arch culverts shall have their inverts paved with an asphaltic mixture having a minimum thickness over the crest of the corrugation of 1/8 of an inch. The paving shall adhere firmly to the adjacent layers and shall be moisture and erosion resistant.

(g) Where specified, corrugated metal and structural plate pipe and pipe arches shall have their inverts lined with metal or in the case of structural plate heaver inverts may be required. In these instances, detailed requirements will be set out in the Information to Bidders.

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(h) All culvert material, together with all necessary fittings and appurtenances shall be supplied by the Contractor in the gauges and dimensions specified.

(2) The materials used for the bed and fill around culverts shall be selected by the Engineer from one of the various scheduled contract items.

6.3.3 CONSTRUCTION

(1) Excavation

(a) Excavation shall be carried out in accordance with the appropriate Standard Plan and to the line and grade staked by the Engineer. During construction the Contractor may be required to provide for the temporary flow of water outside of the limits of the culvert.

(b) The excavated surface for culverts shall provide a firm foundation of uniform density throughout its entire length. Where a firm foundation is not encountered at the grade established, unless other special construction methods are called for, all the unstable soil under the culvert and for a width of at least one diameter on each side of the culvert shall be replaced with granular material properly compacted to provide adequate support for the culvert.

(2) Bedding

The culvert shall be bedded in a granular foundation compacted to 100% of Maximum Density and having a thickness under the culvert of not less than $\frac{1}{8}$" per foot of fill over the top of the culvert, with a minimum allowable thickness of 8 inches. The bed shall be shaped by means of a template to fit the lower part of the culvert exterior for at least 10% of its overall height. Recesses shall be provided for any bells involved.

(3) Installation

(a) Corrugated Metal, Structural Plate Pipe and Pipe Arch

(i) Proper couplings shall be used to join separate sections firmly together, with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides.

(ii) Structural Plate pipe and pipe arches shall be placed in accordance with the manufacturer's recommendations.

(b) Reinforced Concrete Pipe and Pipe Arch

(i) The sections shall be laid carefully, hubs upgrade and with the ends fully and closely jointed. Unless otherwise specified, all joints shall be filled with

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stiff cement mortar composed of one part of portland cement and one and one-half parts of sand.

(ii) The section ends shall be thoroughly cleaned and wetted with water before the joint is made. Mortar shall then be placed in the lower half of the bell or groove of the section already laid and on the upper half of the spigot or tongue of the section being laid. The two sections shall then be tightly joined together with their inner surfaces flush and even. After the sections are joined, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the elements with a cover of thoroughly wetted earth or burlap.

(c) Strutting

Pipe culverts shall be strutted in accordance with the manufacturer's instructions.

(d) Appurtenances

(i) End sections, where specified, shall be installed in accordance with the manufacturer's recommendations.

(ii) Concrete inlets, cradles, aprons and headwalls shall be constructed, where specified, in accordance with the plans and the current Highways Division Standard Specification for "Concrete Structures".

(e) Fill Around Culverts

Fill around culverts shall be carried out in accordance with Article 2.3.3 Para. 5(b) and to the limits shown on the Standard Plans.

6.3.4 MEASUREMENT

(1) Supply

(a) The quantity of pipe and pipe arch or structural plate pipe and pipe arch for which payment will be made shall be the number of linear feet of the various types and sizes furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(b) The quantity of end sections for which payment will be made shall be the number of end sections furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

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(2) Installation

(a) The quantity of pipe and pipe arch and structural plate pipe and pipe arch for which payment will be made shall be the number of linear feet of the various types and sizes, measured along the invert centre line complete in place and accepted by the Engineer.

(b) The quantity of end sections for which payment will be made shall be the number of end sections of the various sizes and types complete in place and accepted by the Engineer.

(3) Excavation

The quantity of excavation for which payment will be made shall be in accordance with Article 2.2.4 - Roadway and Borrow Excavation.

(4) Bedding and Fill Around Culverts

The quantity of bedding and fill around culverts for which payment will be made shall be the quantity measured as directed by the appropriate specification for the material used and accepted by the Engineer.

6.3.5 PAYMENT

(1) Supply

(a) Payment for the supply of pipe, pipe arch, structural plate pipe and pipe arch culverts of the types and sizes specified, will be made for the quantities as determined above, at the contract unit price per linear foot for these items, which price and payment shall include the furnishing and fabrication of all material, transportation to the site of installation, or if surplus to requirements to stockpile, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for the supply of end sections will be made for the number as determined above, at the contract unit price for end sections, which price and payment shall include the furnishing and fabrication of all materials, transportation to the site of installation, or if surplus to requirements to stockpile, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Installation

(a) Payment for the installation of pipe, pipe arch, structural plate pipe and pipe arch culverts will be made for the quantities as determined above, at the contract unit price per linear foot for these items, which price and payment shall include compensation

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in full for preparation of bed, assembly and installation of the culverts and all materials, labour, tools, equipment and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for the installation of end sections will be made for the quantities as determined above, at the contract unit price per unit of measurement for these items, which price and payment shall include compensation in full for the assembly and attachment of the end sections and all material, labour, equipment and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(3) Excavation

Payment for excavation will be made in accordance with Article 2.2.5 - Roadway and Borrow Excavation.

(4) Bedding and Fill

Payment for bedding and fill around culverts will be made, for the quantities as determined above, as directed by the appropriate specification for the material used and accepted by the Engineer.

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6.4.1 DESCRIPTION

This item shall consist of the supply and placing of underdrains in accordance with these specifications and in conformity with the lines, grades, dimensions, and designs shown on the plans or designated by the Engineer.

6.4.2 MATERIALS

(1) Pipe for underdrains shall be either tile, or perforated corrugated metal pipe and shall conform to either A.A.S.H.O. Specification M 66-55 or M 136-47, or subsequent revisions thereof.

(2) Backfill for underdrains shall consist of granular material approved by the Engineer.

6.4.3 CONSTRUCTION

(1) Trench and Bedding

(a) The base of the trench in earth shall be deep enough to provide a minimum 4 inch granular bed under the pipe. The base of the trench in rock shall be deep enough to provide a 4 inch granular bed between the highest solid rock peaks and the under side of the pipe. The excavation in either rock or earth shall have a bottom width equal to the diameter of the pipe plus 2 feet. Excavated material shall be disposed of as directed by the Engineer.

(b) The bed of granular material shall be placed and tamped true to grade, providing recesses for the pipe bells if necessary.

(2) Placing the Pipe

(a) Pipe of the type and dimensions required shall be laid firmly in the prepared bed.

(b) Bell and spigot pipe shall be laid with bell ends upgrade and the spigot ends entered in the adjacent bells but not mortared or otherwise closed to the desired infiltration of water. The joints shall be covered with two-ply tar-paper strips not less than 6 inches in width and of sufficient length to permit the ends being turned outward and laid flat on the bottom course of gravel on either side of the pipe for a distance of 3 inches.

(c) Perforated pipe shall be laid with the perforated side of the pipe down and separate sections shall be firmly joined together with the appropriate connectors.

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(3) Granular Backfill

The granular backfill shall then be carefully placed by hand - shovelling to a depth of at least 6 inches over the top of the pipe, special care being taken not to disturb the alignment or grade of the pipe. The trench shall then be filled with granular material to the elevation shown on the plans or as directed by the Engineer. If the Engineer so directs, the top 1 foot of backfill shall be the same material as is in the adjacent area.

6.4.4 MEASUREMENT

(1) Excavation

The quantity of excavation for underdrains for which payment will be made shall be the volume measured in cubic yards in its original position, computed by the method of average end areas, removed within the neat lines of excavation for underdrains shown on the plan or staked by the Engineer.

(2) Supply

The quantity of pipe for which payment will be made shall be the number of linear feet of the various types of underdrain pipe furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(3) Installation

The quantity for which payment will be made shall be the number of linear feet of underdrain installed complete in place and accepted by the Engineer.

(4) Bed and Backfill

The quantity of granular backfill for which payment will be made shall be the quantity measured as directed by the appropriate specification for material used.

6.4.5 PAYMENT

(1) Excavation

Payment will be made for the quantities as above determined, measured in cubic yards at the contract unit prices for Excavation for Underdrains, Common and Excavation of Underdrains, Rock, which prices and payment shall include compensation in full for excavating and hauling the materials, placing excavated materials in embankments or disposal areas as may be directed by the Engineer, shaping and dressing the ditch, for all labour, explosives, tools and equipment and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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(2) Supply

Payment will be made for the quantities as above determined, at the contract unit price per linear foot for Supply of Underdrains which price and payment shall include full compensation for underdrain material delivered at the site of the work including all material necessary for joints, unloading and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(3) Installation

Payment will be made for the quantities as above determined at the contract unit price per linear foot for Installation of Underdrains which price and payment shall include compensation in full for preparation of bed, assembly and installation of the underdrain pipe and all material, labour, equipment and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) Bed and Backfill

Payment for granular backfill will be made as directed by the appropriate specification for the backfill material used.

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6.10.1 DESCRIPTION

This item consists of supplying vehicles for the use of the Engineer and his representatives in relation to the work.

6.10.2 VEHICLES

(1) Type and Equipment

All vehicles shall be, and be kept, in good running order and equipped with heater, defroster, right and left hand mirrors, permanent type anti-freeze, a spare wheel, all weather mud and snow tires on the rear and spare wheels, directional signals with two-way flasher and safety equipment in accordance with provincial regulations, full width front seat and required licensing and shall be of the type and number specified in the "Information to Bidders".

(2) Delivery and Return of Vehicles

(a) The vehicles are to be delivered to a location designated by the Engineer, and from the time the vehicles are so delivered, they shall be deemed to be in the possession of the Crown until returned to the Contractor, as hereunder provided.

(b) The Engineer may, at any time or times, return any or all of the vehicles to the Contractor by advising the Contractor's representative in writing that a specified vehicle is not required. From the date of such advice to the Contractor's representative the specified vehicle shall be deemed to be in the possession of the Contractor until redelivered to the Engineer upon his request.

(c) The Contractor will upon written request from the Engineer redeliver to him any vehicle returned to the Contractor as aforesaid.

(d) The Engineer may require the Contractor to furnish vehicles until final measurements have been completed.

6.10.3 RENTAL CONDITIONS

(1) Damage and Repairs

(a) All vehicles supplied pursuant to this contract are at the risk of the Contractor whether in the possession of the Contractor or the Crown, and the Contractor shall not make any claim or demand, or bring any action or other legal proceedings against the Crown in respect of damage to any such vehicle, including

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damage caused by the negligence of an officer or servant of the Crown while acting within the scope of his duties or employment.

(b) All repairs to vehicles supplied under this contract will be performed expeditiously by the Contractor.

(2) Protection

The Contractor, for himself, his heirs, executors and administrators, hereby undertakes to indemnify and save harmless, the Crown, and officers, servants and agents of the Crown from and against all manner of actions, causes of action, suits, debts, duties, agreements, claims and demands whatsoever which may hereafter exist or be made for or by reason of any cause, matter or thing whatsoever arising out of these terms of rental and the transportation or operation of equipment herein referred to.

6.10.4 MEASUREMENT

The quantity for which payment will be made shall be the actual months or fractions thereof the vehicles are in the possession of the Crown.

6.10.5 PAYMENT

Payment will be made for the quantities as above determined at the contract unit prices for "Vehicles for the Use of the Engineer", which prices and payment shall be compensation in full for supplying, repairing and maintaining the vehicles excepting the cost of fuel and lubricants.

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A3	Rock Fill Class B & C Highway
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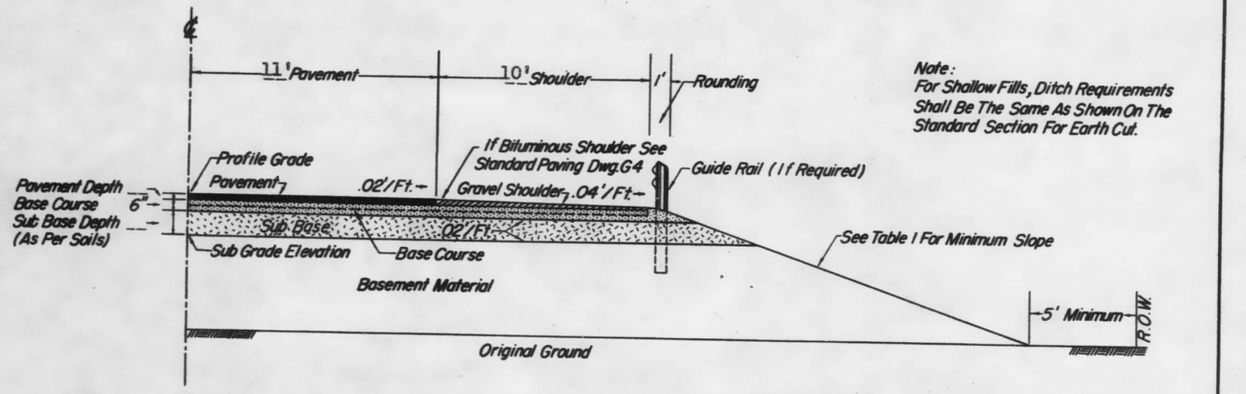

TABLE I			
MINIMUM SLOPES			
Heigth Of Cut Or Fill	TERRAIN		
	Rolling	Mod. Steep	Steep
0 - 4'	4 : 1	4 : 1	4 : 1
4 - 10'	4 : 1	3 : 1	2 : 1
10 - 15'	3 : 1	2½ : 1	1½ : 1
15 - 20'	2 : 1	2 : 1	1½ 1
Over 20'	2 : 1	1½ : 1	1½ 1

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A1

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APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

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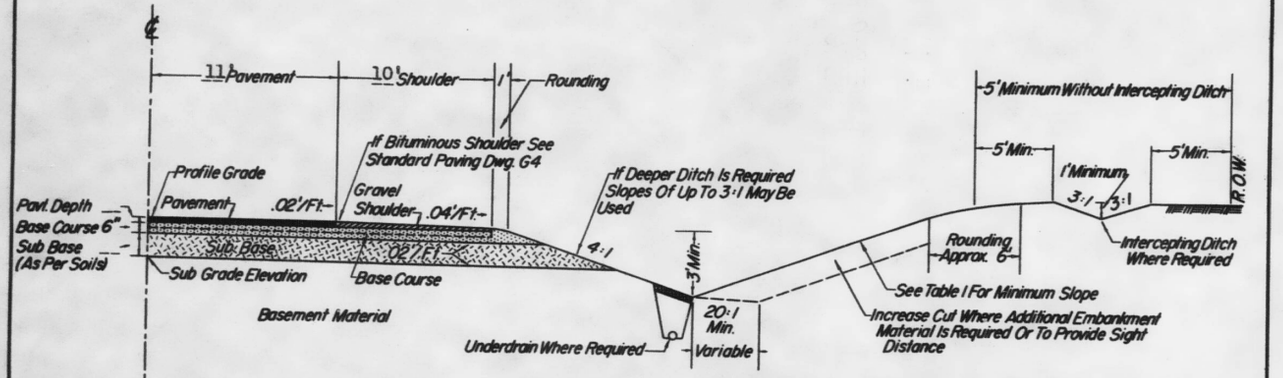

TABLE I MINIMUM SLOPES			
Heigth Of Cut Or Fill	TERRAIN		
	Rolling	Mod. Steep	Steep
0 - 4'	4:1	4:1	4:1
4 - 10'	4:1	3:1	2:1
10 - 15'	3:1	2½:1	1½:1
15 - 20'	2:1	2:1	1½:1
Over 20'	2:1	1½:1	1½:1

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A2

DRAWN BY B. Nicol CHECKED BY W.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

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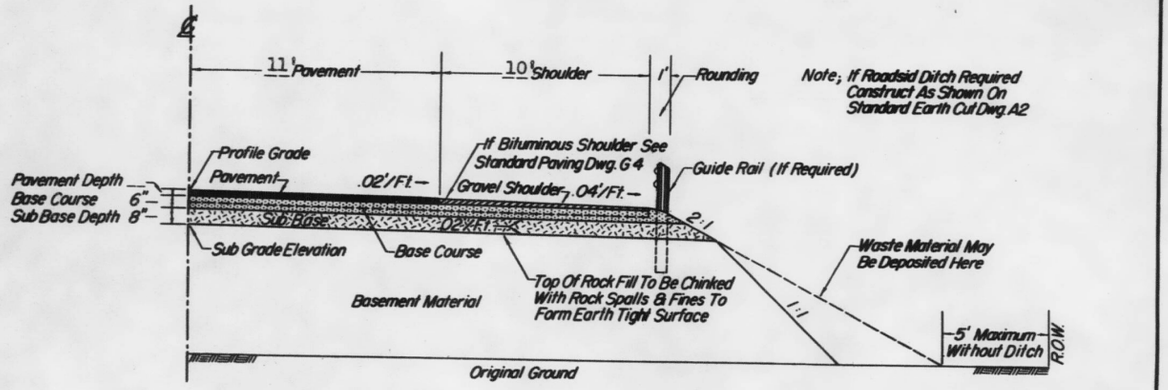

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HIGHWAYS DIVISION

ROCK FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A3

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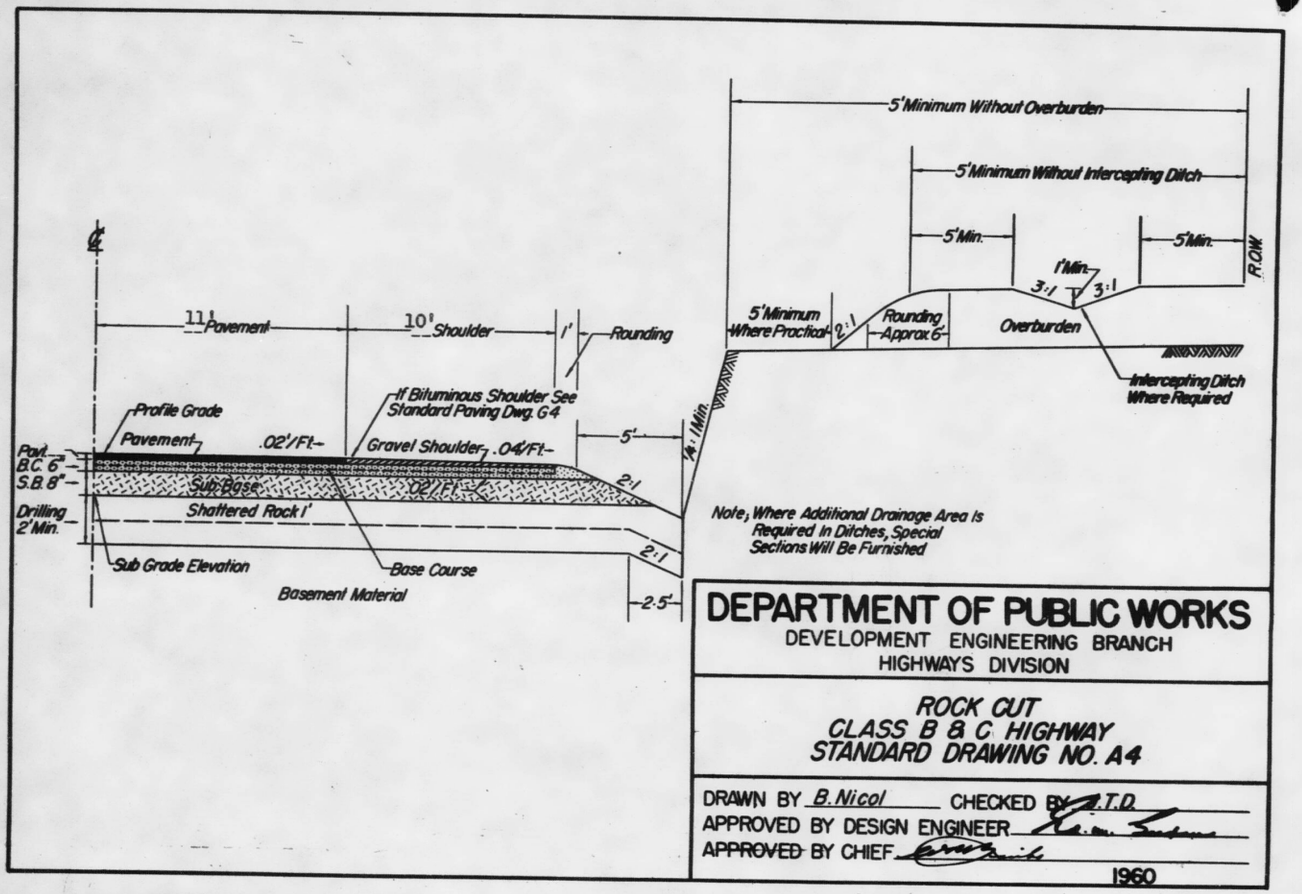

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HIGHWAYS DIVISION

ROCK CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A4

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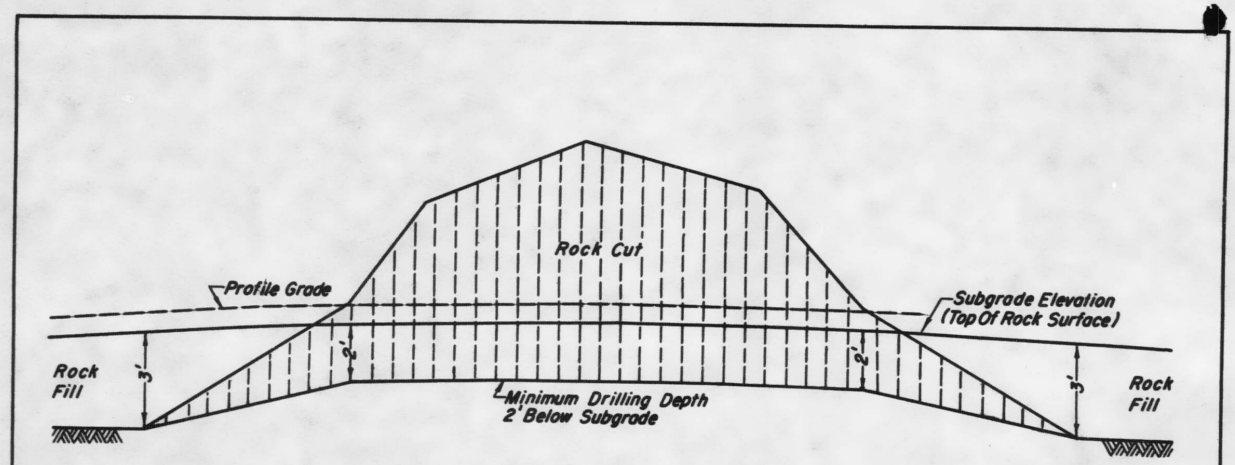

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ROCK CUT
CONSTRUCTION
STANDARD DRAWING NO. B1

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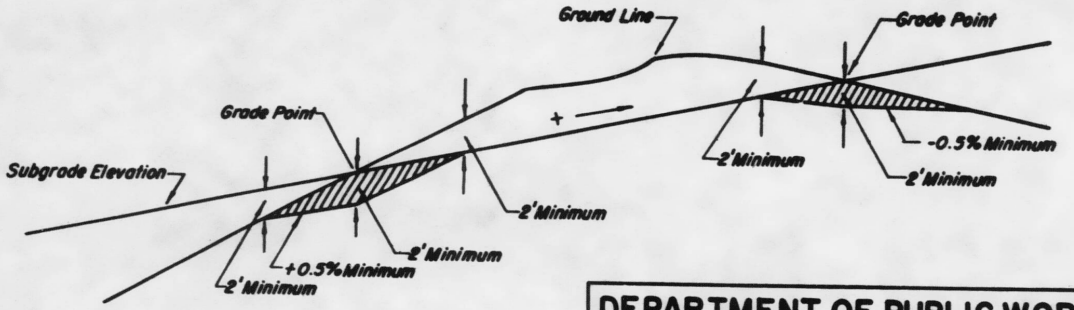

Note: The Material Shown By The Shaded Area Shall Be Removed For Full Width Of Cut & Fill Of The Section & Replaced With Approved Material In Accordance With Standard Specifications

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DEVELOPMENT ENGINEERING BRANCH
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EARTH CUT & FILL
CONSTRUCTION METHOD AT GRADE POINTS
STANDARD DRAWING NO. B-2

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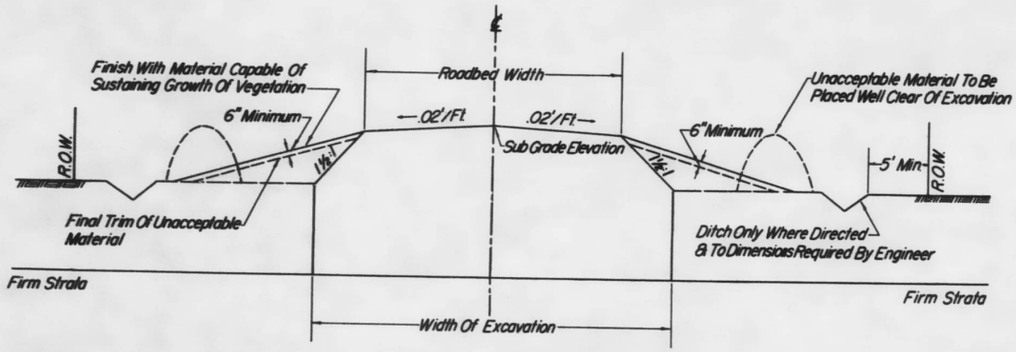

Note:
Roadbed Width Shall Be Sufficient To Receive Granular & Surface Courses In In Accordance With Standard Drawing No. A-1

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CONSTRUCTION THROUGH SWAMP AREAS (EXCAVATION METHOD) STANDARD DRAWING NO. B3

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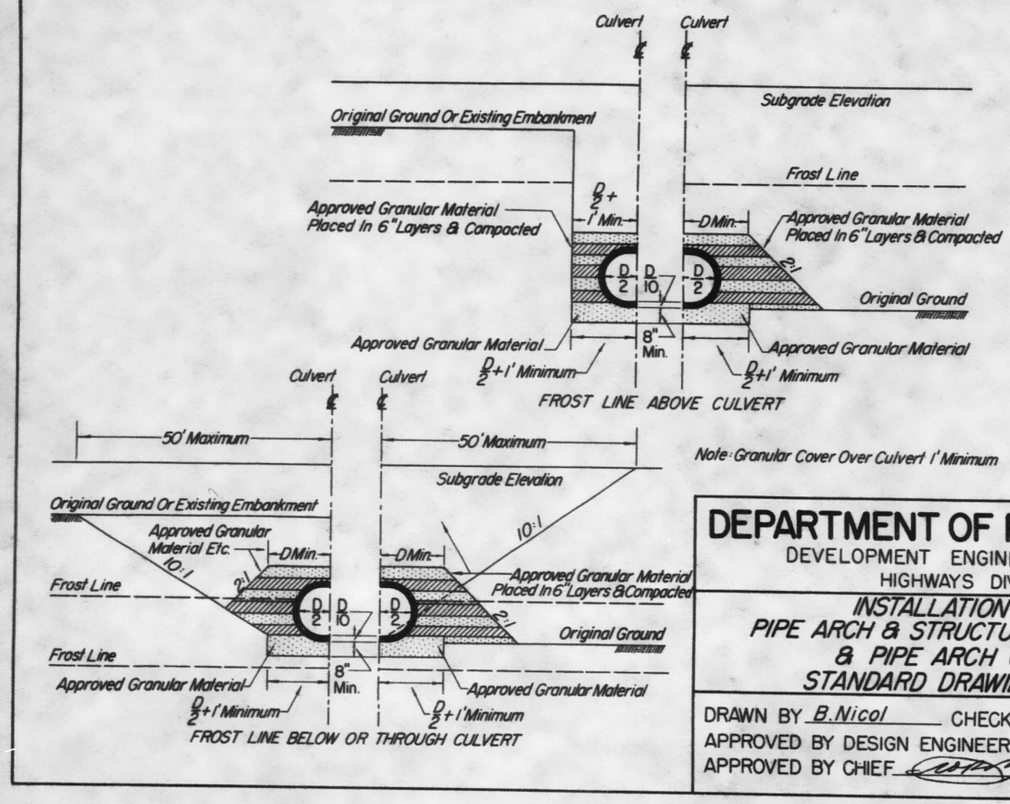

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DEVELOPMENT ENGINEERING BRANCH
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INSTALLATION OF PIPE PIPE ARCH & STRUCTURAL PLATE PIPE & PIPE ARCH CULVERTS STANDARD DRAWING NO. D-1

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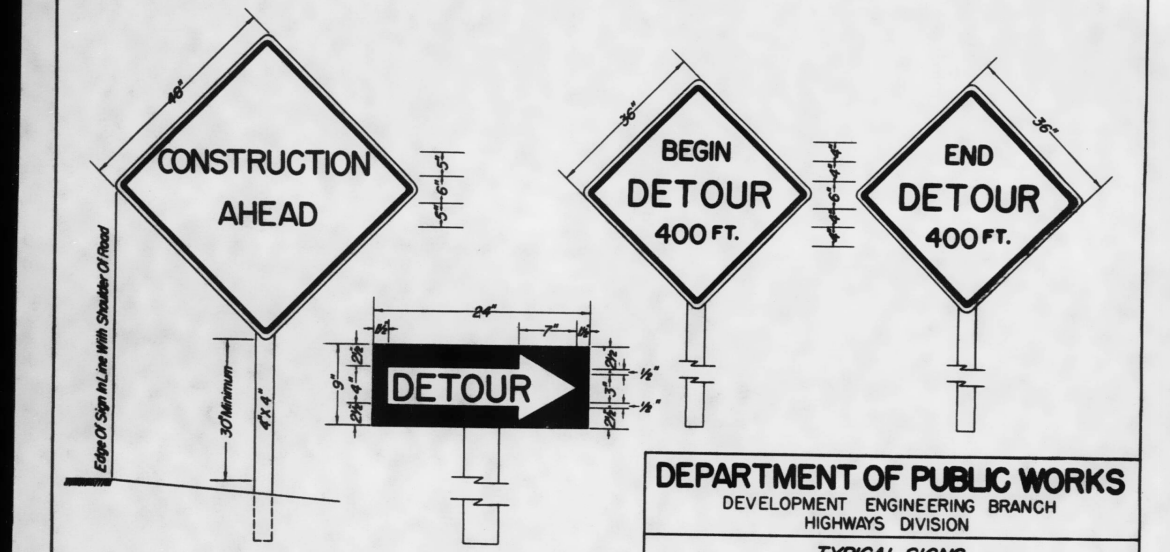

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DEVELOPMENT ENGINEERING BRANCH
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TYPICAL SIGNS
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 1

DRAWN BY *B. Nicol* CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
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Note:
1. Colouring - Black Lettering & Trim On Yellow Background
2. Mounting Post's For All Signs Similar To That Shown By Construction Ahead
3. Corner Radii - 1⅛"

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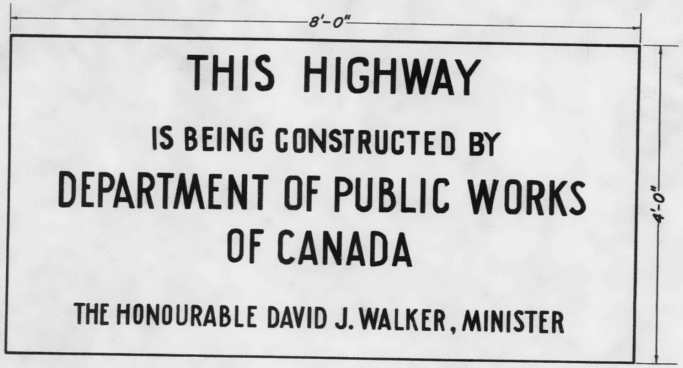

Note:
Colour - Black Letters On White Background

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HIGHWAYS DIVISION

STYLE OF LETTERING FOR
PROJECT SIGN BOARDS
STANDARD DRAWING NO. F 2-A

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
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REV. No. 1, JAN. 1961

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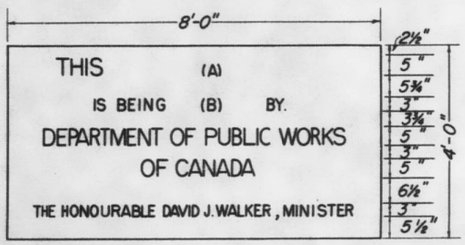
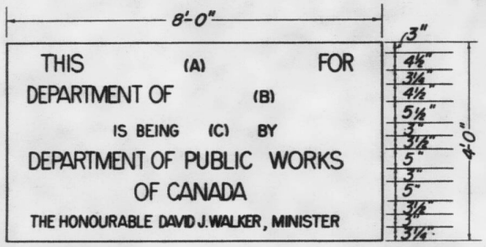
CONSTRUCTION SIGN FOR PUBLIC WORKS PROJECTS



(A) INSERT APPROPRIATE WORDING, E.G:
HIGHWAY – BRIDGE
(B) INSERT APPROPRIATE WORDING, E.G:
CONSTRUCTED – ERECTED – PAVED

Note:
Colour - Black Letters On White Background

CONSTRUCTION SIGN FOR PROJECTS UNDERTAKEN BY PUBLIC WORKS FOR OTHER DEPARTMENTS



(A) INSERT APPROPRIATE WORDING, E.G:
HIGHWAY – BRIDGE
(B) INSERT APPROPRIATE WORDING, E.G:
NATIONAL REVENUE – TRANSPORT – NORTHERN AFFAIRS & NATIONAL RESOURCES
(C) INSERT APPROPRIATE WORDING, E.G:
CONSTRUCTED – ERECTED – PAVED

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

PROJECT
SIGN BOARDS
STANDARD DRAWING NO. F2-B

DRAWN BY B. Nicol CHECKED BY
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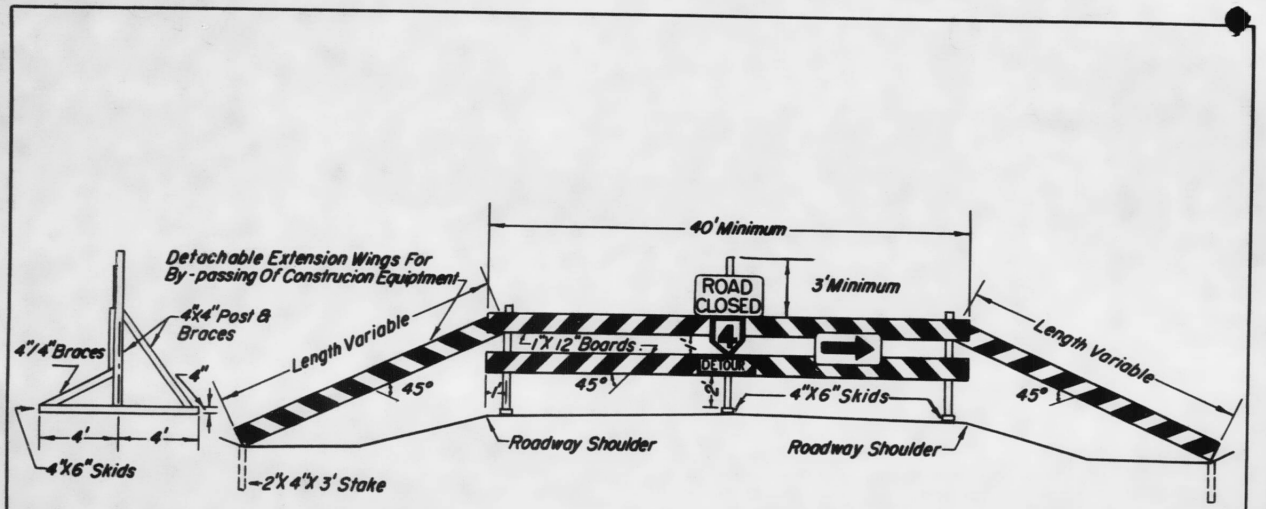

Notes:
1. The Various Types & Combinations Of Approved Signs For Barricades Required For Each Project Will Be Governed By Field Conditions & Subject To Approval By The Engineer
2. All Barricades To Be 1" X 12" Lumber Painted 8" Alternate Black & Yellow Strips
3. All Skids, Braces & Posts To Be Painted White & Nailed Together With No. 20d Nails
4. Bases To Be Weighted Where Necessary To Provide Stability

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 3

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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SUPPLEMENTAL SPECIFICATION FOR CONSTRUCTION OF FLUMES

1. DESCRIPTION

The item consists of the supply and installation of fluming including excavation and preparation of the foundation bed, assembly and installation and backfilling to the original ground line.

2. MATERIALS

All fluming shall be furnished and delivered to the site by the Contractor in the gauges and sizes ordered in writing by the Engineer.

Fluming shall be half round plain galvanized sheet metal conforming to the requirements of AASHO Specification M36-57, or subsequent revisions thereof.

Fluming shall be supplied with matched holes on the ends for easy field assembly.

3. CONSTRUCTION

Fluming shall be laid in trenches excavated to the lines as staked by the Engineer. Trenches shall not be deeper than the flume nor shallower than two-thirds (2/3) its radius. The bedding surface shall provide a firm foundation throughout the entire length of the flume. Each section of flume shall be bolted to each adjacent section, by a method approved by the Engineer to give it continuous flow true to the line set by the Engineer.

Backfill shall be placed to the original ground line and compacted so as to prevent the flume from "creeping" down the slopes.

4. MEASUREMENT

(1) Supply and Deliver

The quantity for which payment will be made shall be the total linear feet of fluming of each of the various sizes and gauges furnished and delivered to the site as directed by the Engineer.

(2) Installation

The quantity for which payment will be made shall be the actual linear feet of fluming of the various sizes installed and accepted in the completed work.

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5. PAYMENT

(1) Supply and Deliver

Payment for the supply and delivery of fluming will be made for the quantities as above determined at the contract unit price for "Supply and Deliver", which price and payment shall include full compensation for furnishing the fluming including necessary hardware and delivery to the site, including hauling and unloading and all labour, equipment, tools and works subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Installation

Payment for the installation of flumes of the sizes specified will be made for the quantities as above determined at the contract unit price for "Installation of Fluming", which price and payment shall include full compensation for excavating the trench, preparing the bed, assembling and installing the flume, backfilling, and all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not otherwise provided.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

Highways Division

CONTRACT AND SPECIFICATIONS

FOR

GRADING, CULVERTS, BASE COURSE, PRIME & SEAL COAT

MILE 105.5 TO MILE 115

BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALBERTA

CONTRACT NO. 6/61/B-1

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 6/61/B-J

GRADING, CULVERTS, BASE COURSE, PRIME & SEAL COAT

MILE 105.5 TO MILE 115

BANFF-JASPER HIGHWAY

JASPER NATIONAL PARK, ALBERTA

Instruction to Bidders

(1) Pages [illegible], 3(a), 5(f), 9 & 10 inclusive must be duly executed.

(2) The tender only is to be submitted to the Secretary. The plans and specifications are to be returned in due course to the office issuing the documents.

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DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

INSTRUCTIONS TO BIDDERS DECEMBER, 1960

PART 1 - BIDDING REQUIREMENTS AND CONDITIONS

1.1 Qualifications of Bidders

The bidder will be required to show that he is capable of performing the class of work contemplated and shall submit with the tender on questionnaire forms supplied by the Department:-

(a) A Declaration of Equipment giving a description of the various units, their capacity, condition, age and present location that the bidder will definitely assign to the project being tendered on for its duration.

(b) A statement of his experience in performing work of the type or character for which his bid is submitted.

The bidder may be required to submit such additional evidence of his qualifications as may be deemed necessary by the Department.

1.2 Contents of Tender Forms

All papers bound with or attached to the tender forms are necessary parts thereof and must not be detached or altered.

All plans, specifications and other documents, designated in the tender form, will be considered a part of the tender whether attached or not.

The bidder will be required to deposit with the Department the sum stated in the notice to contractors for each copy of tender form and plans.

1.3 Interpretation of Quantities in Bid Schedule

The quantities appearing in the prepared bid schedule are approximate only and are prepared for the comparison of bids. Payment to the contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the contract, and it is understood that the scheduled quantities of work to be done and materials to be furnished may each be increased, diminished, or omitted as hereinafter provided without in any way invalidating the unit prices bid.

1.4 Examination of Plans, Specifications, Special Provisions, and Site of Work

The bidder is required to examine carefully the site of the proposed work, the tender, plans, specifications, special provisions, and contract forms before submitting a tender. It is mutually agreed that submission of a bid shall be considered prima facie evidence that the bidder has made such examination and is satisfied as to the

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conditions to be encountered in performing the work and as to the requirements of the plans, specifications, supplemental specifications, special provisions, and contract.

1.5 Preparation of Tender

The bidder shall submit his tender upon the blank forms furnished by the Department. The bidder shall specify a unit price, in both words and figures, for each pay item for which a quantity is given, and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose, and the total amount of the tender obtained by adding the amounts of the several items.

All words and figures shall be in ink. In case of a discrepancy between the prices written in words and those written in figures, the written words shall govern.

The bidder's tender shall be signed with ink by the individual, by one or more members of the partnership, or by one or more of the officers of the corporation submitting it. If the tender is made by an individual his name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the proposal must show the name of the province under the laws of which the corporation was chartered and the names, titles, and business addresses of the president, vice president, secretary and treasurer.

1.6 Irregular Tenders

Tenders shall be considered irregular and may be rejected for the following reasons:-

(a) If the tender form furnished by the Department is not used or is altered.

(b) If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the tender incomplete, indefinite, or ambiguous as to its meaning.

(c) If the bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

(d) If the unit prices contained in the bid schedule are obviously unbalanced either in excess or below the reasonable cost analysis values.

(e) If they fail to contain a unit price for every pay item indicated.

1.7 Security

Each tender must be accompanied by security as specified in the tender form.

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1.8 Interest

Tenderers are notified that they must make their own arrangements with their bankers as to the payment of interest, if any, on the amount of any certified cheque accompanying their tender. The Government of Canada will not pay interest on said cheque pending the awarding of the contract, nor be responsible for the payment of interest under any arrangements made by the tenderers. The cheque of the tenderer to whom the contract has been awarded will forthwith be deposited in the Department of Finance and interest on the amount thereof at the prevailing rate of interest under the regulations governing deposits in Post Office Savings Banks will be allowed.

1.9 Delivery of Tenders

Each tender must when possible be submitted in a special envelope furnished by the Department and the blank spaces on the envelope must be filled in correctly so as to clearly indicate its contents. When an envelope other than the special one furnished by the Department is used it must be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail the sealed tender must be addressed to the Department at the address and in the care of the official in whose office the bids are to be received. All tenders shall be filed prior to the time and at the place specified in the notice to Contractors. Tenders received after the time for opening of bids will be returned to the bidder unopened.

1.10 Withdrawal or Revision of Tenders

A bidder may, without prejudice to himself, withdraw a tender after it has been deposited with the Department, provided the request for such withdrawal is received by the Department, in writing or by telegram, before the time set for opening tenders. The bidder may then submit a revised tender provided it is received prior to the time set for opening tenders.

1.11 Material Guaranty

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition and manufacture of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

1.12 Insurance

Tenderers shall take note that insurance of the type specified in Clause 1.5.11 of the General Conditions will be required for all contracts for the construction of a bridge or bridges and all such other work as may, from time to time, be especially provided for in the Information to Tenderers.

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PART 2 - AWARD AND EXECUTION OF CONTRACT

2.1 Consideration of Tenders

After the tenders are opened and read, they will be compared on the basis of the summation of the products of the approximate quantities shown in the bid schedule by the unit bid prices. In the event of a discrepancy between unit bid prices and extensions, the unit bid price shall govern.

The right is reserved to reject any or all tenders, to waive technicalities, to advertise for new tenders or to proceed to do the work otherwise, if in the judgment of the awarding authority the best interests of Canada will be promoted thereby.

2.2 Award of Contract

The successful bidder will be notified, by letter mailed to the address shown on his tender, that his bid has been accepted and that he has been awarded the contract. The Contractor's Security Deposit may be forfeited if the tenderer declines to enter into a contract when called upon to do so, or if he, as a Contractor, fails to complete the contract.

2.3 Return of Tender Security

All tender securities will be returned except that of the successful bidder, which will be retained until the contract has been successfully completed and accepted.

2.4 Execution of Contract

The Contractor who submitted the successful bid will be required to sign a contract similar to the Indenture exhibited at the same time as the plans and specifications.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

HIGHWAYS DIVISION

TENDER FORM

FOR

CONTRACT NO. 6/61/B-J

FOR: Grading, Culverts, Base Course, Prime and Seal Coat

LOCATION: Mile 105.5 to Mile 115 Banff-Jasper Highway
Jasper National Park, Alberta

The Undersigned, hereby offer to the Honourable the Minister of Public Works, to furnish all necessary machinery, tools, apparatus, and other means of construction, do all the work, furnish all the material except as otherwise specified and, for the prices named in the attached itemized Bid Schedule, to complete the work herein described in strict accordance with the plans, profiles and specifications therefor and such other special provisions and supplemental specifications listed in the Schedule of Plans and Specifications which are provided by the Department for the performance of this work.

The Undersigned, hereby certify that (I, we) have visited and examined the site of the proposed work or have caused it to be visited and examined by a competent person on (my, our) behalf and have made all enquiries relative to the amount of work and value of the materials and plant required for this work.

The Undersigned, understands that the quantities shown on the Bid Schedule are to be considered as approximate only and the Department reserves the right of increasing or diminishing any or all of the items. However, the bids will be compared on the basis of estimated quantities of work to be done as given on the attached Bid Schedule.

The Undersigned herewith enclose:

(a) a security deposit equal to 10% of the tender, or $25,000 plus 5% of the amount by which the tender exceeds $250,000, in one or more of the following forms:

(i) a certified cheque drawn on a bank incorporated under the Bank Act or the Quebec Savings Bank Act, payable to the Receiver General of Canada;

(ii) Government of Canada bonds payable to bearer, with unmatured coupons attached if coupon bonds;

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(iii) Bonds issued by Canadian National Railways or its constituent companies, unconditionally guaranteed as to principal and interest by the Government of Canada and payable to bearer, with unmatured coupons attached if coupon bonds.

OR

(b) a bid bond in an approved form equal to at least 10% of the tender.

The Undersigned understands that before a contract is awarded, the successful tenderer must furnish either a security deposit as described in (a) above, or a Performance Bond and a Labour and Material Payment Bond in approved forms, each bond being equal to 50% of the tender. A successful tenderer, who has furnished a Security Deposit with the tender and substitutes a Performance Bond and a Labour and Material Payment Bond upon award of the contract, will have the Security Deposit returned. Bid Bonds, Performance Bonds, and Labour and Material Payment Bonds must be issued by a surety company approved by the Department of Insurance. A list of approximately 100 approved companies may be obtained from any office of the Department of Public Works.

Envelopes containing this tender are to be endorsed:

"Tenders for Contract 6/61/B-J "

and addressed to the Secretary of the Department of Public Works, Ottawa.

The signature(s) of the person(s) tendering must be in their respective handwriting.

In the case of partnerships, the signature, post office address and occupation of each partner must be given.

By my/our signature hereunder, I/we hereby identify this as the tender for Contract 6/61/B-J executed by me/us and bearing date the 21st day of March 1961

WITNESS J.A. Capstick

ADDRESS 775 Clark Drive, Vancouver 6, B.C.

Dawson, Wade & Co.Ltd.

SIGNATURE W.E. Terry Vice President

ADDRESS 775 Clark Drive, Vancouver 6, B.C.

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Schedule of Documents, Plans and Specifications

Provided by the Department

for

Tender Submission

Contract No. 6/61/B-J

1. Instruction to Bidders
2. Information to Tenderers — Page 4 - 4 (b)
3. Bid Schedule — Page 5 - 5 (f)
4. Construction Program and Equipment Statement — Page 6 - 6 (a)
5. Schedule of Equipment Rental Rates Alberta National Parks — Page 7
6. Statement of Experience — Page 8
7. Employment of Sub-Contractors — Page 9
8. Notice to Tenderers — Page 10
9. Indenture
10. Labour Conditions
11. Plans and Specifications

(a) General Specifications

Division	Section
(i) General Conditions	1 - 8 incl.
(ii) Earthwork	1, 2, 3, 4, 6
(iii) Base Course	1
(iv) Pavements	2, 3
(vi) Incidental Construction	1, 2, 3, 4, 8, 10

(b) Standard Plans

A1, A2, A3, A4, B1, B2, B3, D1, F1, F2A, F2-B, F3

(c) Plan and Profile

Plan 1-1-69 - Mile 105.5 to 115
Profile 1-1-69(a) - Mile 105.5 to 115
Line Diagram - 1-1-69(b)

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By my/our signature hereunder, I/we hereby identify this as the Schedule of Plans and Specifications provided by the Department of Public Works for the performance of the work under and forming part of this Contract No. 6/61/B-J executed by me/us and bearing date

the 21st day of March, 1961

WITNESS J.A. Capstick

ADDRESS 775 Clark Drive
Vancouver 6, B.C.

SIGNATURE Dawson, Wade & Co. Ltd.
W.E. Terry Vice President

ADDRESS 775 Clark Drive,
Vancouver 6, B.C.

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ADDENDUM NO. 1

FOR

CONTRACT 6/61/BJ

GRADING, CULVERTS, BASE COURSE, PRIME & SEAL COAT
MILE 105.5 TO MILE 115
BANFF-JASPER HIGHWAY

BID SCHEDULE:

Item 13, Page 5(a)

Increase estimated quantities
from 525,000 cubic yard miles
to 1,000,000 cubic yard miles.

CONTRACTOR'S SIGNATURE Dawson, Wade & Co., Ltd.
W.E. Terry Vice President

DATED March 21, 1961

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INFORMATION TO TENDERERS
FOR
CONTRACT NO. 6/61/B-J

1. Description

Work to be done under this contract consists of grading, culverts, base course, priming and double seal coat from Mile 105.5 to Mile 115.0 (Ranger Creek) on the Banff-Jasper Highway, Jasper National Park and reconstruction of the access roads from the Banff-Jasper Highway to Honeymoon Lake, Buck Lake and Sunwapta Falls.

2. Completion Date

30 November 1962.

3. Nearest Railway Siding

Jasper, Alberta.

4. Nearest Post Office

Jasper, Alberta.

5. Maintenance of Traffic

Between the middle of June and Labour Day heavy traffic made up largely of tourists may be expected. The contractor shall therefore conduct his work so as to create a minimum of inconvenience to traffic.

6. Snow Plowing

Should the contractor wish to continue operations during the winter he may make his own arrangements to keep the road open at his own expense. All such arrangements shall be subject to the approval of the Engineer.

SPECIAL PROVISIONS

7. Sources of Aggregate

The known source of material suitable for processing base course Class 1, sub-base course Class 2 and seal coat cover aggregate is located at Mile 114.4 near Ranger Creek.

8. Roadway and Borrow Excavation Common

The Bid Schedule item for Roadway and Borrow Excavation Common includes approximately 10,000 cubic yards of select granular borrow which will be used for bedding and backfill at culvert and underdrain installations.

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8. Roadway and Borrow Excavation Common (Cont'd)

The select granular borrow material shall be pit run gravel well graded and of such size that 100% will pass the 4-inch square mesh sieve and not more than 8% passing the No. 200 mesh sieve.

9. Vibratory Compactors

Vibratory compactors may be either a type mounted on pneumatic tires and weighing from 12 to 16 tons or a type mounted on a steel drum weighing at least 3½ tons.

10. Priming and Double Seal Coat

The finished Class 1 granular base course shall be treated with bituminous prime coating and double bituminous seal coat.

The contractor must so plan and prosecute the work that priming and seal coating operations will be kept within two miles of the main subgrade operations.

Bituminous material for prime coat shall be cut back asphalt grade MC-0 meeting the requirements of the Canadian Government Specifications Board, Specification No. 16-GP-1(b).

Bituminous material for Seal Coat shall be an emulsified asphalt grade RS-2 meeting the requirements of Canadian Government Specifications Board, Specification No. 16-GP-2.

Seal coat cover aggregate shall conform to the requirements of type 2 shown in Table 1 of Article 4.2.2 (3) of the Specifications.

Brooming may be required on the finished seal coats to distribute the cover aggregate evenly or to remove any float remaining after rolling. The brooming will be done only on the instructions of the Engineer and no payment will be made for this brooming operation.

Section 4.2.3(5)(a) of the Specifications notwithstanding, the contractor will be permitted to use only self-propelled pneumatic rollers for rolling the seal coat cover aggregate.

11. Vehicles

The following vehicles shall be supplied by the contractor:

(a) 2 standard panel trucks

(b) 2 standard ½ ton trucks

12. Ranger Creek Pipe Arch Culvert

The contractor will supply, deliver and install 104 feet of 14'10"

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12. Ranger Creek Pipe Arch Culvert

by 9'1", 3 gauge structural plate arch culvert, plain on one end and bevelled to a 3 to 1 slope on the other. The supply, delivery and installation of a metal head wall at the inlet of the arch culvert shall be carried out as directed by the Engineer and shall be paid for as extra work under the item Extra Work on Force Account.

13. Provisions for Extra Work

The sum of $40,000.00 is included in the tender for cleaning up slides, trimming slopes and ditches outside of the contract specifications and for installing headwall at Ranger Creek, and will be added to the costs of the other items in arriving at the total tender amount. Extra work orders will be issued by the Engineer for the work as required and payment will be made only for the work so completed. Payment will be made in accordance with Article 1.7.3 of the Specifications.

14. Stripping

All authorised stripping of areas for embankment borrow and base course aggregates will be classified and paid for as Excavation Common.

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 6/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
1.	2.1.5	Clearing, at One Hundred and Twenty Dollars per acre	30	120	00	3,600	00
2.	2.1.5	Grubbing, at One Hundred Dollars per acre	70	100	00	7,000	00
3.	2.2.5(a) & Info.to Tenderers Para. 14	Excavation, Common, at Thirty-Seven Cents per cu.yd.	1,170,000	0	37	432,900	00
4.	2.2.5(a)	Excavation, Rock, at One Dollar and Twenty-Eight Cents per cu.yd.	225,000	1	28	288,000	00
5.	2.3.5(2) 3.1.5(4)	Compaction (Pneumatic tired roller complete unit), at Five Dollars and Thirty Cents per hour	1,500	5	30	7,950	00
6.	2.3.5(4)	Compaction (Pneumatic tired roller only in tandem), at Two Dollars and Fifty Cents per hour	500	2	50	1,250	00
7.	2.3.5(2)	Compaction (Grid Roller), at Eleven Dollars per hour	6,000	11	00	66,000	00
8.	2.3.5(2) & Info.to Tenderers para.9	Compaction (Vibratory type), at Nine Dollars and Seventy Cents per hour	3,000	9	70	29,100	00

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 6/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
9.	2.3.5(2)	Self powered, hand operated compaction unit, at Three Dollars and Sixty Cents per hour	500	3	60	1,800	00
10.	2.3.5(3) 3.1.5(3)	Water for compaction, at Two Dollars and Sixty Cents per 1000 gal.unit	6,000	2	60	15,600	00
11.	2.4.5	Channel excavation, common, at Forty-Five Cents per cu.yd.	5,000	0	45	2,250	00
12.	2.4.5	Channel excavation, rock, at Two Dollars and Seventy Cents per cu.yd.	500	2	70	1,350	00
13.	2.6.5	Overhaul (1000 ft. free), at Ten and One-Quarter Cents per cu.yd.mile	1,000,000	0	10¼	102,500	00
14.	3.1.5(1)	Base Course Class 1, at Sixty-Four Cents per ton	55,000	0	64	35,200	00
15.	3.1.5(2)	Hauling Base Course Class 1, at Ten Cents per ton mile	230,000		10	23,000	00
16.	3.1.5(1)	Sub Base Course Class 2, at Thirty-Eight Cents per ton	210,000		38	79,800	00

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DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 6/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
17.	3.1.5(2)	Hauling Sub-base Class 2, at _____ Ten Cents _____ per ton mile	950,000		10	95,000	00
18.	4.3.5(1) & Info.to Tenderers Para.10	Bituminous Prime Coat, MC-0, at _____ Twenty-Six Cents _____ per gallon	82,000		26	21,320	00
19.	4.2.5(1) & Info.to Tenderers Para.10	Bituminous material for seal coat RS-2, at _____ Thirty-Three Cents _____ per gallon	125,000		33	41,250	00
20.	4.2.5(2) & Info.to Tenderers Para.10	Seal coat cover aggregate, at _____ Two Dollars and Sixty-Seven Cents _____ per ton	10,000	2	67	26,700	00
21.	6.1.5	Random rip rap, at Two Dollars _____ per cu.yd.	2,000	2	00	4,000	00
22.	6.2.5	Hand placed rip rap, at Four Dollars and Eighty-Five Cents _____ per cu.yd.	3,000	4	85	14,550	00
23.	6.3.5(1) (a)	Supply and Deliver Plain Galvanized Corrugated Metal Pipe Culverts					
		18" diam., 16 gauge, at _____ Three Dollars _____ per lin.ft.	400	3	00	1,200	00

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DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 6/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
		24" dia., 14 gauge, at Four Dollars and Fifty Cents per lin.ft.	6,500	4	50	29,250	00
		30" dia., 14 gauge, at Five Dollars and Sixty Cents per lin.ft.	900	5	60	5,040	00
		36" dia., 12 gauge, at Nine Dollars per lin.ft.	400	9	00	3,600	00
		48" dia., 12 gauge, at Twelve Dollars and Fifty Cents per lin.ft.	150	12	50	1,875	00
24.	6.3.5(1)(a)	Supply and Deliver Structural Plate Pipe Arch Mile 115 Ranger Creek 14'10" x 9'1" Gauge 3, at One Hundred Thirty-Three Dollars per lin.ft.	104	133	00	13,832	00
25.	6.3.5(2)(a)	Installation of Plain Galvanized Corrugated Metal Pipe Culverts,					
		18" dia., 16 gauge, at One Dollar and Twenty Cents per lin.ft.	400	1	20	480	00
		24" dia., 16 gauge, at One Dollar and Sixty Cents per lin.ft.	6,500	1	60	10,400	00

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 6/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
		30" dia., 14 gauge, at Two Dollars per lin.ft.	900	2	00	1,800	00
		36" dia., 12 gauge, at Two Dollars and Seventy Cents per lin.ft.	400	2	70	1,080	00
		48" dia., 12 gauge, at Four Dollars per lin.ft.	150	4	00	600	00
26.	6.3.5(2) (a)	Install Structural Plate Pipe Arch at Ranger Creek, at Seventeen Dollars and Sixty Cents per lin.ft.	104	17	60	1,830	40
27.	6.4.5(1)	Excavation for underdrains, common at One Dollar and Twenty Cents per cu.yd.	1,000	1	20	1,200	00
28.	6.4.5(2)	Supply & Deliver Perforated Pipe Underdrains, 8" dia., 16 gauge, at One Dollar and Ninety Cents per lin.ft.	1,500	1	90	2,850	00
29.	6.4.5(3)	Install Perforated Pipe Underdrains, 8" dia., at Seventy-Three Cents per lin.ft.	1,500		73	1,095	00
30.	6.8.5(1)	Supply Calcium Chloride at One Hundred and Four Dollars per ton	100	104	00	10,400	00

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DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

BID SCHEDULE

CONTRACT NO. 6/61/B-J

Item No.	Specification Item	Pay Names with Unit Prices Written in Words	Estimated Quantity	Unit Bid Price		Total Amount	
31.	6.8.5(2)	Apply Calcium Chloride, at _____ Ten Dollars _____ per ton	100	10	00	1,000	00
32.	6.10.5 & Info. to Tenderers Para. 11	Supply Two ½ ton trucks, at Two Hundred and Fifty-Five Dollars _____ per veh./mo.	36	255	00	9,180	00
33.	6.10.5 & Info. to Tenderers Para. 11	Supply Two ½ ton panel trucks, at Two Hundred and Seventy Dollars _____ per veh./mo.	36	270	00	9,720	00
34.	Info. to Tenderers Para. 13	Extra Work on Force Account	As ordered by the Engineer			40,000	00

TOTAL: $ 1,446,552.40

TOTAL WRITTEN IN WORDS One Million Four Hundred and Forty-Six Thousand Five Hundred and Fifty-Two Dollars and Forty Cents

Note 1: The contractor shall list below the names and addresses of the supplier of the following materials:

Culvert Material: Name: Rosco Metal Products B.C. Ltd.

Address: 8750 Ash St., Vancouver, B.C.

Underdrains: Name: Rosco Metal Products B.C. Ltd.

Address: 8750 Ash St., Vancouver, B.C.

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Prime: Name: Imperial Oil Co., Ltd.

Address: Vancouver, B.C.

Seal Coat: Name: Canadian Bitumus Co. Ltd.,

Address: Calgary, Alta.

Note 2: IMPORTANT

The tenderer or the person or persons duly authorized to sign on his behalf must initial and date each and every correction, change, erasure or alteration contained in this completed tender document.

CONTRACTOR'S SIGNATURE Dawson, Wade & Co. Ltd.
W. E. Terry Vice President

DATED March 21, 1961

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CONSTRUCTION PROGRAM AND EQUIPMENT STATEMENT

The Contractor shall in the spaces provided hereunder furnish a detailed outline of the construction program to be followed and a list and complete description of the plant and equipment available, if required, for the satisfactory prosecution of the work within the time limit specified in the "Information to Bidders". The Department reserves the right to inspect all equipment listed prior to the award of a contract.

CONSTRUCTION PROGRAM

Immediately after notification of award of Contract, we would commence construction of camp, and move equipment to site.

We anticipate grading operations should commence in about three weeks after date of notification.

With the equipment listed in "Equipment Statement" we expect to move excavation quantities as follows:

Rock	45,000 cu.yds. per month
Excavation and Borrow	120,000 cu.yds. per month

Work on other items included in tender will be proceeded with as excavation work progresses.

We propose working two shifts whenever possible.

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EQUIPMENT STATEMENT

Description of Unit (Make, Model, Year)	Capacity, etc. (Size, Capacity and Horse Power Rating)	Auxiliary and/or Special Equipment (Power take-off, Power Control Units, etc.)	Condition	Present Location
Bucyrus Erie Shovel	2½ cu.yd.		Good	Glacier, B.C.
Caterpillar D8	14A	Dozer Blade	Good	Rogers, B.C.
Caterpillar D8	14A	Dozer Blade	Good	Rogers, B.C.
Caterpillar D8	14A	Dozer Blade	Good	Rogers, B.C.
Euclid Scraper S18	15-20 cu.yd.		Good	Rogers, B.C.
Euclid Scraper S18	15-20 cu.yd.		Good	Rogers, B.C.
Euclid Scraper S18	15-20 cu.yd.		Good	Rogers, B.C.
Euclid Scraper S18	15-20 cu.yd.		Good	Rogers, B.C.
Gravel Crushing Plant	Pioneer 40V		Good	Kamloops, B.C.
Asphalt and Water Distributor	1250 Gals.		Good	Kamloops, B.C.
Rubber Tired Rollers			Good	Spences Bridge "
Rubber Tired Roller			Good	Rogers, B.C.
Grid Roller			Good	Spences Bridge
Vibratory Type Roller	3½ ton steel wheel		Good	Kamloops, B.C.
2 - Air Compressors	600 cu.ft.		Good	Spences Bridge
2 - Euclid Rock Trucks	15 cu.yd.		Good	Rogers, B.C.
4 - Euclid Rock Trucks	11 cu.yd.		Good	Rogers, B.C.
Motor Patrol	Caterpillar No. 12		Good	Kamloops, B.C.
Caterpillar D9	18A	Dozer Blade	Good	Spences Bridge
	Together with all necessary trucks and incidental equipment			

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EQUIPMENT RENTAL RATES

FOR FORCE ACCOUNT WORK IN ALBERTA NATIONAL PARKS

HIGHWAYS DIVISION, DEPARTMENT OF PUBLIC WORKS

GENERAL CONDITIONS

In the event that extra and force account work is required under the contract, the following equipment rental rates may be used by the Department in settling such accounts.

1. These rates include operators' and oilers' wages, fuel, lubricants, repairs, replacements, depreciation, interest, servicing, and other costs pertaining to operation of the equipment except where equipment only is specified.

2. Where equipment only is specified the rates as given include fuel, lubricants, repairs, replacements, depreciation, interest and servicing but the Department will pay the wage of the operator(s) when operator(s) are required by the Department.

3. Rates for equipment not shown shall be interpolated from the rates given for that class of equipment.

4. For purpose of payment 10 hours constitutes a day and where hourly and daily rates are both shown for a piece of equipment, the least expensive rate or combination of rates will be used for payment.

5. No transportation costs or standby time will be paid for by the Department.

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EQUIPMENT	HOURLY RENTAL RATE
AIR COMPRESSOR	
DIESEL	
185 cfm.	4.50
210 cfm.	5.50
365 cfm.	7.50
600 cfm.	11.50
GASOLINE	
105 cfm.	2.50
125 cfm.	3.00
210 cfm.	4.80
365 cfm.	7.30
600 cfm.	10.50
AIR TOOLS AND ACCESSORIES (EQUIPMENT ONLY)	
Air hose or pipe, line oilers and couplers per 50 ft.	.15
Clay digger 22 lbs.	.25
Jackhammer 48 lbs.	.40
Jackhammer 60 lbs.	.40
Paving breaker 55 lbs.	.35
Paving breaker 80 lbs.	.40
Wagon Drill Model DR 34	1.35
MIXERS	
3½ "S" Tilt Type	2.00
6 & 7 "S" Non-Tilt	2.75
11 "S" Non-Tilt Power Loader	3.40
14 "S" Non-Tilt Power Loader	3.70
16 "S" Non-Tilt Power Loader	4.00
VIBRATORS	
2 H.P. Gas Driven, 12' Flexible Shaft	1.60
6 H.P. Gas, 21' Flexible Shafting	2.20
EUCLID EQUIPMENT	
91 F.D. Reardump 10 c.y. or 15 tons	16.00
31 T.D. Reardump 14.8 c.y. or 22 tons	20.00
36 T.D. 45-46-53 Reardump 14.8 c.y. or 22 tons	21.00
4 F.FD. Reardump 20.0 c.y. or 34 tons	30.00
70 FDT-71 FDT-89W. Bottom Dump 13 c.y. or 20 tons	17.00

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EQUIPMENT	HOURLY RENTAL RATE
POWER GRADERS	
(Grader Blades to be included under "All Found")	
Gradall	
80 to 90 h.p.	18.50
90 to 100 h.p.	12.60
	14.00
SCRAPERS (EQUIPMENT ONLY)	**DAILY RENTAL RATE**
6 to 8 cu. yds.	30.00
8 to 11 cu. yds.	40.00
12 to 15 cu. yds.	42.00
14 to 18 cu. yds.	65.00
25 cu. yds.	85.00
SCRAPERS SELF-PROPELLED	**HOURLY RENTAL RATE**
D Tournapull E9 and Scraper 8 c.y. 9 tons 122 h.p.	15.00
C Tournapull and Scraper 14.7 cu. yds. 22 tons 206 h.p.	19.00
B Tournapull and Scraper 23 cu. yds. 294 h.p.	27.00
2T55-2S55, 10-13 cu. yds. 165 h.p.	20.00
2T75-2S75, 15-20 cu. yds. 262 h.p.	25.00
TH 200, 15 cu. yds. 176 h.p.	19.50
TH 0142, 14-18 cu. yds. 225 h.p.	24.00
DW 21, 25 cu. yds. 300 h.p.	26.00
GRADALL with Remote Control	16.00
SHOVELS	
N.B. The Lessor will provide all Maintenance, Operator, Fuel, and Grease, Cables, Shovel Teeth, Welding Repairs to Dippers and Crawlers. Padmen not Included.	
3/8 Yard	9.00
1/2 Yard	11.00
3/4 Yard	14.00
1 Yard	19.00
1 1/2 Yard	25.00
1 3/4 Yard	30.00

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EQUIPMENT	HOURLY RENTAL RATE
2 Yard	33.00
2 1/2 Yard	36.00
3 Yard	40.00
3 1/2 Yard	52.00
5 1/2 Yard	94.00

TRACTORS "BARE"

N.B. The Lessor will build up Crawlers on "All Found" Rates.

Prior to 1948

D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	7.75

1948 to 1953

D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	8.20

1956

D6, 66 h.p. TD 14A 78 h.p. HD 11B, 85 h.p.	10.00

Prior to 1948

D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	9.50

1948 to 1953

D7, 81 h.p. TD 18A, 89 h.p. HD 13A, 124 h.p.	10.25

1956

D7, 81 h.p. TD 18, 103 h.p. RD 16A, 141 h.p.	12.60

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EQUIPMENT	HOURLY RENTAL RATE
TRACTORS "BARE"-Cont'd	
Prior to 1948	
D8 130 h.p.	11.25
1948 to 1953	
D8, 130 h.p.	13.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, 104 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 20, 175 h.p.	12.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	15.00
1956	
D9, 286 h.p.	23.00
TRACTORS WITH BLADE	
Prior to 1948	
D6, 66 h.p. TD 14A, 66 h.p. HD 11B, 66 h.p.	8.70
1948 to 1953	
D6, 66 h.p. TD 14A, 66 h.p. HD 9B, 72 h.p.	10.00
1956	
D6, 75 h.p. TD 14A, 66 h.p. HD 11B, 85 h.p.	12.00

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EQUIPMENT	HOURLY RENTAL RATE
TRACTORS WITH BLADE-Cont'd	
Prior to 1948	
D7, 81 h.p. TD 18A, 89 h.p. HD 15A, 124 h.p.	11.10
1948 to 1953	
D7, 81 h.p. TD 18A, 89 h.p. HD 12A, 124 h.p.	12.25
1956	
D7, 102 h.p. TD 18A, 103 h.p. HD 16A, 125 h.p.	15.25
Prior to 1948	
D8, 130 h.p.	13.00
1948 to 1953	
D8, 130 h.p.	15.00
1956	
D8, 155 h.p. TD 24, 161 h.p. HD 21, AC 204 h.p.	20.00
Prior to 1948	
TD 24, 149 h.p. HD 19, 175 h.p.	14.00
1948 to 1953	
TD 24, 149 h.p. HD 20, 175 h.p.	16.50
1956	
D9, 230 h.p.	26.50
TRUCKS	
1/2 Ton Light Delivery	2.50
3/4 " " "	2.75
1 " " "	3.00

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EQUIPMENT	HOURLY RENTAL RATE
TRUCKS-Cont'd.	
1/2 Ton Panel	3.00
3/4 " "	3.25
1 " Flat Deck	3.00
1 1/2 Ton Flat Deck	3.25
2 " " "	4.00
3 " " "	4.50
4 " " "	5.00
5 " " "	6.50
2 Ton Dump	4.50
3 " "	5.00
4 " "	6.00
5 " "	7.00
6 " "	8.00
8 " "	10.50
10 " "	13.00
12 " "	15.00
14 " "	17.00
16 " (4 Wheel Tandem) (Includes use of Winch)	20.00
LOW-BOY TRAILER AND TRUCK	
5 Ton	7.00
10 "	10.00
15 "	13.00
20 "	16.00
25 "	19.00
30 "	24.00
40 "	30.00
PILE DRIVER	
Steam Power	9.00
Gasoline Power	8.00
FRONT END LOADERS	
No. 933 Traxcavator 50 h.p.	8.50
1 1/3 H.D. 60, 45 h.p.	10.00
No. 955 Traxcavator, 70 h.p.	11.00
No. 6 " ,100 h.p.	14.00
2 1/4 c.y. H.D. 116, 75 h.p.	15.00
DUMPTOR	
Koehring 60, 6 c.y.	14.50

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STATEMENT OF EXPERIENCE

The tenderer shall state below his experience on similar work to that, which is included in this tender. The date and place of work as well as the agency for whom the work was undertaken shall be clearly stated. Tenderers who have contract work STILL UNDERWAY for the Department of Public Works need not furnish this information.

Contract No. 19/58/TCH-G, Glacier National Park still underway

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EMPLOYMENT OF SUB-CONTRACTORS

It is (my, our) intention to employ the following sub-contractors whom (I, we) believe, after investigation to be reliable and competent for the performance of that part of the work indicated. All other work will be done by (me, us).

	Name and Address of Sub-Contractors	Description of Work to be Done by Sub-Contractors
1.	Kish & Kish, Abbotsford, B.C.	Hauling Base Course Class 1
		Hauling Sub Base Class 2
2.		
3.		
4.		

It is agreed that (I, we) shall not sub-contract with any other individual or organization or for any other work without the consent of the Minister of Public Works.

Dawson, Wade & Co. Ltd.

Contractor's Signature W.E. Terry, Vice President

DATED March 21, 1961

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NOTICE TO TENDERER

THE FOLLOWING INFORMATION IS REQUIRED FOR DEPARTMENTAL USE

PLEASE PRINT CLEARLY

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1 - LIMITED COMPANY

If this tender is made by a limited company, then the full name of the company should be accurately PRINTED in the space provided for that purpose and its corporate seal, if any, affixed where indicated.

NAME OF COMPANY	SEAL
DAWSON, WADE & COMPANY LIMITED	COMPANY'S SEAL

2 - PARTNERSHIP

If this tender is made by a partnership, then the firm name or the business name should be accurately PRINTED in the space provided and the name or names of the partners should be PRINTED where indicated

NAME OF PARTNERSHIP	LIST OF PARTNERS

3 - SOLE PROPRIETORSHIP

If this tender is made by an individual carrying on business under a name other than his own, then his business name should be PRINTED in the space provided and the name of the sole proprietor should be printed where indicated. In the event that the sole proprietor carries on business in his own name, he should merely PRINT his name where indicated.

BUSINESS NAME	NAME OF SOLE PROPRIETOR

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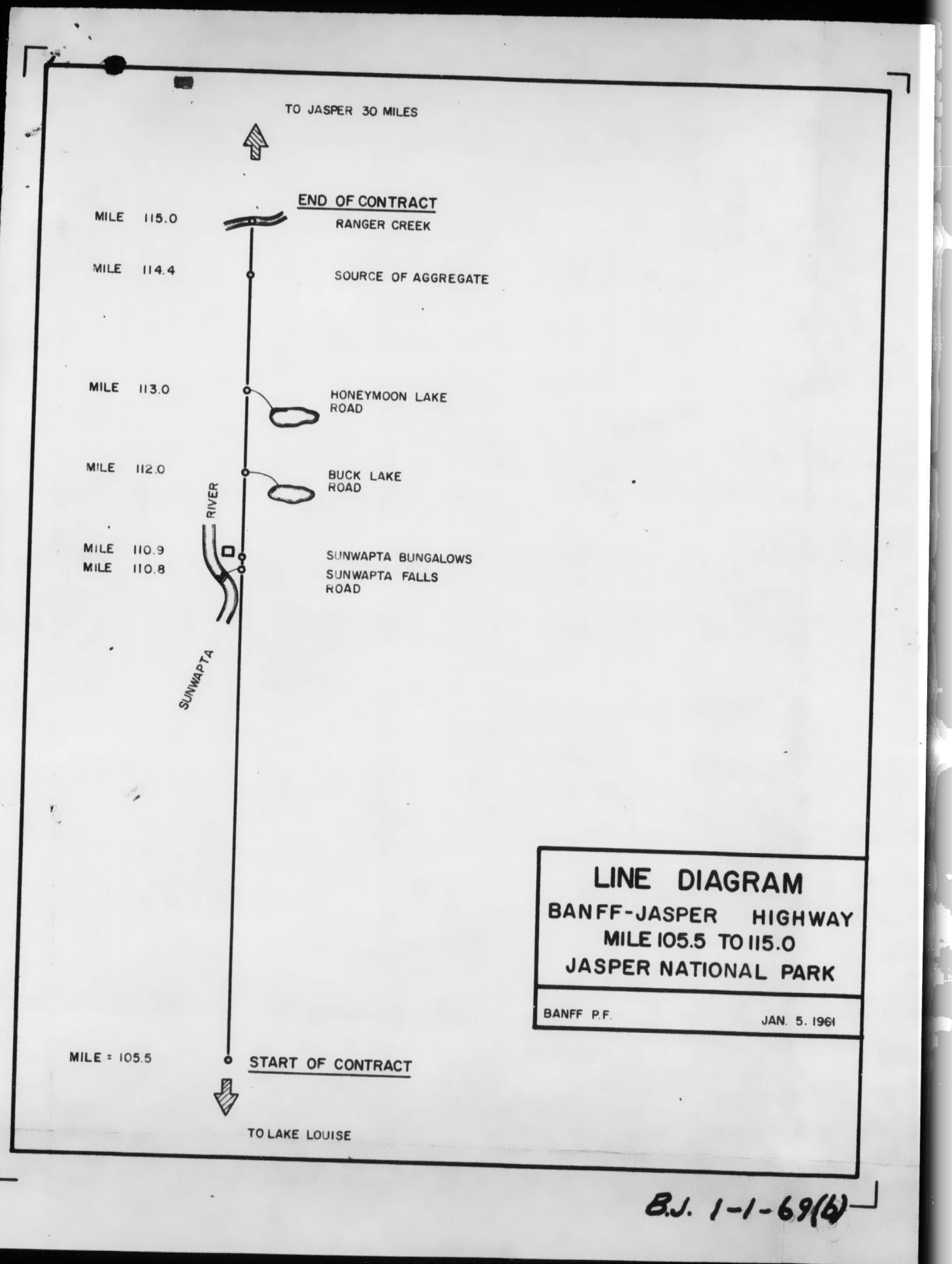

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This Indenture, MADE IN DUPLICATE

this day of

one thousand nine hundred and

BETWEEN

hereinafter called "the Contractor", of the first part;

And HER MAJESTY THE QUEEN, in the right of Canada represented by the Minister of Public Works of Canada, of the second part.

WHEREAS the party of the first part for the consideration hereinafter mentioned has agreed with the party of the second part to do, furnish and perform the works, materials, matters and things required to be done, furnished and performed, in the manner hereinafter described, in connection with the following work or works namely:— Work to be done.

Now this indenture witnesseth that the said parties hereto hereby covenant, promise and agree each with the other, as follows:—

1. In this contract the following words shall, unless the context requires a different meaning, have the following meanings, respectively, that is to say:— Interpretation.

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"Contractor" or other words relative thereto, or of like import, shall mean and include, irrespective of sex or number, the party or parties of the first part as above designated or described, jointly and severally, and their and each of their executors, administrators, curators, successors, or assigns.

"Her Majesty" or other words relative thereto, or of like import, shall mean and include the reigning Sovereign or the successors or assigns of the Sovereign.

"Minister" shall mean the person holding the position or acting in the capacity of the Minister of Public Works and shall include the person holding the position or acting in the capacity of the Deputy Minister of Public Works.

"Engineer" shall mean the Chief Engineer or Chief Architect or Director of Property and Building Management, as the case may be, of the Department of Public Works of Canada, having control over the work, and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer or Chief Architect or Director of Property and Building Management, and all instructions or directions, or certificates given, or decisions made by any one acting for the Chief Engineer or the Chief Architect or the Director of Property and Building Management shall be subject to the approval of the Chief Engineer or the Chief Architect or the Director of Property and Building Management and may be cancelled, altered, modified and changed as the Chief Engineer or Chief Architect or Director of Property and Building Management may see fit: Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer or the Chief Architect or Director of Property and Building Management in connection with and in virtue of the present contract, and any instructions or directions or certificates given, or decisions made by the said Chief Engineer or the Chief Architect or Director of Property and Building Management or by any one acting for such Chief Engineer or Chief Architect or Director of Property and Building Management shall be subject to the approval of or modification or cancellation by the Minister of the Department of Public works of Canada.

"Work or works" shall mean the whole of the work, materials, matters and things required to be done, furnished and performed by the Contractor, as above described, by this contract.

2. All the covenants and agreements in this contract binding on and all the provisions in this contract inuring to the benefit of the Contractor shall, respectively, be binding on and inure to the benefit of the executors, administrators, curators, successors and assigns of the Contractor and all the covenants and agreements in this contract binding upon and all the provisions in this contract inuring to the benefit of Her Majesty shall, respectively, be binding upon and inure to the benefit of the successors and assigns of Her Majesty.

Provision by contractor for completion of work.

3. The Contractor shall at his own expense (except as in this contract otherwise specifically provided) provide all and every kind of labour, superintendence, services, tools, implements, machinery, plant, materials, articles and things necessary for the due execution and completion of all and every the works set out or referred to in the specification hereto annexed, and in any special specification referred to therein and set out or referred to in the plans and drawings prepared and to be prepared for the purposes of the work, and shall forthwith commence the works and diligently execute and fully complete the respective portions thereof, and shall deliver the works complete in every particular to Her Majesty on or before the date or dates following, viz:—

Time for completion.

Time shall be deemed to be material and of the essence of this contract.

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MUNICIPAL PERMITS

3A (1) The contractor shall within one month from the date of this contract offer to the municipal authority an amount equal to all fees and charges which would be payable to the municipal authority in respect to building permits if the work were being constructed for a person other than Her Majesty.

(2) The contractor shall notify the Minister, within 10 days of the offer, the amount of the offer and whether or not the municipal authority accepted it.

(3) If the municipal authority did not accept the offer the contractor shall deliver to the Minister within the time limited by subsection (2) an amount equal to the offer.

(4) For the purposes of this section "municipal authority" means an authority which would have jurisdiction respecting permission to construct the work if the owner of the work were not Her Majesty.

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4. The works shall be constructed by the Contractor, and under his personal supervision, of the best materials of their several kinds and finished in the best and most workmanlike manner and in the manner required by and in strict conformity with this contract, the said specifications and special specifications, and the plans and drawings relating thereto, and the working or detail drawings which may from time to time be furnished (which said specifications, and special specifications, plans and drawings are hereby declared to be part of this contract), and to the complete satisfaction of the Engineer. **Quality.** **Plans and specifications part of contract.**

5. The work shall be commenced, carried on and prosecuted to completion by the Contractor in all its several parts in such manner and at such points and places as the Engineer shall from time to time direct, and to his satisfaction, but always according to the provisions of this contract, and if no direction is given by the Engineer, in a careful, prompt, and workmanlike manner. **Execution of work directed by Engineer.**

6. The several parts of this contract shall be taken together to explain each other and to make the whole consistent; and, if it is found that anything has been omitted or misstated which is necessary for the proper performance or completion of any part of the work the Contractor shall, at his own expense, execute the same as though it had been inserted and propertly described, and the correction of any such omission or error shall not be deemed to be an addition to or deviation from the works herein described. **Construction of contract.**

7. The Engineer may, in writing, at any time before the final acceptance of the works, order any additional work or materials or things not covered by the contract to be done or provided, or the whole or any portion of the works to be dispensed with, or any changes to be made which he may deem expedient in or in respect of the works hereby contracted for, or the plans, dimensions, character, quantity, quality, description, location or position of the works or any portion or portions thereof or in any materials or things connected therewith or used or intended to be used therein or in any other thing connected therewith or used or intended to be used therein or in any other thing connected with the works, whether or not the effect of such orders is to increase or diminish the work to be done or the materials or things to be provided or the cost of doing or providing the same, and the Engineer may in such order, or from time to time as he may see fit, specify the time or times within which each order shall, in whole or in part, be complied with. The Contractor shall comply with every such order of the Engineer. The decision of the Engineer as to whether the compliance with such order increases or diminishes the work to be done or the materials or things to be provided, or the cost of doing or providing the same and as to the amount to be paid or deducted, as the case may be, in respect thereof, shall be final. As a condition precedent to the right of the Contractor to payment in respect of any such order of the Engineer the Contractor shall obtain and produce the order, in writing, of the Engineer and a certificate in writing, of the Engineer showing compliance with such order and fixing the amount to be paid or deducted in respect thereof. **Extra work.** **How treated.** **Engineer's order and decision.**

8. All the clauses of this contract shall apply to any changes, additions, deviations, or additional work, so ordered by the Engineer, in like manner and to the same extent as to the works contracted for. **Covenants herein apply to extra work.**

9. If any change or deviation in or omission from the works be made by which the amount of work to be done shall be decreased, or if the whole or any portion of the works be dispensed with, no compensation shall be claimable by the Contractor for any loss of anticipated profits in respect thereof. **No claim for anticipated profits.**

10. The Engineer shall be the sole judge of the work and material, in respect of both quality and quantity, and his decision on all questions in dispute with regard thereto or as to the meaning or intention of this contract and as to the meaning or interpretations of the plans, drawings and specifications, shall be final, and no work under this contract shall be deemed to have been performed nor materials nor things provided so as to entitle the Contractor to payment therefor unless and until the Engineer is satisfied therewith, as evidenced by his certificate in writing, which certificate shall be a condition precedent to the right of the Contractor to be paid therefor. **Engineer sole judge of work and materials.**

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Work subject to control of Engineer.

11. The work shall, in every particular, be under and subject to the control and supervision of the Engineer; and all orders, directions or instructions at any time given by the Engineer with respect thereto, or concerning the conduct thereof, shall by the Contractor promptly and efficiently be obeyed, performed and complied with to the satisfaction of the Engineer.

Descriptions of work. What items include.

12. The description or descriptions of the work and materials or any portion or portions of the works set out or referred to in or covered by any item or items for which a price or prices are given in this contract include not only the particular kinds of materials mentioned in the said item or items but also all and every kind of work, labour, tools, plant, materials, equipment, articles and things, whatsoever necessary for the full execution, completion and delivery, ready for use, of such respective portions of the works, in accordance with the plans, drawings and specifications, to the satisfaction of the Engineer. The said price or prices shall cover not only the particular descriptions of work and materials mentioned herein or in the specifications or plans but also all and every kind of work, labour, tools, plant, material, equipment, articles and things whatsoever necessary for the full execution, completion and delivery, ready for use, of the entire work as herein contracted for, to the satisfaction of the Engineer. In case of dispute as to what work, labour, tools, plant, material, equipment, articles and things are so included or covered the decision of the Engineer shall be final and conclusive with respect thereto.

Price, what it covers.

Foreman of the works.

13. A competent foreman shall be kept on the ground by the Contractor during all working hours to receive the orders of the Engineer. Such foreman shall be considered as the lawful representative of the Contractor and shall have full power to carry out all requisitions and instructions of the said Engineer, but this clause shall not relieve the Contractor from the duty of personally superintending the work.

Defective work or material.

Engineer may order removal or re-execution.

Non-compliance by Contractor.

14. Should the Contractor use or employ, or intend to use or employ, any material, plant, tools, equipment, articles or things which in the opinion of the Engineer are not in accordance with the provisions of this contract or are in any way unsuitable for the works, or any part thereof, or should the Engineer consider that any work is for any reason, improperly, defectively, or insufficiently executed or performed, the Engineer may order the Contractor to remove the same and to use and employ proper material, plant, tools, equipment, articles and things or to properly re-execute and perform such work, as the case may be, and thereupon the Contractor shall immediately comply with such orders and if the Contractor fails to comply with such orders within twenty-four hours the Engineer may, at any time thereafter, execute or cause to be executed the order so given and the Contractor shall, on demand, pay to Her Majesty all costs, damages and expenses incurred in respect thereof or occasioned to Her Majesty by reason of the non-compliance by the Contractor with any such orders, or Her Majesty may, in the discretion of the Minister, retain and deduct such costs, damages and expenses from any amounts then or thereafter payable to the Contractor.

Contractor's machinery, plant, etc.

Becomes property of H.M. until completion of work.

15. All machinery, tools, plants, materials, equipment, articles and things whatsoever provided by the Contractor or by the Engineer under the provisions of sections 14 and 16 for the works, and not rejected under the provisions of sections 14, shall from the time of their being so provided become and, until the final completion of the said work, be the property of Her Majesty for the purposes of the said works, and the same shall on no account be taken away, used, or disposed of, except for the purposes of the said works, without the consent in writing of the Engineer. Her Majesty shall not, however, be answerable for any loss or damage whatsoever which may at any time happen to such machinery, tools, plants, materials, equipment, articles or things. Upon the completion of the works and upon payment by the Contractor of all such moneys, loss, costs and damages, if any, as shall be due from the Contractor to Her Majesty, or chargeable against the Contractor under this contract, such of the said machinery, tools, plants, materials, equipment, articles and things as shall not have been used and converted in the works or disposed of by Her Majesty under powers conferred in this contract, shall be delivered up to the Contractor in such condition as they may then be in.

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Insufficient workmen, plant, etc.

16. If the Engineer shall at any time consider the number of workmen, horses, quantity of machinery, tools, plant or equipment, or of proper materials, articles or things, employed or provided by the Contractor on or for the said works to be insufficient for the advancement of such works or any part thereof towards completion within the time limited in respect thereof, or that the works are, or some part thereof, is not being carried on with due diligence, then the Engineer may, in writing, order the Contractor to employ or provide such additional workmen, horses, machinery, tools, plants, equipment, materials, articles and things as the Engineer may think necessary, and in case the Contractor shall not within three days, or such other longer period as may be fixed by any such order, in all respects comply therewith the Engineer may employ and provide such additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things as he may think proper and may pay such additional workmen such wages, and for such additional horses, machinery, tools, plant, equipment, materials, articles and things, any such prices as he may think proper, and all such amounts so paid shall, on demand, be repaid to Her Majesty by the Contractor, or the same may be retained or deducted from any sum that may then or thereafter be or become due from Her Majesty to the Contractor. The Contractor shall employ the additional workmen, horses, machinery, tools, plant, equipment, materials, articles and things so provided and employed by the Engineer in the diligent advancement of the works; the workmen and horses so provided shall, however, be thereafter subject to discharge by the Contractor, but only with the consent and approval of the Engineer.

Work not proceeding with due diligence.

Engineer may provide additional equipment, etc., at Contractor's expense.

Repayment by Contractor.

Work not comprised in contract.

17. Her Majesty may, at any time, and without payment therefor, send and employ on, in and about the works other contractors and workmen, with such horses, machinery, tools, plant, equipment, materials, articles and things as the Engineer may deem necessary to do any work not comprised in this contract, and the Contractor shall afford to them all reasonable facilities, to the satisfaction of the Engineer, for doing such work, the work of the Contractor being interfered with as little as the Engineer may deem practicable.

The taking of possession of the whole or any part of the works of the Contractor for such purpose shall not be deemed an acceptance by or on behalf of Her Majesty of the whole or any portion of the works comprised in this contract.

18. That whenever and so often as it may be necessary for the Contractor to co-operate with other contractors on this work, the Contractor shall diligently and under the directions of the Engineer perform all such works as shall be requisite and proper on the part of the Contractor herein for such co-operation and for securing and placing in proper position the portion necessary herein and hereby contracted to be constructed and erected for the proposed work in a proper and secure mode, and to prevent the possibility of any accident therefrom, without any extra charge therefor, and shall be bound in all things to conform to the direction of the Minister or the Engineer touching such co-operation and work.

Default or delay by Contractor.

Notice by Engineer.

Minister may take work out of Contractor's hands.

19. In case the Contractor shall make default or delay in commencing or in diligently executing any of the works or portions thereof to be performed, or that may be ordered under this contract, to the satisfaction of the Engineer, the Engineer may give a general notice to the Contractor requiring him to put an end to such default or delay, and should such default or delay continue for six days after such notice shall have been given by the Engineer to the Contractor or should the Contractor make default in the completion of the works, or any portion thereof within the time limited with respect thereto in or under this contract, or should the Contractor become insolvent, or abandon the work, or make an assignment of this contract without the consent required, or otherwise fail to observe and perform any of the provisions of this contract, then in any of such cases the Minister for and on behalf of Her Majesty, and without any further authorization, may take all the work out of the Contractor's hands and may employ such means as he, on Her Majesty's behalf, may see fit to complete the works, and in such case the Contractor shall have no claim for any further payment in respect of work performed but shall be chargeable with and shall remain liable for all loss and damage which may be suffered by Her Majesty by reason of such default or delay, or the non-completion by the Contractor of the works, and no objection or claim shall be raised or made by the Contractor by reason or on account of the ultimate cost of

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the works so taken over for any reason proving greater than, in the opinion of the Contractor, it should have been; and all materials, articles and things whatsoever and all horses, machinery, tools, plant and equipment, and all rights, proprietary or otherwise, licences, powers, and privileges, whether relating to or affecting real estate or personal property, acquired, possessed or provided by the Contractor for the purposes of the work, or by the Engineer under the provisions of this contract, shall remain and be the property of Her Majesty and may be used, exercised and enjoyed by Her Majesty as fully to all intents and purposes as they might therefor have been used, exercised and enjoyed by the Contractor; and the Minister may also, at his option, on behalf of Her Majesty, sell or otherwise dispose of, at forced sale prices, or at public auction, or private sale, or otherwise, the whole or any portion or number of such materials, articles, things, horses, machinery, tools, plant and equipment at such price or prices as he may see fit and retain the proceeds of any such sale or disposition and all other amounts then or thereafter due by Her Majesty to the Contractor on account of or in part satisfaction of any loss or damage which Her Majesty may sustain or have sustained by reason aforesaid.

Damages arising from non-completion.

20. Whenever in this contract power or authority is given to Her Majesty, the Minister, the Engineer, or any person on behalf of Her Majesty, to take any action consequent upon the insolvency of the Contractor or upon the acts, defaults, neglects, delays, breaches, non-observance or non-performance by the Contractor in respect of the works or any portion or details thereof, such powers or authorities may be exercised from time to time, and not only in the event of the happening of such contingencies before the time limited in this contract for the completion of the works but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to further proceed with the execution of the works.

Power to take action on default of Contractor.

21. The Contract shall be at the risk of the Contractor who shall bear all loss or damage whatsoever, from whatsoever cause arising, which may occur to the works or any part thereof, until the same be finally accepted by the Minister, and if any such loss or damage occur before such final acceptance the Contractor shall immediately, at his own expense, repair, restore and re-execute the work so damaged so that the whole works, or the respective portions thereof, shall be completed within the time limited for completion thereof and any delay occasioned by the Contractor to the other contractors on the work or any interference by the Contractor with the operation which may be a cause of delay or damage shall be rectified at the cost and the claim for damage or delay (if any) shall be at the charge of the Contractor.

Damages to work in progress, Contractor assumes risk.

22. The Contractor shall, during the period of one year after the date of the final certificate of the completion of the work, at the sole cost of the Contractor, and to the satisfaction of the Engineer, rectify any defects in the works caused by faulty workmanship or materials of which he shall have received notice from the Engineer. The Contractor shall be responsible for and shall reimburse Her Majesty with respect to any loss or damage sustained by Her Majesty and shall save harmless and indemnify Her Majesty from and against all claims, demands or actions based upon or arising out of the negligence of the Contractor, his officers, servants or agents during the rectification of the said defects. This clause shall not in anyway affect the rights of Her Majesty under any other agreement, deed or bond pursuant to which the works or any portion thereof are guaranteed free of defects or are to be repaired or replaced by the Contractor or any other person.

23. The Contractor, his agents and all workmen and persons employed by him or under his control, shall use due care that no person nor property is injured and that no rights are infringed in the prosecution of the work, and the Contractor shall be solely responsible for all damages, by whomsoever claimable, in respect of any injury to persons or to lands, buildings, structures, fences, trees, crops, roads, ways, ships, or property of whatever description, and in respect of any infringement of any right, privilege or easement whatsoever, occasioned in the carrying on of the works or any part thereof, or by any neglect, misfeasance or nonfeasance on the Contractor's part or on the part of any of his agents, workmen or persons employed by him or under his control, and shall, at his own expense, make such temporary provisions as may be necessary to ensure the avoidance of

Damages to persons or property.

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any such damage, injury or infringement, and to prevent the interruption of or any danger or menace to the traffic on any public or private road, and to secure to all persons and corporations the uninterrupted enjoyment of all their rights, in and during the performance of the said works; and the Contractor shall indemnify and save harmless Her Majesty from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon, occasioned by, or attributable to any such damage, injury or infringement. Contractor assumes liabilities.

24. The Contractor shall, upon the completion of the works, remove all temporary structures and clear away all rubbish and surplus and waste materials remaining on or about the works and place the premises in a neat and tidy condition, satisfactory to the Engineer. Contractor to clean premises on completion.

25. The Contractor shall at his own expense take special precautions to prevent fire occurring in or about the works and shall employ his own workmen to the satisfaction and under the direction of the Engineer in extinguishing all such fires which may occur; and shall observe and comply with all laws and regulations in force respecting fires and with all regulations and instructions made and given from time to time during construction by the Engineer with respect to fires and the prevention and extinguishing of fires, and shall pay all wages and other outlay occasioned by reason of the observance or compliance with such regulations and instructions. Precautions as to fire.

26. The Contractor shall insure buildings, structures and materials in accordance with the provisions of the specification in respect thereto.

27. The Contractor shall not assign or sublet this contrat without the written consent of the Minister first obtained: Provided, however, that (unless in any case, the Minister objects thereto) the Contractor may sublet such portions of the work herein contracted for as is customary and usual in the construction of such works, but Her Majesty shall not in any way be held liable for the payment of any moneys due to any sub-contractor, and the Contractor shall be held responsible for the proper performance of every portion of the works herein contracted for. Assignments.

28. Pursuant to the provisions of the Statute in such case made and provided, no Member of the House of Commons of Canada shall be admitted to any share or part of this contract or to any benefit to arise therefrom. Members of H. of C. not to benefit.

29. The Contractor shall not allow any public ceremony in connection with the work without having previously obtained the written permission of the Minister. No public ceremony.

30. No work whatever shall at any time or place be carried on during Sunday and the Contractor shall take all necessary steps for preventing any foreman or agent or men from working or employing others on that day. No work on Sunday.

31. The Contractor shall promptly pay for all labour, services and materials in or about the construction of the works, and all payments for such purposes shall be made by the Contractor at least as often as payments are made to the Contractor by Her Majesty under this contract, and in the event of failure by the Contractor at any time so to do, or if any sum due for labour of any foreman or workman, or for hire of horses, teams or carts upon or in respect of the works or any part thereof remains in arrear or unpaid, or if there be at any time found to exist any claims against the Contractor, or any sub-contractor, for labour, teams, tools, plant, equipment, materials, articles or things employed, hired or supplied upon or for the works or any part thereof, or if the Minister has reason to believe that any such payments, sums or claims will not be promptly made or paid, the Minister may, in addition to or in lieu of exercising any powers confered by the Fair Wages Clause, at his option, retain out of any moneys due or to become due to the Contractor from Her Majesty such amount or amounts as the Minister may deem sufficient to satisfy the same, or pay the Contractor the moneys due him in instalments, giving him from time to time such sums as the Minister or the Engineer deems sufficient to meet such payments, sums or claims or any of them, and withholding the balance until the same are satisfied, or may pay Payment by Contractor for labour, etc. Power to retain money on default of Contractor paying for labour, etc.

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all or any of such payments, sums or claims, rendering to the Contractor the balance due him after deducting the payments so made. The Contractor shall be stopped from denying the accuracy and correctness of any and all payments so made by the Minister.

Books, etc., of Contractor open for inspection.

The Contractor's pay-rolls, time-books, books of account, invoices and statements shall at all times be open for inspection and extract by the Engineer and any authorized representative of the Minister, or either of them, who shall be assisted in every possible way by the Contractor, to enable the Engineer and such representative to ascertain, as far as possible, the exact payment, sums or claims so due and remaining unpaid by the Contractor.

Work to be free from all encumbrances.

32. Before making any payment on any progress or final estimate the Minister may require the Contractor to satisfy the Engineer, or other authorized representative of Her Majesty, that all work performed and material supplied and all structures built for which payment is being made are free and clear from all lawful claims or liens under any law of labour, workmanship, materials or otherwise; the Contractor shall indemnify and hold harmless Her Majesty from and against any and all kinds of claims or liens accurring from labour and services performed and material furnished, or otherwise, and any of the same in or about the works.

Sanitation.

33. The Contractor shall comply with and the works shall be carried on subject to all regulations made by any lawful authority and applicable to said works and all orders given by the Engineer with respect to sanitation or preservation of health on the work. The Contractor shall, at his own expense make adequate arrangements, to the satisfaction of the Engineer, for the medical and sanitary supervision of all his employees.

Engineer's stakes or other marks not to be removed.

34. The Contractor shall protect, and shall not remove or destroy or permit to be removed or destroyed, the stakes, buoys and other marks placed on or about the said works by the Engineer or his assistants and shall furnish the necessary assistance to correct or replace any stake, buoy or mark which through any cause may have been removed or destroyed.

Notice; how given.

35. Any notice, order, direction or other communication given to the Contractor under any of the provisions of this contract shall be sufficiently given if delivered to the Contractor personally, or to his foreman, or left at the Contractor's office, or mailed at any post office to the Contractor or foreman, addressed to the address mentioned in this contract, or to the Contractor's last known place of business or residence. Every such notice, order, direction or communication shall be sufficient which expresses in general language and without detail the matters required or communicated, or which follows the general language of the section or sections of this contract under which it is given, and no objection shall be taken to the form thereof.

Payment by Her Majesty.

36. Her Majesty, in consideration of the premises, and subject to the performance and observation on the part of the Contractor of all the covenants, provisos and conditions in this contract contained, will pay to the Contractor for and in respect of the works in manner hereinafter stated, viz:—

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And for any work or additional work done or materials or things provided, under the written orders of the Engineer, for which no price or prices are named herein, Her Majesty, in consideration and subject as aforesaid, will pay to the Contractor the actual and reasonable cost as determined by the Engineer of such work, materials and things, with an additional ten per cent thereon for the use of tools, Contractor's plant, superintendence and profits. Payment for additional work.

37. The quantities (if any) given are approximate only and no claim shall be made by the Contractor against Her Majesty on account of any excess or deficiency, absolute or relative, in the same. Approximate quantities.

38. The said price or prices shall be accepted by the Contractor as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not included in the items hereinabove mentioned, and also for all loss or damage arising out of the nature of the works or the action of the weather, tides, elements, or any unforseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description connected with the works, and for all expenses incurred by or in connection with the works, and for all works, and for all expenses incurred by or in consequence of any delay or suspension or discontinuance of the work as herein specified, and for well and faithfully completing the works as in this contract provided. Prices to be accepted as full compensation.

39. Cash payments equal to about ninety per cent of the value of the work done estimated from progress measurements and computed at the price or prices agreed upon or determined under the provisions of this contract will be made to the Contractor monthly, if practicable, on the written certificate of the Engineer stating that the work for or on account of which the certificate is granted has been done, and stating the value of such work completed as above mentioned; and the said certificate shall be a condition precedent to the right of the Contractor to be paid the said ninety per cent or any part thereof. The remaining ten per cent shall be retained till the final completion of the whole work to the satisfaction of the Engineer and will be paid within two months after such completion. The written certificate of the said Engineer certifying to the final completion of the said works to his satisfaction shall be a condition precedent to the right of the Contractor to receive or to be paid the remaining ten per cent or any part thereof. Progress payments. Ninety per cent. Ten per cent retained until completed.

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40. Provided always that where in the opinion of the Engineer the work done is not sufficiently finished or is not of sufficient value to justify payment at the price or prices agreed upon or determined under the provisions of this contract, the Engineer may, for the purpose of such payment, disregard the price or prices agreed upon or determined and may estimate the proportionate value payable in respect of such work and issue a certificate accordingly; in which case the Contractor shall only be entitled to receive ninety per cent of such estimated proportionate value as stated in such certificate and shall not be paid the ninety per cent of the price or prices agreed upon or determined under the provisions of this contract until such time as the Engineer, by reason of the performance of additional work, shall certify that the Contractor is entitled thereto.

Engineer in certifying values for progress payments may disregard price-list.

41. It is intended that every allowance to which the Contractor is fairly entitled will be embraced in the Engineer's monthly certificate, but should the Contractor at any time have claims of any description which he considers are not included in the progress certificates such claims must be made in writing to the Engineer within thirty days after the date of the delivery to him of the certificate from which he considers the items of such claims to have been omitted, but in no case beyond the period of sixty days from the date of the practical completion of that portion of the work to which such claims apply. And in default of the presentation of such claims within the time or times so limited the Minister may treat such claims as absolutely barred.

Full prices when obtainable. Claims under progress certificate.

Limitation of time for presentation of claims.

42. The Contractor in presenting claims of the kind referred to in the last preceding clause must accompany them with satisfactory evidence of their accuracy and the reason why he thinks they should be allowed.

Claims evidence of accuracy.

43. The progress measurements and progress certificates shall not in any respect be taken as binding upon the Engineer, or as final measurements or as fixing final amounts; they are to be subject to the revision of the Engineer in making up his final certificate and they shall not in any respect be taken as an acceptance of the work or as a release of the Contractor from responsibility in respect thereof.

Progress measurements and certificates not binding.

44. The Contractor shall not have nor make any claim or demand nor bring any action or suit or petition against Her Majesty for any damage which may be sustained by reason of any delay or delays from whatever cause arising in the progress of the work.

Delays.

45. It is distinctly declared that no implied contract of any kind whatsoever by or on behalf of Her Majesty shall arise or be implied from anything in this contract contained, or from any position or situation of the parties at any time, it being clearly understood and agreed that the express contracts, covenants and agreements herein contained and made by Her Majesty are and shall be the only contracts, covenants and agreements upon which any rights against Her Majesty are to be founded.

Contract is express contract.

46. Should the amount voted by Parliament and applicable towards payment for the work hereby contracted for be at any time expended previous to the completion of the works the Minister or the Engineer may give the Contractor written notice to that effect. And, upon receiving such notice, the Contractor may, if he thinks fit, stop the work, but in any case shall not be entitled to any payment for work done beyond the amount voted and applicable as aforesaid unless and until the necessary funds shall have been voted by Parliament in that behalf. And in no event shall the Contractor have or make any claim on Her Majesty for any damages or compensation by reason of the suspension of payment, or by reason of any delay or loss caused by the stoppage of work. And in the event of the Contractor electing to proceed or proceeding with such work after such notice and before additional funds are voted, no action of the Engineer or of any other person on behalf of Her Majesty in giving orders, directions or instructions or otherwise acting with respect to such work shall be taken or considered as in any manner improving the rights of the Contractor or as waiving in any particular any of the provisions of this section.

Parliamentary appropriations exhausted.

Contractor proceeds at own risk.

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47. The Minister may, from time to time and for such period as he may deem expedient, delay or suspend, in whole or in part operations under this contract, either upon the whole of the works or at any particular point or points. Should any such delay or suspension, or the stoppage of the works under the last preceding clause of this contract, or should any delay caused by any circumstances which, in the opinion of the Engineer is beyond the control of or not the fault of the Contractor, unreasonably limit the time for the completion of the works within the time specified by this contract, the Minister, as often as the case occurs, shall allow such additional time as to him may seem sufficient in the extension of such time for completion; but no such delay, suspension or stoppage shall vitiate or void this contract or any part thereof, or any security or obligation for the performance thereof, nor shall the Contractor be entitled to make any claim for damages by reason thereof. Upon the termination of such delay, suspension or stoppage, or upon the removal of the cause thereof, or upon the Contractor receiving notice from the Minister or Engineer requiring him to resume the work, he shall at once resume operations and diligently carry on the same.

Minister may suspend work.

No compensation to contractor for delay.

48. The Contractor shall not bring nor permit to be brought anywhere on or, as far as the Contractor can prevent the same, near the works any spirituous or intoxicating liquor; and if any person employed on the works be in the opinion of the Engineer intemperate, disorderly, incompetent, wilfully negligent or dishonest in the performance of his duties, he shall on the direction of the Engineer be forthwith discharged and the Contractor shall not employ or permit to remain on the work any person who shall have been discharged for any or all of said causes.

Liquors.

49. All orders, directions, instructions or notices to be given or issued by the Engineer under and pursuant to any section in this contract may be given or issued by a duly and expressly authorized agent or agents of the Engineer.

Orders by Engineer's agent.

50. The decision of the Minister as to what additional time, if any, beyond the time specified for the completion of the works may be allowed to the Contractor for such completion and as to the reasonableness or sufficiency thereof shall be final.

If any additional time for such completion is so allowed the Contractor shall, if and to such extent as the Minister requires, pay to Her Majesty all salaries and wages paid by Her Majesty to the person or persons superintending the work during the additional time so allowed and all other costs, expenses and damages incurred by Her Majesty as a result of the allowance of such additional time for completion. Any extension of time that may be granted to the Contractor shall not affect any rights of Her Majesty under this contract, and no assent thereto on the part of the Contractor shall be necessary.

Extension of time.

51. The Contractor hereby and herewith deposits with and delivers to Her Majesty as security for the due fulfilment of his contract the sum of

Security deposit.

upon the express understanding that the same shall be held and retained by Her Majesty as security for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this contract contained, on the part of the Contractor to be observed, performed and complied with. Provided always and it is understood and agreed that the Contractor assumes the risk and must bear any loss in respect of the security deposited as aforesaid occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid.

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52. If at any time hereafter the said Contractor should make default under the said contract, or if Her Majesty acting under the powers reserved in the said contract shall determine that the said works or any portion thereof remaining to be done should be taken out of the hands of the Contractor and be completed in any other manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay any salaries or wages or any accounts for materials due by the said Contractor for work done or materials supplied by any person in connection with the said work, Her Majesty may, in either case, dispose of said security and of the interest which may have accrued thereon for the carrying out of the construction and completion of the work of the contract, or for paying any salaries or wages for work done, or any accounts for materials supplied for the said works that may be left unpaid by the said Contractor.

53. Upon the due and faithful performance, observance and fulfilment by the Contractor of all and every the terms, provisions, covenants, agreements, conditions and reservations hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Contractor shall be entitled to be repaid or to receive again the money so deposited, together with so much interest upon such money as Her Majesty may, during her retention or possession of the same actually receive by reason thereof; it being, however, understood that Her Majesty shall not be under any obligation to cause the said money to be placed at interest, or to earn, or to endeavour to earn, interest thereon. Repayment of security deposit.

54. In the event of any breach, default, or non-performance being made or suffered by the Contractor in or in respect of any of the terms or conditions, covenants, provisos, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said money and interest thereon so delivered to or deposited with Her Majesty, or by Her received in respect thereof shall, by the Contractor, be forfeited absolutely to Her Majesty. Interest on security deposit.

55. No condoning, excusing, or overlooking by Her Majesty or any person acting on her behalf, on previous occasions of breaches or defaults similar to that for which any action is taken or power exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken to operate as a waiver of any provision of this contract, nor to defeat or prejudice in any way the right of Her Majesty hereunder. Forfeit of security.

56. This contract is made and entered into between the Contractor and Her Majesty on the distinct understanding that the Contractor has, before execution, investigated and satisfied himself of everything and of every condition affecting the works to be executed and the labour and material to be provided, and that the execution of this contract by the Contractor is founded and based upon his own examination, knowledge, information and judgment, and not upon any statement, representation, or information made or given, or upon any information derived from any quantities, dimensions, tests, specifications, plans, maps or profiles, given or furnished by Her Majesty or any of Her officers, employees or agents; and that any such statement, representation or information, if so made, given or furnished, was made, given or furnished merely for the general information of bidders and is not anywise warranted or guaranteed by or on behalf of Her Majesty; and that no extra allowance will be made to the Contractor by Her Majesty and the Contractor will make no claim against Her Majesty for any loss or damage sustained in consequence of or by reason of any such statement, representation or information being incorrect or inaccurate, or on account of unforseen difficulties of any kind. Waiver negatived. Contractor to investigate every condition of work before execution of contract.

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57. In the event of any inconsistency between the provisions of this contract and the provisions of the specifications forming part hereof the provisions of the contract shall prevail. Inconsistency between contract and specification.

In Witness whereof the respective parties hereto have executed these presents on the day, month and year first above written.

Signed, sealed and delivered by the Contractor in the presence of:

.....
Deputy Minister of Public Works.

.....
Secretary—Dept. of Public Works.

The Queen's Printer and Controller of Stationery, Ottawa, 1960

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No. .....

Date 19

DEPT. OF PUBLIC WORKS OF CANADA

AGREEMENT

AND

Her Majesty the Queen, represented by the Minister of Public Works of Canada.

For

Amount:

Date of Completion:

File No.

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DEPARTMENT OF LABOUR

Ref. PWD 13475 OTTAWA, CANADA

LABOUR CONDITIONS (A-1)

The following schedule of labour conditions is applicable to the work of grading, culverts, base course, prime & seal, mile 105 to mile 115.0, Banff-Jasper Highway
AT Jasper National Park, Alta.

to be undertaken for the Department of Public Works

Classifications, Wages and Hours

(1) (a) All persons in the employ of the contractor, subcontractor, or any person doing or contracting to do the whole or any part of the work contemplated by this contract shall at no time be paid less than the rates of wages set out in this Schedule or less than such other rates as, during the continuance of the work contemplated by this contract, are fixed by the Minister of Labour. Except in cases of emergency as may be approved by the Minister of Labour, the working hours of all persons employed in the execution of this contract shall not exceed 8 hours per day nor 44 hours per week.

(b) Application for permission to exceed 8 hours per day and 44 hours per week on this contract shall be made to the Minister of the Contracting Department for reference to the Minister of Labour.

(c) Every person in the employ of the contractor or subcontractor shall, except where the Minister of Labour otherwise orders, be paid for hours worked in excess of 44 hours per week at a rate of not less than one and one-half times the wages required to be paid under this contract; and where the Minister or Labour so orders, be paid at the same overtime rate for hours worked in excess of 8 hours per day.

CLASSIFICATIONS OF LABOUR	RATE OF WAGES PER HOUR NOT LESS THAN
Carpenters & joiners	$ 2.45
Compressor operators	1.65
Drill runners	1.65
Firemen	1.60
Grader operators	2.00
Labourers	1.60
Oilers (construction equipment)	1.60
Operators (draglines, cranes, shovels, etc.)	2.30
Powdermen	1.65
Pump operators	1.60
Roller operators	1.65
Timbermen & cribmen	1.70
Tractor operators (large)	2.00
Tractor operators (small)	1.65
Truck drivers	1.60
Watchmen	1.00
Welders & burners (acetylene or electric)	1.95

(See next page)

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Labour Conditions (A-1)

Minister of Labour to Determine Proper Classifications of Labour

(2) Where there are special circumstances, which in the judgment of the Minister of Labour make it expedient that he should do so, he may decide what is the proper classification of any work for the purposes of wages and hours. Immediately upon receipt of notice of any decision of the Minister of Labour hereunder the Contractor shall adjust the wages and hours and classification of work so as to give effect to such decision.

Schedule to be Posted

(3) For the protection of the workmen employed, the contractor shall post and keep posted in a conspicuous place on the premises where the contract is being performed, occupied or frequented by the workmen, the Schedule of Labour Conditions included in this contract and any revisions of the same subsequently made by the Minister of Labour pursuant to Sections (1) and (2) thereof.

Contractor to Keep Records Which are to be Open for Inspection

(4) The Contractor shall keep proper books and records showing the names, trades, and addresses of all workmen in his employ and the wages paid to and time worked by such workmen, and the books or documents containing such records shall be open for inspection by the Fair Wages Officers of the Government at any time it may be expedient to the Minister of Labour to have the same inspected.

Departmental Requirements Before Payments Made to Contractor

(5) The Contractor shall not be entitled to payment of any money which would otherwise be payable under the terms of the contract in respect of work and labour performed in the execution of the contract unless and until he shall have filed with the Minister of the Contracting Department in support of his claim for payment a statement attested by statutory declaration, showing: (1) the rates of wages and hours of labour of the various classes of workmen employed in the execution of the contract; (2) whether any wages in respect of the said work and labour remain in arrears; and (3) that all the labour conditions of the contract have been duly complied with; nor in the event of notice from the Minister of Labour of claims for wages, until the same are adjusted. The Contractor shall also from time to time furnish to the Minister of the Contracting Department such further detailed information and evidence as the said Minister may deem necessary in order to satisfy him that the conditions herein contained to secure the payment of fair wages have been complied with, and that the workmen so employed as aforesaid upon the portion of the work in respect of which payment is demanded have been paid in full.

Authority to Pay Wages in Event of Default by Contractor

(6) All cases of default in the payment of wages to employees by the contractor or other party charged with payment of wages under the contract shall be referred to the Minister of Labour for investigation and determination of the amount in default. Where the Minister of Labour determines that there is an amount in default he may request the contractor or other party charged with the payment of wages to deliver to him a cheque payable to the Receiver General for the amount of the default, or may, as he sees fit, authorize and direct the Minister of the Department of government concerned to deliver to him a cheque payable to the Receiver General for the amount of default and to deduct the amount from any moneys owing by the Government to the contractor, and any amount so deducted shall for all purposes as between the contractor and the Government be deemed to be payment to the contractor.

Conditions of Subcontracting

(7) With a view to the avoidance of any abuses which might arise from the subletting of contracts it shall be understood that subletting, other than such as may be customary in the trades concerned, is prohibited unless the approval of the Minister of the Contracting Department is obtained; subcontractors shall be bound in all cases to conform to the conditions of the main contract, and the main contractor shall be held responsible for strict adherence to all contract conditions on the part of subcontractor; the contract shall not, nor shall any portion thereof be transferred without the written permission of the Minister of the Contracting Department; no portion of the work to be performed shall be done at the homes of the workmen.

Workmen to be Residents of Canada

(8) All workmen employed upon the work comprehended in and to be executed pursuant to the said contract shall be residents of Canada, unless the Minister of the Contracting Department is of opinion that Canadian labour is not available or that special circumstances exist which render it contrary to the public interest to enforce this provision.

Non-Discrimination in Hiring and Employment of Labour

(9) (a) In the hiring and employment of labour for the execution of this contract the contractor shall not refuse to employ or otherwise discriminate against any person in regard to employment because of that person's race, national origin, colour or religion, nor because the person has made a complaint or given information with respect to an alleged failure to comply with the provisions of this clause.

(b) If any question arises at any time as to whether or not there has been a failure on the part of the contractor to comply with the provisions of clause (a), the Minister or Deputy Minister of Labour or any other person designated by the Minister of Labour for the purpose shall decide the question, subject to clause (e), and his decision shall be final for the purpose of this contract.

(c) The contractor shall make available to the Minister or Deputy Minister of Labour or any person instructed by the Minister or Deputy Minister of Labour to inquire into any complaint of non-compliance with the provisions of clause (a) or to otherwise make inquiries as to compliance by the contractor with the provisions thereof, his books and records and shall furnish such additional information as is required for the purposes of the inquiry.

(d) Failure of the contractor to comply with any of the provisions of clause (a) shall constitute a material breach of the contract.

(e) If the contractor is dissatisfied with a decision under clause (b), he may, within thirty days after the decision was made, request the Minister of Labour to refer the question to a judge, and thereupon the Minister of Labour shall refer the question to a judge of a superior, county or district court, whose decision is final for the purposes of this contract.

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DIVISION 1

GENERAL CONDITIONS OF THE CONTRACT

Section

1 Definitions and Terms

2 Scope of Work

3 Control of Work

4 Control of Materials

5 Legal Relations and Responsibility to Public

6 Prosecution and Progress

7 Measurement and Payment

8 Wages and Conditions of Employment

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GENERAL CONDITIONS OF THE CONTRACT

(These Conditions are Supplemental to the Indenture)

SECTION 1. DEFINITIONS AND TERMS

Definitions:

Wherever in these specifications or in other contract documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Abbreviations - Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

A.A.S.H.O.	American Association of State Highway Officials
A.S.T.M.	American Society for Testing Materials
C.S.A.	Canadian Standards Association
C.G.S.B.	Canadian Government Specifications Board

Bridge - A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the centre of roadway of more than 20 feet between under-copings of abutments or extreme ends of openings for multiple boxes and pipes where the clear distance between openings is less than half of the smaller contiguous opening.

Length - The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end of the bridge floor; but in no case less than the total clear opening of the structure.

Roadway Width - The clear width measured at right angles to the longitudinal centreline of the bridge between the bottom of curbs or guard timbers or in the case of multiple height curbs, between the bottoms of the lower risers.

Contract Item (Pay Item) - An item of work specifically described and for which a price, either unit or lump sum is provided. It includes the performance of all work and the furnishing of all labour, equipment and materials, described in the text of a specification item included in the contract or described in any subdivision of the text of the supplemental specifications or special provisions of the contract. In these specifications, contract items are numbered to correspond to sections, and each contract item shall be constructed under the specification contained in the section of the corresponding number.

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Contract Time or Completion Date - The number of working or calendar days shown in the proposal indicating the time allowed for the completion of the work contemplated in the contract.

In case a calendar date of completion is shown in the proposal, in lieu of the number of working or calendar days, such work contemplated shall be completed by that date.

Culvert - Any structure not classified as a bridge which provides an opening under any roadway.

Density - Shall mean the maximum dry density in pounds per cubic foot as determined by the standard method of test for the compaction and soils A.A.S.H.O. designation T.99-49.

Employee - Any person working on the project mentioned in the contract of which these specifications are a part, and who is under the direction or control or receives compensation from the Contractor or Subcontractor.

Engineer - Shall mean the Chief Engineer of the Development Engineering Branch of the Department of Public Works of Canada, having control over the work and shall extend to and include any of the officers or employees of the Department of Public Works, acting under the instructions of the Chief Engineer and all instructions or directions or certificates given, or decisions made by any one acting for the Chief Engineer shall be subject to the approval of the Chief Engineer and may be cancelled, altered, modified and changed as the Chief Engineer may deem fit. Provided always and it is hereby understood and agreed that any act on the part of the Chief Engineer in connection with and in virtue of the present contract, and any instructions or directions or certificates given or decisions made by the said Chief Engineer or by any one acting for such Chief Engineer shall be subject to the approval of or modification or cancellation by the Minister.

Inspector - The authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work, or materials therefor.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified in the tender form.

Profile Grade - Line representing the surface elevation as shown on the Standard Plan along the longitudinal centreline of the proposed wearing surface. Profile grade means either elevation or gradient of such trace according to the context.

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Right of Way - (a) The land secured and reserved to the public for highway purposes.

(b) The lines shown on the plan (or as indicated by the Engineer) roughly parallel to the centreline of the highway showing the area reserved for highway purposes.

Roadway - The portion of the right-of-way included within the construction limits of the grading, drainage, base course and surface course improvements and the appurtenant structures.

Specifications - The general term comprising all the directions, provisions and requirements contained herein, together with such as may be added or adopted as supplemental specifications or special provisions, all of which are necessary for the proper performance of the contract.

Substructure - All of that part of the structure below the bearings of simple and continuous spans, skewbacks of arches and tops of footings of rigid frames, together with the backwalls, wingwalls and wing protection railings.

Superstructure - All of that part of the structure above the bearings of simple and continuous spans, skewbacks of arches and footings of rigid frames, except as noted above for substructure.

Superintendent - The executive representative of the Contractor authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

Working Drawings - Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

SECTION 2 - SCOPE OF WORK

1.2.1 Intent of Contract

See Indenture Article 8 and 12.

The intent of the contract is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the plans, specifications, special provisions, tender and contract.

1.2.2 Special Work

Should any construction or conditions which are not covered by the plans or these specifications be anticipated, special provisions for such work will be prepared by the Engineer, stated on or attached

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1.2.2 Special Work (Cont'd)

to the tender form, and shall be considered a part of these specifications the same as though contained fully herein. Should any such special provisions or requirements conflict with these specifications or supplements thereto, the special provisions shall govern.

1.2.3 Alterations of Plans or of Character of Work and Extra Work

See Indenture Article 7, 8, 9 and 10

1.2.4 Night Work

Should it be found necessary to work at night, the Contractor shall furnish at his own expense, artificial light satisfactory to the Engineer.

1.2.5 Provision for Traffic

(1) Unless otherwise provided, the Contractor shall be responsible for the provision of a safe road for traffic between the extreme limits of his contract and for the maintenance of this road to the satisfaction of the Engineer.

(2) The Contractor shall at all times carry on the work in a manner that will create the least interference with traffic, consistent with the faithful performance of the work. He shall not close any portion of the existing road nor divert traffic outside the limits of the right-of-way except by written order of the Engineer.

(3) The Contractor shall construct and maintain at his own expense a safe road for traffic in every case where traffic is maintained within the limits of the right-of-way or carried on detours, deemed to be a part of the work under this contract. He shall make provisions, acceptable to the Engineer, for the handling of traffic.

(4) The Contractor shall maintain safely and adequately at all times during the progress of the work, and at his own expense, all existing private entrance facilities throughout the entire length of the contract.

See also Article 1.5.8 of these Specifications "Barricades and Warning Signs and Project Sign Boards".

1.2.6 Temporary Structures

(1) In bridge contracts, the Contractor will not be required to construct or maintain temporary structures unless the construction and maintenance of such structures are stipulated in the contract or ordered as extra work by the Engineer.

(2) Plans for temporary structures and procedure for moving existing structures to temporary location, when not provided by the Engineer, shall be subject to his approval.

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1.2.7 Removal and Disposal of Structures and Obstructions

(1) All fences, buildings, structures, relics, or encumbrances of any character upon or within the limits of the highway, shall be removed by the Contractor and stored or otherwise disposed of as ordered by the Engineer. Materials so removed, which the Engineer may order salvaged, shall be carefully removed and shall become the property of the Department.

(2) Payment for this work shall be made under the pay items identified for such work in the tender, except that when the work is of minor consequence, it shall be considered as incidental to and included in other items.

1.2.8 Rights In and Use of Materials Found on the Work

(1) The Contractor, with the approval of the Engineer, may use in the proposed construction such stone, gravel, sand, or other material as may be found in the excavation. The Contractor will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material, all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills, approaches or otherwise. No charge for the materials so used will be made against the Contractor. The Contractor shall not excavate or remove any material from within the right-of-way which is not within the excavation, as indicated by the slope and grade lines, without written authorization from the Engineer.

(2) Unless otherwise provided, the material from any existing old structure may be used temporarily by the Contractor in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the Engineer.

1.2.9 Final Cleaning Up

See Indenture Article 24.

SECTION 3 - CONTROL OF THE WORK

1.3.1 Authority of the Engineer

See Indenture Article 10 and 11

1.3.2 Plans

Plans consisting of general drawings and showing such details as are necessary to indicate the construction contemplated, will be furnished by the Department. Roadway plans will show alignment, profile grade and typical cross sections.

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1.3.3 Conformity with Plans and Allowable Deviations

Finished surface in all cases shall conform with lines, grades, dimensions and adjustments shown on the approved plans, except as modified by written orders of the Engineer. The crown or rise of the finished surfaces of the roadway, from the curb side line to the centreline, shall be as shown on the typical cross section of the plans, except at intersecting highways, or wherever, to insure correct drainage or for other reasons, changes may be directed. On curves, or at other places where deemed necessary, the Contractor will be required to widen, superelevate and spiral the roadway according to Departmental standards. Any deviations from the plans and approved workings that may be required by the exigencies of construction or otherwise will in all cases be determined and authorized by the Engineer in writing.

1.3.4 Coordination of Plans, Specifications, Supplemental Specifications and Special Provisions

These specifications, the supplemental specifications, the plans, Special Provisions and all supplementary documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In the event of any discrepancy between the drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. In the case of any discrepancy between the plans and the specifications, the plans are to govern. If there is a discrepancy between these standard specifications and supplemental specifications, the supplemental specifications are to govern. Special provisions shall govern over specifications, supplemental specifications and plans.

See also Indenture Article 57.

1.3.5 Cooperation by Contractor

See Indenture Article 13.

1.3.6 Cooperation with Utilities

(1) It shall be the responsibility of the Contractor to notify the Department's Officer when necessary adjustments of public or private utility fixtures, pipelines and other appurtenances within or adjacent to the limits of the construction are required.

(2) It shall be the Department's duty to notify all utility companies, all pipe line owners, or other parties affected, and to endeavour to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

(3) Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction are to be moved by the owners under agreement with the Department except as otherwise provided for in the special provisions or as noted on the plans.

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1.3.6 Cooperation with Utilities (Cont'd)

(4) It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

(5) At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

(6) The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and that duplication or rearrangement of work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

1.3.7 Cooperation between Contractors

See Indenture Article 17 and 18.

1.3.8 Construction Stakes, Lines and Grades

See Indenture Article 34.

(1) Highways and Roads

The Engineer will set construction stakes establishing lines, slopes and continuous profile-grade in road work, for culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work.

(2) Structures

The Engineer will set stakes and establish bench marks necessary to mark properly the locations, alignment and reference elevations for bridge piers and abutments. The Contractor shall completely check the Engineer's layout, before commencement of the work, after which he shall assume responsibility for detail dimensions and elevations measured from the lines and elevations thus established.

(3) Preservation of Stakes

The Contractor is responsible for the preservation of Construction Stakes.

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1.3.9 Authority and Duties of Inspector

(1) Inspectors, employed by the Department, shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work, and to the preparation, fabrication or manufacture of the materials to be used. The Inspector is not authorized to alter or waive the provisions of these specifications.

(2) An Inspector is placed on the work to keep the Engineer informed as to the progress of the work and the manner in which it is being done; also to call the Contractor's attention to any non-conformance with the plans or specifications. He will not be authorized to approve or accept any portion of the work, to issue instructions contrary to the plans and specifications. The Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Engineer, provided the suspension is confirmed in writing.

(3) The Inspector will exercise such additional authority as may from time to time be delegated to him by the Engineer.

1.3.10 Inspection of Work

(1) All materials and each part or detail of the work shall be subject at all times to inspection by the Engineer or his authorized representatives, and the Contractor will be held strictly to the true intent of the specifications in regard to quality of materials, workmanship, and the diligent execution of the contract. Such inspection may include mill, plant, or shop inspection, and any material furnished under these specifications is subject to such inspection. The Engineer or his representative shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

(2) If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed shall be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, shall be at the Contractor's expense.

(3) Any work done or materials used without supervision or inspection by a Department representative may be ordered removed and replaced at the Contractor's expense.

1.3.11 Defective and Unauthorized Work or Materials

See Indenture Article 14

(1) The fact that the Inspector in charge may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

(2) No work shall be done without lines and grades having been given by the Engineer.

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1.3.12 Maintenance of Work During Construction

(1) The Contractor shall maintain the work during construction. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway, or structures, are kept in a condition at all times satisfactory to the Engineer.

(2) All cost of maintenance of the work during construction shall be included in the unit prices bid on the various pay items and the Contractor will not be paid an additional amount for such work.

(3) In the event that the Contractor's work is ordered shut-down for failure to comply with the provisions of the contract, the Contractor shall maintain the roadway and structures, as provided herein, and provide such ingress and egress for local residents as may be necessary during the period of suspended work or until the contract is terminated.

(4) In the case of a contract for the placing of a surface course or courses upon a subgrade previously constructed under a separate contract, the Contractor shall be required to maintain the subgrade ahead of other operations covering the preparation and conditioning of the subgrade.

1.3.13 Failure to Maintain Roadway or Structure

Failure on the part of the Contractor, at any time, to comply with the provisions of Articles 1.2.5 and 1.3.12 above, will result in the Engineer immediately notifying the Contractor to comply with the required maintenance provisions. In the event that the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer will immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from monies due the Contractor on his contract.

1.3.14 Tentative Acceptance

(1) At the option of the Engineer, certain sections of the work may be inspected, and completed work tentatively accepted for the use of traffic. Such acceptance shall not constitute final acceptance of the work or any part of it or a waiver of any provisions of the contract: provided, however, that on such portions of the project as are accepted for use of traffic, the Contractor shall not be required to assume any expense entailed in maintaining the roadway for traffic as a result of ordinary wear and tear after such acceptance, but shall be compensated therefor in the manner provided hereinafter in Article 1.7.3. Any damage to the highway that may occur on such section not attributable to traffic, shall be repaired by the Contractor at his expense; provided, however, that any unavoidable "slides" shall be removed and paid for at the respective contract unit prices for the quantities and items of work involved.

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1.3.14 Tentative Acceptance (Cont'd)

(2) If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may order all of a portion of the project open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

1.3.15 Claims for Adjustment and Disputes

See Indenture Article 41 and 42.

In any case where the Contractor deems that extra compensation is due to him for work or material not clearly covered in the contract or not ordered by the Engineer as an extra as defined herein, the Contractor shall notify the Engineer in writing of his intention to make claim for such extra compensation before he begins the work on which he bases the claim. If such notification is not given and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost as defined for force account, then the Contractor hereby agrees to waive the claim for such extra compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost as aforesaid shall not in any way be construed as proving the validity of the claim. Nothing in this Article shall be construed as establishing any claim contrary to the terms of Indenture Articles 7, 8, 9 and 10.

1.3.16 Final Acceptance

(1) Whenever all the materials have been furnished, all the work has been performed, and the construction provided and contemplated by the contract has been satisfactorily completed, all in accordance with these specifications, the Engineer shall make the final inspection.

(2) Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer shall make a semi-final inspection and if at such semi-final inspection, all construction provided for and contemplated by the contract is found completed to his satisfaction, such inspection shall constitute the final inspection and the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

(3) If, however, at any semi-final inspection any work in whole or in part is found unsatisfactory, the Engineer shall give the Contractor the necessary instructions as to replacement of material and performance or re-performance of work necessary and pre-requisite to final completion and acceptance, and the Contractor forthwith shall comply with and execute such instructions. Upon satisfactory replacement of such material and performance or re-performance of such work, another inspection shall be made which shall constitute the final inspection if the said material is found to have been replaced and the work completed satisfactorily. In such event the Engineer shall make the final acceptance and the Contractor shall be notified of such acceptance in writing as soon thereafter as practicable.

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SECTION 4 - CONTROL OF MATERIAL

1.4.1 Canadian Parts and Materials

To the full extent to which the same are procurable, consistent with proper economy and the expeditious carrying out of this contract, the Contractor shall use in the works only such articles, materials or parts as have been produced in Canada or manufactured from Canadian materials. Tenderers shall state in their tender the country or origin of items where such items originate in countries other than Canada. In all cases, the minimum standards for all goods and materials supplied shall meet those established by the Canadian Government Specifications Board and the Canadian Standards Association.

1.4.2 Source of Supply and Quality Requirements

The materials supplied by the Contractor for use on the work shall be at least equal in quality to the requirements of these specifications. The source of supply of each of the materials shall be approved by the Engineer before delivery is started. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other approved sources.

1.4.3 Designated Local Material Sources

(1) The Department will acquire and make available to the Contractor the right to take materials from sources shown on the plans, described under special provisions or designated by the Engineer, together with the right to use such property as may be specified, adjacent thereto, as may be required for plant site, stockpiles and hauling roads.

(2) The quality of material in such deposits will be acceptable in general, but the Contractor shall determine for himself the amount of equipment and work required to secure a finished product meeting the specifications and whether blending with other materials will be necessary. It shall be understood that it is not feasible to ascertain from samples limits for an entire deposit, and that variations shall be considered as usual and to be expected. It shall also be understood that the Engineer may order procurement of material from any portion of any area designated as a pit site and may reject portions of the deposit as unacceptable.

(3) If the Contractor desires to use material from sources other than those designated, he shall do so only on written authority of the Engineer. The Engineer may, if he deems it practical and desirable, authorize the use of such sources, only after samples have been submitted under the direction of the Engineer. Approval for the use of material from such alternate sources will not be given unless the quality of the material therefrom is at least equal to the quality of material from the designated source or sources.

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1.4.3 Designated Local Material Sources (Cont'd)

(4) Sites from which material has been removed shall be left in a neat and presentable condition upon completion of the work. Where practicable, borrow pits, gravel pits, and quarry sites shall be located so that they will not be visible from the highway.

1.4.4 Field Office and Laboratory

Wherever indicated in the contract, the Contractor shall provide a field office and/or laboratory.

1.4.5 Delivery and Storage of Materials

(1) Railway cars or barges used for transporting such materials as aggregates, portland cement, bituminous material, etc., must be clean when any of these materials are placed therein.

(2) Trucks, or other vehicles used in transporting construction materials, must be kept clean, free from all foreign matter, in proper working condition, and have strong, substantial bodies which will prevent the loss of materials during transportation.

(3) Materials shall be so stored as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be stored in weatherproof buildings, placed on wooden platforms, or other hard, clean surfaces, and not on the ground and shall be covered when directed. Stored materials, even though approved before storage, may be inspected prior to their use in the work, and they shall meet the requirements of the specifications at the time it is proposed to use them. Stored materials shall be located so as to facilitate their prompt inspection. Storage sites on crown lands must be approved by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee. All storage sites shall be restored to their original condition by the Contractor at his expense. This shall not apply to the stripping and storing of topsoil or to other materials salvaged from the work or specifically prescribed under the specifications.

(4) During the handling of all aggregates or other construction materials, special care shall be taken that no earth or foreign material becomes mixed therewith. Aggregates shall be handled in such a manner as to prevent segregation. C.S.A. standard practice shall govern the storage of materials unless otherwise provided.

1.4.6 Handling Materials

All materials shall be handled carefully and in such manner as to preserve their quality and fitness for the work. They shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

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1.4.7 Defective Materials

All materials not conforming to the requirements of the specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected and shall be removed immediately from the site of the work unless otherwise directed by the Engineer. No rejected material, the defects of which have been substantially corrected, shall be used until approval has been given.

1.4.8 Materials Inspection

In order to expedite the inspection and testing of materials, the Contractor shall advise the Engineer at least two weeks prior to delivery of materials from commercial sources of supply.

1.4.9 Department Furnished Material

(1) The Contractor shall furnish all materials required to complete the work, except those specified to be furnished by the Department.

(2) The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

(3) The Contractor will be held responsible for all material delivered to him and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges due to delinquency in unloading.

(4) The Contractor will arrange with the supplying company as to point of delivery and arrange the time and quantity of shipment and shall give the Engineer a copy of all orders or instructions issued respecting shipment at the time such orders or instructions are issued. The Contractor shall also arrange with the railway company concerned for prompt shipment of the materials. The Contractor shall be responsible for all original outbound freight charges on materials returned to the supplier which are surplus to contract requirements for any cause whatsoever.

SECTION 5 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

1.5.1 Laws to be Observed

The Contractor shall keep himself fully informed of all Federal and Provincial laws, all local bylaws, ordinances and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Department and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees.

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1.5.2 Permits, Licenses and Taxes

The Contractor shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

1.5.3 Patented Devices, Materials and Processes

If the Contractor is required or desires to use any design, device, material or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner and a copy of this agreement shall be filed with the Department; if no such agreement is made or filed as noted, the Contractor and the surety shall indemnify and save harmless, the Department, any affected railroad or railway company, or political subsdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process or any trademark or copyright, and shall indemnify the Department, any costs, expenses, and damages which it may be obliged to pay, by reason of any infringement, at any time during the prosecution or after the completion of the work.

1.5.4 Restoration of Surfaces Opened by Permit

(1) The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time is hereby expressly reserved by the Department for the proper authorities of the municipality in which the work is done and the Contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

(2) Any individual, firm, or corporation wishing to make an opening in the highway must secure a permit from the Department, and the Contractor s hall not allow any person or persons to make an opening unless a duly authorized permit of the Department is presented. The Engineer may authorize the Contractor to allow parties bearing such permits to make openings in the highway. The Contractor shall, when ordered by the Engineer, make in an acceptable manner all necessary repairs due to such openings and such necessary work shall be paid for as extra work, as provided in these specifications and shall be subject to the same conditions as original work performed.

1.5.5 Health and Sanitary Provisions

See Indenture Article 33.

1.5.6 Railway - Highway Separation

(1) In case the Contractor is required to haul materials across the tracks of any railway, or elects to do so, he shall make his own arrangements with that railway for any new private crossings required or for the use of any existing private crossing.

(2) All work to be performed by the Contractor in the construction of railway - highway separation structures on the railroad right-of-way shall be done in a manner satisfactory to the Engineer of the railway company and shall be performed at such times and in such manner as not

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1.5.6 Railway - Highway Separation (Cont'd)

to unnecessarily interfere with the movement of trains or traffic upon the track of the railway company. The Contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property.

1.5.7 Impeding Navigation

In all matters connected with the prosecution of the works, the transportation or delivery of materials of any kind required for them and in making arrangements for these purposes, the Contractor must be governed by the laws and rules of navigation and the interpretation put upon them by the Officer entrusted to enforce them, and he must use every precaution to guard against interrupting, impeding or in any way interfering with the navigation, as he will be held strictly and legally liable for all damage, loss or detention that any vessel may sustain from any of his acts, whether such may result from a desire to prosecute the works or any other cause.

1.5.8 Barricades and Warning Signs and Project Sign Boards

(1) The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient red lights, danger signals, and other signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and the safety of the public. Highways closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated at night. Suitable warning signs, illuminated at night by lanterns or flares, shall be provided to mark the places where surfacing ends or is not compacted. All lights for this purpose shall be kept burning from sunset to sunrise.

(2) The Contractor shall erect warning signs in advance of any place on the project where operations interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be constructed and erected in accordance with the plans furnished or as required by local ordinances.

(3) The Contractor shall, at his own expense, provide and erect project sign boards at either or both ends of the contract, at locations approved by the Engineer. The sign boards shall be appropriately lettered in accordance with Standard Plan.

1.5.9 Use of Explosives

(1) When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.

(2) All explosives shall be stored in a secure manner, in compliance with laws, ordinances and regulations and all such storage shall be marked clearly "DANGEROUS - EXPLOSIVES".

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1.5.9 Use of Explosives (Cont'd)

(3) The Contractor shall notify each public utility company, having structures in proximity to the site of the work, of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the Contractor of responsibility for any damage resulting from his blasting operations.

1.5.10 Damage to Property and Persons

See Indenture Article 23 and 25.

1.5.11 Insurance

Unless specifically excepted in the special provisions, no payment will be made under a contract for the construction of a bridge or bridges as defined in Section 1 of these General Conditions until the Contractor deposits with the Chief of Legal Services, Department of Public Works, Ottawa, an insurance policy that complies with the following conditions:

(i) All money payable by the Insurer under the policy shall be payable to Her Majesty the Queen in Right of Canada and the Contractor jointly.

(ii) The policy shall cover all structures to be constructed whether temporary or not and all materials provided by the Contractor for the work while on property owned or leased by the Crown.

(iii) The policy shall be enforced until the work is completed and accepted by the Crown.

(iv) The policy shall ensure against loss equal in amount to the total value of the contract.

(v) The policy shall be a Bridge Builders All Risk Policy.

(vi) The policy shall provide that in event of loss the amount of such loss shall be automatically reinstated.

(vii) The policy shall provide for a deductible amount of one thousand dollars ($1,000.00) in respect of every claim.

1.5.12 Camps

In carrying out work within or adjacent to Forests, the Contractor shall comply with all of the regulations of the Provincial or Federal Forestry Department, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep all the areas in an orderly condition, dispose of all refuse and obtain approval of the Engineer for the construction of camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the forest protection agency.

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1.5.13 Contractor's Responsibility for Work

See Indenture Article 21.

1.5.14 Furnishing Right-of-Way

The Department will be responsible for the securing of all necessary rights-of-way in advance of construction.

1.5.15 Responsibility for Damage to Crown Property

The Contractor shall indemnify Her Majesty in respect of all loss or damage to property owned by Her Majesty caused by the negligence of an officer, servant, or agent of the Contractor or of any Sub-Contractor or caused in whole or in part by an act or omission of the Contractor, any Sub-Contractor, or any officer, servant or agent of the Contractor or of any Sub-Contractor whether or not such act or omission was negligent.

SECTION 6 - PROSECUTION AND PROGRESS

1.6.1 Subletting of Contract

See Indenture Article 27.

1.6.2 Prosecution of Work

It is the meaning and intent of this contract, unless otherwise herein specifically provided, that the Contractor shall be allowed to prosecute his work at such times and seasons, in such order of procedure and in such manner as shall be most conducive to economy of construction, provided, however, that the time and order shall be such that the work shall be completed, in accordance with the plans and specifications, as interpreted by the Engineer, and within the time of completion designated in the agreement, provided also that when the Department is having other work done, either by contract, or by the Department with its own force, the Engineer may direct the time and manner of constructing the work done under this contract, so that conflict will be avoided and the various works harmonized The Engineer may also direct the arrangements of the work so as to provide and take advantage of convenient detours for traffic.

1.6.3. Limitation of Operations

The Contractor shall not open up work to the prejudice of work already started and he may be required by the Engineer to finish a section on which work is in progress before work is started on any additional section.

1.6.4 Temporary Suspension of Work

The Engineer shall have the authority to suspend the work wholly or in part by written oder, for such period as he may deem necessary due to unsuitable weather, to conditions, considered unfavourable for the suitable prosecution of the work, or to failure

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1.6.4 Temporary Suspension of Work (Cont'd)

on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract.

1.6.5 Extension of Time

See Indenture Article 20 and 50.

1.6.6 Default and Annulment of Contract

See Indenture Article 19.

SECTION 7 - MEASUREMENT AND PAYMENT

1.7.1 Measurement of Quantities

(1) General

All work completed under the contract shall be measured by the Engineer according to British standard measure.

(2) Linear and Area

(a) All longitudinal and transverse measurements for areas will be measured horizontally.

(b) Structures shall be measured according to neat lines shown on the plans or as ordered in writing, unless otherwise provided for elsewhere in the specifications or in the special provisions.

(c) All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., shall be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

(3) Volume and Weight

(a) In computing volumes of excavation, embankment and borrow, the average end area method will be used.

(b) The term ton shall mean the short ton consisting of 2,000 pounds avoirdupois. All materials which are specified for measurement by the ton shall be weighed on accurate, approved scales at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided the actual weight of material only will be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible indentification mark.

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1.7.1 Measurement of Quantities (Cont'd)

(c) All materials for which measurements are obtained by the cubic yard., "loose measurement" or "measured in the vehicle", shall be hauled in approved vehicles and measured therein at the point of delivery. No allowance will be made for the settlement of material in transit. Approved vehicles for this purpose shall be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. Unless all approved vehicles are of uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. All vehicles shall be loaded to at least their water level capacity and all loads shall be levelled when the vehicles arrive at the point of delivery.

(d) When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the laboratory and shall be agreed to by the Contractor before such method of measurement of pay quantities will be approved by the Engineer.

(e) The weight measurements shall be made by a weighmaster provided by the Department using the scales provided by the Contractor. These scales shall be of suitable design and of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested for accuracy as often as may be required by the Engineer.

(f) The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as required.

(4) Materials

(a) Bituminous material may be measured by the gallon in the railroad tank car, except when delivered in tank truck, distributor tank, or drums. Each railroad tank, tank truck, drum, or distributor tank of bituminous material delivered for the project shall be measured. The measurement shall be taken when the bituminous material is of a uniform temperature and free from air bubbles.

(b) The volumetric measurement of the bituminous material for these specifications will be based upon a temperature of 60°F.

(c) Only the quantity of bituminous material actually placed in the work and accepted will be considered in determining the amount due the Contractor.

(d) Timber will be measured by the thousand feet board measure (M.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

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1.7.1 Measurement of Quantities (Cont'd)

(5) Time

Rental of equipment will be measured by time in hours of actual working time and necessary travelling time of the equipment within the limits of the project except when special conditions make some other method of measurement desirable.

(6) Lump Sum

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

1.7.2 Scope of Payment

See Indenture Article 12 and 38.

1.7.3 Extra and Force Account Work

(1) General

For extra work performed in accordance with Article 7 of the Indenture, the detailed method of payment shall be either at the unit price or lump sum stipulated in a supplemental agreement or in lieu of such agreement, the Department will require the Contractor to do such work on a force account basis to be compensated in the following manner:

(2) Labour

For all labour and teams and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labour, teams and foremen are actually engaged in such work, to which cost shall be added an amount equal to 10 percent of the sum thereof.

(3) Bond, Insurance and Tax

For property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions on the force account work, the Contractor shall receive the actual cost, to which no percentage shall be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance and tax.

(4) Materials

For materials accepted by the Engineer, and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost shall be added an amount equal to 10 percent of the sum thereof.

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1.7.3 Extra and Force Account Work (Cont'd)

(5) Equipment

For any machinery or special equipment, (other than small tools) the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum no percentage shall be added.

(6) Superintendence

No additional allowance shall be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

(7) Compensation

The compensation as set forth above shall be received by the Contractor as payment in full for extra work done on a force account basis. At the end of each day the Contractor's representative and the Inspector shall compare records of the cost of work done as ordered on a force account basis.

(8) Statements

No payment will be made for work performed on a force account basis until the Contractor shall furnish to the Engineer duplicate itemized statements of the cost of such force account work detailed as to the following:

(i) Name, classification, date, daily hours, total hours, rate and extension for such labourer, foreman and team.

(ii) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

(iii) Quantities of materials, prices and extensions.

(iv) Transportation on materials.

(v) Cost of property damage, liability and workmen's compensation insurance premiums and unemployment insurance contributions. Such statements shall be accompanied and supported by original receipted invoices for all materials used and transportation charges, provided that, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the original invoices the statements shall contain or be accompanied by an affidavit of the Contractor certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

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1.7.4 Progress Payments

See Indenture Article 39 and 40.

1.7.5 Payment for Material Delivered on Project

(1) Partial payments may be made to the extent of 75 percent of the delivered cost of materials on hand to be incorporated in the work when delivered on the project and stored on ground owned by the Department, or leased by the Contractor and transferred to the Department providing such is done to the satisfaction of the Engineer. If requested to do so, the Contractor shall produce the receipted invoices and bills of lading of the materials delivered. Partial payments for materials on hand will not constitute acceptance, and any faulty material will be condemned even though previous payment may have been made for same in the estimates.

(2) No payment shall be made upon fuels, supplies, form lumber, false work, or other materials, or on temporary structures of any kind which will not become an integral part of the finished construction.

(3) In the case of planting operations, no progress payments will be made on living or perishable plant materials until planted.

1.7.6 Acceptance and Final Payment

When the final inspection and final acceptance have been duly made by the Engineer as provided in Article 1.3.16 the Engineer shall prepare the final estimate of the quantities of the various classes of work performed, and after the approval of such final estimate by the Minister, there shall be paid to the Contractor the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the contract.

SECTION 8 - WAGES AND CONDITIONS OF EMPLOYMENT

1.8.1 Scope

The provisions pertaining to wages and conditions of employment shall apply to all work performed (on the contract) by the Contractor with his own organization and with the assistance of workmen under his immediate superintendence, and to all work performed on the contract by piecework, station work, or by sub-contract.

1.8.2 Labour Conditions

(1) The Contractor's attention is directed particularly to the provisions and requirements of the Province's Workmen's Compensation Act and to Statutes regulating the hours of employment on public work.

(2) In addition to the Provincial Laws restricting the hours of labour, and minimum wage rates, the Contractor shall abide by the Labour Conditions of the Department of Labour of Canada as set forth in the Schedule attached to and forming part of this contract.

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1.8.3 Employment of Canadian Labour

In engaging labour for the work contemplated by this contract as far as practicable and consistent with reasonable efficiency and economy, only Canadian residents shall be used and first consideration shall be given to the employment of available and competent workmen who are most in need and are resident in the district in which the works are to be performed. Preference is to be given to veterans of the Armed Forces of Canada and to married men and single men with dependants.

1.8.4 Records

The Contractor shall maintain and keep available for inspection by the Minister, a record of the names and addresses of ex-servicemen employed on this work, together with a record of the steps taken to implement this requirement.

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 2

EARTHWORK

Section 1 - Clearing and Grubbing

" 2 - Roadway and Borrow Excavation

" 3 - Embankment Construction

" 4 - Channel Excavation

" 5 - Excavation for Structures

" 6 - Overhaul

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SECTION 1 - CLEARING AND GRUBBING

SEPTEMBER 1959

2.1.1 DESCRIPTION

This item shall consist of the complete removal and disposal of trees, stumps, roots, brush, logs, rubbish and other work as herein described. The areas to be cleared and/or grubbed shall be those areas within the limits specifically denoted on the plans as well as any other areas which may be designated by the Engineer.

2.1.2 MATERIALS

No materials are involved.

2.1.3 CONSTRUCTION

(1) Clearing

(a) Clearing shall consist of the cutting, removing, burning or other disposal and cleaning up of all timber, brush, windfalls and other fallen timber, stumps and rubbish except such trees and shrubs as may be designated for preservation by the Engineer. Such designated trees and shrubs shall be protected from scoring, barking or other injury during the construction operations. Where grubbing is not to be done, all trees, roots and existing stumps shall be cut off flush with the original ground surface. Dangerous trees or snags, overhanging and off the right-of-way, shall be removed.

(b) Clearing shall be completed at least one-half mile in advance of grading operations.

(2) Salvage

All merchantable timber shall become the property of the Contractor and may be disposed of at his discretion, provided it be removed from the site of the work before the completion date of the contract.

(3) Grubbing

Grubbing shall include the removal and disposal of all roots 2 inches in diameter and larger and stumps, imbedded logs, and other objectionable debris.

(4) Disposal

All timber, logs, trees, stumps, brush and other rubbish

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shall be piled and burned or otherwise disposed of so as to leave the areas disturbed by clearing and grubbing with a neat and finished appearance free from debris. All material not burned shall be disposed of outside of the right-of-way and out of sight of any part of the highway at locations approved by the Engineer.

(5) Excavation

If the Contractor clears or grubs in a manner such that excavation is removed during the operation, payment will not be made for the excavation so removed. Cross-sectioning for excavation quantities will be done after clearing and/or grubbing operations have been completed.

2.1.4 MEASUREMENT

The quantity to be paid for under this item shall be the number of acres, and fractions thereof, of land actually cleared and/or grubbed in accordance with these specifications and completed to the satisfaction of the Engineer.

2.1.5 PAYMENT

Clearing and grubbing shall be considered as separate items. The acreage, determined as provided above, will be paid for at the contract unit price per acre for clearing and the contract unit price per acre for grubbing, which price and payment shall constitute full compensation for all labour, equipment, tools and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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DIVISION 2

SECTION 2 - ROADWAY AND BORROW EXCAVATION

SEPTEMBER 1959

2.2.1 DESCRIPTION

(1) Scope

This item consists of the excavation and disposal of all materials in conformity with the lines and grades or dimensions indicated on the plans or as staked or directed by the Engineer, and includes:

(a) All roadway and borrow excavation.

(b) Excavation for all culverts and other drainage installations not requiring footings.

(c) Formation of side ditches, embankments, permanent access and connecting roads, approaches, entrances, parking areas, berms and any other earthworks necessary for the proper construction of the road.

(d) Removal and disposal of unsuitable materials from excavation, embankment and borrow areas.

(e) Transportation of excavated materials for the freehaul distance.

(f) Trimming and rounding of slopes.

(g) Maintenance of the work set forth under this section in a finished condition until it or any portion thereof has been accepted as completed by the Engineer.

(2) Classification

(a) Excavation Common will include the excavation of all materials not hereinafter classified as Excavation Rock.

(b) Excavation Rock will include the excavation of all boulders more than $\frac{1}{2}$ cubic yard in volume, all stone fences and masonry walls, all concrete or masonry structures, concrete pavements and all rock in mass formation, and other material which is determined by the Engineer to be so hard that it is not practicable to loosen and handle it except by blasting. Excavation Rock will not apply to bituminous pavement, gravel, or broken stone which will be classified as Excavation Common.

2.2.2 MATERIALS

Not applicable.

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2.2.3 CONSTRUCTION

(1) Utilization of Excavated Materials

All suitable materials removed by excavation from the roadway shall be used as far as practicable, in the formation of embankments before any material from Borrow Excavation shall be used, except as otherwise directed by the Engineer.

(2) Location of Borrow Pits

The Engineer will locate and the Department will furnish all borrow pits. The Contractor shall notify the Engineer sufficiently in advance of opening any approved borrow pits, so the necessary measurements may be made.

(3) Unsuitable Materials

When unsuitable material is encountered in areas on which an embankment is to be constructed, or below the subgrade in cuts, the material shall be removed to the lateral limits and depths specified by the Engineer. Any material removed in excess of approved limits and depths will not be measured for payment and the Contractor will be required to provide at his own expense, the material, properly compacted, necessary to replace the excess material which has been excavated.

(4) Swamp Treatment

Where the roadway crosses deposits of peat, muck, muskeg or swamp, the unsuitable material shall be excavated to a firm foundation and to the width indicated on the Standard Plans unless otherwise indicated. In such cases supplementary specifications and plans will be supplied to the Contractor.

(5) Clearing and Grubbing

Clearing and Grubbing will be measured and paid for as stated in Division 2, Section 1 -- "Clearing and Grubbing". Original measurements for all excavation shall be taken after Clearing and/or Grubbing operations are complete.

(6) Stripping and Conserving Topsoil

Prior to the excavation of embankment materials the ground surface shall be stripped of all unsuitable material. Where material is suitable for top soiling the Engineer may direct that it be stock-piled at approved locations.

(7) Trimming and Restoration of Borrow Pits

All borrow pits shall be trimmed and left in such shape as to permit accurate measurement after the excavation is completed. Pits shall be so excavated that no water will collect or remain therein. Upon completion of the hauling, the Contractor shall restore the sites which were disturbed by such operation to a satisfactory and sightly condition.

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(8) Construction in Roadway Cuts

(a) Where the subgrade is on transition from excavation to embankment the ground slopes at the grade point shall be treated in accordance with the Standard Plan "Earth Cut and Fill Construction Method at Grade Point."

(b) Where there is no subexcavation in cuts the area from inslope to inslope of ditches shall be treated as follows:

(i) Where granular sub-base is not provided the basement soil shall be sub-excavated one foot and replaced in 6 inch layers compacted to 100% of maximum density.

(ii) When granular sub-base is provided the basement soil shall be scarified to a depth of 6 inches and compacted to 100% of maximum density.

(c) Where unsuitable materials are sub-excavated, as detailed in (3) above, the excavated areas shall be back-filled in 6 inch layers with approved materials and to the elevations indicated by the Engineer and compacted to 95% of maximum density except that the top 12 inches shall be compacted to 100% of maximum density.

(d) In rock cuts the rock shall be removed to the subgrade elevation as shown on the standard plan and the exposed rock surface shall be chinked with rock spalls and fines to form an earth tight surface.

(9) Rock Excavation

(a) If, during excavation, material appearing to conform to the classification for Excavation Rock is encountered, the Contractor shall notify the Engineer and shall provide ample opportunity for him to investigate and make such measurements as are necessary to determine the volume of the material in question.

(b) Rock Excavation in roadway cuts shall be carried out in accordance with the Standard Plans.

(c) The Contractor shall collect and place in the embankment, all the material dislodged by blasting.

(d) In order to obtain uniform shattering drilling shall be carried out to a plane parallel to and at a minimum of 2 feet below the subgrade. All drill holes shall be located by the Contractor sufficiently in advance of the drilling so that the Engineer may furnish the exact distance from the rock surface to the subgrade at each drill hole. While the minimum depth of drilling below subgrade has been specified any additional depth of drilling shall be at the option of the Contractor and subject to the Engineer's approval. All holes shall be drilled to

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the same distance below the subgrade except at cut ends where drilling shall be continued beyond the lower ends of cuts on non-level gradients and beyond both ends of cuts on level gradients, to a point at least 3 feet below sub-grade or correspondingly lower if this minimum drilling in the cut has been exceeded. See Standard Plan "Rock Cut Construction". All operations shall be so conducted as to effect drainage to ditches and not leave undrained pockets in the foundation.

(e) Rock slopes must be carefully scaled down and all rock, boulders and fragments which are liable to slide or roll down the slopes shall be removed. No rock shall be left projecting within the limits of the staked sections.

(10) Drainage

Side ditches shall be constructed to the depths and widths indicated on the plans, to permit ready run-off of surface water.

(11) Rounding and Finishing Slopes

The top surface and side slopes of cuts shall be left in a neat condition and true to the lines and grades shown in the Plans. When boulders are encountered in cut slopes they shall be removed on instruction of the Engineer and any resulting cavities shall be filled and thoroughly compacted.

When in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand finishing may be called for.

2.2.4 MEASUREMENT

(1) Excavation Common

(a) The quantity of Excavation Common for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for materials acceptably excavated. The measurement will include subexcavation of unacceptable material, surface boulders less than ½ cubic yard in volume and the authorized stripping of excavation and embankment areas.

(b) In cut section where material is removed and replaced (Item 2.2.3 (8) (b) of this Specification), the volume for which payment will be made shall be considered as twice the volume contained in a prism having a depth of 12 inches and an area equal to the top area of the replaced material. There will be no measurement for scarifying the 6 inches under Item 2.2.3 (8) (b).

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(c) Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material, due to slides, which is necessary to move in order to complete the roadway but only when such slides are not attributable to the negligence of the Contractor.

(2) Excavation Rock

(a) The quantity of Excavation Rock for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for material including surface boulders greater than ½ cubic yard in volume which is acceptably excavated.

(b) Where in the opinion of the Engineer unavoidable overbreak occurs payment will be made for the actual quantity involved but not to exceed 10 percent of the volume of the individual cut as staked by the Engineer.

(c) All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position as for Excavation Rock and paid for at the unit price for Excavation Common.

2.2.5 PAYMENT

(a) Payment for Excavation Common (roadway and borrow) and Excavation Rock will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment shall include full compensation for all labour, equipment, tools, explosives, excavation and hauling (except overhaul), scarifying in earth cuts, benching or scarifying slopes, scarifying or breaking up old pavement, shattering rock below grade in rock cuts, the formation of embankments, stockpiling stripped material for topsoiling, trimming and finishing slopes and top surfaces, disposal of surplus or unsuitable materials, maintaining the work until acceptance, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Additional payment at the contract unit price for Excavation Common will be made for topsoil material taken from the stockpile and placed as directed by the Engineer.

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(c) Excavation made beyond the lines established by the Engineer will not be measured for payment except that it may include the volume of material, due to slides, which is necessary to move in order to complete the roadway but only when such slides are not attributable to the negligence of the Contractor.

(2) Excavation Rock

(a) The quantity of Excavation Rock for which payment will be made, shall be the volume in cubic yards measured in its original position and computed by the average end area method, for material including surface boulders greater than ½ cubic yard in volume which is acceptably excavated.

(b) Where in the opinion of the Engineer unavoidable overbreak occurs payment will be made for the actual quantity involved but not to exceed 10 percent of the volume of the individual cut as staked by the Engineer.

(c) All other rock excavation beyond the lines staked by the Engineer and in excess of the overbreak allowed, when placed in embankments, will be measured in its original position as for Excavation Rock and paid for at the unit price for Excavation Common.

2.2.5 PAYMENT

(a) Payment for Excavation Common (roadway and borrow) and Excavation Rock will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices, which prices and payment shall include full compensation for all labour, equipment, tools, explosives, excavation and hauling (except overhaul), scarifying in earth cuts, benching or scarifying slopes, scarifying or breaking up old pavement, shattering rock below grade in rock cuts, the formation of embankments, stockpiling stripped material for topsoiling, trimming and finishing slopes and top surfaces, disposal of surplus or unsuitable materials, maintaining the work until acceptance, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(b) Additional payment at the contract unit price for Excavation Common will be made for topsoil material taken from the stockpile and placed as directed by the Engineer.

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SECTION 3 - EMBANKMENT CONSTRUCTION

SEPTEMBER 1959

2.3.1 DESCRIPTION

Scope: This item shall include the placing in embankments and cuts of suitable materials obtained from the various scheduled items of excavation, at the prescribed locations, and in conformance with the lines, grades, cross sections and dimensions shown on the plans or as staked by the Engineer.

2.3.2 MATERIALS

(1) Materials used for embankments shall be free from muck, wood, brush, roots, sods, ashes, rubbish, top soil and other organic matter.

(2) The material for embankments shall be any stable material which can be properly compacted by the methods hereinafter specified. All material shall be approved by the Engineer prior to incorporation. In embankments adjacent to abutments and other structures, where shown on the plans, the material shall be granular in nature and approved by the Engineer.

2.3.3 CONSTRUCTION

(1) Embankment Foundation

(a) The foundation for the embankments shall be prepared by removing unsuitable materials as specified in Article 2.3.3 (3) and (4) of the Specification "Roadway Excavation".

(b) When the sub-grade elevation of the new embankment is less than 1 foot above an existing pavement, the pavement shall be broken up or scarified to ensure a proper bond between the new material and the old embankment.

(2) Side Hill Construction

When an embankment is to be constructed on a slope or against an existing embankment, the entire sloping surface on which the embankment is to be placed shall be ploughed, benched or broken up in such a manner that the new material will bond with the resulting surface. The specific method employed shall be subject to the approval of the Engineer.

(3) Placing Embankment

(a) Material shall not be placed while frozen nor shall it be placed on a frozen surface.

(b) The embankment shall be constructed to the cross-section shown in the Standard Plans. A crown shall be maintained at all times during construction to ensure ready run-off of surface water.

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(c) The embankment material will be placed in successive uniform layers across the entire area of the embankment as follows:

(i) Material containing less than 25 percent by volume of stone larger than 4 inches shall be placed in 6 inch compacted layers.

(ii) Material containing 25 percent or more in volume of stone or ledge rock larger than 4 inches shall be placed in layers not to exceed the maximum size of the rock or stone in thickness but in no case shall the thickness of the layer exceed 2 feet. Stone larger than 4 inches shall not be placed within 6 inches of the sub-grade elevation.

(iii) In embankments composed principally of material obtained from rock cuts, the larger stones shall be carefully distributed and the interstices filled with smaller stones and other available material to form as compact a mass as practicable. Such embankments shall be constructed in layers having a maximum height of 3 feet. Even though the thickness of the layers is limited as provided above, the placing of individual rocks and boulders of a size not exceeding 5 feet in least dimension will be permitted provided they are carefully distributed and the interstices filled with finer material to form a dense and compact mass. Each layers, before starting the next shall be levelled and smoothed by means of power driven graders, bulldozers, or other suitable equipment. Hauling and spreading equipment shall be operated over the full width of each layer.

(iv) The top of the rock surface shall be chinked with rock spalls and fines to form an earth-tight surface.

(4) Compaction

(a) The material shall be spread in layers. Each layer shall be thoroughly compacted by approved compaction equipment for the full width of the layer and to the required degree of compaction before successive layers are placed.

(b) The embankment shall be compacted to not less than 95 percent of the maximum density except that the top 6 inches below the subgrade shall be compacted to a dry density of 100 percent of the maximum density.

(c) The Engineer shall specify the type of compaction units to be used during construction.

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(d) During compaction operations water shall be added to the embankment material as directed by the Engineer. Water shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank, or other suitable indicating gauge approved by the Engineer. If at any time during the compaction process it is found that the embankment material is too wet, it shall be aerated or work shall cease temporarily while the material is brought to approximately the optimum moisture content.

(e) On each embankment at least one approved compactor shall be in continuous operation while material is being placed. Additional units shall be used only as directed by the Engineer.

(5) Embankment Adjacent to Structures

(a) Embankment on Bridge Approaches. The permission of the Engineer must be obtained before any fill is placed against concrete abutments or wing walls. Approach fills within the lines shown on the plan or as directed shall be constructed of approved granular material placed in 6" layers and compacted to 100% maximum density. Where approach fill is to be placed on ground sloping toward an abutment or wing wall, the Engineer may require the slope to be benched to prevent wedging action against the structure. The puddling method for placing any part of an approach fill will not be permitted. In the case of rigid frame structures the embankment shall be placed in approximately equal lifts on both sides of the structure and the compacted height shall be maintained at approximately the same elevation.

(b) Embankments at Culverts. Embankment around culverts shall consist of approved granular material placed to the limits shown on Standard Plan "Installation of Culverts". Material shall be placed in 6" layers alternately on each side of the culvert so as not to displace it during installation and shall be compacted to 100% maximum density. Special care shall be taken to obtain the required compaction under the haunches of pipe and pipe arch culverts.

(c) Fill - Retaining Walls. The fill behind the wall shall be of approved granular material as indicated on the plans, placed in layers not exceeding 6 inches in thickness and tamped or consolidated as directed by the Engineer. In the case of cell type retaining walls the fill behind the wall shall be tamped and kept near but not above the level of the compacted material within the cells. Where fill is to be placed on a sloping surface, the surface must be benched to reduce the load on the retaining structure. The puddling method of filling will not be permitted.

(6) Compaction Equipment

All compactors specified herein for compaction of materials shall comply with the following minimum requirements:

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(a) Sheepsfoot compactors shall consist of two drum units, each drum having a minimum length of 4 feet. The length of the tamping feet shall not be less than 7 inches. Under working conditions, the compactor shall be of such weight that the minimum load upon each tamper foot will not be less than 250 pounds per square inch of cross sectional area. The sheepsfoot compactor shall be of the self-cleaning type and so constructed that each drum will oscillate independently of the other.

(b) Pneumatic-tired rollers shall have a width of not less than 5 feet. They shall be equipped with pneumatic tires of equal size and diameter. The space between the side walls of adjacent tires shall be not greater than 5 inches, and the rear tires shall be staggered in relation to the front tires. The roller shall be equipped with mechanical means of distributing the contact pressure uniformly among all the tires and the tires shall be uniformly inflated so that the air pressure in the several tires shall not vary more than 5 pounds per square inch. Pneumatic-tired rollers shall be so constructed that the total weight of the roller shall be not less than 9 tons and that the roller shall develop a minimum of 300 pounds pressure per inch width of tire. During rolling, the operating weight of the roller shall be varied to fit the soil conditions.

(c) Three wheel power rollers shall not weigh less than 10 tons and shall provide a compression on the rear wheels of not less than 330 pounds per linear inch of tire width.

(d) Tandem power rollers shall not weigh less than 8 tons and shall provide a compression on the drive roller of not less than 250 pounds per linear inch of tire width.

(e) Grid Rollers shall not weigh less than 15 tons, and shall be of such weight that the load on each square inch of surface in contact with the road at any time shall not be less than 250 lbs.

(f) Vibratory Compactors shall be of a design approved by the Engineer with weight variable, depending on the application but not to exceed 16 tons.

(g) Prime movers shall be capable of pulling compaction units at a minimum of 3 miles per hour, and each prime mover shall have an hour meter of approved design installed.

(h) Where directed by the Engineer additional compaction units shall be hauled in tandem.

(i) Self-powered hand-operated tamping units for compaction of backfill and/or embankments contiguous to structures shall be of the vibratory or ramming type of approved design and weighing not less than 100 pounds.

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(j) Should the Contractor desire to use special compaction equipment in preference to the types specified, he may do so if approval is given in writing by the Engineer. However, the Contractor shall be obliged to prove in the field at his own expense, the effectiveness of such special equipment before the Engineer grants authority for the use of a lesser number of such units in respect of the minimum number of standard units required in the Specifications.

(7) Trimming

The top surface and side slopes of the embankments shall be left in a neat and workmanlike condition and true to the lines and grades shown in the plans and profiles or as staked by the Engineer. Where in the opinion of the Engineer satisfactory trimming cannot be obtained by mechanical means hand trimming may be called for.

(8) Maintenance of Roadbed

The finished roadbed shall be maintained continuously in a condition suitable for traffic until the next course, if any, of material is placed or until the final completion of the work as the case may be.

2.3.4 MEASUREMENT

(1) Embankment shall not be measured for direct payment.

(2) Compaction

(a) The quantity of compaction for which payment will be made shall be the actual number of hours that the equipment worked, as recorded on the installed hour meter of the hauling unit.

(b) In the case of hand-operated tamping units the quantity for which payment will be made will be the actual number of hours worked.

(3) Watering

The quantity of water for which payment will be made shall be measured in units of 1,000 gallons for quantities authorized by the Engineer.

2.3.5 PAYMENT

(1) Payment for construction of embankment, as above described, including granular fill at abutment, and elsewhere, is not payable directly but shall be considered as a subsidiary obligation of the contractor, covered under the contract unit prices for performance of work under the various scheduled excavation items except as provided below.

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(2) Payment for compaction will be made for the number of hours, as above determined, at the contract unit prices for the individual units of compaction equipment, which prices shall be full compensation for performing the work specified, and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided. No payment will be allowed for interruptions or down-time of any kind.

(3) Payment for watering shall be made at the contract unit price for the number of 1000 gallon units authorized by the Engineer, which price shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) When more than one compaction unit is driven by a single prime mover payment will be made for the additional unit(s) at the contract unit price for the compaction unit only i.e. "Compaction (Tamping Roller only)". No additional compensation will be allowed for an increase in the size of the machinery supplying the motive power.

(5) When granular material is used as directed by the Engineer, for the work detailed in Article 2.3.3 paragraph 5, payment will be made at the contract unit price for one of the various scheduled item.

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SECTION 4 - CHANNEL EXCAVATION

SEPTEMBER 1959

2.4.1 DESCRIPTION

This item shall include the excavation required for deepening, widening and relocating water channels, and the construction of ditches other than roadway side ditches, to the lines and grades, and at the locations shown on the plans or designated and staked by the Engineer.

2.4.2 MATERIALS

No materials are involved.

2.4.3 CONSTRUCTION

Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.4.4 MEASUREMENT

The quantity of Channel Excavation for which payment will be made will be the volume, measured in its original position, computed by the method of average end areas, removed within the neat lines of Channel Excavation shown on the plans or as staked by the Engineer. The material shall be classified as Channel Excavation Common, or Channel Excavation Rock, in accordance with Item (2), Article 2.2.1.

2.4.5 PAYMENT

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, Common, and Channel Excavation, Rock, which prices shall include full compensation for all labour, equipment, tools, explosives, excavating and hauling materials (except overhaul), placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 4 - CHANNEL EXCAVATION

SEPTEMBER 1959

2.4.1 DESCRIPTION

This item shall include the excavation required for deepening, widening and relocating water channels, and the construction of ditches other than roadway side ditches, to the lines and grades, and at the locations shown on the plans or designated and staked by the Engineer.

2.4.2 MATERIALS

No materials are involved.

2.4.3 CONSTRUCTION

Excavated material suitable for embankment shall be used when needed for that purpose. Excess material shall be disposed of by the Contractor as directed by the Engineer. When the Contractor is permitted to dispose of material near the banks of the channel or ditch, provision shall be made to ensure proper flow of water from adjacent land to the waterway. The excavation shall be neatly finished and the site shall be restored to a condition satisfactory to the Engineer.

2.4.4 MEASUREMENT

The quantity of Channel Excavation for which payment will be made will be the volume, measured in its original position, computed by the method of average end areas, removed within the neat lines of Channel Excavation shown on the plans or as staked by the Engineer. The material shall be classified as Channel Excavation Common, or Channel Excavation Rock, in accordance with Item (2), Article 2.2.1.

2.4.5 PAYMENT

Payment for Channel Excavation will be made for the quantities as above determined, measured in cubic yards, at the contract unit prices for Channel Excavation, Common, and Channel Excavation, Rock, which prices shall include full compensation for all labour, equipment, tools, explosives, excavating and hauling materials (except overhaul), placing excavated materials in embankment, shaping and dressing slopes and other surfaces, disposal of excess material, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 6 - OVERHAUL

SEPTEMBER 1959

2.6.1 DESCRIPTION

This item shall consist of authorized hauling in excess of the free haul distance of 1000 feet of any material paid for under one of the various classes of excavation, and disposed of as required under the various items prescribed for the disposal of such material.

2.6.2 MATERIALS

Not applicable.

2.6.3 CONSTRUCTION

Not applicable.

2.6.4 MEASUREMENT

(1) The quantity of Overhaul, measured in cubic-yard-miles, to be paid for shall be the product of the volume of the overhauled material, measured in its original position, in cubic yards, by the overhaul distance in miles and fractions thereof.

(2) The overhaul distance shall be the distance between the centres of volume of the overhauled material in its original position and after placing, less the free haul distance of 1000 feet. The haul distance shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul the material over some other route, and such route is longer, the computations for payment shall be based on the haul distance measured along the route designated by the Engineer.

(3) In calculating Overhaul for Roadway Excavation, the Mass Diagram method will be used by the Engineer. In this method the limits of free haul will be determined by fixing on the profile two points 1000 feet apart, one on each side of the neutral grade point, selected in such a way that the included quantities of excavation will balance the included quantities of embankment plus the proper allowance for shrinkage or swell. All material within the balance points beyond this limit of 1000 feet will be calculated and payment will be made on the basis of the following method of computation:

(a) All material within the limits of the 1000 feet will be eliminated from further consideration in overhaul compensation.

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(b) The overhaul distance will be the distance between the centre of gravity of the remaining mass of excavation and the centre of gravity of the resulting embankments, measured in miles or fractions thereof, less 1000 feet free haul.

(c) The amount of overhaul to be paid for shall be obtained by multiplying the overhaul distance in miles by the quantity of the remaining mass of excavation in cubic yards and shall be expressed in units of cubic-yard-miles.

2.6.5 PAYMENT

Payment for Overhaul will be made for the quantities as above determined, measured in cubic-yard-miles, at the contract unit price for Overhaul, which price and payment shall be full compensation for all labour, equipment and tools necessary to complete the hauling operations satisfactorily, and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 3

BASE COURSE

Section 1 - Base Course (Class 1) and Sub-base Course (Class 2) and (Class 3)

" 2 - Bituminous Stabilized Base Course (Plant Mixed)

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DIVISION 3

SECTION 1 - BASE COURSE (CLASS 1) AND SUB-BASE COURSES (CLASS 2) AND (CLASS 3)

3.1.1 DESCRIPTION

This item shall consist of crushing and screening gravel or stone and placing in stockpile(s) or on the road in accordance with these specifications.

3.1.2 MATERIALS

(1) Base Course Class 1

(a) This material shall consist of crushed stone or crushed gravel meeting the requirements of Tables 1 and 2. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 1

Physical Requirements for Coarse Aggregate (Material Retained on No.4 Sieve)

Test	Stone	Gravel
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	35	35
(b) Crushed fragments, min. % by wt.	-	50
(c) Loss by washing, max. % by wt.	-	2.0
(d) Soundness Test, Magnesium Sulphate max. % loss by wt. 5 cycles, A.A.S.H.O. Method T-104-46	15	15

Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

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TABLE 2

Physical Requirements - Deleterious Materials

Description	Stone	Gravel
1. Shales	4%	4%
2. Siltstones	1	1
3. Chert	2	2
4. Ochre	1	1
5. Clay ball	1	1
Max. allowable total % by weight of deleterious material	8	8

The percentages of deleterious materials as listed in Table 2 shall be determined by a petrographic analysis.

(b) Gradation

The aggregate shall conform within the limits specified in Table 3. The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes specified, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

TABLE 3

Base Course (Class 1)

Sieve No.	Percent Passing
3/4"	100%
1/2"	80 - 100
No. 4	45 - 65
No. 10	30 - 50
No. 40	12 - 26
No. 200	0 - 8

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(2) Sub-Base Course (Class 2)

This material shall consist of crushed stone or crushed gravel, meeting the gradation requirements of Table 4. It shall be composed of clean, hard, angular particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 4

Sub-Base Course (Class 2)

Sieve No.	Percent Passing
2"	100%
1"	70 - 100
½"	50 - 80
No. 4	30 - 60
No. 10	18 - 43
No. 40	7 - 23
No. 200	0 - 8

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction. At least 20% of the material retained on the No. 4 sieve shall have at least one fractured face.

(3) Sub-Base Course (Class 3)

This material shall consist of gravel, talus rock, desintegrated granite, sand, or other granular materials meeting the gradation requirements of Table 5. It shall be composed of clean, hard particles free from clay lumps, cementation and organic material. It shall be washed if so directed.

TABLE 5

Sub-Base Course (Class 3)

Sieve No.	Percent Passing
4"	100%
1"	60 - 100%
No. 4	25 - 100%
No. 10	12 - 85%
No. 40	5 - 40%
No. 200	0 - 8%

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3.1.3

The grading of the material shall not show marked fluctuations from opposite extremes of the limiting sizes given above, and the curve plotted from the sieve analysis shall flow in a manner free from acute changes in direction.

(4) General - Base Course (Class 1) and Sub-Base Courses (Classes 2 and 3)

(a) The portion of the material passing the No. 40 sieve shall have a plasticity index of not more than 6, or a liquid limit of not more than 25.

(b) Even though particle sizes are within the limits of the grading sizes herein provided, materials will be considered unsuitable, if particle shapes are thin or elongated or exhibit other characteristics precluding satisfactory compaction and a roadbed acceptable to the Engineer.

(c) The source of supply for the Base Course and Sub-Base Courses shall be in accordance with Section 1.4.2. "Source of Supply and Quality Requirements".

3.1.3 CONSTRUCTION

(1) Clearing and Grubbing

The clearing and grubbing of deposits from which these materials are obtained, stockpile sites and access roads thereto, shall be carried out as specified in Article 2.1.3 - "Clearing and Grubbing".

(2) Stripping

The pits from which these materials are obtained shall be stripped of all overburden, and this overburden will be disposed of in topsoil stockpiles, access road construction, or as directed by the Engineer.

(3) Access Roads

The Engineer will locate all necessary access roads and other facilities which may be required for hauling this material to and over the right-of-way. Any work and materials required for the construction of such access roads, will be specified by the Engineer.

(4) Blending Aggregates

It shall be permissible to blend or mix two or more materials to meet the gradation requirements. When two or more materials are blended, they shall be thoroughly mixed by mechanical means.

(5) Preparation of Surface Prior to Placing

Each course shall be placed on a surface which shall be clean, dry, free from frost, snow, and loose or adhering deleterious materials, properly shaped and compacted. Any damage to a finished surface shall be repaired by the Contractor at his own expense and to the satisfaction of the Engineer, before the next course is placed.

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(6) Spreading and Compacting Base Course (Class 1)

The granular material shall be laid so as to avoid segregation in layers of not more than three (3) inches in compacted thickness or as directed by the Engineer. Tail-gating will not be permitted. Immediately following spreading and smoothing of each layer, all the material shall be compacted to the full width shown on the plans by rolling with steel wheel rollers, rubber tired rollers or vibratory compactors, meeting the requirements of Item 2.3.3(6) of the "Specification for Embankment Construction". All compacting shall start at the edges and progress towards the centre, so that each succeeding pass will uniformly overlap the previous one. While compacting progresses, the entire surface of each layer shall be shaped and dressed with a motor grader, having a blade at least twelve (12) feet in length, to maintain a uniformly smooth surface conforming to the required lines and grades.

Any irregularities in the completed surface of each lift that exceed 3/8 inch from the template grade for that lift when tested with a 10 foot straight edge shall be remedied to the satisfaction of the Engineer by loosening the surface and removing or adding material as may be required, after which the entire area, including the surrounding surface, shall be rolled until it is compacted satisfactorily. Additional material when required shall be paid for at the contract unit price for base course material.

Each layer shall be compacted to at least 100% maximum density. During compaction, the base course shall be maintained at the optimum moisture content. Water, when required, shall be applied with an approved distributor which has a gauge glass easily visible from the road indicating the water level in the tank.

(7) Placing, Spreading and Compacting Sub-base (Class 2 and Class 3)

This material shall be placed, spread and compacted to depths indicated on the plans or as ordered by the Engineer. The placing, spreading and compacting shall be done in accordance with Articles 2.3.3(3) and 2.3.3(4) - "Embankment Construction".

(8) Stockpiling

The stockpile site(s) shall be cleaned of all deleterious material and shall be firm and level. The stockpile(s) shall be constructed in layers not exceeding three feet and be built to eliminate coning and segregation of aggregate sizes. During winter operations, stockpile(s) shall be kept free of ice and snow to the satisfaction of the Engineer.

3.1.4 MEASUREMENT

(1) The quantity of base course for which payment will be made, shall be the number of tons (2000 lbs) of base course or sub-base course material, placed and accepted in the completed work. The weight measurements shall be made by a weighmaster provided by the Department using scales provided by the contractor. These scales shall be of sufficient capacity to accommodate any truck used on the work and shall be inspected and tested

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for accuracy as often as may be required by the Engineer. The cost of inspecting and testing scales shall be borne by the Contractor and the test certificates shall be exhibited to the Engineer as often as required.

(2) The quantity of haul, measured in ton-miles, for which payment will be made, shall be the product of the quantity of base course or sub-base course material acceptably placed, and the haul distance. The haul distance shall be the distance, measured in miles or fractions thereof, from the plant producing the material to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(3) The quantity of water for which payment will be made, shall be the number of one thousand (1000) gallon units of water supplied and distributed on the work.

(4) The quantity for which payment will be made for the compaction of the base course or the sub-base course, shall be the actual number of hours as recorded on the installed hour meter on the hauling unit of the particular equipment for the time of operation approved by the Engineer.

(5) The quantity of clearing and/or grubbing of borrow areas, stockpile sites and access roads thereto for which payment will be made, shall be measured as specified in Article 2.1.4 "Clearing and Grubbing".

(6) The quantity of stripping of borrow areas, for which payment will be made, shall be the number of cubic yards of stripped material measured in its original position and computed by the average end area method.

(7) The quantity of work and materials required for the construction of access roads, will be measured as specified under the various scheduled items.

3.1.5 PAYMENT

(1) Payment for base course or sub-base course will be made for the quantities as above determined, measured in tons (2000 lbs) at the contract unit price for "Base Course" or "Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and for the trimming and restoration of the site of the work, and for all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Payment for hauling base course or sub-base course material will be made for the quantities as above determined, measured in ton-miles, at the contract unit price for "Hauling Base Course" or "Hauling Sub-Base Course", which price and payment shall constitute full compensation for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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(3) Payment for watering will be made for the quantities as above determined, measured in one thousand (1000) gallon units, at the contract unit price for "Watering", which price and payment shall be full compensation for furnishing, hauling and distributing, and for all labour, equipment, tools and all other work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(4) Payment for compaction will be made for the quantities above determined, measured in hours for a particular unit at the contract unit price or prices for "Compaction" which price or prices and payment shall constitute full compensation for performing the work specified and shall include the cost of furnishing motive power for the compaction units, all labour, repairs and all work subsidiary and incidental thereto for which payment is not elsewhere provided. No payment will be allowed for interruption or down time of any kind.

(5) Payment for clearing and/or grubbing borrow areas, stockpile sites and access roads thereto, will be made as specified in Article 2.1.5 "Clearing and Grubbing".

(6) Payment for stripping of borrow areas will be made for the quantities as above determined, measured in cubic yards, at the contract unit price for "Stripping of Borrow Areas", which price and payment shall be full compensation for all labour, equipment, tools, excavation and hauling, disposal in suitable locations, the trimming and restoration of disposal areas, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(7) Payment for work and materials required for the construction of access roads will be made as specified under the various scheduled items.

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 4

PAVEMENTS

Section 1 - Bituminous Concrete Pavements Type "A", "B" and "C"

" 2 - Seal Coat

" 3 - Bituminous Prime Coat

" 4 - Bituminous Tack Coat

" 5 - Equipment for Stabilized Base and Paving Operations

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SECTION 2 - BITUMINOUS SEAL COAT

FEBRUARY, 1960

4.2.1 DESCRIPTION

This items shall consit of one or more applications of bituminous material with or without cover aggregate on a previously bituminized roadbed in accordance with thes specifications.

4.2.2 MATERIALS

(1) General

Samples of all materials which are to be used under these specifications shall be submitted to the Department Testing Laboratory or specified agent for analysis.

(2) Bituminous Materials

(a) Bituminous materials shall be of the type and grade called for in the "Information to Bidders" and shall conform to the requirements of the Canadian Government Specifications Board specifications for the material.

(b) The Contractor shall obtain from the manufacturer and furnish in tabular or graphical form, the temperature - viscosity relationship of the bituminous material to be used.

(3) Cover Aggregate

Cover aggregate shall be crushed gravel, crushed stone or sand consisting of clean, tough durable fragments free from dirt or other objectionable matter meeting the requirements of the following tables:

Table 1 - Gradation

Sieve No. *	Crushed Stone or Gravel		Sand
	Percent Passing		Percent Passing
	Type 1	Type 2	Type 3
½	100	100	
3/8			100
4	0-10	0-50	95-100
10	0-5		
40			0-25
200	0-2	0-10	0-5

* U. S. Sieve Size

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Table 2 - Physical Requirements for Coarst Aggregate (Material Retained on No. 4 Sieve)

Test	Type 1	Type 2
(a) Los Angeles Rattler Test, max. % loss by weight at 500 revs. A.A.S.H.O. Method T-96-49	25	45
(b) Crushed Fragments, Min. % by weight	90	50
(c) Thin and elongated particles, max. % by weight	5	8
(d) Loss by washing, max. % by weight A.A.S.H.O. Method T-11-49	1	2
(e) Soundness Test, Magnesium Sulphate max. % loss by weight 5 cycles. A.A.S.H.O. Method T-104.46	15	20
(f) Absorption test, max. % by weight, A.A.S.H.O. Method T-85-45	1.0	1.5

1. Thin and elongated particles are fragments whose average thickness or depth is less than one-fifth the length or greatest dimension.

2. Fragments having at least one fractured face shall be considered as crushed material, the percentage of which will be determined by dividing the weight of the fractured fragments by the weight of the sample from which they were selected.

Table 3 - Physical Requirements - Deleterious Materials

Description	Type 1	Type 2
(a) Limestones		
Shaley	Max. 2%	Max. 2%
Clayey	2	2
Sandy	1	3
(b) Shales		
Thin bedded	1	2
Thick bedded	1	2

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	Description	Type 1	Type 2
(c)	Siltstones	1	1
(d)	Sandstones		
	Friable	2	2
	Loosely bonded	2	2
(e)	Chert	2	5
(f)	Clayballs	-	1
(g)	Marble	*	*
(h)	Slate	1	2
(i)	Ochre	1	1
(j)	Quartzite	*	*
	max. allowable total % by weight of deleterious and objectionable material	5	12

Note: The percentage of deleterious and objectionable materials, as listed on the above table, which are contained in any aggregate shall be determined by a petrographic analysis.

* The percentages of marble and quartzite which are contained in any aggregate shall be kept within limits specified by the Engineer.

(4) Stripping Test - (For special cases involving hydrophylic aggregates)

The fine or coarse aggregate, or a composite mixture, shall show no detrimental amount of stripping when tested in the following manner. The bituminous material and aggregate shall be mixed by hand until the best possible coating is obtained and then immediately placed in any oven at 140°F for 24 hours after which it shall be cooled to room temperature. A portion of the sample, not over one-half the capacity of the jar, shall be placed in a glass jar and be completely covered with distilled water. The jar shall then be fitted with a tight screw cap and allowed to stand for a period of 24 hours. The jar shall then be vigorously shaken for a period of 15 minutes, and the sample of the mixture shall then be examined for stripping. If stripping occurs, the aggregate shall be rejected or an approved method of treating shall be specified to change the aggregate from a hydrophylic to hydrophobic state as directed by the Engineer.

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4.2.3 CONSTRUCTION

(1) Weather Limitations

Seal coat shall be applied only when the prepared surface is dry, when the air temperature in the shade is not less than 60°F and rising, and when the weather is not foggy or rainy.

(2) Preparation of Surface

Immediately before the application of the bituminous material, all dirt and other objectionable material shall be removed from the surface by means of an approved power broom and/or hand brooms.

(3) Mixing of Additives with Bitumen

Where called for in the "Information to Bidders" additives shall be mixed with the Bitumen in the amounts specified. Adding and mixing may be done either by the manufacturer, in the tank car or in the distributor. Where mixing is in the tank car the required amount of additives, corresponding to the whole bitumen content of the tank car shall be thoroughly mixed, by approved mechanical means. Agitation, by either steam of air will not be permitted. Where mixing is in the distributor the required amount of additives, corresponding to the whole bitumen content of the distributor, shall be circulated by the use of the distributor's pumps, at maximum capacity, for at least 30 minutes.

(4) Application of Bituminous Material

Bituminous material shall be applied on the prepared surface by means of a distributor at the rate or rates directed by the Engineer. For cut back asphalts the application temperature shall be such that the Saybolt Furol Viscosity will be between 25 and 50 seconds. For emulsified asphalts the temperature shall be between 70°F and 150°F depending on the material being used. Where steep grades are encountered the temperature shall be adjusted to prevent flowing off the surface. Building paper shall be spread on the surface for a sufficient distance back from the ends of each application so that flow through nozzles may be started and stopped on the paper and so that all nozzles will operate properly over the length being treated. Building paper so used shall be immediately removed and disposed of in a manner satisfactory to the Engineer.

(5) Application of Cover Aggregate

(a) The cover aggregate shall be spread uniformly over the surface, by an approved aggregate spreader, immediately after the bitumen is applied. The rate of application will be determined by the Engineer. Before the bituminous material is applied, sufficient cover aggregate to cover the distributor load of bitumen shall be in trucks or spreaders on the roadway at the site of the work. Trucks spreading aggregate shall be operated backward so that bituminous material will be covered before truck wheels pass over

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it. Immediately after the spreading of cover aggregate the surface shall be rolled with a steel wheeled roller and rolling will continue until the aggregate is uniformly and thoroughly bonded over the full width. One roller will be required for each 2000 square yards of surface treated per hour. Where more than one roller is required at least one of the units shall be a self-propelled pneumatic tired roller.

(b) The correction of local irregularities and supplemental spreading and smoothing shall, where required, be done with a broom drag and by hand methods where necessary.

(6) Opening to Traffic

The Contractor shall supply flagmen and/or erect barricades to exclude traffic from sections of the road that have been newly treated. Sections shall not be opened to traffic until the bituminous material has cured sufficiently to prevent tracking.

(7) Equipment

(a) Distributor

(i) Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. Spray bars shall have a minimum length of 14 feet and shall be of the full circulating type. The header bar shall be adjustable to permit varying heights above the surface to be treated. The nozzles attached to the bar shall be either of the conical or flat slotted type, except that in spreading asphaltic emulsion, special emulsion nozzles shall be used. The distance centre to centre of the nozzles shall not exceed 6 inches. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The spray bars shall be controlled by a bootman riding at the rear of the distributor where the operation of all sprays is in full view. Spreading by means of cab-controlled valves will not be permitted. The valves which control the flow from nozzles shall be of a positive acting design so as to provide a uniform unbroken spread of asphalt material on the surface.

(ii) The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of asphaltic material being applied and with a tachometer of the auxiliary wheel type reading speed in feet per minute. The spreading equipment shall be so designed and articulated that uniform application of bituminous material, in controlled amounts, may be made ranging from 0.05 to 1 gallon per square yard of surface with a range of pressure from 25 to 75 pounds per square inch. If a spray bar extension is used to cover a greater width, it shall be of the full circulation type. The distributor shall

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be equipped with a hose and nozzle attachment to be used for spotting skipped areas inaccessible to the distributor. The distributor shall also be equipped with pressure gauges and an accurate thermometer for determination of temperature of the bituminous material. Distributors and booster tanks shall be so maintained at all times as to prevent dripping of free asphaltic material from any part of the equipment.

(b) Aggregate Spreader

The aggregate spreading equipment shall be capable of spreading the cover material uniformly and vertically over the whole width of the freshly applied bitumen at the directed rate of application.

(c) Rollers

Steel wheeled rollers shall be self-powered weighing not less than 5 tons nor more than 8 tons. Pneumatic tired rollers shall be self-propelled and meet the requirements of Article 2.3.5 (b) "Embankment Construction".

(d) Brooms

(i) The power broom for cleaning the surface to be treated shall be of an approved type capable of satisfactorily removing the loose dirt from the surface.

(ii) Drag and hand brooms shall be of approved types.

4.2.4 MEASUREMENT

(1) The quantity of Bituminous Material for which payment will be made shall be the number of gallons of bituminous material used in the accepted work. Gallonage shall be determined by tank measurement of the material corrected to a temperature of 60°F in accordance with A.S.T.M. Designation D206-36.

(2) The quantity of Seal Coat Cover Aggregate for which payment shall be made will be the number of tons of aggregate accepted in the work.

4.2.5 PAYMENT

(1) Payment for Bituminous Material shall be made for the quantities as above determined at the contract unit price per gallon which price and payment will constitute full compensation for supply and delivery (including freight, demurrage, delivery and storage) of the bituminous material and additives; preparation of surface; mixing additives; heating and applying the bituminous material; for facilitating and controlling traffic and for all labour, equipment tools, and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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(2) Payment for Seal Coat Cover Aggregate will be made for the quantities as above determined, measured in tons at the contract unit price for Seal Coat Cover Aggregate, which price and payment shall constitute full compensation for furnishing, loading, hauling, spreading, rolling and brooming and for all labour, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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SECTION 3 - BITUMINOUS PRIME COAT

FEBRUARY, 1960

4.3.1 DESCRIPTION

This item shall consist of preparing the surface, furnishing and applying bituminous material, and when required, the supply and application of a sand cover to the primed surface, all in accordance with these specifications.

4.3.2 MATERIALS

(1) General

Samples of all materials which are to be used under these specifications shall be submitted to the Department Laboratory or specified agent for analysis.

(2) Bituminous Materials

Bituminous materials shall be of the type and grade called for in the "Information to Bidders" and shall conform to the requirements of the Canadian Government Specifications Board specifications for the material. The Contractor shall obtain from the manufacturer and furnish in tabular or graphical form, the temperature - viscosity relationship of the bituminous material to be used.

(3) Sand Cover

Sand cover, if used, shall consist of clean granular material approved by the Engineer, all of which shall pass a number 4 sieve.

4.3.3 CONSTRUCTION

(1) Weather Limitations

Prime Coat shall be applied only when the prepared surface is dry or but slightly damp, when the air temperature in the shade is not less than 50°F, and rising, and when the weather is not foggy or rainy.

(2) Preparation of Surface

(a) Immediately before the application of the bituminous material all loose dirt and other objectionable material shall be removed from the surface by means os an approved power broom and/or hand brooms.

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(b) When directed the surface shall be lightly scarified and shaped with a blade grader prior to the application of bituminous material. In general, the depth loosened shall not exceed 1 inch. In this case sweeping will not be required. If a dusty surface results from the above operation, a light application of water, on the direction of the Engineer, may be applied shortly before the application of bituminous material to improve coverage and penetration.

(3) Application of Bituminous Material

Bituminous material shall be applied on the prepared surface by means of a distributor at the rate or rates directed by the Engineer, and at a temperature such that the Saybolt Furol Viscosity will be between 25 and 50 seconds. Any prescribed application may be divided into two applications to prevent flowing off the surface, and additional bituminous material shall be applied where, in the opinion of the Engineer, conditions indicate it to be necessary.

(4) Application of Sand Cover

Where directed, a lane of prime coat shall be applied, allowed to penetrate not less than 4 hours or until absorption ceases, then covered with blotter material at the rate directed by the Engineer.

(5) Rolling

Where directed by the Engineer the primed surface shall be rolled with self propelled pneumatic tired or steel wheeled rollers of an approved design.

(6) Equipment

(a) Distributor

Distributor trucks shall be of the pressure type with insulated tanks. The use of gravity distributors will not be permitted. Spray bars shall have a minimum length of 14 feet and shall be of the full circulating type. The header bar shall be adjustable to permit varying heights above the surface to be treated. The nozzles attached to the bar shall be either of the conical or flat slotted type, except that in spreading asphaltic emulsion, special emulsion nozzles shall be used. The distance centre to centre of the nozzles shall not exceed 6 inches. The valves shall be operated by levers so that one or all valves may be quickly opened or closed in one operation. The spray bars shall be controlled by a bootman riding at the rear of the distributor where the operation of all sprays is in full view. Spreading by means of cab-controlled valves will not be permitted. The valves which control the flow from nozzles shall be of a positive acting design so as to provide a uniform unbroken spread of asphalt material on the surface.

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The distributor shall be equipped with devices and charts to provide for accurate and rapid determination and control of the amount of asphaltic material being applied and with a tachometer of the auxiliary wheel type reading speed in feet per minute. The spreading equipment shall be so designed and articulated that uniform application of bituminous material, in controlled amounts, may be made ranging from 0.05 to 1 gallon per square yard of surface with a range of pressure from 25 to 75 pounds per square inch. If a spray bar extension is used to cover a greater width, it shall be of the full circulating type. The distributor shall be equipped with a hose and nozzle attachment to be used for spotting skipped areas inaccessible to the distributor. The distributor shall also be equipped with pressure gauges and an accurate thermometer for determination of temperature of the bituminous material. Distributors and booster tanks shall be so maintained at all times as to prevent dripping of free asphaltic material from any part of the equipment.

(b) Aggregate Spreader

Where required, sand shall be distributed uniformly over the surface by means of an approved mechanical spreader. Trucks spreading material shall be operated backward so that the bituminous material will be covered before truck wheels pass over it.

(c) Rollers

Rollers shall be self propelled pneumatic and steel wheeled types meeting the requirements of Article 2.3.3 (6) (b), (c) and (d).

(d) Brooms

The power brooms for cleaning the surface to be treated shall be of an approved type capable of satisfactorily removing the loose dirt from the surface.

(e) Maintenance and Opening to Traffic

(i) Traffic shall not be permitted on the primed surface until the bituminous material has penetrated and dried and, in the opinion of the Engineer, will not pick up under traffic.

(ii) The Contractor shall supply flagmen and erect barricades to ensure traffic safety and to protect the newly laid prime from damage.

(iii) Areas containing an excess or deficiency of priming material shall be corrected by the addition of sand or bitumen as directed by the Engineer.

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4.3.4 MEASUREMENT

(1) The quantity of bituminous prime coat for which payment will be made shall be the number of gallons of bituminous material used in the accepted work. Gallonage shall be determined by tank measurement of the material, corrected to a temperature of 60°F.

(2) The quantity of sand cover for which payment will be made shall be the number of cubic yards or tons of sand acceptably placed on the road. Where measurement is by the cubic yard the quantity shall be derived from a measurement of the vehicle box by the Engineer. Measurement will not be made for material heaped above the top of the box and deductions will be made for loads which do not contain full capacity. Where measurement is by the ton the quantity shall be the number of tons of material accepted in the work.

(3) The quantity of haul measured in cubic yard-miles or ton-miles, for which payment will be made shall be the product of the quantity of sand acceptably placed and the haul distance. The haul distance shall be the distance measured in miles or fractions thereof, from the borrow pit where the sand was obtained to the centre of volume of that material after placing. The haul distance will be measured along the shortest route determined by the Engineer as being feasible and satisfactory.

(4) The quantity of water for which payment will be made shall be measured in accordance with Article 2.3.4 (3).

(5) The quantity of compaction for which payment will be made shall be measured in accordance with Article 2.3.4 (2) (a).

4.3.5 PAYMENT

(1) Payment for bituminous prime coat will be made for the quantities as above determined, measured in gallons at the contract unit price for "Bituminous Prime Coat", which price and payment shall constitute full compensation for supply and delivery (including freight, demurrage, hauling and storage) of the prime; preparation of the surface; applying the material; for facilitating and controlling traffic, and for all labour, equipment, tools, and incidentals necessary to complete the work.

(2) Payment for sand cover will be made for the quantities as above determined, measured in cubic yards or tons, at the contract unit price for "Sand Cover", which price and payment shall constitute full compensation for furnishing, loading and unloading the sand, and for all labour, equipment, tools, and incidentals necessary to complete the work.

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(3) Payment for hauling sand cover will be made for the quantities as above determined, measured in cubic yard-miles or ton-miles, at the contract unit price for "Hauling Sand Cover", which price and payment shall constitute full compensation for all labour, equipment, tools and incidentals necessary to complete the work.

(4) Payment for watering will be made in accordance with Article 2.3.5(3).

(5) Payment for compaction will be made in accordance with Article 2.3.5 (2) and (4).

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CANADA

DEPARTMENT OF PUBLIC WORKS

DEVELOPMENT ENGINEERING BRANCH

STANDARD SPECIFICATIONS

FOR

HIGHWAYS AND BRIDGES

DIVISION 6

INCIDENTAL CONSTRUCTION

Section 1 - (A) Random Rip-Rap
(B) Armour Rip-Rap

" 2 - (A) Hand-Placed Rip-Rap
(B) Grouted Hand-Plant Rip-Rap

" 3 - Culverts

" 4 - Underdrains

" 5 - Guide Fence and Guide Posts

" 6 -

" 7 - Metal Type Retaining Wall

" 8 - Dust Control

" 9 - Conditioning of Roadbed

" 10 - Rental Vehicles

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SECTION 1 (A) RANDOM RIP-RAP
(B) ARMOUR RIP-RAP

FEBRUARY, 1960

6.1.1 DESCRIPTION

This item shall consist of stone rip-rap for bank protection furnished and constructed in accordance with these specifications at the locations indicated and in conformity with lines, grades and dimensions shown on the plans or required by the Engineer.

6.1.2 MATERIALS

The Contractor shall supply all materials. The stones for the rip-rap shall be hard, angular and of such quality that they will not readily disintegrate on exposure to water or weather. The source of the material must be approved by the Engineer.

(a) RANDOM RIP-RAP

In random rip-rap the stones shall weigh between 20 and 400 pounds. Not less than 25% of the individual stones shall weigh over 200 pounds.

(b) ARMOUR RIP-RAP

In armour rip-rap 60% of the individual stones shall weigh between 1200 and 2000 pounds each and an additional 20% shall weigh between 400 and 1200 pounds. The remaining 20% shall not weigh less than 200 pounds.

6.1.3 CONSTRUCTION

When shown on the plans and as directed by the Engineer, the Contractor shall excavate an adequate foundation bed upon which the bottom of the rip-rap shall rest. The stones shall be handled or dumped into place so as to form the required cross-sections. Stone above the low water line shall form a uniform surface free from humps or depressions with no excessively large individual stones projecting from the general surface. Armour rip-rap stone excessively large and tending to extend beyond the average general surface shall be embedded into the surface or broken down or discarded.

6.1.4 MEASUREMENT

The quantity for which payment will be made shall be the quantity measured in cubic yards in place and computed by the average end area method for materials satisfactorily incorporated into the work.

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6.1.5 PAYMENT

Payment for rip-rap will be made for the quantities as above determined, measured in cubic yards at the contract unit prices per cubic yard for "Random Rip-Rap" and "Armour Rip-Rap", which prices and payment shall constitute full compensation for excavating, blasting, selecting, transporting and placing all stones, excavating and preparing the foundation bed and for all labour, equipment, tools and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

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SECTION 2 (A) HAND-PLACED RIP-RAP
(B) GROUTED HAND-PLACED RIP-RAP

FEBRUARY, 1960

6.2.1 DESCRIPTION

This item shall consist of constructing hand-placed rip-rap walls, gutters or other protective coverings of approved stone, with or without mortar as required, in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans and directed by the Engineer.

6.2.2 MATERIAL

(1) General

The Contractor shall supply all materials.

(2) Rock

(a) Stone for rip-rap shall be of approved quality sound, hard, dense, resistant to the action of air and water and free from seams, cracks or other structural defects.

(b) For wall construction no stone shall be less than ½ cubic foot in volume and 75 percent of the stones shall be at least 1 cubic foot in volume.

(c) For gutter construction stones shall not be less than 4 inches and not more than 6 inches in thickness with approximately flat surfaces with widths of not less than 2 inches and lengths of not less than 6 inches.

(d) Spalls shall be supplied to fill open joints.

(3) Sand

Sand for mortar shall conform to the C.S.A. Specification for Aggregate for Masonry Mortar A82.56-1950.

(4) Cement

Cement for mortar shall be Portland Cement conforming to the requirements of the C.S.A. Specification A5-1951.

6.2.3 CONSTRUCTION

(1) Excavation

(a) HAND-PLACED RIP-RAP

Where shown on the plans and as directed by the Engineer the

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Contractor shall excavate so as to provide for an adequate foundation upon which the bottom of the rip-rap shall rest and he shall fine grade to a uniform and even surface the whole area to be rip-rapped. Depressions shall be filled and thoroughly compacted.

(b) GROUTED HAND-PLACED RIP-RAP

Excavation shall be performed as for (a) above.

(2) Placing

(a) HAND-PLACED RIP-RAP

Unless laid to form a flat apron, the rip-rap shall commence in a trench below the toe of the slope. Stones shall be placed at the locations and to the required dimensions and cross-section shown on the plans and as directed by the Engineer. Stone shall be laid with close broken joints and shall be firmly bedded into the slope and against adjoining stones. The larger stones shall be placed in the lower courses and all shall be thoroughly compacted as construction progresses. Spalls shall be used to fill voids.

(b) GROUTED HAND-PLACED RIP-RAP

The placing of the stones shall be as required under (a) above. The space between the stone shall be filled with cement mortar composed of one part Portland Cement to three parts fine aggregate, and shall be of such consistency that it can be placed with a mason's trowel. Before applying mortar the surfaces of the stones shall be amply wetted. Mortar shall be placed from the bottom to top, and worked with suitable tools to completely fill all voids except that the outer faces of the stones shall be left exposed. Grouted hand-laid rip-rap shall be cured in accordance with the curing requirements of the C.S.A. Standard Specifications for Concrete and Reinforced Concrete A23-1942 and amendments thereto.

6.2.4 MEASUREMENT

The quantity of Hand-placed Rip-rap and Grouted Hand-placed Rip-rap for which payment will be made shall be the number of cubic yards measured in place and accepted in the completed work.

6.2.5 PAYMENT

Payment for Hand-placed Rip-rap and for Grouted Hand-placed Rip-rap will be made for the quantities as above determined, at the contract prices per cubic yard for "Hand-placed Rip-rap" and "Grouted Hand-placed Rip-rap" which prices and payment shall constitute full compensation for excavating the bed, for trimming and consolidating the foundation as directed, for excavating, selecting and transporting all stones, for placing stones by hand, for backfilling and grouting when required, and for all labour, materials, equipment, tools and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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DIVISION 6

SECTION 3 - CULVERTS FEBRUARY, 1960

6.3.1 DESCRIPTION

This item consists of the supply and/or installation of corrugated metal, structural plate, and reinforced concrete pipe or pipe arch culverts in accordance with the specifications and to the lines and grades shown on the plans or as directed by the Engineer.

6.3.2 MATERIALS

(1)

(a) All corrugated metal pipe or pipe arch culverts shall meet the requirements of the A.A.S.H.O. Specification M - 36 - 53, or subsequent revisions thereof.

(b) All structural plate pipe or pipe-arch culverts, shall meet the requirements of the A.A.S.H.O. Standard Specification for Highway Bridges, 1957 - Division 2, Section 23, or subsequent revision thereof.

(c) All reinforced concrete pipe or pipe-arch culverts shall meet the requirements of the A.A.S.H.O. Specification M 41 - 55, or subsequent revision thereof.

(d) Where specified, corrugated metal and structural plate pipe and pipe arch culverts shall be fully coated inside and outside with asphalt cement of approved quality not less than 0.05" thick at the crest of the corrugations. The coating shall adhere firmly to the galvanized metal and shall be moisture and erosion resistant.

(e) Where specified, corrugated metal and structural plate pipe and pipe arch culverts shall be asbestos fused by pressing asbestos fibres into the molten metallic zinc during the manufacturing process.

(f) Where specified, corrugated metal pipe and pipe arch culverts shall have their inverts paved with an asphaltic mixture having a minimum thickness over the crest of the corrugation of 1/8 of an inch. The paving shall adhere firmly to the adjacent layers and shall be moisture and erosion resistant.

(g) Where specified, corrugated metal and structural plate pipe and pipe arches shall have their inverts lined with metal or in the case of structural plate heaver inverts may be required. In these instances, detailed requirements will be set out in the Information to Bidders.

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(h) All culvert material, together with all necessary fittings and appurtenances shall be supplied by the Contractor in the gauges and dimensions specified.

(2) The materials used for the bed and fill around culverts shall be selected by the Engineer from one of the various scheduled contract items.

6.3.3 CONSTRUCTION

(1) Excavation

(a) Excavation shall be carried out in accordance with the appropriate Standard Plan and to the line and grade staked by the Engineer. During construction the Contractor may be required to provide for the temporary flow of water outside of the limits of the culvert.

(b) The excavated surface for culverts shall provide a firm foundation of uniform density throughout its entire length. Where a firm foundation is not encountered at the grade established, unless other special construction methods are called for, all the unstable soil under the culvert and for a width of at least one diameter on each side of the culvert shall be replaced with granular material properly compacted to provide adequate support for the culvert.

(2) Bedding

The culvert shall be bedded in a granular foundation compacted to 100% of Maximum Density and having a thickness under the culvert of not less than $\frac{1}{2}$" per foot of fill over the top of the culvert, with a minimum allowable thickness of 8 inches. The bed shall be shaped by means of a template to fit the lower part of the culvert exterior for at least 10% of its overall height. Recesses shall be provided for any bells involved.

(3) Installation

(a) Corrugated Metal, Structural Plate Pipe and Pipe Arch

(i) Proper couplings shall be used to join separate sections firmly together, with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides.

(ii) Structural Plate pipe and pipe arches shall be placed in accordance with the manufacturer's recommendations.

(b) Reinforced Concrete Pipe and Pipe Arch

(i) The sections shall be laid carefully, hubs upgrade and with the ends fully and closely jointed. Unless otherwise specified, all joints shall be filled with

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stiff cement mortar composed of one part of portland cement and one and one-half parts of sand.

(ii) The section ends shall be thoroughly cleaned and wetted with water before the joint is made. Mortar shall then be placed in the lower half of the bell or groove of the section already laid and on the upper half of the spigot or tongue of the section being laid. The two sections shall then be tightly joined together with their inner surfaces flush and even. After the sections are joined, the remainder of the joint shall be filled with mortar and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall then be wiped and finished smooth. After the initial set, the mortar on the outside shall be protected from the elements with a cover of thoroughly wetted earth or burlap.

(c) Strutting

Pipe culverts shall be strutted in accordance with the manufacturer's instructions.

(d) Appurtenances

(i) End sections, where specified, shall be installed in accordance with the manufacturer's recommendations.

(ii) Concrete inlets, cradles, aprons and headwalls shall be constructed, where specified, in accordance with the plans and the current Highways Division Standard Specification for "Concrete Structures".

(e) Fill Around Culverts

Fill around culverts shall be carried out in accordance with Article 2.3.3 Para. 5(b) and to the limits shown on the Standard Plans.

6.3.4 MEASUREMENT

(1) Supply

(a) The quantity of pipe and pipe arch or structural plate pipe and pipe arch for which payment will be made shall be the number of linear feet of the various types and sizes furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(b) The quantity of end sections for which payment will be made shall be the number of end sections furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

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(2) Installation

(a) The quantity of pipe and pipe arch and structural plate pipe and pipe arch for which payment will be made shall be the number of linear feet of the various types and sizes, measured along the invert centre line complete in place and accepted by the Engineer.

(b) The quantity of end sections for which payment will be made shall be the number of end sections of the various sizes and types complete in place and accepted by the Engineer.

(3) Excavation

The quantity of excavation for which payment will be made shall be in accordance with Article 2.2.4 - Roadway and Borrow Excavation.

(4) Bedding and Fill Around Culverts

The quantity of bedding and fill around culverts for which payment will be made shall be the quantity measured as directed by the appropriate specification for the material used and accepted by the Engineer.

6.3.5 PAYMENT

(1) Supply

(a) Payment for the supply of pipe, pipe arch, structural plate pipe and pipe arch culverts of the types and sizes specified, will be made for the quantities as determined above, at the contract unit price per linear foot for these items, which price and payment shall include the furnishing and fabrication of all material, transportation to the site of installation, or if surplus to requirements to stockpile, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for the supply of end sections will be made for the number as determined above, at the contract unit price for end sections, which price and payment shall include the furnishing and fabrication of all materials, transportation to the site of installation, or if surplus to requirements to stockpile, and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(2) Installation

(a) Payment for the installation of pipe, pipe arch, structural plate pipe and pipe arch culverts will be made for the quantities as determined above, at the contract unit price per linear foot for these items, which price and payment shall include compensation

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in full for preparation of bed, assembly and installation of the culverts and all materials, labour, tools, equipment and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(b) Payment for the installation of end sections will be made for the quantities as determined above, at the contract unit price per unit of measurement for these items, which price and payment shall include compensation in full for the assembly and attachment of the end sections and all material, labour, equipment and all work subsidiary and incidental thereto, for which separate payment is not elsewhere provided.

(3) Excavation

Payment for excavation will be made in accordance with Article 2.2.5 - Roadway and Borrow Excavation.

(4) Bedding and Fill

Payment for bedding and fill around culverts will be made, for the quantities as determined above, as directed by the appropriate specification for the material used and accepted by the Engineer.

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6.4.1 DESCRIPTION

This item shall consist of the supply and placing of underdrains in accordance with these specifications and in conformity with the lines, grades, dimensions, and designs shown on the plans or designated by the Engineer.

6.4.2 MATERIALS

(1) Pipe for underdrains shall be either tile, or perforated corrugated metal pipe and shall conform to either A.A.S.H.O. Specification M 66-55 or M 136-47, or subsequent revisions thereof.

(2) Backfill for underdrains shall consist of granular material approved by the Engineer.

6.4.3 CONSTRUCTION

(1) Trench and Bedding

(a) The base of the trench in earth shall be deep enough to provide a minimum 4 inch granular bed under the pipe. The base of the trench in rock shall be deep enough to provide a 4 inch granular bed between the highest solid rock peaks and the under side of the pipe. The excavation in either rock or earth shall have a bottom width equal to the diameter of the pipe plus 2 feet. Excavated material shall be disposed of as directed by the Engineer.

(b) The bed of granular material shall be placed and tamped true to grade, providing recesses for the pipe bells if necessary.

(2) Placing the Pipe

(a) Pipe of the type and dimensions required shall be laid firmly in the prepared bed.

(b) Bell and spigot pipe shall be laid with bell ends upgrade and the spigot ends entered in the adjacent bells but not mortared or otherwise closed to the desired infiltration of water. The joints shall be covered with two-ply tar-paper strips not less than 6 inches in width and of sufficient length to permit the ends being turned outward and laid flat on the bottom course of gravel on either side of the pipe for a distance of 3 inches.

(c) Perforated pipe shall be laid with the perforated side of the pipe down and separate sections shall be firmly joined together with the appropriate connectors.

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(3) Granular Backfill

The granular backfill shall then be carefully placed by hand - shovelling to a depth of at least 6 inches over the top of the pipe, special care being taken not to disturb the alignment or grade of the pipe. The trench shall then be filled with granular material to the elevation shown on the plans or as directed by the Engineer. If the Engineer so directs, the top 1 foot of backfill shall be the same material as is in the adjacent area.

6.4.4 MEASUREMENT

(1) Excavation

The quantity of excavation for underdrains for which payment will be made shall be the volume measured in cubic yards in its original position, computed by the method of average end areas, removed within the neat lines of excavation for underdrains shown on the plan or staked by the Engineer.

(2) Supply

The quantity of pipe for which payment will be made shall be the number of linear feet of the various types of underdrain pipe furnished at the site in accordance with the plans and specifications or such itemized lists as may be furnished to the Contractor by the Engineer.

(3) Installation

The quantity for which payment will be made shall be the number of linear feet of underdrain installed complete in place and accepted by the Engineer.

(4) Bed and Backfill

The quantity of granular backfill for which payment will be made shall be the quantity measured as directed by the appropriate specification for material used.

6.4.5 PAYMENT

(1) Excavation

Payment will be made for the quantities as above determined, measured in cubic yards at the contract unit prices for Excavation for Underdrains, Common and Excavation of Underdrains, Rock, which prices and payment shall include compensation in full for excavating and hauling the materials, placing excavated materials in embankments or disposal areas as may be directed by the Engineer, shaping and dressing the ditch, for all labour, explosives, tools and equipment and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

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(2) Supply

Payment will be made for the quantities as above determined, at the contract unit price per linear foot for Supply of Underdrains which price and payment shall include full compensation for underdrain material delivered at the site of the work including all material necessary for joints, unloading and for all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(3) Installation

Payment will be made for the quantities as above determined at the contract unit price per linear foot for Installation of Underdrains which price and payment shall include compensation in full for preparation of bed, assembly and installation of the underdrain pipe and all material, labour, equipment and all work subsidiary and incidental thereto for which separate payment is not elsewhere provided.

(4) Bed and Backfill

Payment for granular backfill will be made as directed by the appropriate specification for the backfill material used.

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SECTION 8 - DUST CONTROL

MARCH 1960

6.8.1 DESCRIPTION

This item shall consist of the treatment of existing roads and such portions of the new road which are open to public travel during the construction of the new highway with calcium chloride at such locations and at such times as are ordered by the Engineer.

6.8.2 MATERIALS

(1) Calcium chloride shall be supplied by the Contractor in waterproof paper bags in the quantity ordered in writing by the Engineer.

(2) Calcium chloride shall conform to the A.A.S.H.O. Standard Specification for Calcium Chloride Designation M.144.

6.8.3 CONSTRUCTION

(1) Storage

Calcium chloride shall be stored in a weather tight storage shed provided by the Contractor within the limits of the contract until used or otherwise disposed of as directed by the Engineer.

(2) Application

(a) Calcium chloride shall be applied with mechanical equipment of an approved type to ensure even distribution.

(b) The quantity applied and rate of application shall be determined by the Engineer.

(c) When required, the surface shall be dampened by thoroughly sprinkling with an approved sprinkler or other approved method.

6.8.4 MEASUREMENT

(1) Supply

The quantity for which payment will be made shall be the number of tons or fractions thereof, furnished as ordered in writing by the Engineer, delivered and placed in storage as described in Article 6.8.3 (1) above.

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(2) Application

The quantity for which payment will be made shall be the number of tons applied at such locations and times and in such amounts as directed by the Engineer.

(3) Water

Water required for dampening the surface will be measured as provided for in Article 2.3.4.

6.8.5 PAYMENT

(1) Supply

Payment will be made for the quantities as above determined at the contract unit price per ton for "Supply Calcium Chloride" which price and payment shall be compensation in full for supplying, delivering to the storage shed and storing calcium chloride and all work subsidiary and incidental thereto.

(2) Application

Payment will be made for the quantities as above determined at the contract unit price per ton for "Apply Calcium Chloride for Dust Control" which price and payment shall be compensation in full for loading from the storehouse, delivery, applying, disposing of paper bags, and all work subsidiary and incidental thereto for which payment is not elsewhere provided.

(3) Water

Payment for water required for dampening the surface will be paid for as provided in Article 2.3.5

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SECTION 10 - RENTAL VEHICLES

MARCH 1960

6.10.1 DESCRIPTION

This item consists of supplying vehicles for the use of the Engineer and his representatives in relation to the work.

6.10.2 VEHICLES

(1) Type and Equipment

All vehicles shall be, and be kept, in good running order and equipped with heater, defroster, right and left hand mirrors, permanent type anti-freeze, a spare wheel, all weather mud and snow tires on the rear and spare wheels, directional signals with two-way flasher and safety equipment in accordance with provincial regulations, full width front seat and required licensing and shall be of the type and number specified in the "Information to Bidders".

(2) Delivery and Return of Vehicles

(a) The vehicles are to be delivered to a location designated by the Engineer, and from the time the vehicles are so delivered, they shall be deemed to be in the possession of the Crown until returned to the Contractor, as hereunder provided.

(b) The Engineer may, at any time or times, return any or all of the vehicles to the Contractor by advising the Contractor's representative in writing that a specified vehicle is not required. From the date of such advice to the Contractor's representative the specified vehicle shall be deemed to be in the possession of the Contractor until redelivered to the Engineer upon his request.

(c) The Contractor will upon written request from the Engineer redeliver to him any vehicle returned to the Contractor as aforesaid.

(d) The Engineer may require the Contractor to furnish vehicles until final measurements have been completed.

6.10.3 RENTAL CONDITIONS

(1) Damage and Repairs

(a) All vehicles supplied pursuant to this contract are at the risk of the Contractor whether in the possession of the Contractor or the Crown, and the Contractor shall not make any claim or demand, or bring any action or other legal proceedings against the Crown in respect of damage to any such vehicle, including

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damage caused by the negligence of an officer or servant of the Crown while acting within the scope of his duties or employment.

(b) All repairs to vehicles supplied under this contract will be performed expeditiously by the Contractor.

(2) Protection

The Contractor, for himself, his heirs, executors and administrators, hereby undertakes to indemnify and save harmless, the Crown, and officers, servants and agents of the Crown from and against all manner of actions, causes of action, suits, debts, duties, agreements, claims and demands whatsoever which may hereafter exist or be made for or by reason of any cause, matter or thing whatsoever arising out of these terms of rental and the transportation or operation of equipment herein referred to.

6.10.4 MEASUREMENT

The quantity for which payment will be made shall be the actual months or fractions thereof the vehicles are in the possession of the Crown.

6.10.5 PAYMENT

Payment will be made for the quantities as above determined at the contract unit prices for "Vehicles for the Use of the Engineer", which prices and payment shall be compensation in full for supplying, repairing and maintaining the vehicles excepting the cost of fuel and lubricants.

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A2	Earth Cut Class B & C Highway
A3	Rock Fill Class B & C Highway
A4	Rock Cut Class B & C Highway
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A6	Earth Cut Class D Highway
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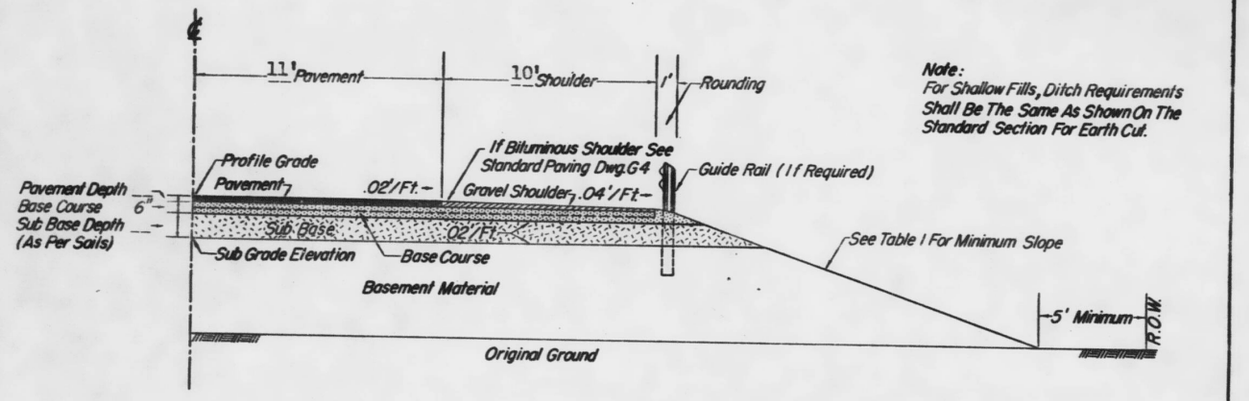

TABLE I MINIMUM SLOPES			
Heigth Of Cut Or Fill	TERRAIN Rolling	Mod. Steep	Steep
0-4'	4:1	4:1	4:1
4-10'	4:1	3:1	2:1
10-15'	3:1	2½:1	1½:1
15-20'	2:1	2:1	1½:1
Over 20'	2:1	1½:1	1½:1

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A1

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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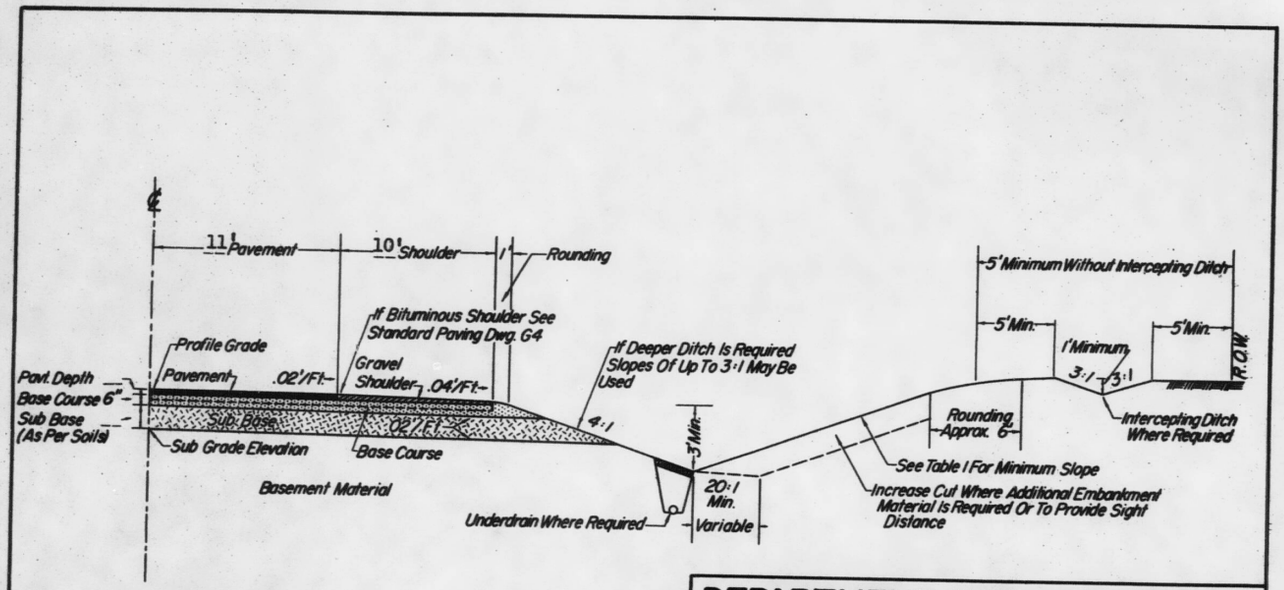

TABLE I
MINIMUM SLOPES

Heigth Of Cut Or Fill	TERRAIN		
	Rolling	Mod. Steep	Steep
0 - 4'	4:1	4:1	4:1
4 - 10'	4:1	3:1	2:1
10 - 15'	3:1	2½:1	1½:1
15 - 20'	2:1	2:1	1½:1
Over 20'	2:1	1½:1	1½:1

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A2

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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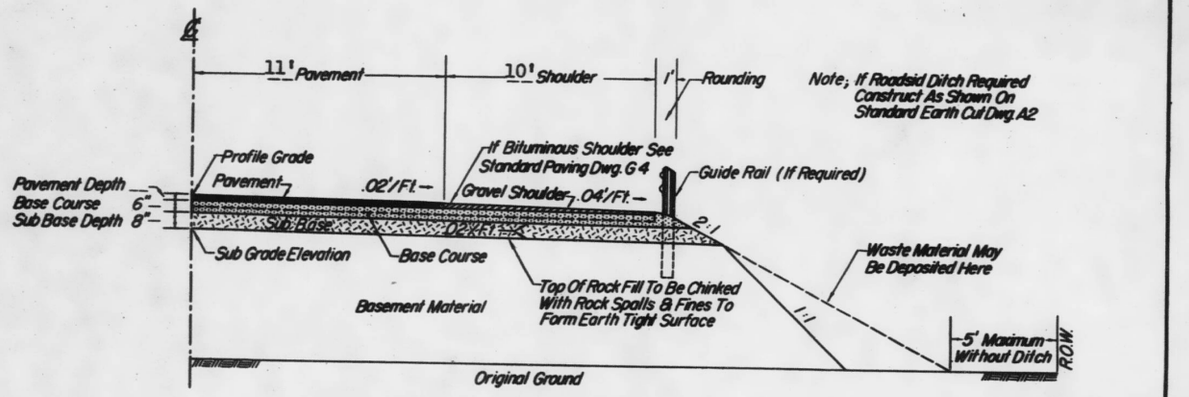

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK FILL
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A3

DRAWN BY B. Nicol CHECKED BY J.T.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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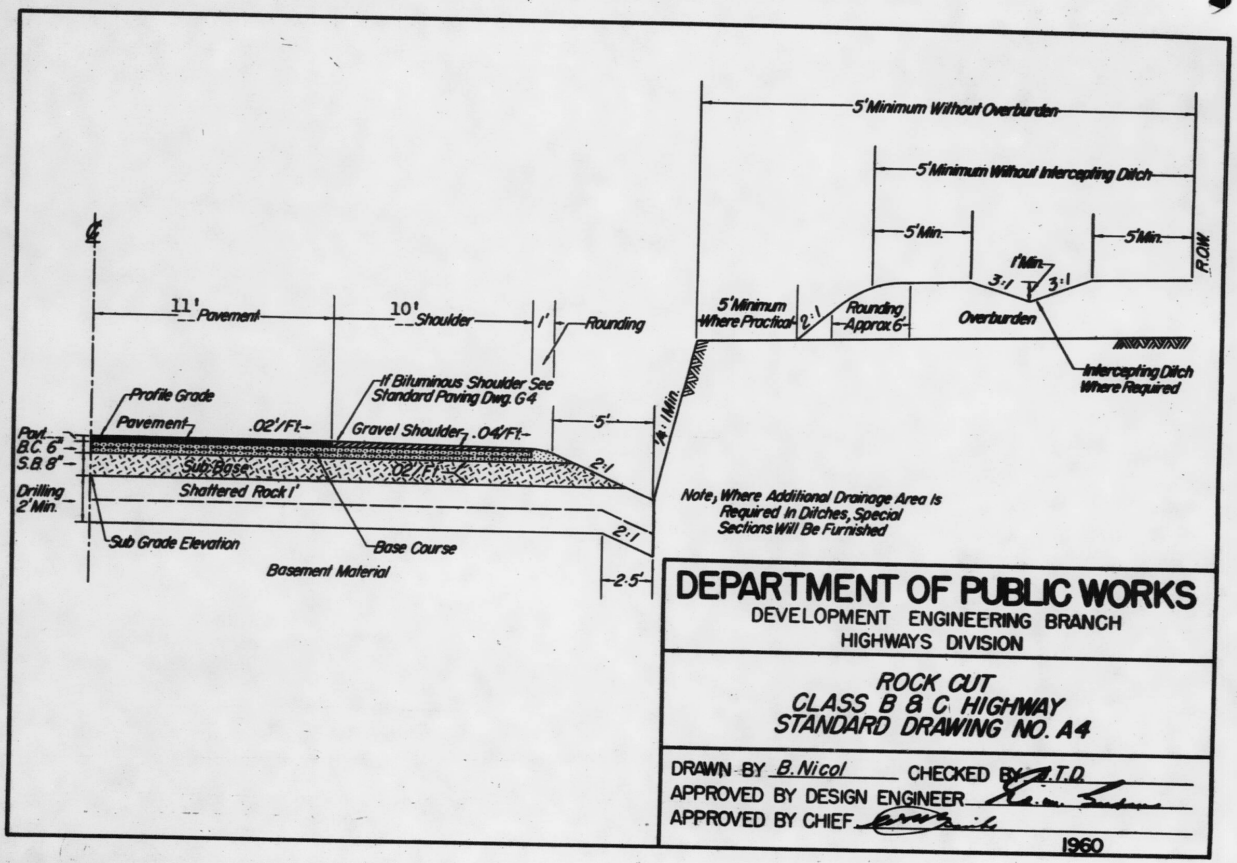

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CLASS B & C HIGHWAY
STANDARD DRAWING NO. A4

DRAWN BY B. Nicol CHECKED BY A.T.D.
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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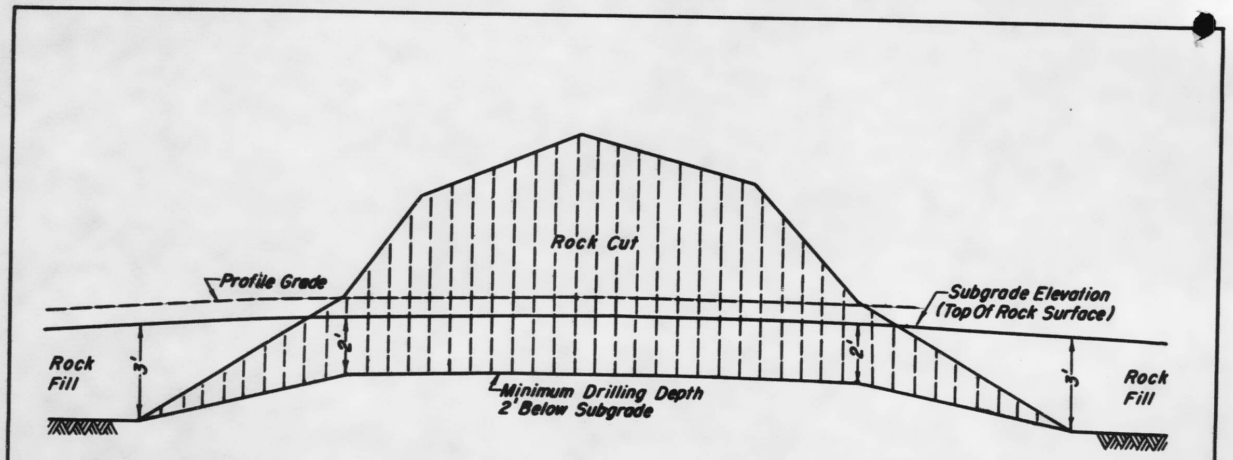

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

ROCK CUT
CONSTRUCTION
STANDARD DRAWING NO. B1

DRAWN BY B.Nicol CHECKED BY
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1960

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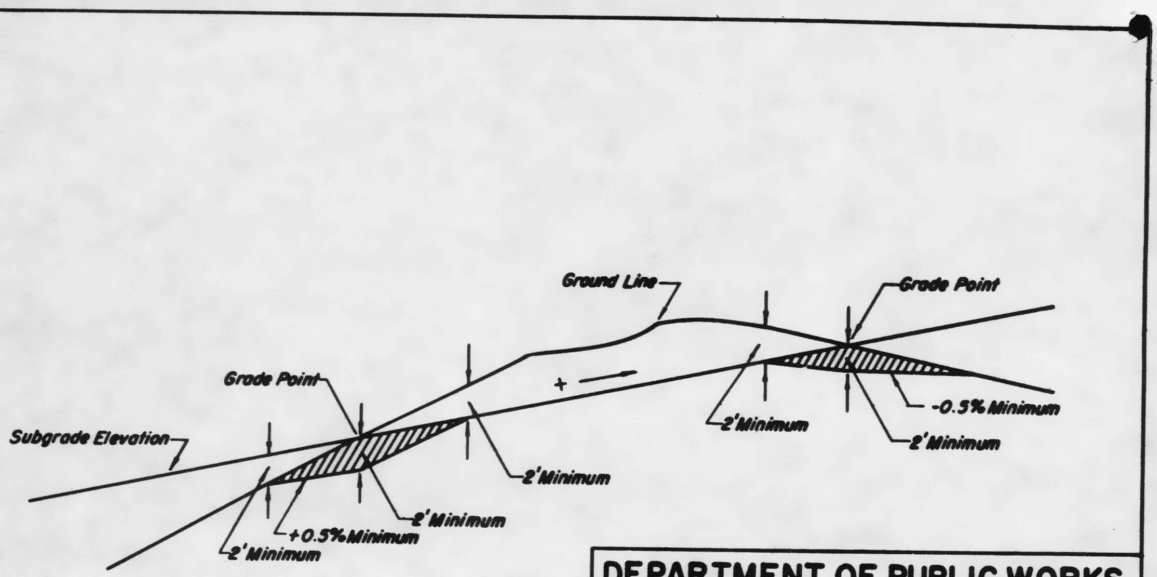

Note: The Material Shown By The Shaded Area Shall Be Removed For Full Width Of Cut & Fill Of The Section & Replaced With Approved Material In Accordance With Standard Specifications

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

EARTH CUT & FILL
CONSTRUCTION METHOD AT GRADE POINTS
STANDARD DRAWING NO. B-2

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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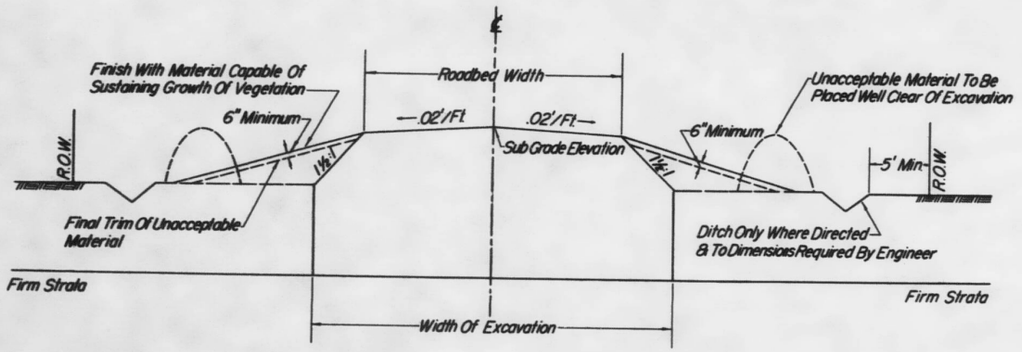

Note:
Roadbed Width Shall Be Sufficient To Receive Granular & Surface Courses In In Accordance With Standard Drawing No. A-1

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CONSTRUCTION THROUGH SWAMP AREAS (EXCAVATION METHOD) STANDARD DRAWING NO. B3

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APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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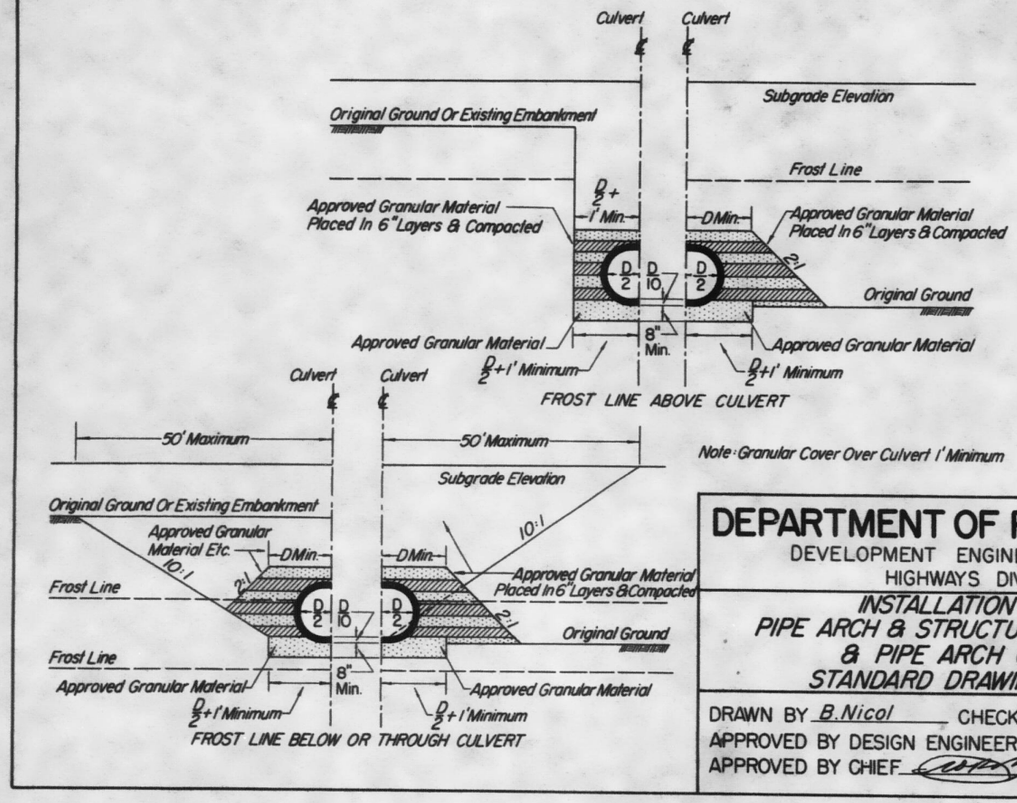

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

INSTALLATION OF PIPE PIPE ARCH & STRUCTURAL PLATE PIPE & PIPE ARCH CULVERTS STANDARD DRAWING NO. D-1

DRAWN BY B.Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF

1960

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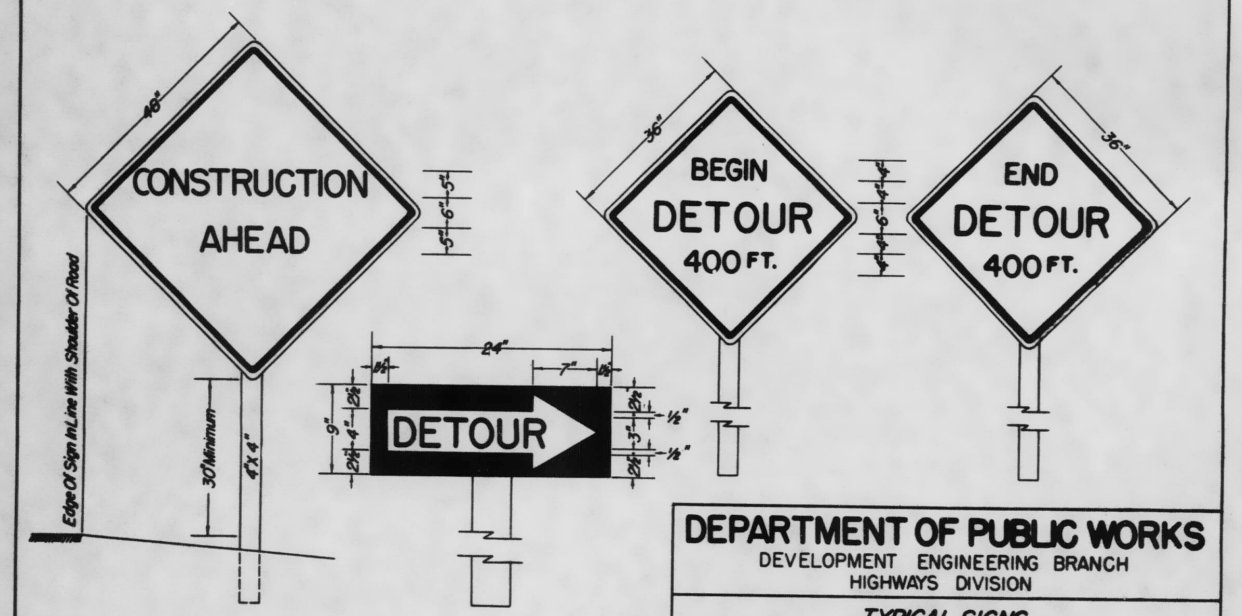

Note:
1. Colouring - Black Lettering & Trim On Yellow Background
2. Mounting Posts For All Signs Similar To That Shown By Construction Ahead
3. Corner Radii - 1½"

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL SIGNS
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 1

DRAWN BY B. Nicol CHECKED BY
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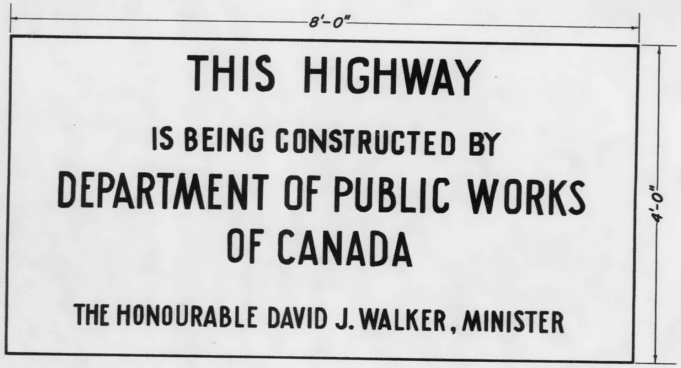

Note:
Colour - Block Letters On White Background

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DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

STYLE OF LETTERING FOR
PROJECT SIGN BOARDS
STANDARD DRAWING NO. F 2-A

DRAWN BY B.Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

REV. No. 1, JAN. 1961

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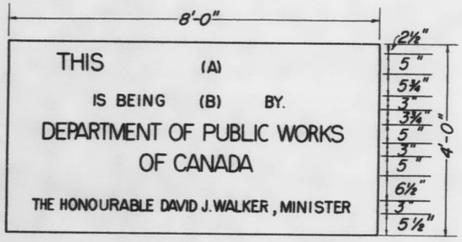
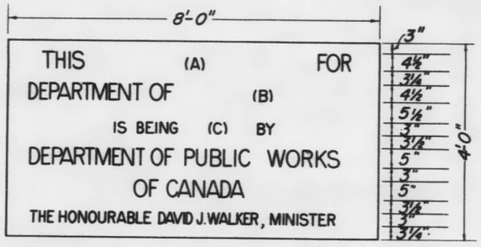
CONSTRUCTION SIGN FOR PUBLIC WORKS PROJECTS



(A) INSERT APPROPRIATE WORDING, E.G:
HIGHWAY – BRIDGE
(B) INSERT APPROPRIATE WORDING, E.G:
CONSTRUCTED – ERECTED – PAVED

Note:
Colour - Black Letters On White Background

CONSTRUCTION SIGN FOR PROJECTS UNDERTAKEN BY PUBLIC WORKS FOR OTHER DEPARTMENTS



(A) INSERT APPROPRIATE WORDING, E.G:
HIGHWAY – BRIDGE
(B) INSERT APPROPRIATE WORDING, E.G:
NATIONAL REVENUE – TRANSPORT – NORTHERN AFFAIRS & NATIONAL RESOURCES
(C) INSERT APPROPRIATE WORDING, E.G:
CONSTRUCTED – ERECTED – PAVED

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

PROJECT
SIGN BOARDS
STANDARD DRAWING NO. F2-B

DRAWN BY B. Nicol CHECKED BY J.G.D. Reid
APPROVED BY DESIGN ENGINEER A.M. Gordon
APPROVED BY CHIEF
1960

REV. No. 1, JAN. 1961

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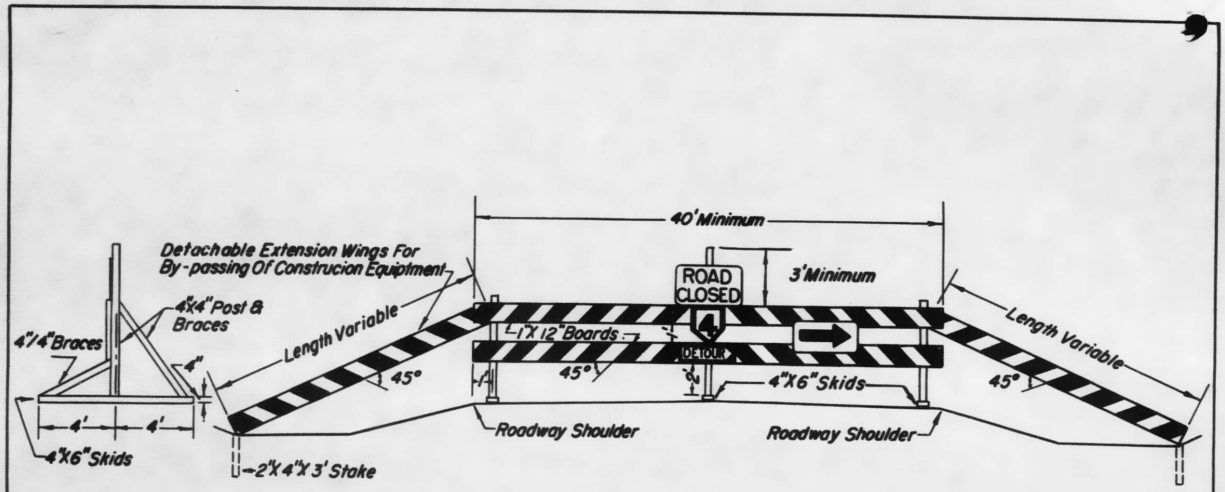

Notes:

1. The Various Types & Combinations Of Approved Signs For Barricades Required For Each Project Will Be Governed By Field Conditions & Subject To Approval By The Engineer
2. All Barricades To Be 1" X 12" Lumber Painted 8" Alternate Black & Yellow Strips
3. All Skids, Braces & Posts To Be Painted White & Nailed Together With No. 20d Nails
4. Bases To Be Weighted Where Necessary To Provide Stability

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH
HIGHWAYS DIVISION

TYPICAL BARRICADE
TO BE USED BY CONTRACTOR ON CONSTRUCTION
STANDARD DRAWING NO. F 3

DRAWN BY B. Nicol CHECKED BY
APPROVED BY DESIGN ENGINEER
APPROVED BY CHIEF
1960

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File/dossier J60-23
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CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

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DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

FILE No. √.60-23 Plans, SPEC's Vol. 3

SUBJECT: NAT. PARKS

BANFF-JASPER
Highway in JASPER

Vol. FROM Jan/63 TO

FILE No.

FOR INSTRUCTIONS RE USE OF FILE COVER SEE BACK COVER

REFERENCE				DISPOSAL			
REFERRED TO	REMARKS	DATE	INITIALS	P.A. DATE OR T.	B.F. DATE	INITIALS	REGISTRY INSPECTION

FILE NO.....

YEAR..... MONTH	DAY	CHARGED TO	IN	YEAR..... MONTH	DAY	CHARGED TO	IN

No. J.60-23 Plans + Specs Vol #3

YEAR MONTH	DAY	CHARGED TO	IN	YEAR MONTH	DAY	CHARGED TO	IN
Jany	11	Mr Gentleman					
May	11	E. Davis					
Sept	2	Elliott					

NANR 10-3

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FILE No. J.60-23 Plans + Specs Vol 3

YEAR		CHARGED TO	IN	YEAR		CHARGED TO	IN
MONTH	DAY			MONTH	DAY		
Jany	11	Mr Gutteff					
May	11	Eidsvik					
Sept	2	Elliott					

NANR 10-3

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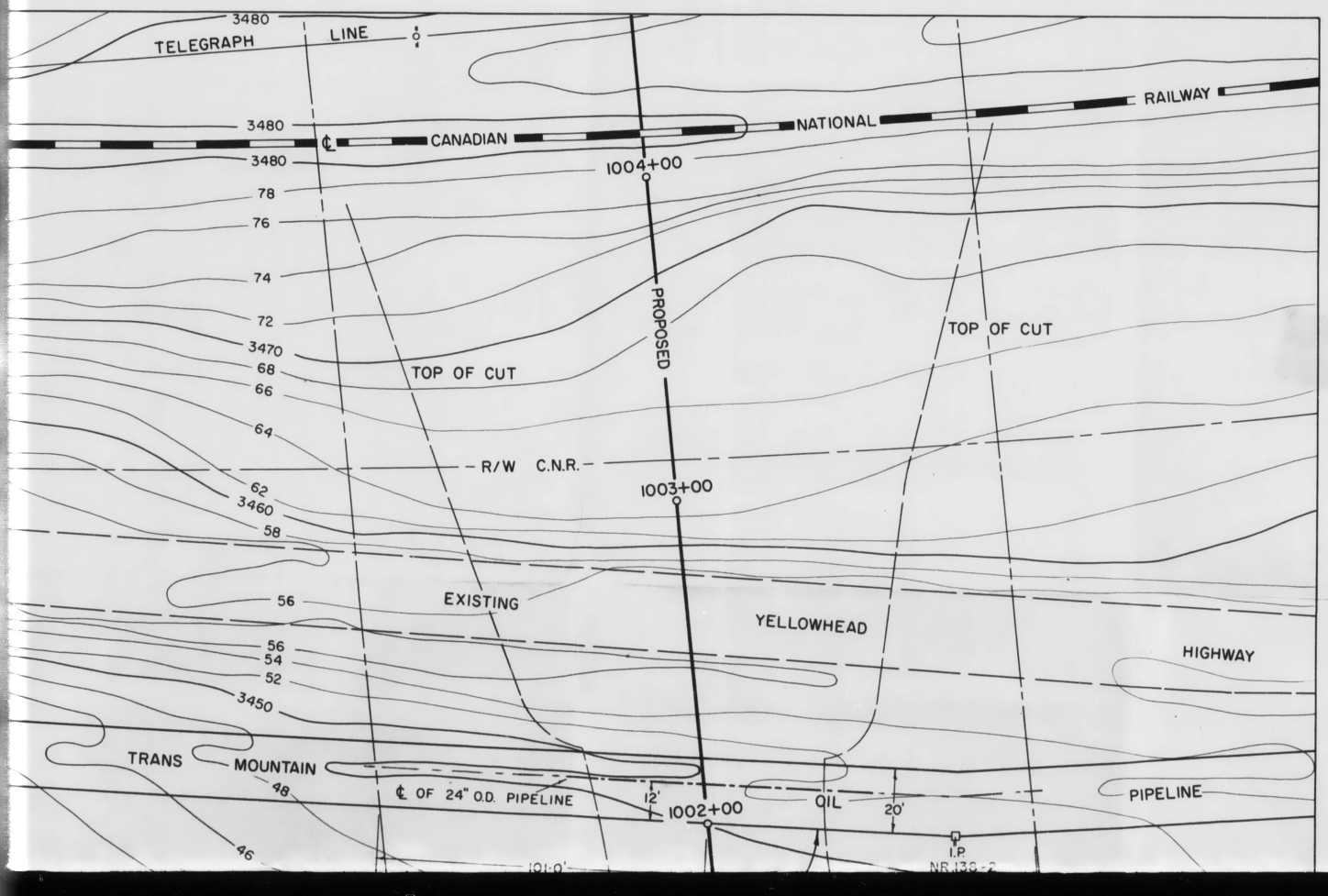
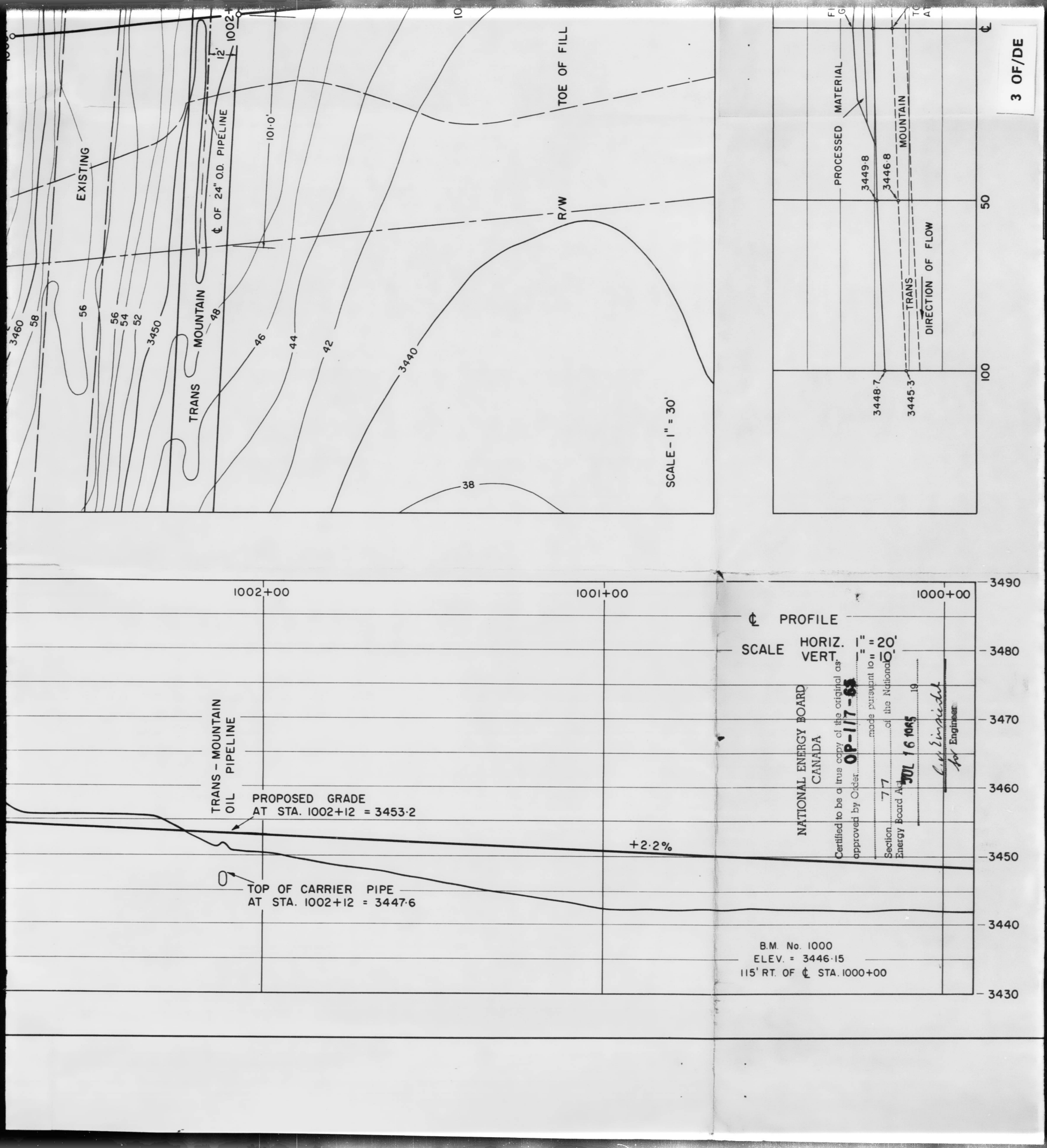
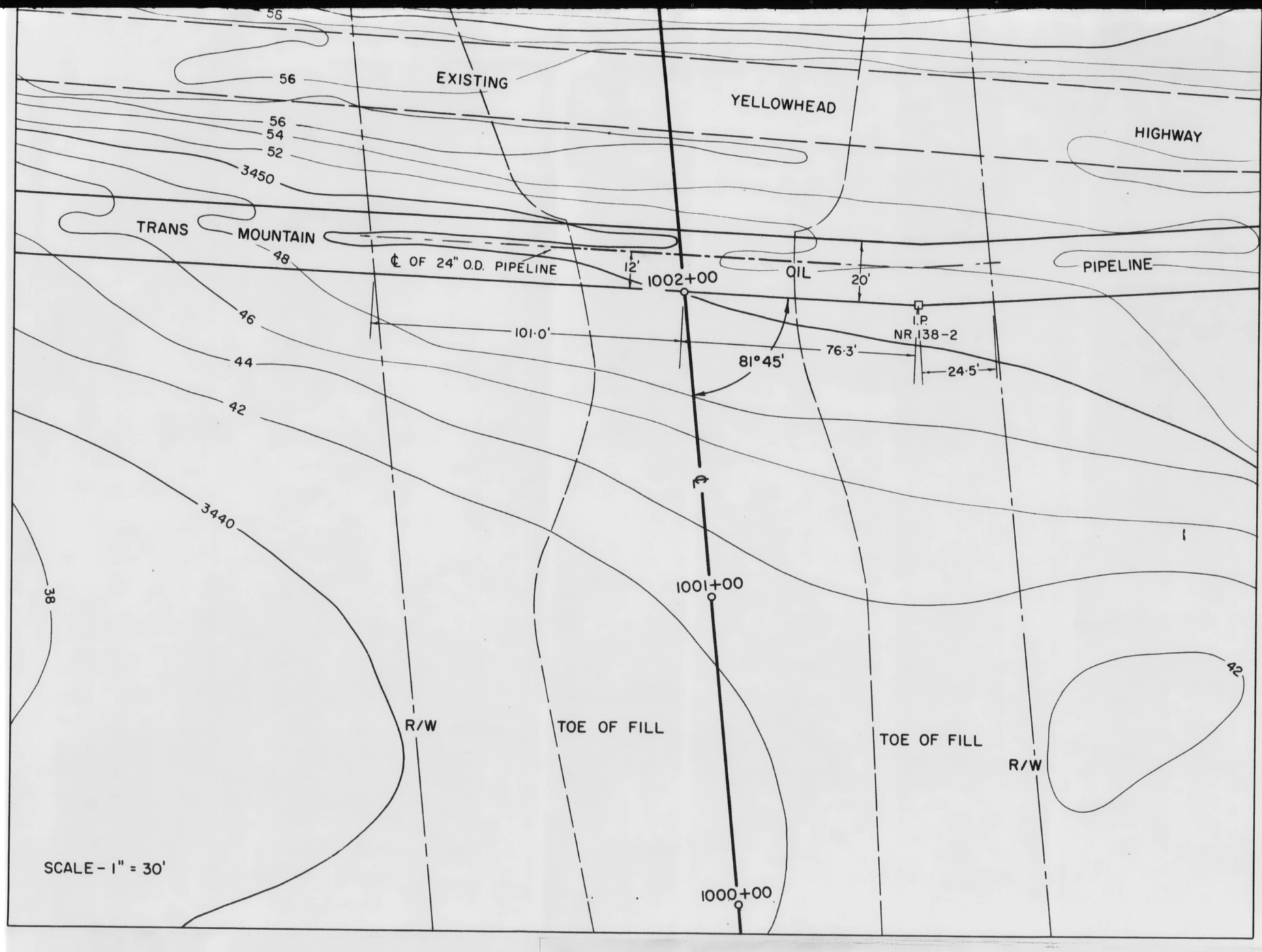
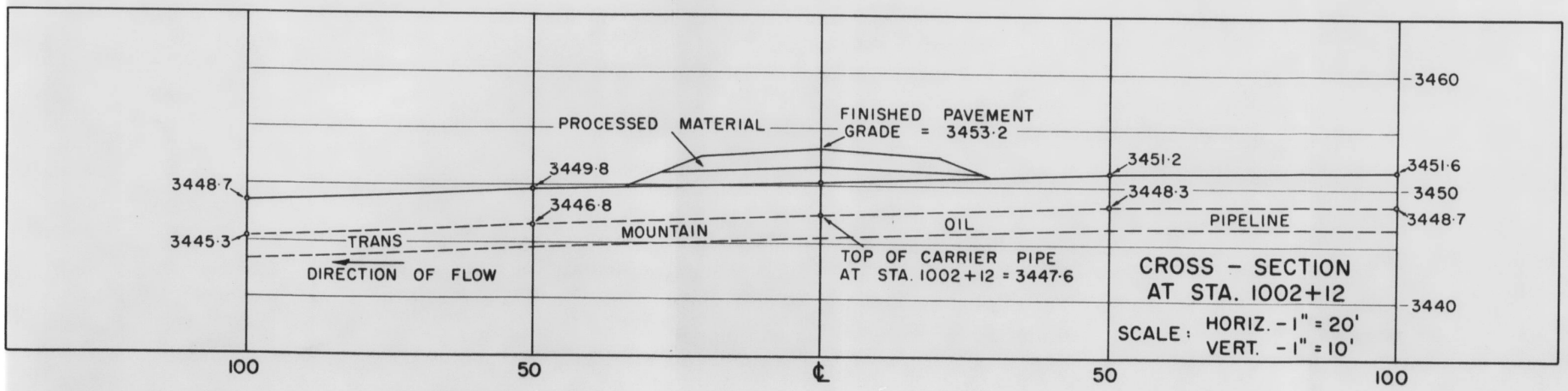

3480
TELEGRAPH LINE
3480
℄ CANADIAN NATIONAL RAILWAY
3480
1004+00
78
76
74
72
3470
68
66
64
62
3460
58
56
56
54
52
3450
48
46
PROPOSED
TOP OF CUT
TOP OF CUT
R/W C.N.R.
1003+00
EXISTING
YELLOWHEAD
HIGHWAY
TRANS MOUNTAIN
℄ OF 24" O.D. PIPELINE
12'
1002+00
OIL
20'
PIPELINE
I.P.
NR.138-6
101.0'

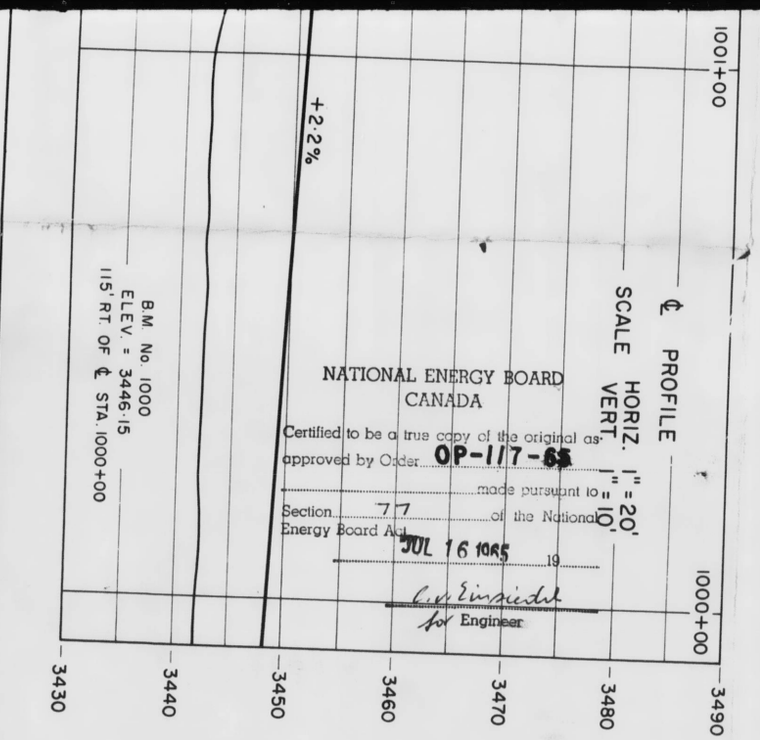

EXISTING
TRANS MOUNTAIN
℄ OF 24" O.D. PIPELINE
12'
1002+
101·0'
R/W
TOE OF FILL
SCALE - 1" = 30'
3460
3450
3440
56
58
54
52
48
46
44
42
38
PROCESSED MATERIAL
3449·8
3446·8
MOUNTAIN
TRANS
DIRECTION OF FLOW
3448·7
3445·3
50
100
℄
3 OF/DE
1002+00
1001+00
1000+00
℄ PROFILE
SCALE HORIZ. 1" = 20'
VERT. 1" = 10'
NATIONAL ENERGY BOARD
CANADA
Certified to be a true copy of the original as approved by Order OP-117-65 made pursuant to
Section 77 of the National Energy Board Act
JUL 16 1965
for Engineer
TRANS - MOUNTAIN OIL PIPELINE
PROPOSED GRADE
AT STA. 1002+12 = 3453·2
+2·2%
TOP OF CARRIER PIPE
AT STA. 1002+12 = 3447·6
B.M. No. 1000
ELEV. = 3446·15
115' RT. OF ℄ STA. 1000+00
3490
3480
3470
3460
3450
3440
3430





Re: Pipe Line
Of Trans-Mountain Oil Pipe Line Company

NORTH

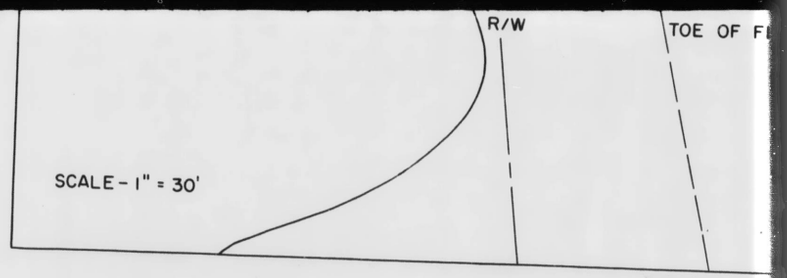


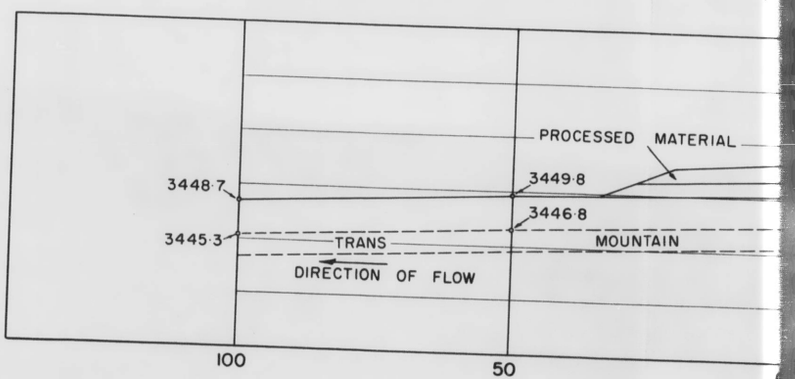
NATIONAL ENERGY BOARD
CANADA

Certified to be a true copy of the original as approved by Order OP-117-65 made pursuant to Section 77 of the National Energy Board Act.

JUL 16 1965 19

for Engineer





NOTES: Re: Pipe Line
Of Trans-Mountain Oil Pipe Line Company
Line Pipe -

1) 24" O.D. x 5/16" W.T.
2) A.P.I. Specifications - 5LX52
3) Minimum Mill Test Pressure - 1220 P.S.I.G.
4) Allowable Pipe Working Pressure - 798 P.S.I.G.
5) Field Test Pressure - Unavailable

Re: Banff - Jasper Highway

1) Design Axle Load - 22,000 lbs.

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

PROPOSED CROSSING OF
TRANS-MOUNTAIN OIL PIPELINE
MILE 144·2 B-J HIGHWAY
JASPER NATIONAL PARK

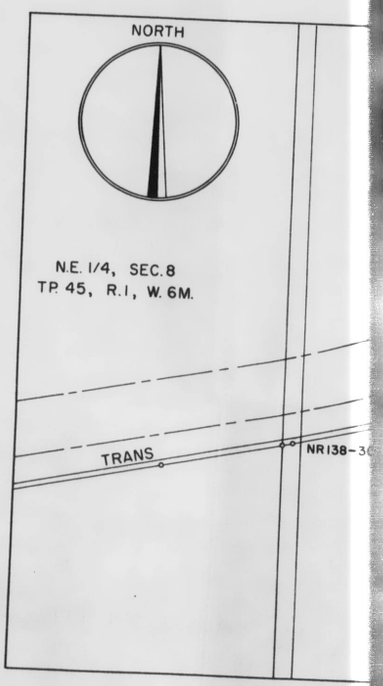
SCALE: AS MARKED CONT. INT. - 2'

DRAWN BY - R. Smith	DATE Nov. 22, 1962.	DESIGN
CHECKED BY - W. Anderson		
TRACED BY - R. Smith		CONSTRUCTION
DIST. ENG.		
ORIGIN		APPROVED
		DATE

REVISIONS - Additional Pipeline Elevations
Pipeline Notes
Feb. 11/63.

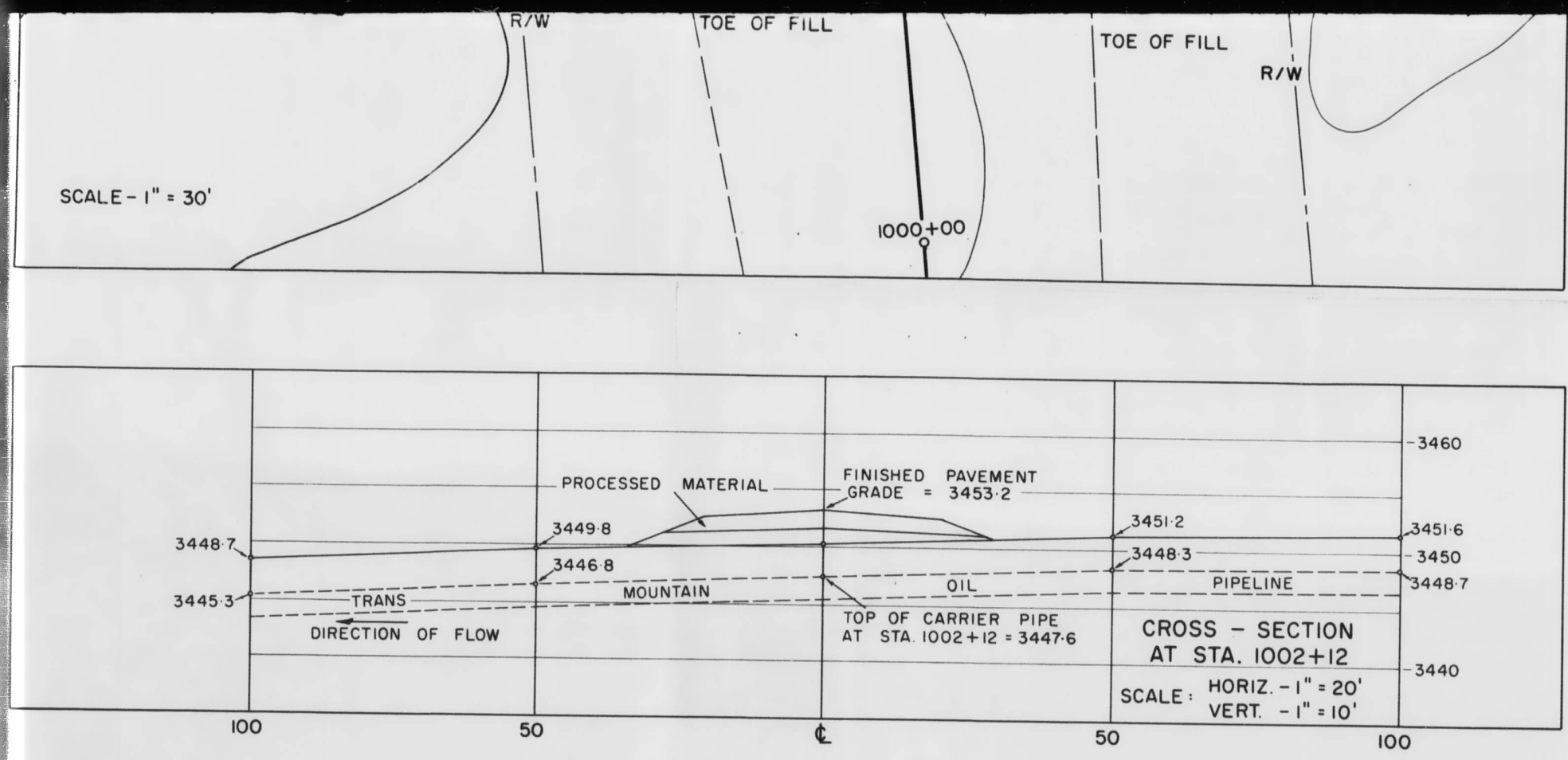
FILE NO.

APPROVED	PROJECTS ENGINEER
DATE	22 Nov. 1962



8 MAR 1965

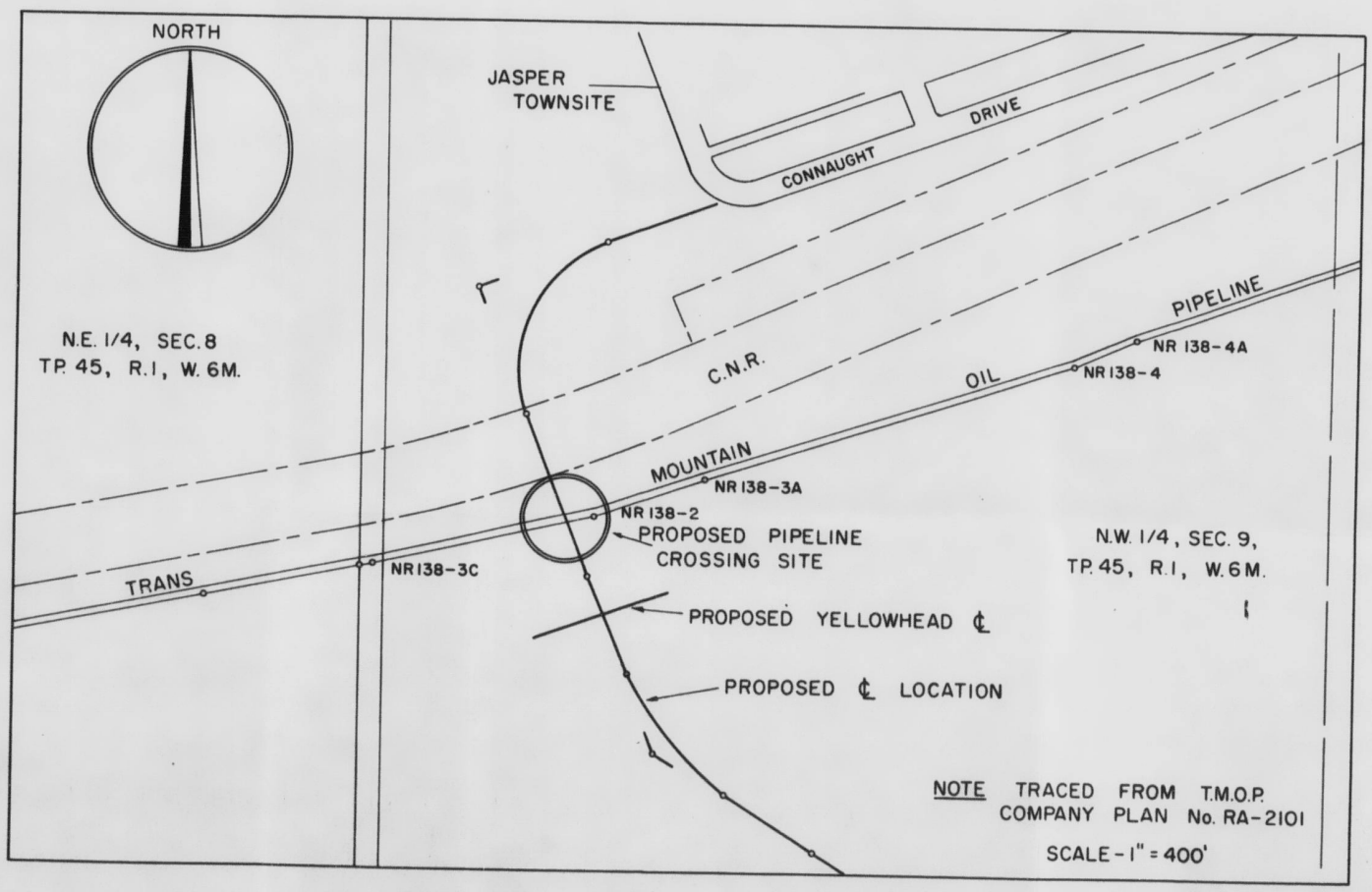
5 OF/DE

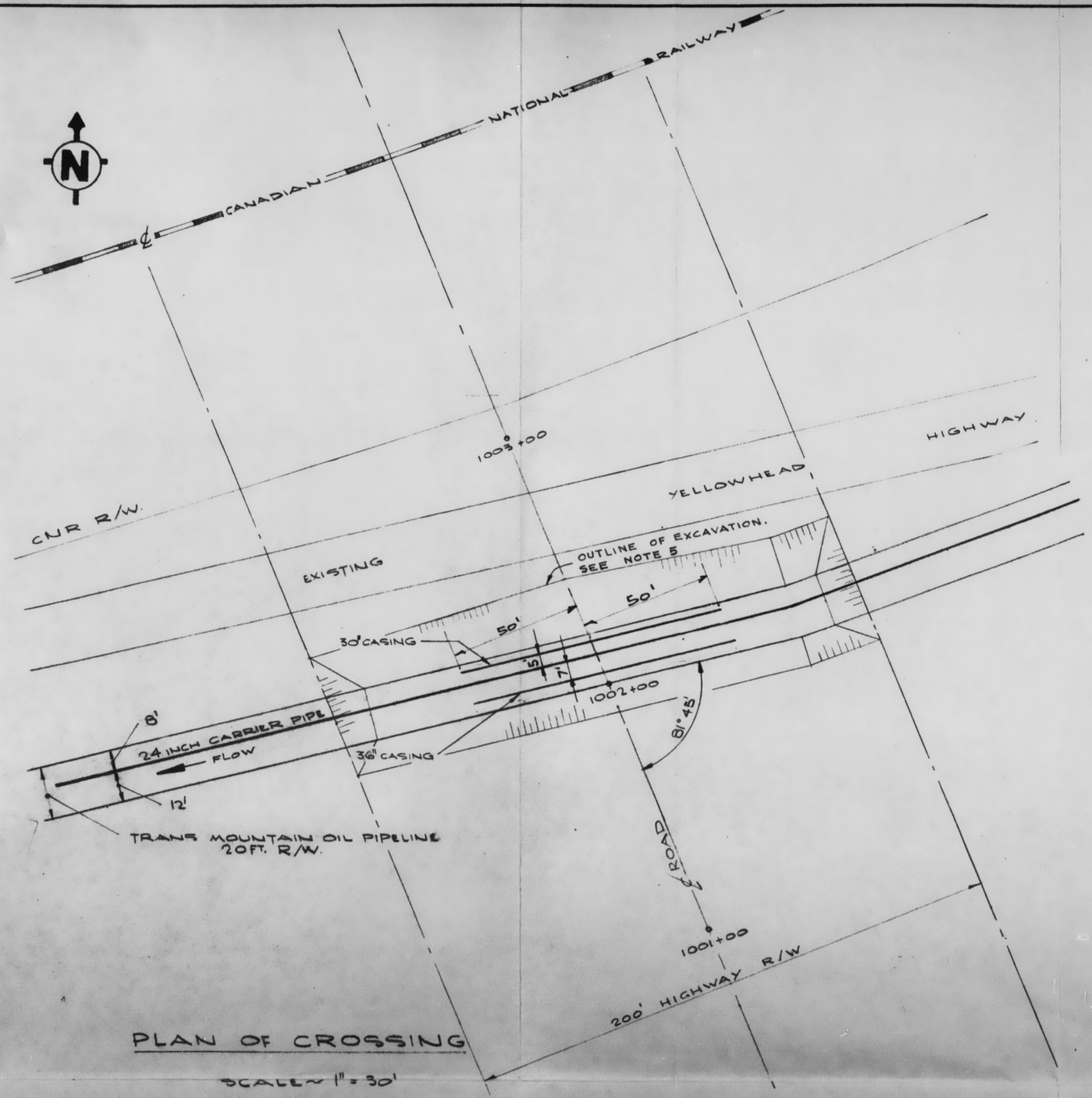


Pipe Line
Trans-Mountain Oil Pipe Line Company
ne Pipe -
24" O.D. x 5/16" W.T.
A.P.I. Specifications - 5LX52
Minimum Mill Test Pressure - 1220 P.S.I.G.
Allowable Pipe Working Pressure - 798 P.S.I.G.
Field Test Pressure - Unavailable

Banff - Jasper Highway
Design Axle Load - 22,000 lbs.

APPROVED	PROJECTS ENGINEER
DATE	22 Nov. 1962





PLAN OF CROSSING

SCALE~ 1" = 30'

TMOPL CARRIER PIPE

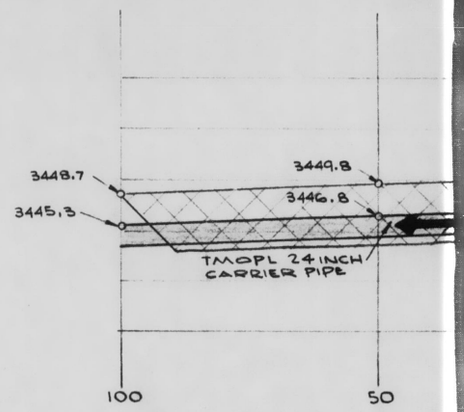
24 INCH OD x 5/16 WT STEEL

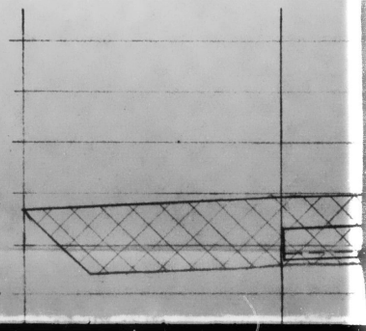
A.P.I SPECIFICATIONS 5 LX

MIN MILL TEST PRESSURE

MAX ALLOWABLE WORKING

MAX. DESIGN AXLE LOAD





1-22-83

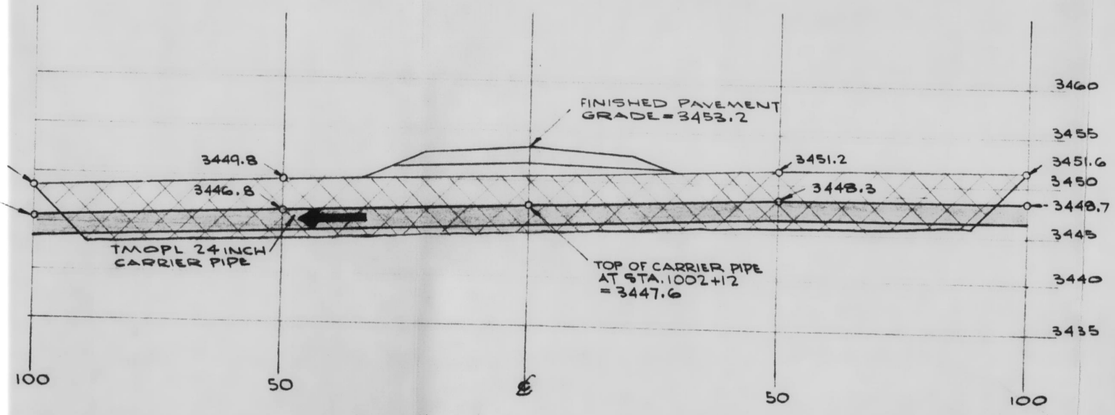
Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3

National Archives of Canada
Archives nationales du Canada

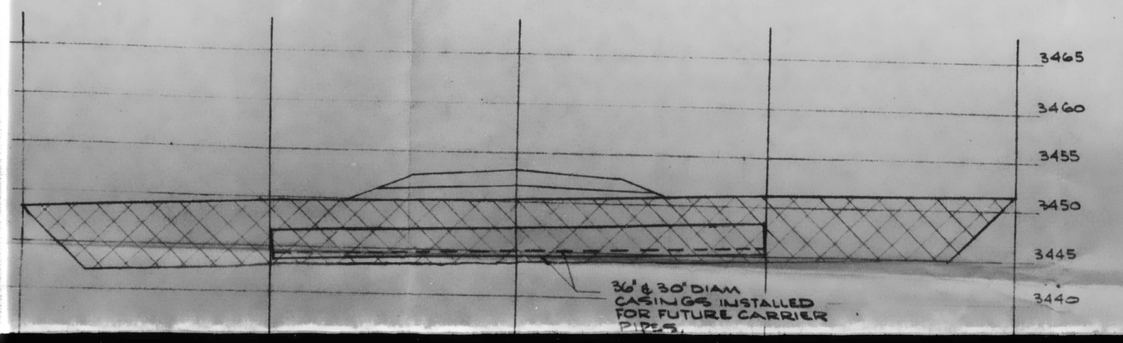
OPL CARRIER PIPE

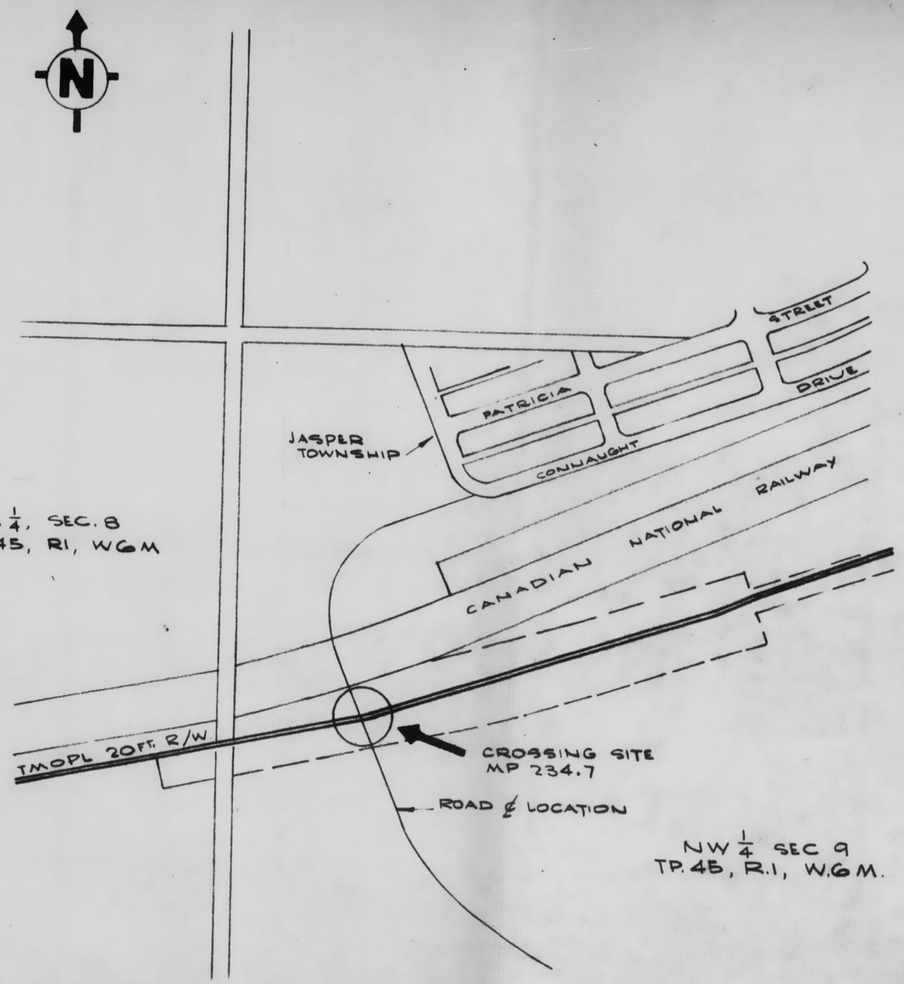
24 INCH OD x $\frac{5}{16}$" WT STEEL OIL PIPE LINE
API SPECIFICATIONS 5 LX - GRADE X-52
MIN MILL TEST PRESSURE 1220 PSI
MAX ALLOWABLE WORKING PRESSURE 798 PSI
MAX. DESIGN AXLE LOAD 22 000 lbs.



CROSS SECTION
THRU HIGHWAY
AT STATION 1002 + 12

SCALE ~ 1" = 20' HORIZ.
1" = 10' VERT.



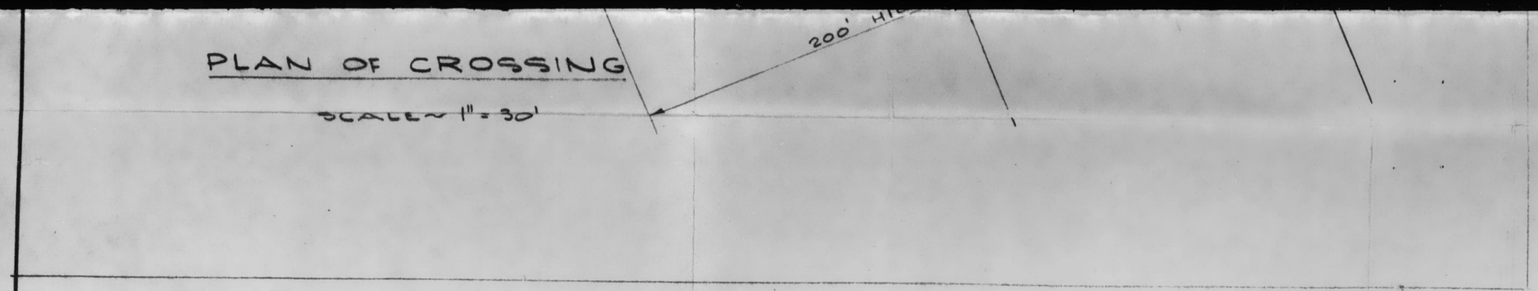


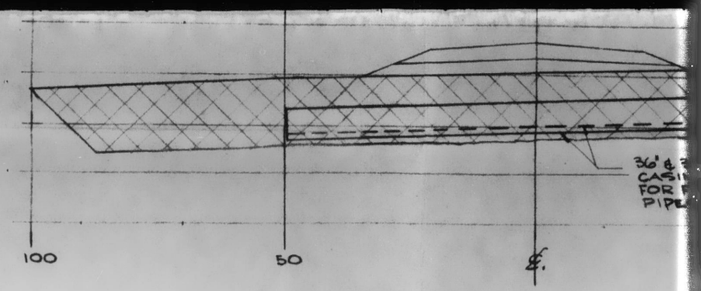
LOCATION PLAN
SCALE 1" = 400'

REF. TRANS MOUNTAIN
DWG. R-A-2101

PLAN OF CROSSING

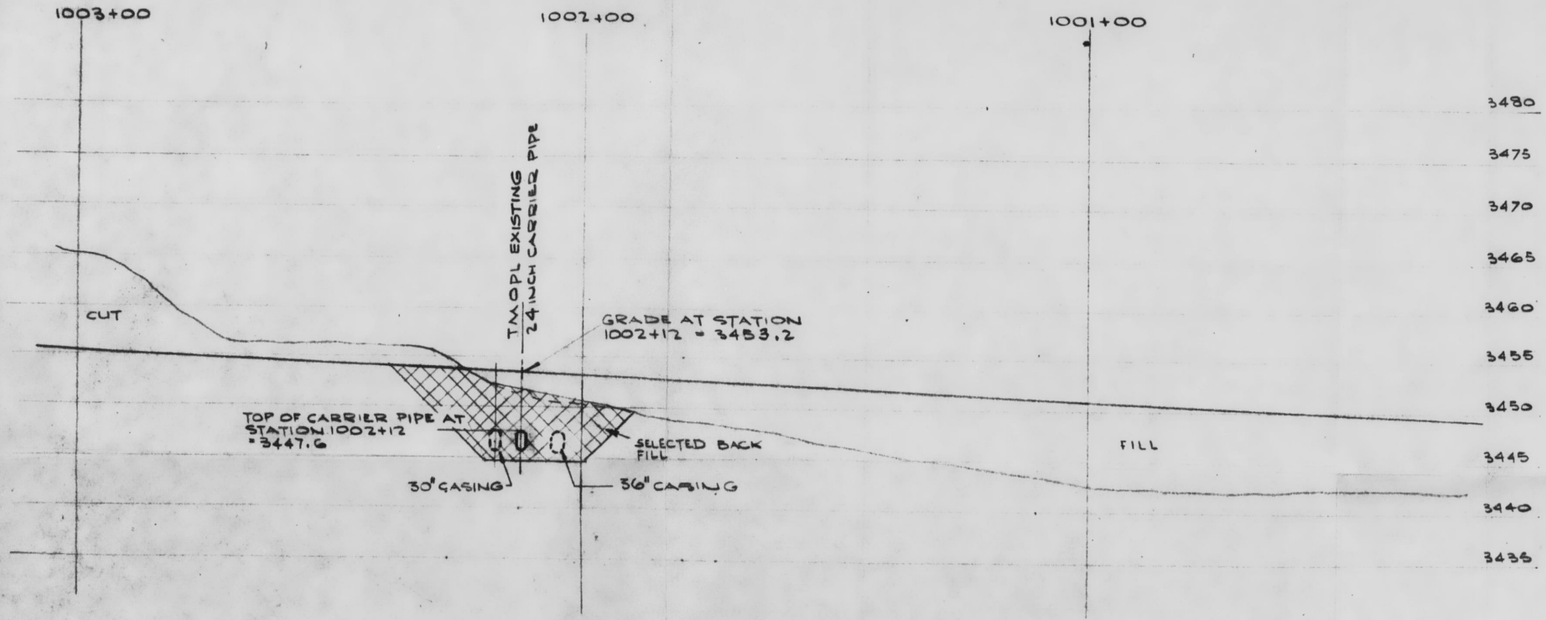
SCALE ~ 1" = 30'





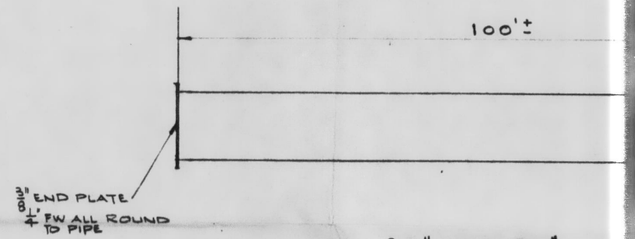
CROSS SECTION
THRU HIGHWAY

SCALE ~ 1" = 20' HOR
1" = 10' VER



PROFILE
ALONG HIGHWAY

SCALE ~ 1" = 20' HORIZ.
1" = 10' VERT.



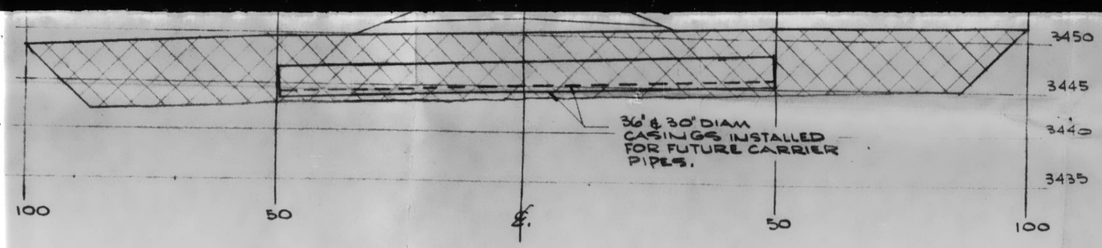
36" AND 30"
CASING DETAILS

NOT TO SCALE

CROSSING 234-4

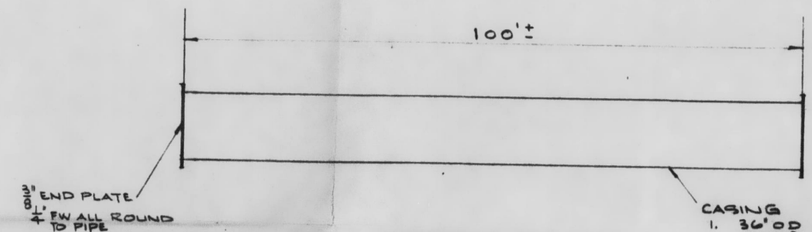
NO.	DATE	REVISION	DR.	CHK.	APPR.
NO.	DATE	REVISION	DR.	CHK.	APPR.
NO.	DATE	REVISION	DR.	CHK.	APPR.

3 OF/DE



CROSS SECTION
THRU HIGHWAY

SCALE ~ 1" = 20' HORIZ
1" = 10' VERT



CASING
1. 36" OD 0.406" WT STEEL PIPE WITH 3/8" x 40" SQ END PLATES
2. 30" OD 0.375 WT STEEL PIPE WITH 3/8" x 34" SQ END PLATES

36" AND 30"
CASING DETAILS

NOT TO SCALE

GENERAL NOTES.

1. CASINGS TO BE CLEANED, PRIMED AND FLOOD COATED WITH COAL TAR ENAMEL AND WRAPPED WITH COAL TAR IMPREGNATED ASBESTOS FELT.
2. 30" CASING INSTALLED FOR 24" CARRIER PIPE IF REQUIRED IN FUTURE.
3. 36" CASING INSTALLED FOR POSSIBLE FUTURE 30" CARRIER PIPE.
4. BACKFILL TO BE OF SELECTED MATERIAL CONSISTING OF 2" MINUS AGGREGATE.
5. SLOPES OF SIDES IN EXCAVATION TO BE NOT STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL.

NATIONAL ENERGY BOARD
CANADA

Certified to be a true copy of the original as approved by Order OP-117-65
made pursuant to Section 77 of the National Energy Board Act
JUL 16 1965 19
C. V. Linsdell
for Engineer

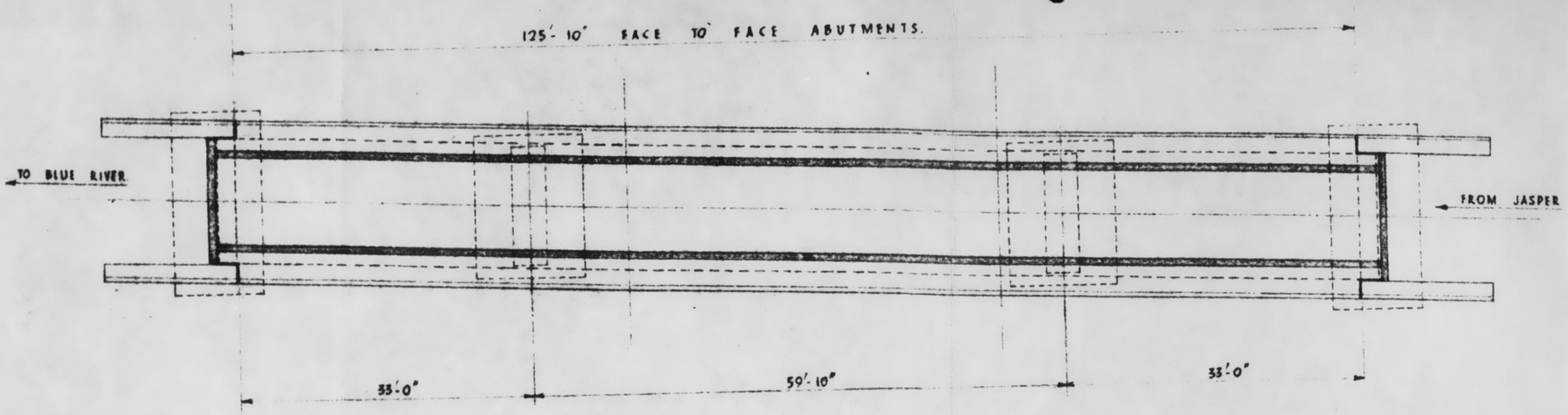
NO.	DATE	REVISION	DR.	CHK.	APPR.

REFERENCE DRAWINGS

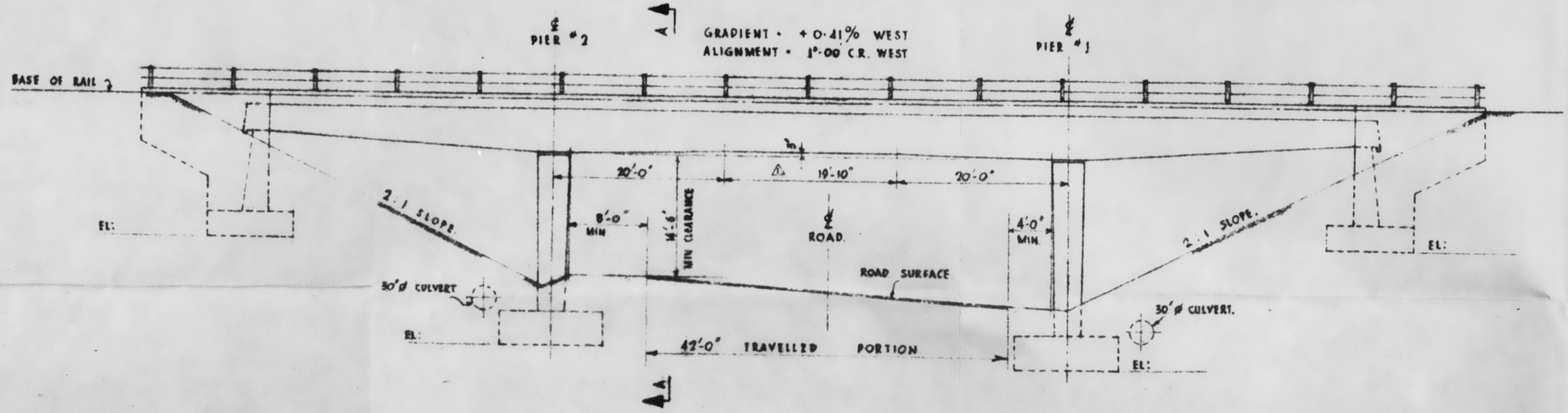
DWG. NO.

TRANS MOUNTAIN OIL PIPE LINE COMPANY
VANCOUVER, B. C.

DRAWN	PCL	CROSSING OF 24" MAIN LINE BY PROPOSED RECONSTRUCTED BANFF - JASPER HIGHWAY JASPER NATIONAL PARK NW 1/4-9-45-1-W6 T.M. MP 234.7	JOB NO.	GROUP 10
DATE	18 JUNE 65			
SCALE	AS NOTED.		DRAWING NO.	REV.
CHECKED			A-X-8897	0
APPR'D.				



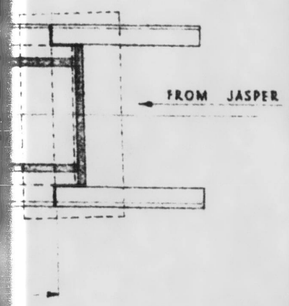
PLAN.

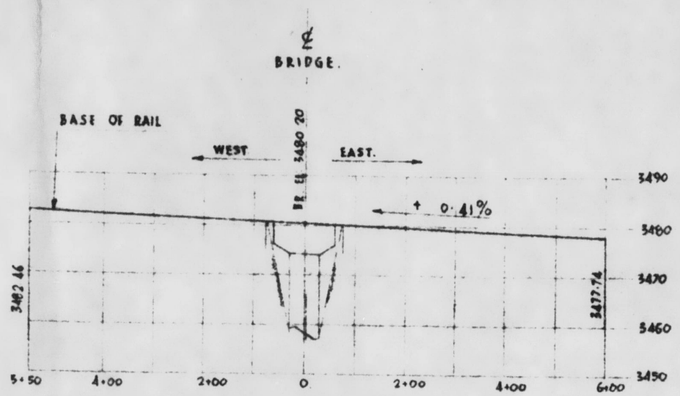


ELEVATION

Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3
National Archives of Canada
Archives nationales du Canada

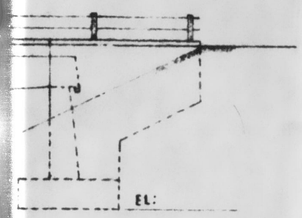
Removed from site July/16/66

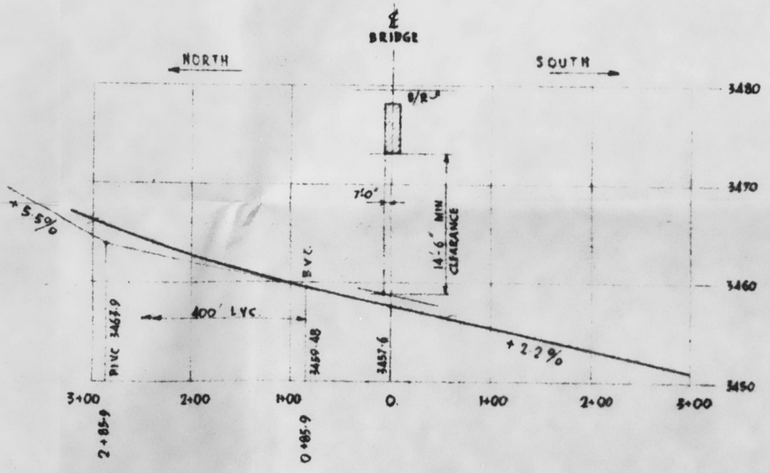




PROFILE • C.N.R. ALBREDA SUBDIVISION.

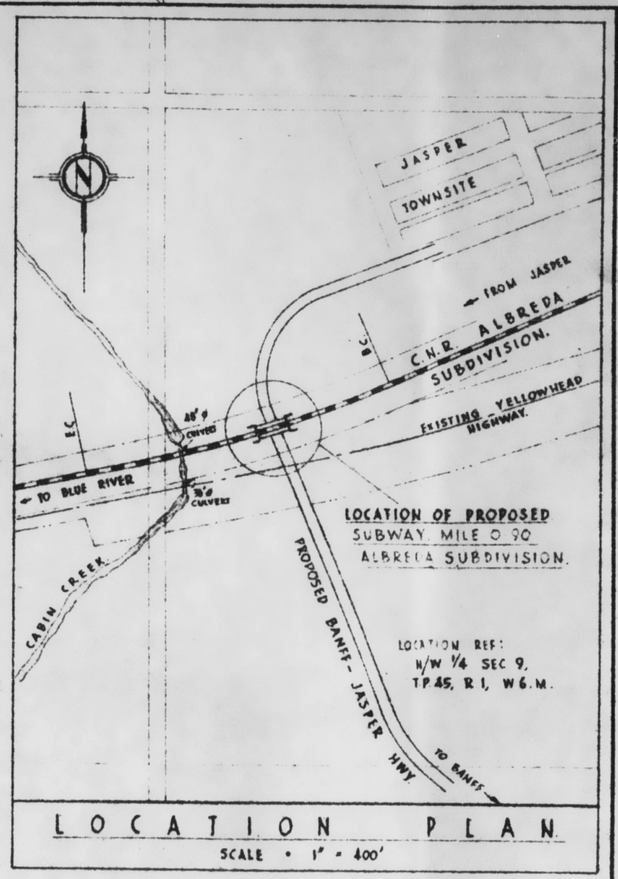
SCALES } VERT. 1" = 20'
HORIZ 1" = 200'





PROFILE • ℄ PROPOSED HIGHWAY

SCALES } VERT. 1" = 10'
HORIZ 1" = 100'



LOCATION PLAN

SCALE • 1" = 400'

GENERAL NOTES:

GENERAL: A NEW BRIDGE, CONSISTING OF A CONTINUOUS CONCRETE SLAB SUPPORTED ON REINFORCED CONCRETE ABUTMENTS & TWO PIERS, IS TO BE CONSTRUCTED TO CARRY THE C.N.R. MAIN LINE TRACK OVER THE RE-ALIGNED JASPER - BANFF HIGHWAY; ALL AS SHOWN ON THIS DRG.

BASE OF RAIL ELEVATIONS & EXISTING ALIGNMENT TO REMAIN UNCHANGED.

LIVE LOAD. COOPERS 70 + DIESEL IMPACT.

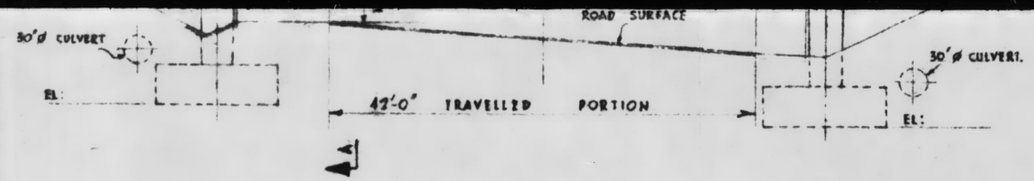
SPECIFICATION:

CONCRETE: C.N.R. SPEC. SOW-61 & SOW-7-1 : CLASS '3A' 4000 P.S.I @ 28 DAYS.

REINFORCING STEEL: C.S.A. SPEC. G30 SERIES 1954. ALL BARS SHALL BE DEFORMED & SHALL BE OF HARD GRADE OR INTERMEDIATE GRADE BILLET OR RAIL STEEL EXCEPT FOR STIRRUPS WHICH ARE TO BE OF STRUCTURAL GRADE BILLET STEEL.

CONSTRUCTION OF SUPERSTRUCTURE - C.N.R. STANDARD SPEC. SOW-9-1

YEAR OF CONSTRUCTION TO BE SHOWN IN ACCORDANCE WITH



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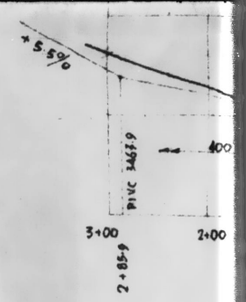

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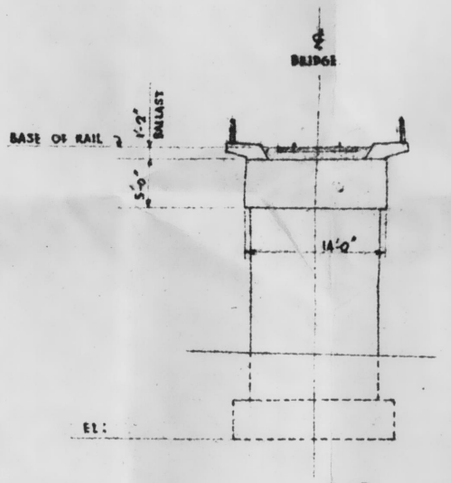
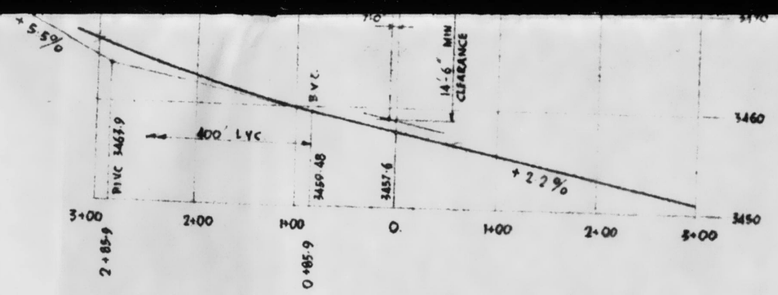


S E C T I O N A-

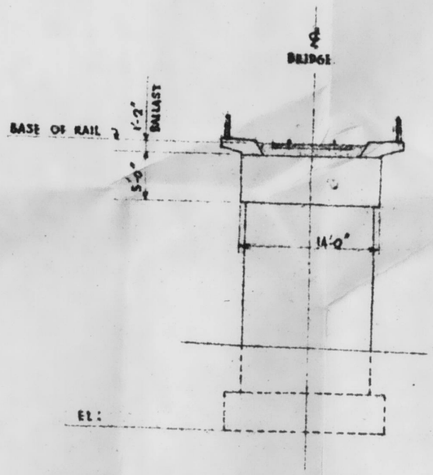
3 OF/DE

N.W.C.L. SNO-TRACE 910-2-63

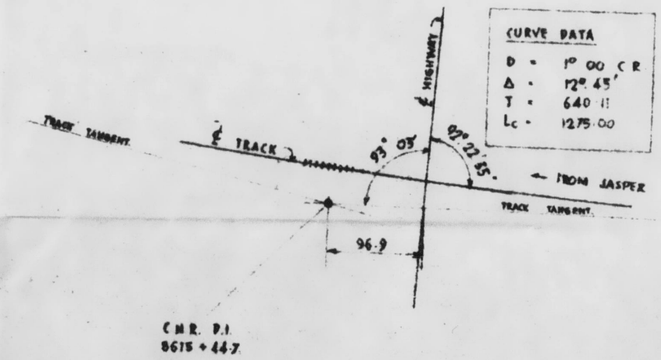


PROFILE • ℄ PROPOSED HIGHWAY

SCALES } VERT. 1" = 10'
HORIZ. 1" = 100'



SECTION A-A.



CURVE DATA

D =	1° 00 C.R.
Δ =	12° 45'
T =	640.11
Lc =	1275.00

INTERSECTION PLAN.
C.N.R. TRACK & HIGHWAY.

SCALE = 1" = 100'

GENERAL: A NEW BRIDGE, CONSISTING OF A CONTINUOUS CONCRETE SLAB SUPPORTED ON REINFORCED CONCRETE ABUTMENTS & TWO PIERS, IS TO BE CONSTRUCTED TO CARRY THE C.N.R. MAIN LINE TRACK OVER THE RE-ALIGNED JASPER - BANFF HIGHWAY; ALL AS SHOWN ON THIS DRG.

BASE OF RAIL ELEVATIONS & EXISTING ALIGNMENT TO REMAIN UNCHANGED.

LIVE LOAD. COOPERS 70 + DIESEL IMPACT.

SPECIFICATION:

CONCRETE: C.N.R. SPEC. SOW-61 & SOW-7.1 : CLASS '3A' 4000 P.S.I. @ 28 DAYS.

REINFORCING STEEL: C.S.A. SPEC. G30 SERIES 1954. ALL BARS SHALL BE DEFORMED & SHALL BE OF HARD GRADE OR INTERMEDIATE GRADE BILLET OR RAIL STEEL EXCEPT FOR STIRRUPS WHICH ARE TO BE OF STRUCTURAL GRADE BILLET STEEL.

CONSTRUCTION OF SUPERSTRUCTURE - C.N.R. STANDARD SPEC. SOW-9.1

YEAR OF CONSTRUCTION TO BE SHOWN IN ACCORDANCE WITH C.N.R. STANDARD DRG. RIS-1.

NEAREST STATION:- JASPER M 0+00

CONSTRUCTED UNDER B.O. No

REFERENCE DRGS:

B-8069-1 & V-8069-1 : C.N.R. MOUNTAIN REGION.
B-8069-3, -5, -6, -7 & 8 : CANADA D.P.W.

ESTIMATED QUANTITIES:

CONC. CLASS '3A'.
REINFORCING STEEL:

LIST OF DRGS:

GENERAL LAYOUT. AA550-0.9-1.1

SCALES: 1/10' = 1'-0" & AS NOTED		REGION MOUNTAIN.	CN Canadian National Railways
DESIGNED: [signature]	CHKD.	AREA B.C.	
DRAWN: J.C.H.	CHKD. [signature]	SUBDIV. ALBREDA.	
MK	DATE	REVISION	BY
1	JULY 7TH 1965	CAMBER ADDED TO BRIDGE SPAN	J.H.

BANFF—JASPER HIGHWAY SUBWAY
JASPER, B.C.

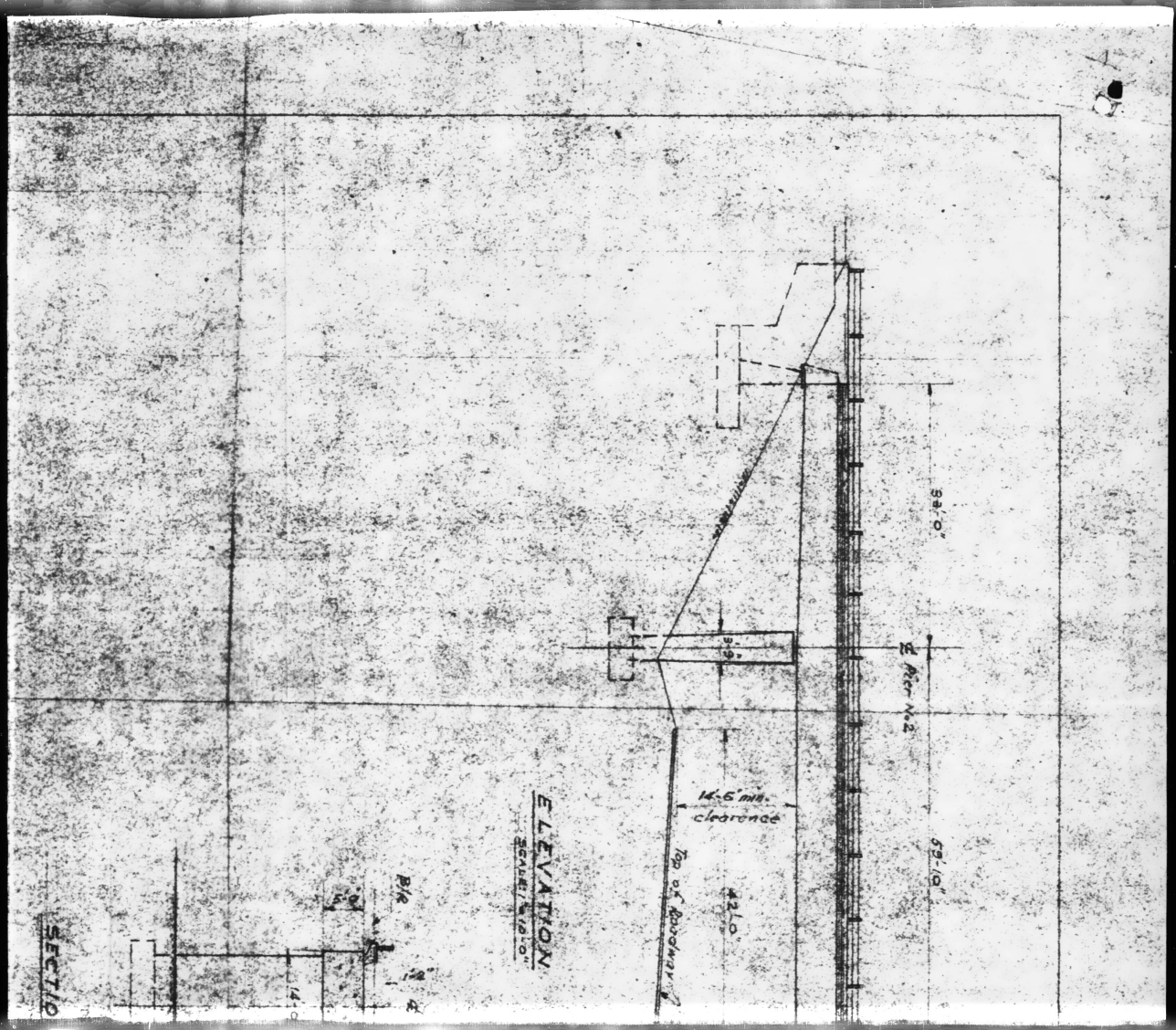
GENERAL LAYOUT.

CORRECT: [signature] Senior Structural Engineer

APPROVED: [signature] Engineer of Bridges & Structures

OFFICE OF ENGINEER OF BRIDGES & STRUCTURES

MONTREAL JUNE 18, 1965 DWG. NO. AA550-0.9-1.1



Parks Canada
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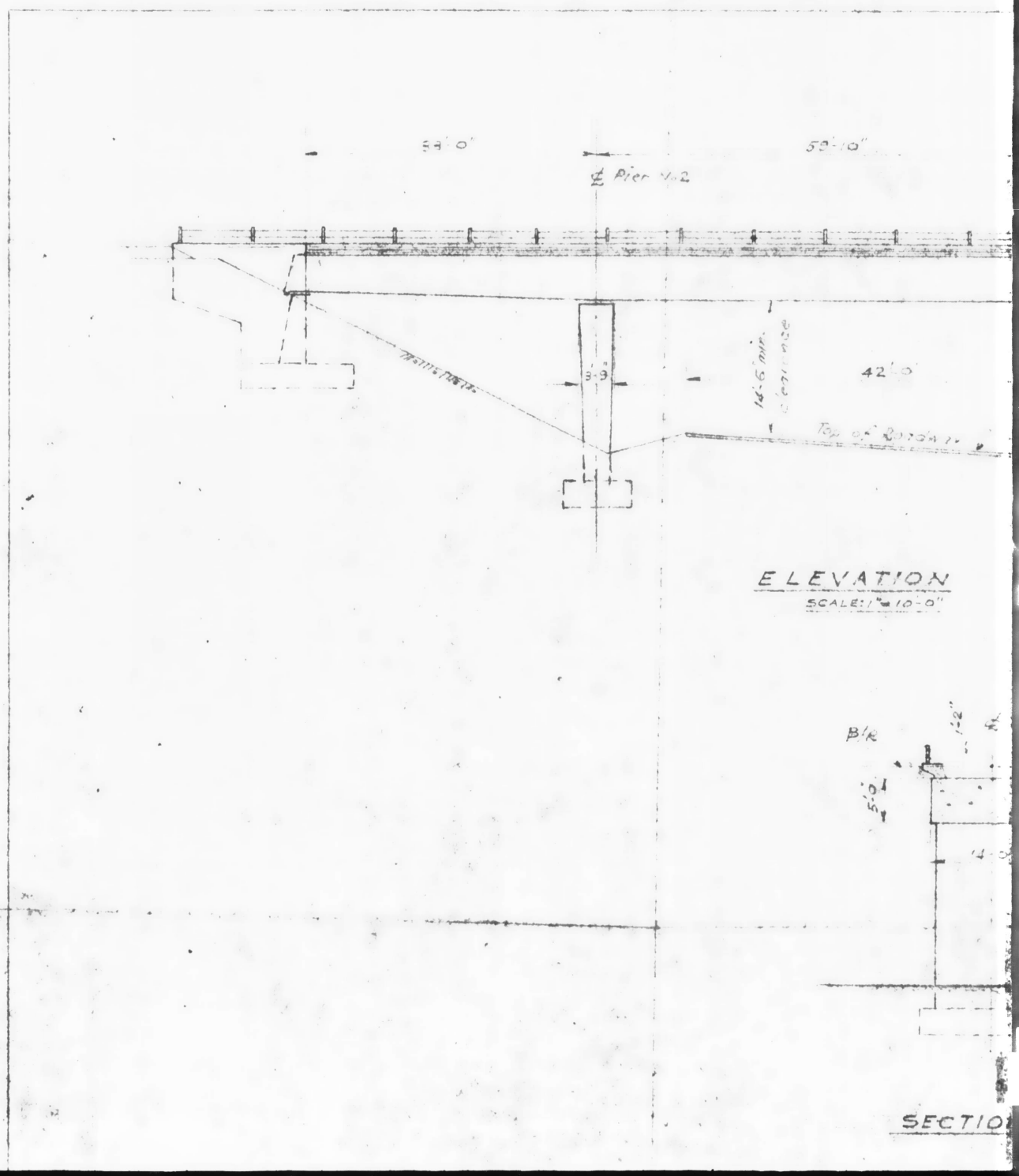
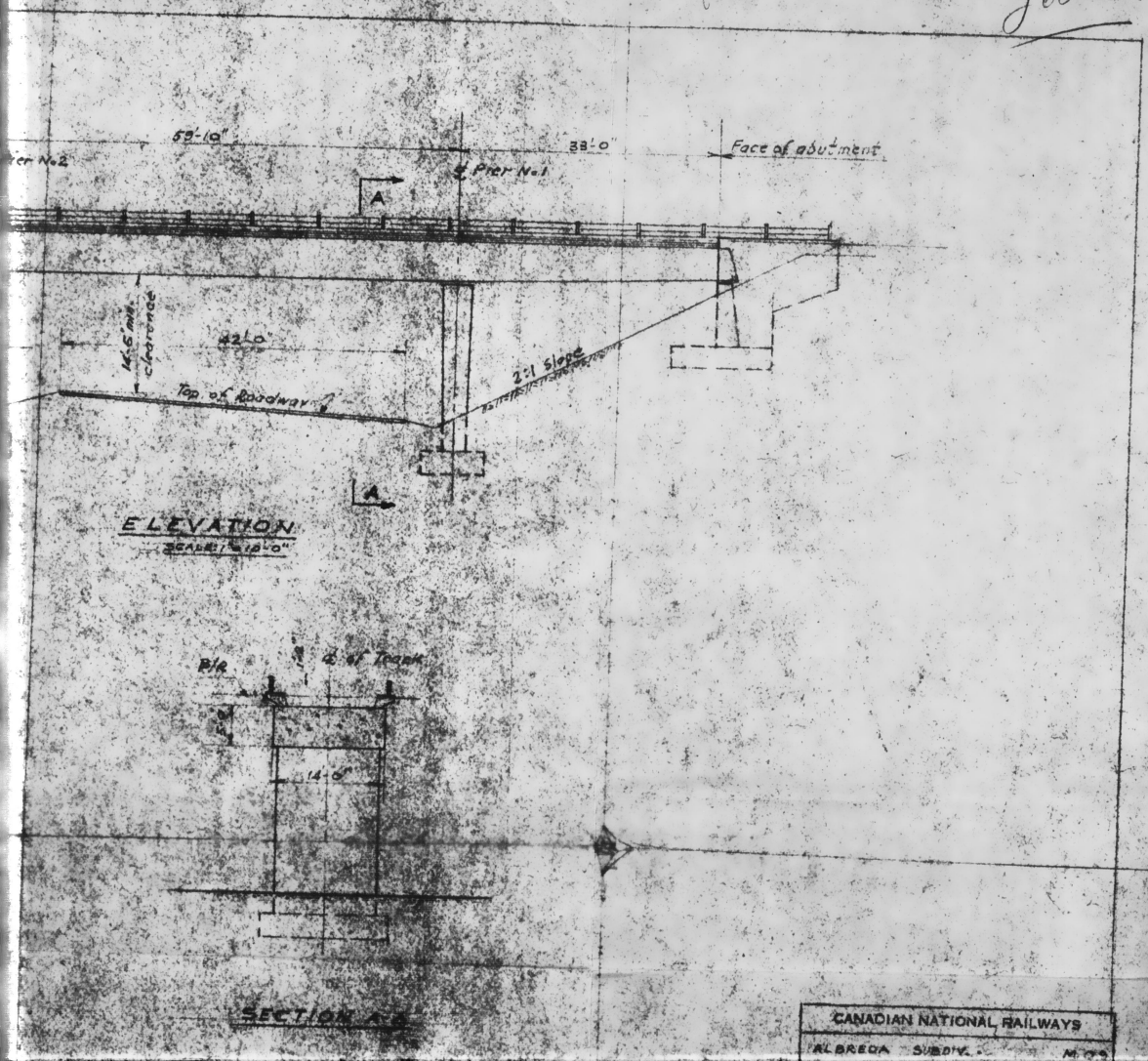
RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3
National Archives of Canada
Archives nationales du Canada
001335

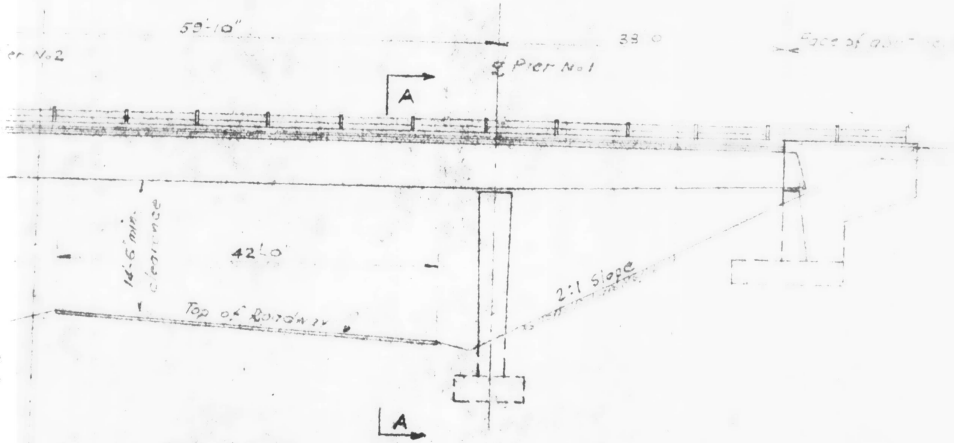


National Archives of Canada
Archives nationales du Canada

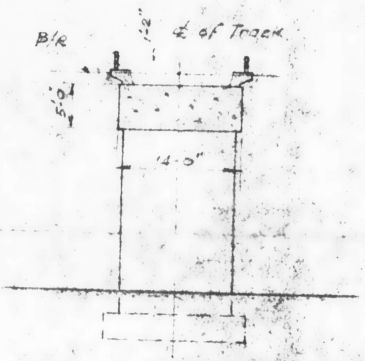
Removed from letter June 23/65

J 60-23.



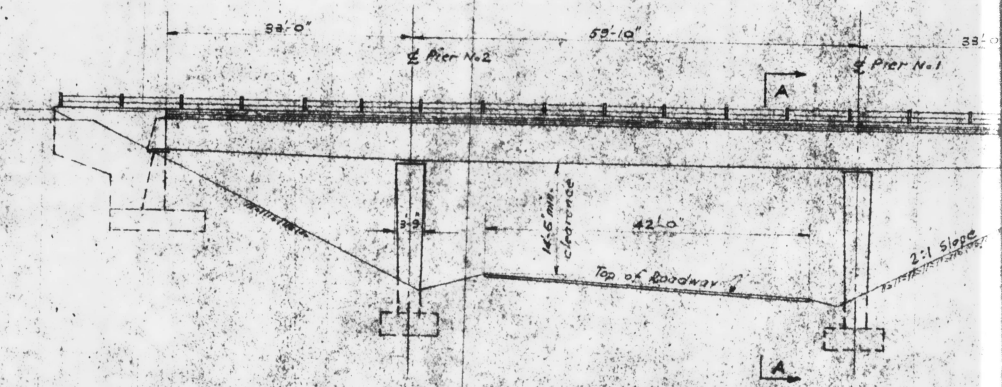


ELEVATION
SCALE: 1" = 10'-0"



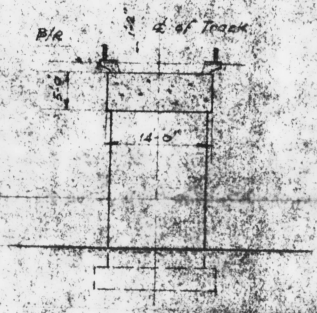
SECTION A-A

CANADIAN NATIONAL RAILWAYS
ALBREDA SUBDIV.



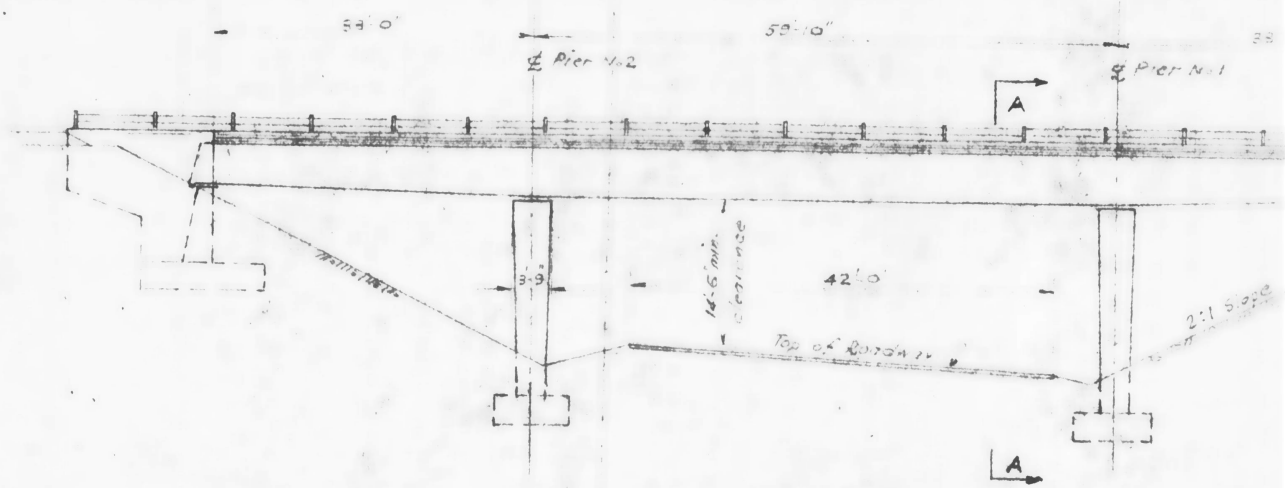
ELEVATION

SCALE: 1" = 10'-0"



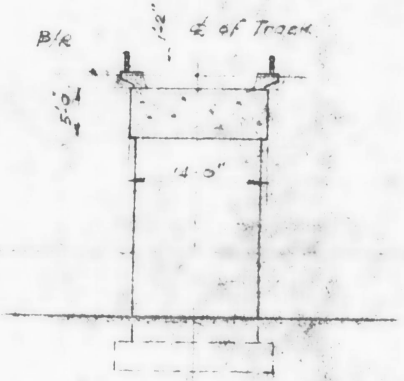
SECTION A-A

3 OF/DE



ELEVATION

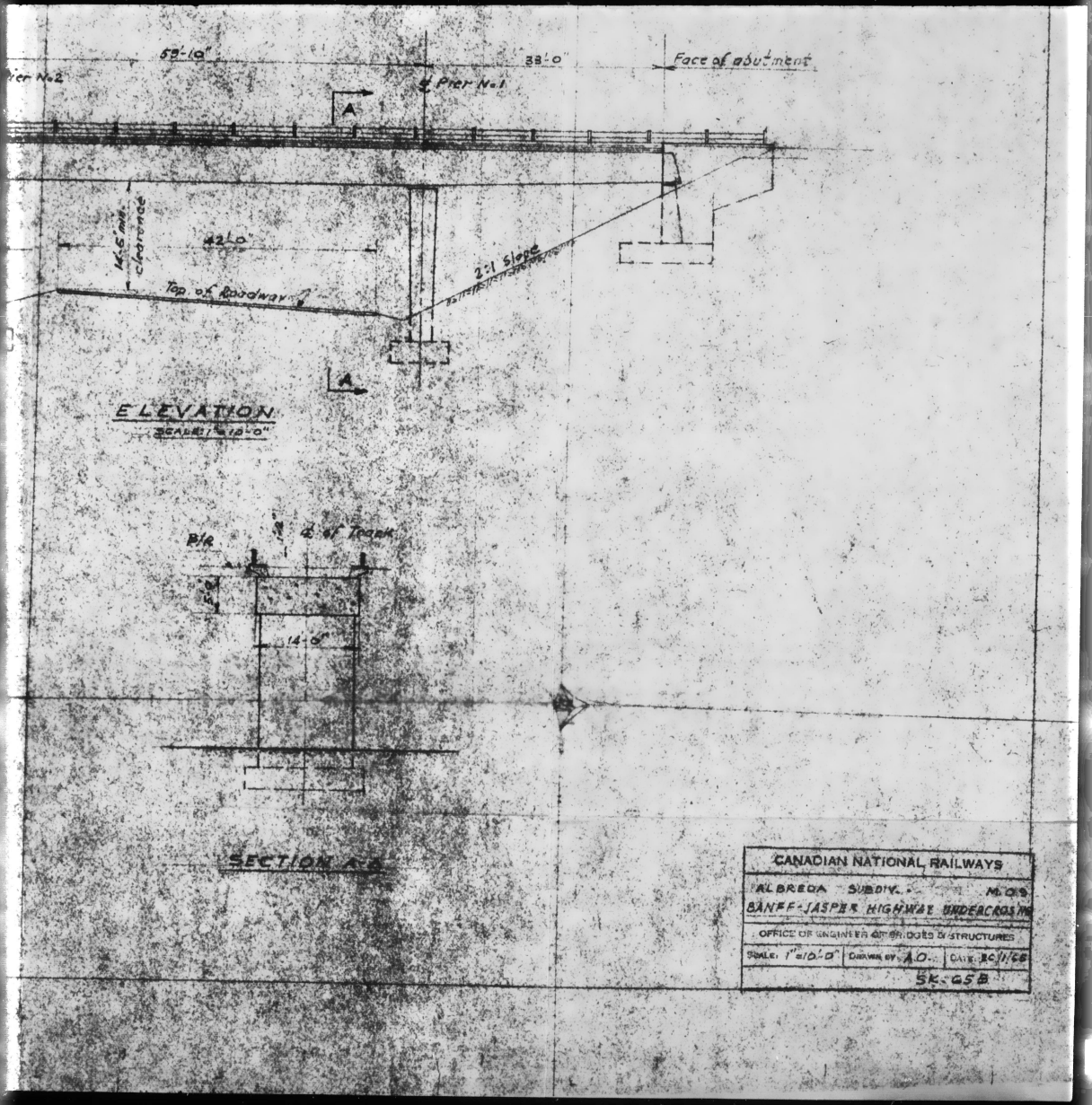
SCALE: 1" = 10'-0"



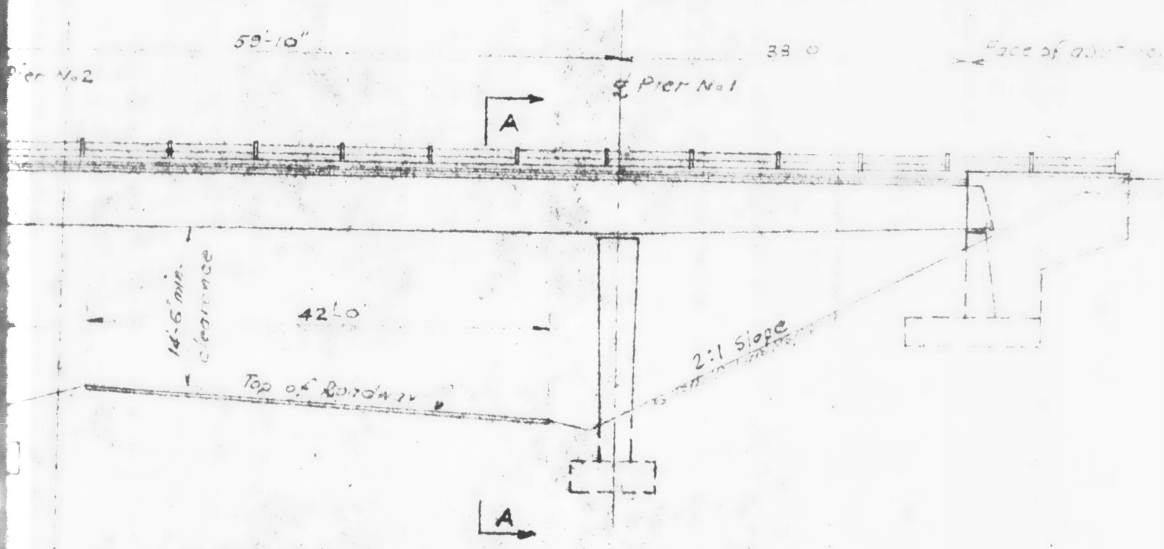
SECTION A-A

3 OF/DE

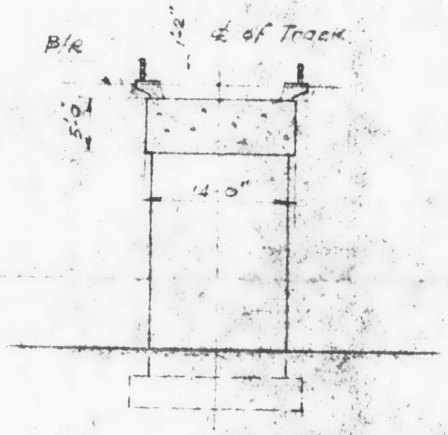
REPEAT
REPETITION



CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.O.S.
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1"=10'-0"	DRAWN BY: A.O.	DATE: DEC/1/66
	5K-G58	



ELEVATION
SCALE: 1" = 10'-0"



SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.09
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF THE CHIEF OF BRIDGES & STRUCTURES		
SCALE 1"=10'-0"	DRAWN BY A.O.	DATE 20/1/66
	SK. 658	

APPROVED	PROJECT ENGINEER
DATE	1 Nov 62

A.H. Anderson 5/11/62

DATE
6/22/61
7/5/61
7/6/61

139-5-144-4 B-J

PLAN		BY	DATE
NOTE BOOK NO. 1	SURVEYED	L. Smith	6/14/61
	PLOTTED	R. Smith	7/5/61
	ALIGNMENT CHECKED	W. Anderson	7/6/61
	RT. OF WAY CHECKED		

3500

BORROW AREA
CABIN LAKE ROAD
5400' FROM 1013+00

JASPER
TOWNSITE

MILE
144.4

E.C.-1010+76.6

CURVE DATA
Δ = 90° 15' 40"
Dc = 15° RT.
Ts = 383.7'
Lc = 601.7'

P.I.-1008+58.6

B.C.-1004+74.9

END OF CONTRACT
MILE 144.4

CONNAUGHT DRIVE

CANADIAN NATIONAL RAILWAY

PRESENT YELLOWHEAD HIGHWAY

TRANS - MOUNTAIN OIL PIPELINE

C.N.R.

T.M.O.P.

Place
24" x 72'
C.M.P

B.M. - 3446.15
115' RT. ℄
STA. 1000+00

B.M. - 3491.04
105' RT. ℄
STA. 1010+00

Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3

National Archives of Canada
Archives nationales du Canada

001343

VERT. SCALE	HOR. SCALE	DRAWING NO.	SHEET NO.	TOTAL SHEETS
1" = 20'	1" = 200'	JA-62-17-abc	2	14

CONNAUGHT DRIVE

CANADIAN NATIONAL RAILWAY

PRESENT YELLOWHEAD HIGHWAY

TRANS-MOUNTAIN OIL PIPELINE

YELLOWHEAD LOCATION

END OF CONTRACT
MILE 144.4

BEGINNING OF CONTRACT MI. 143.7

MIETTE

BANFF

RIVER

CURVE DATA
Δ = 36° 52'
Δc = 21° 52'
Dc = 5° RT.
Ts = 532.9'
Lc = 437.3'
Ls = 300'

MILE 144

BANFF - JASPER HIGHWAY

Place 24" x 72' C.M.P.

Place 24" x 72' C.M.P.

Place 24" x 90' C.M.P.

DH. NO. 8

DH. NO. 7

BC-1004+74.9

ST-994+95.4

CS-991+95.4

P.I. 989+91.0

TS-984+58.1

SC-987+58.1

Sand

Sand

Sand

PROPOSED RIVER DIVERSION

B.M. - 3446.15
115' RT. ℄
STA. 1000+00

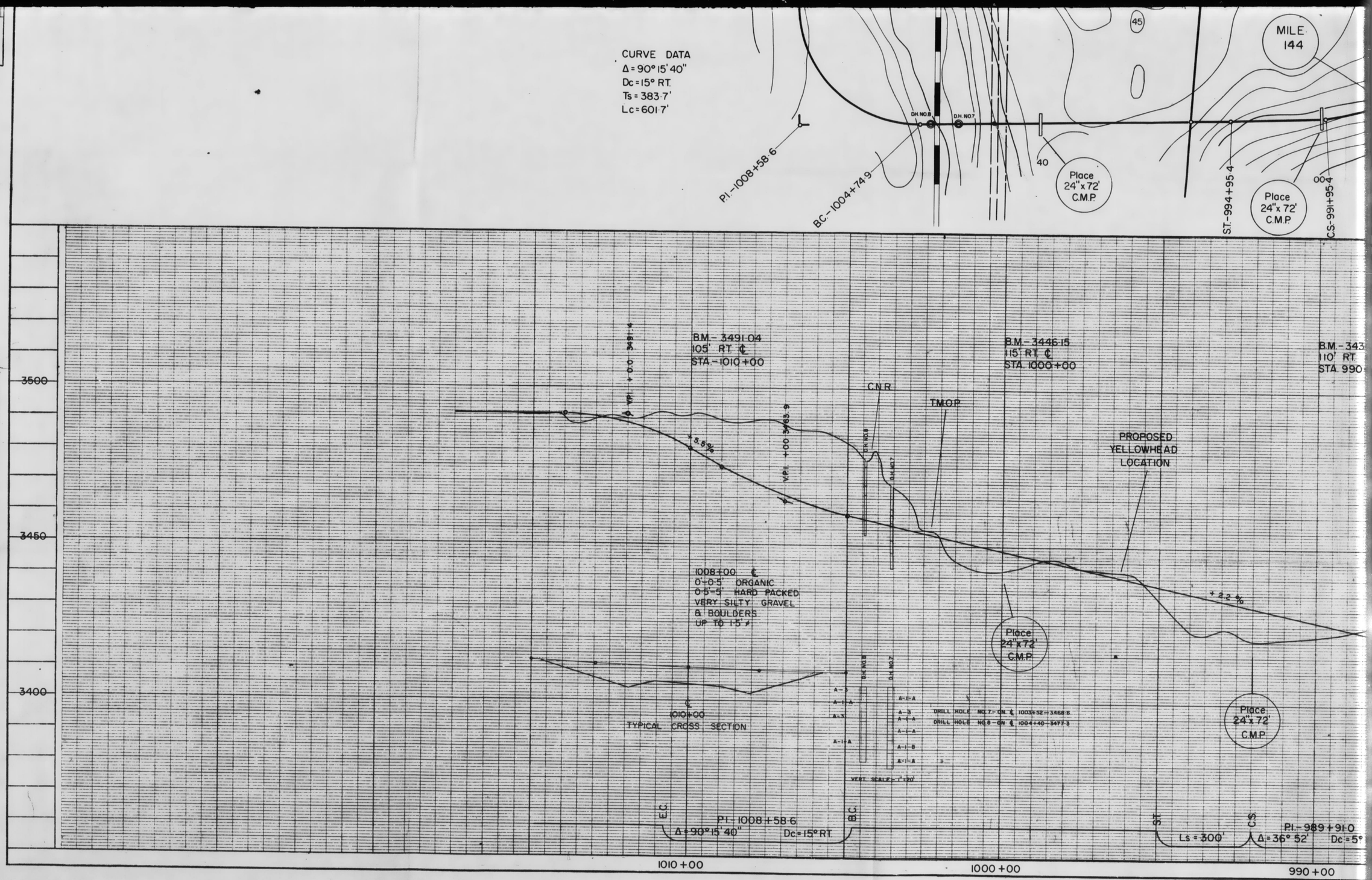
B.M. - 3434.66
110' RT. ℄
STA. 990+00

C.N.R.

T.M.O.P.

Department of Northern Affairs & National [illegible]
ENGINEERING SERVICES DIVISION
PLAN APPROVED

3500



PLAN
NOTE BOOK NO. 1

APPROVED
DATE
PROJECT ENGINEER
1 Nov 62

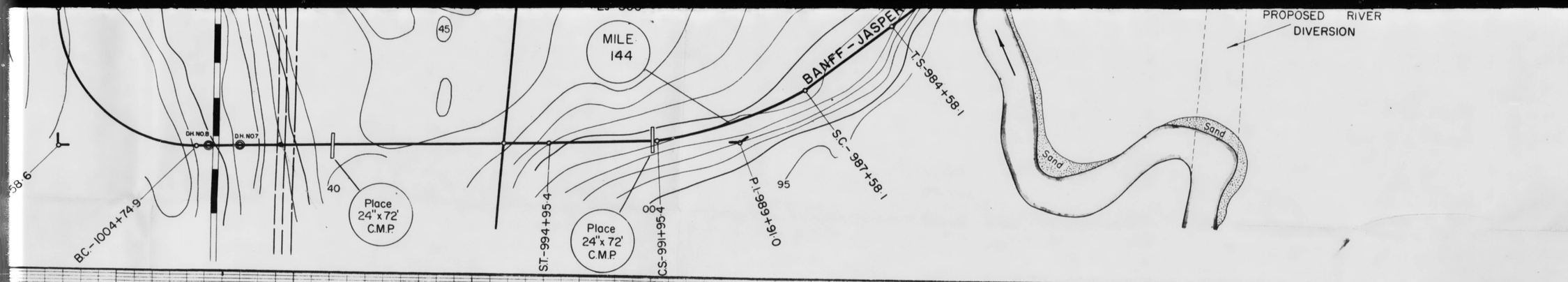
139-5-144-4 B-J

PROFILE
NOTE BOOK NO. 2

	BY	DATE
SURVEYED	D. Lavanway	6/22/61
PLOTTED	R. Smith	7/6/61
GRADES CHECKED	W. Anderson	7/6/61
B.M.'S NOTED		
STRUCTURE NOTAT'NS CH'KD.		

HUGHES OWENS IMPERIAL LINEN

3 OF/DE



B.M.-3446.15
115' RT. ℄
STA. 1000+00

B.M.-3434.66
110' RT. ℄
STA. 990+00

Department of Northern Affairs & National Resources
ENGINEERING SERVICES DIVISION
PLAN APPROVED
☒ WITHOUT ALTERATIONS
☐ With ALTERATIONS INDICATED
1/6/65
DATE
CHIEF ENGINEER
Plan Checked and Recommended
ALTERATIONS MADE:
NONE

C.N.R.
T.M.O.P.
PROPOSED YELLOWHEAD LOCATION
V.P.I. +00-3483.9
D.H. NO.8
D.H. NO.7
NIC
PACKED GRAVEL
Place 24"x72' C.M.P.
+2.2 %
V.P.I.-+00-3408.9
+0.8%
MIETTE RIVER
Place 24"x90' C.M.P.
Place 24"x72' C.M.P.
A-3
A-1-A
A-1-B
DRILL HOLE NO.7 - ON ℄ 1003+52 - 3468.6
DRILL HOLE NO.8 - ON ℄ 1004+40 - 3477.3
VERT. SCALE - 1"=20'
B.C.
+58.6
Dc=15° RT
S.T.
Ls=300'
C.S.
Δ=36° 52'
P.I.-989+91.0
Dc=5° RT
S.T.
Ls=300'
T.S.
S.T.
3500
3450
3400
1000+00
990+00
980+00
970+00

HUGHES OWENS IMPERIAL LINEN



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pt 3

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File/dossier J60-23
pt 3

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Archives nationales du Canada

001348

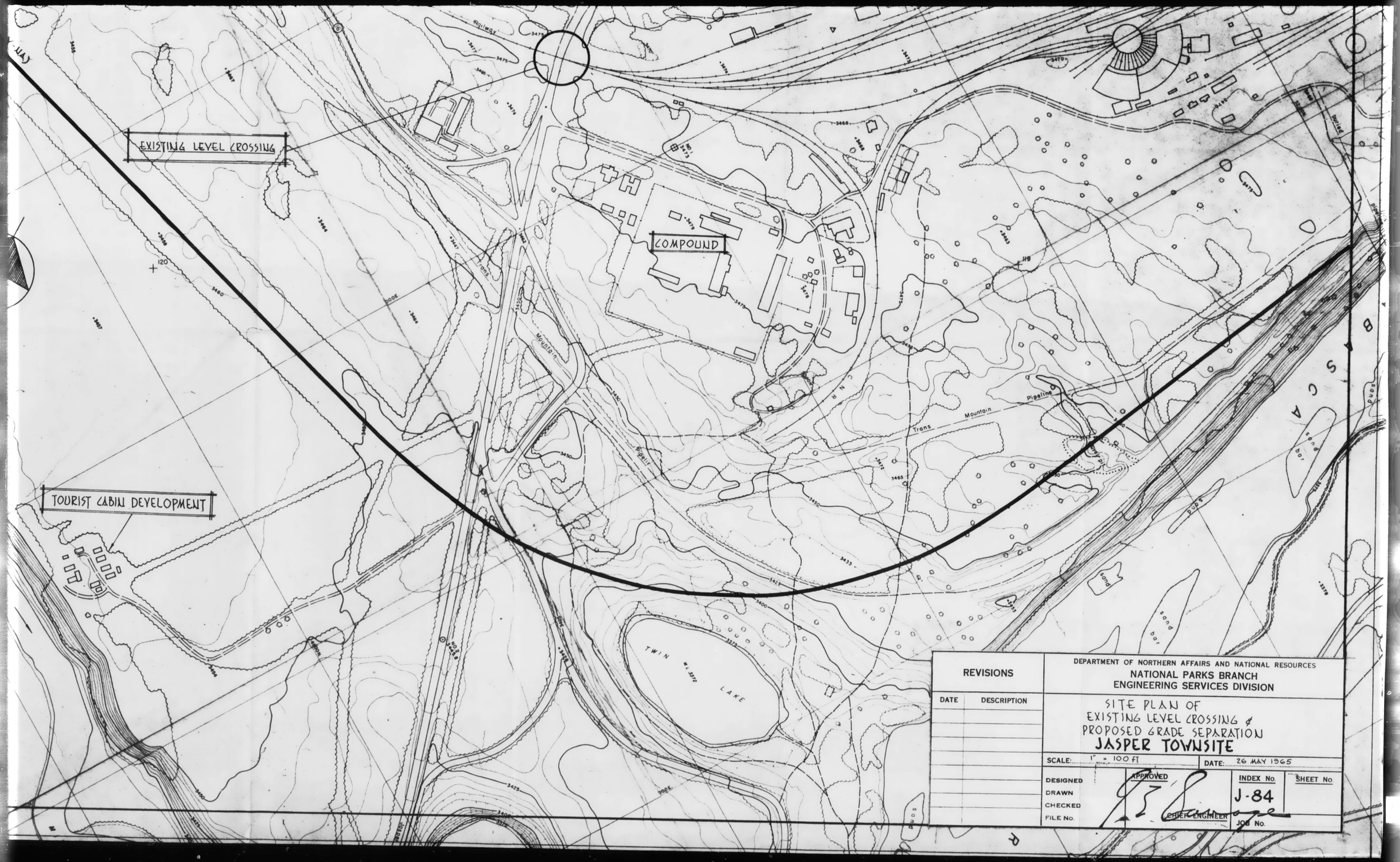






EXISTING LEVEL CROSSING
TOURIST CABIN DEVELOPMENT
BANFF - JASPER HIGHWAY
(DPW CONTRACT 14/65/J-Y-N.A.)
RIVER
sand
cut line
3 OF/DE


RIVER
BANFF - JASPER
(DPW CONTRACT 14/65/J-Y-11A)
EXISTING LEVEL CROSSING
TOURIST CABIN DEVELOPMENT
3 OF/DE
REPEAT
REPETITION


EXISTING LEVEL CROSSING
COMPOUND
TOURIST CABIN DEVELOPMENT
TWIN LAKE
Trans Mountain Pipeline
Railway
Mountain
Pipeline
C N R
BASCA
sand bar
pubs
REVISIONS
DATE
DESCRIPTION
DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION
SITE PLAN OF
EXISTING LEVEL CROSSING &
PROPOSED GRADE SEPARATION
JASPER TOWNSITE
SCALE: 1" = 100 FT
DATE: 26 MAY 1965
DESIGNED
DRAWN
CHECKED
FILE No.
APPROVED
CHIEF ENGINEER
INDEX No.
J-84
SHEET No.
JOB No.

EXISTING LEVEL CROSSING

COMPOUND

TOURIST CABIN DEVELOPMENT

Trans Mountain Pipeline

BASCA

REVISIONS	
DATE	DESCRIPTION

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NATIONAL PARKS BRANCH
ENGINEERING SERVICES DIVISION

SITE PLAN OF
EXISTING LEVEL CROSSING &
PROPOSED GRADE SEPARATION
JASPER TOWNSITE

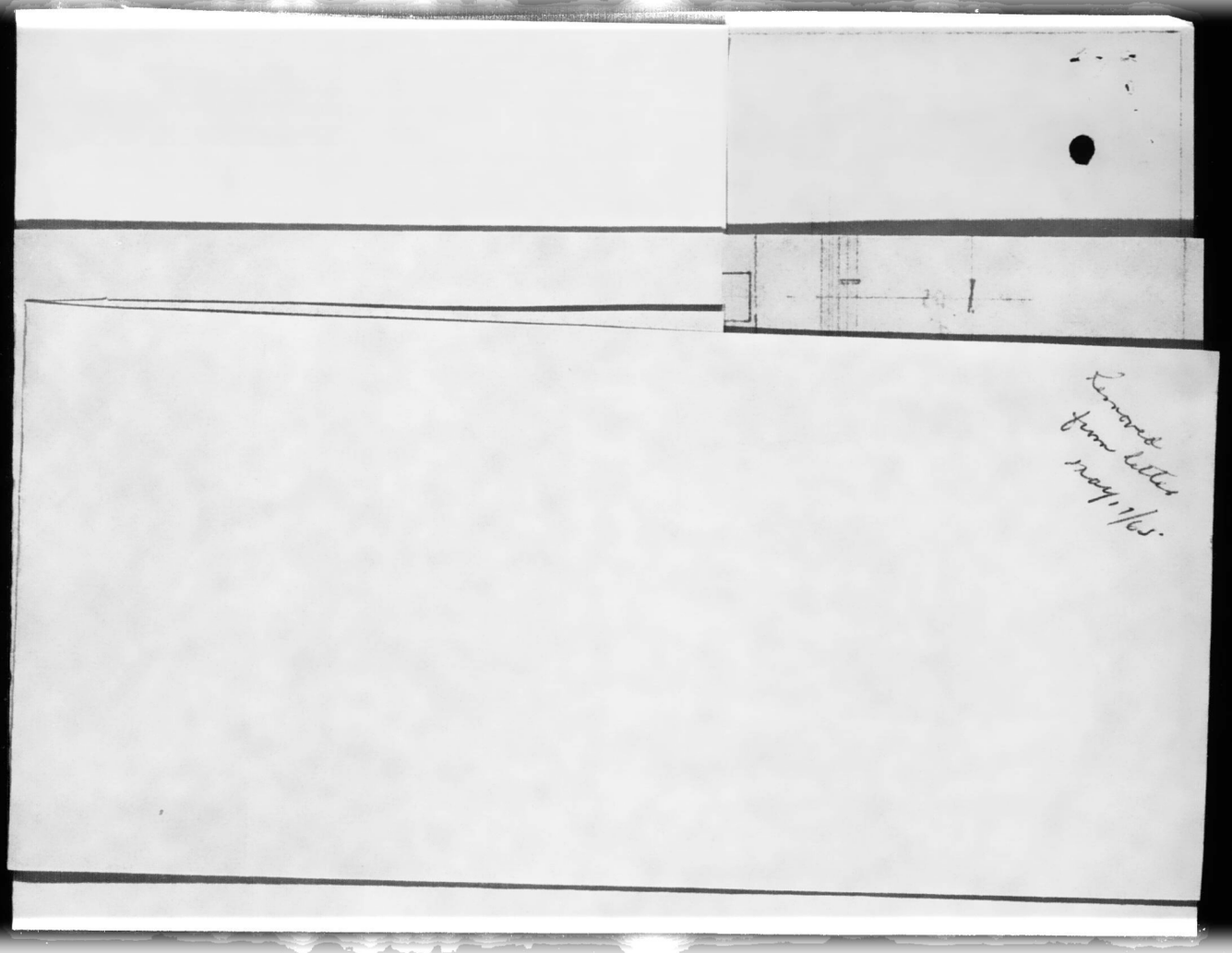
SCALE: 1" = 100 ft
DATE: 26 MAY 1965

DESIGNED
DRAWN
CHECKED
FILE No

APPROVED
CHIEF ENGINEER

INDEX No J-84
JOB No

SHEET No



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File/dossier J60-23
pt 3

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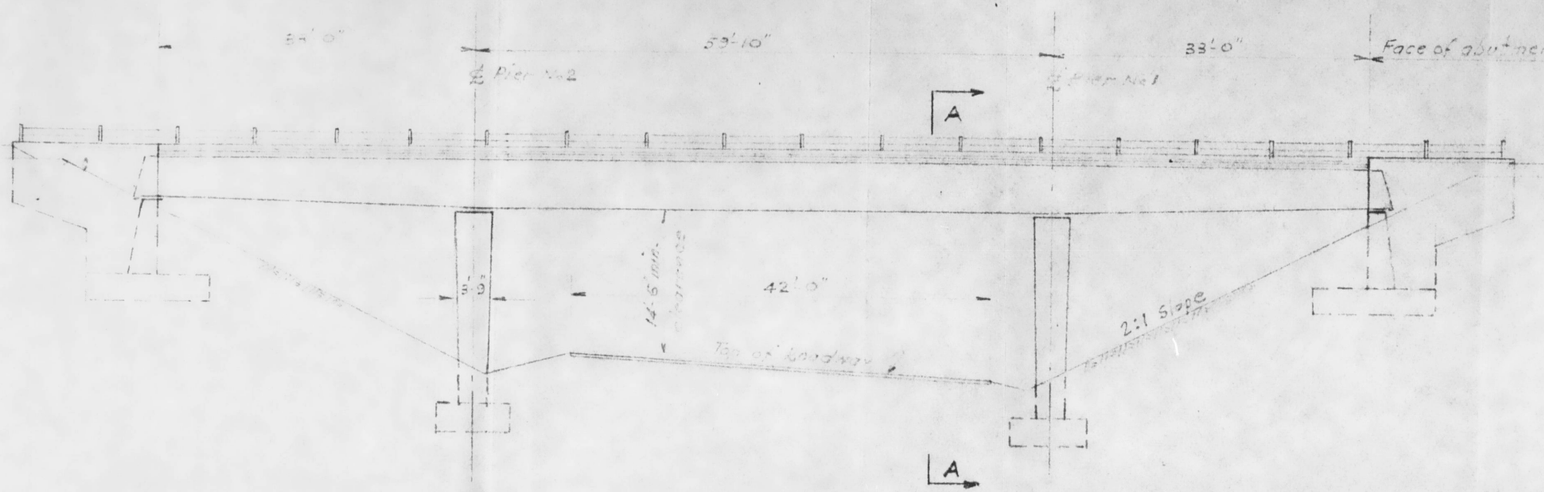
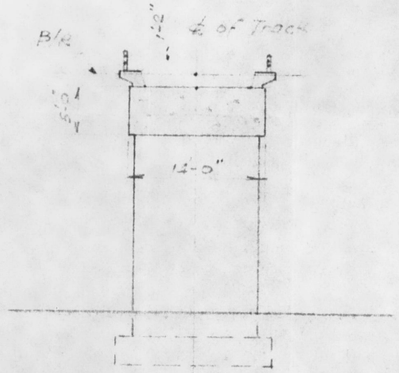
001355



ELEVATION

SCALE: 1"=10'-0"



SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.D.D.
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1"=10'-0"	DRAWN BY: A.O.	DATE: 26/1/65
		SK. 658

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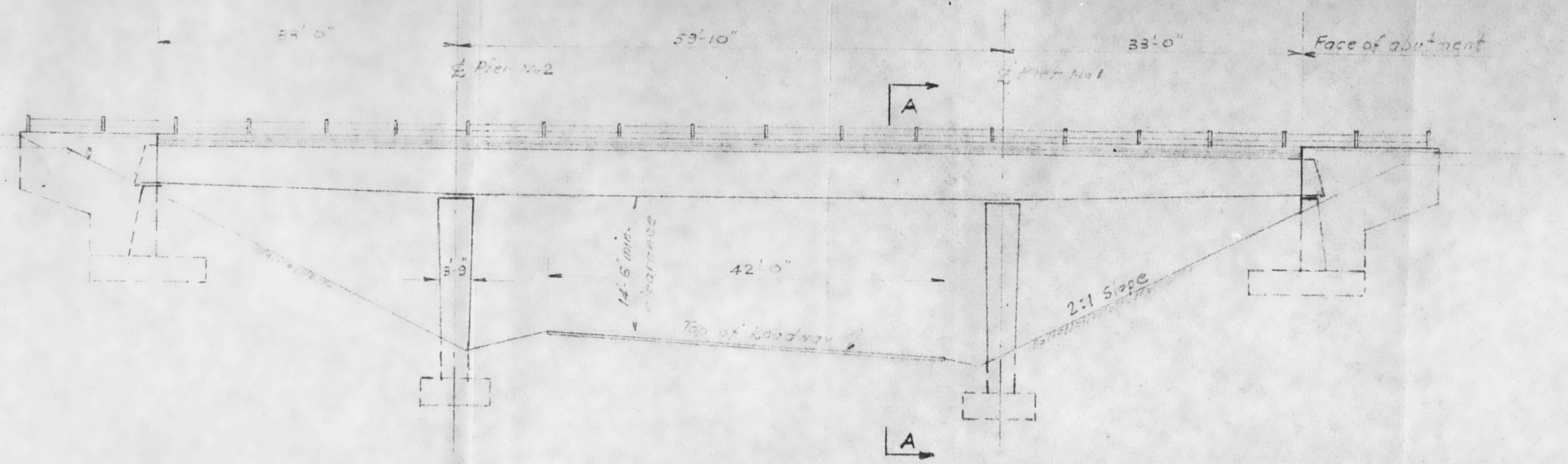

ELEVATION
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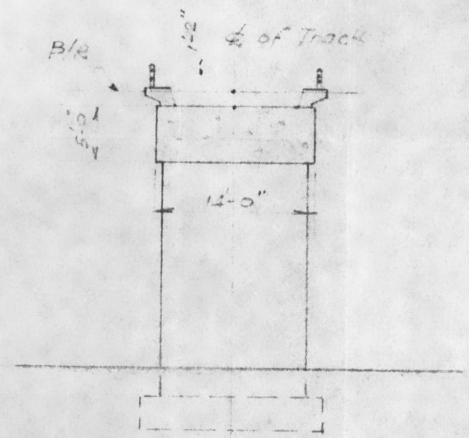

SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.O.D.
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1" = 10'-0"	DRAWN BY: A.O.	DATE: 26/1/65
SK. 65B		

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Parcs Canada
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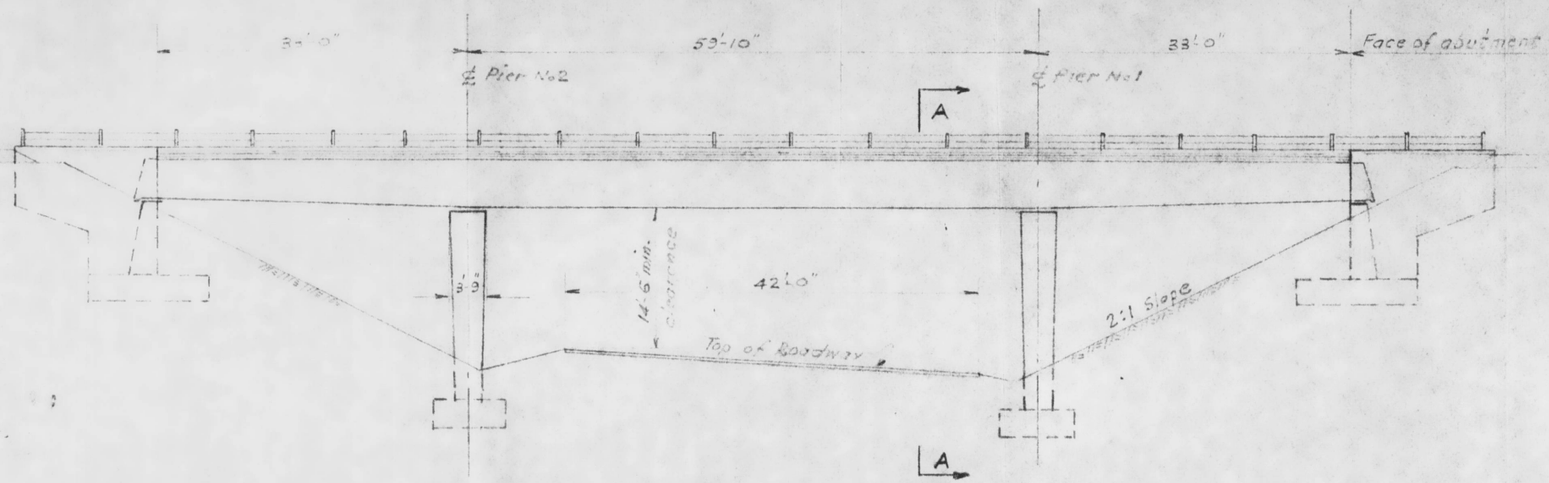

ELEVATION
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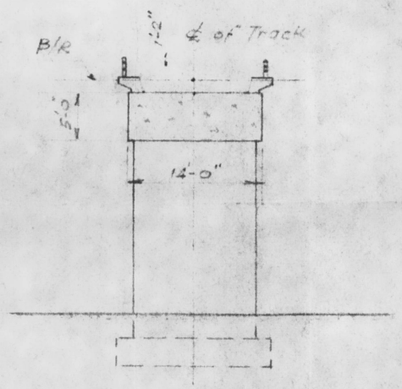

SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.O.9
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1" = 10'-0"	DRAWN BY: A.O.	DATE: 26/1/65
SK. 65B		

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Parcs Canada
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File/dossier J60-23
pt 3
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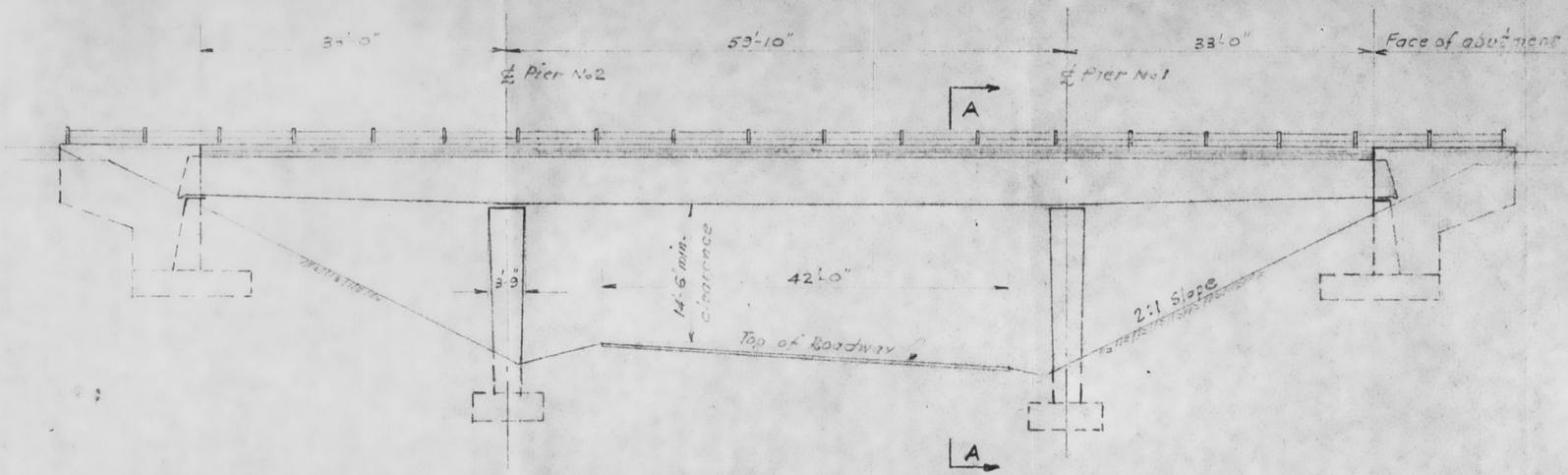
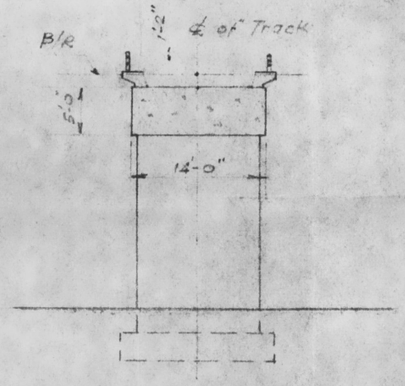
Archives nationales du Canada



ELEVATION

SCALE: 1"=10'-0"



SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.D.9
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1"=10'-0"	DRAWN BY: A.D.	DATE: 20/1/65
		SK. 65B

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Parcs Canada
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File/dossier J60-23
pt 3
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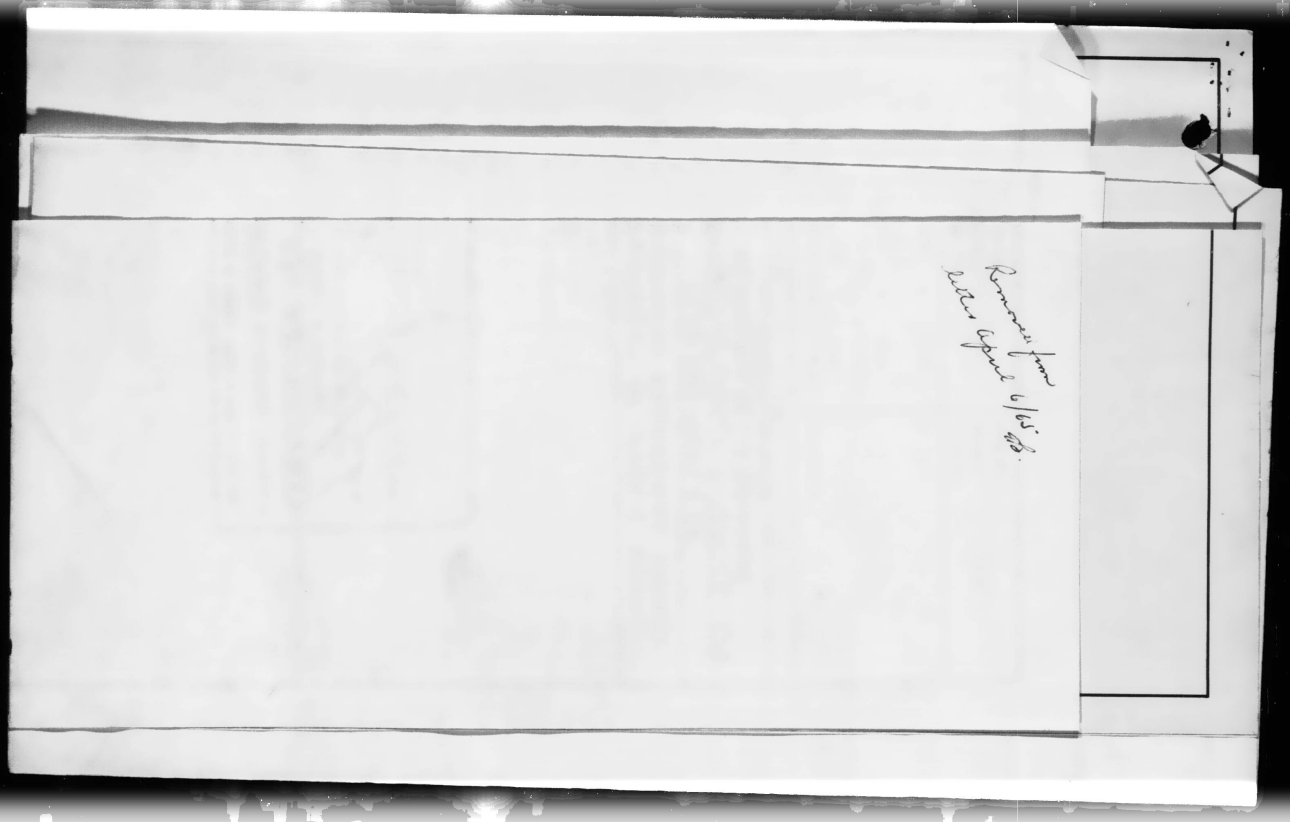

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Parcs Canada

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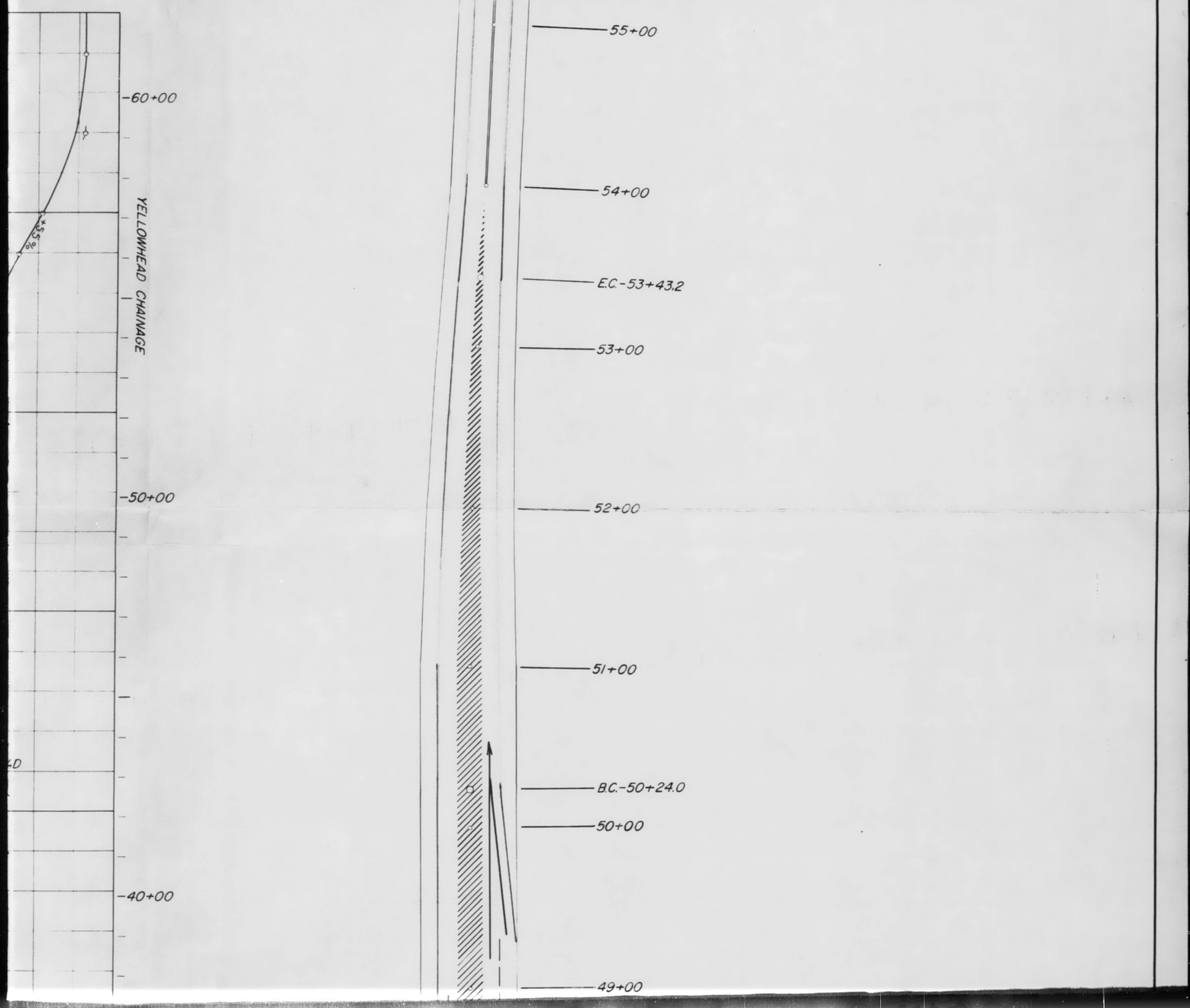

Parks Canada
Parcs Canada

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File/dossier J60-23
pt 3

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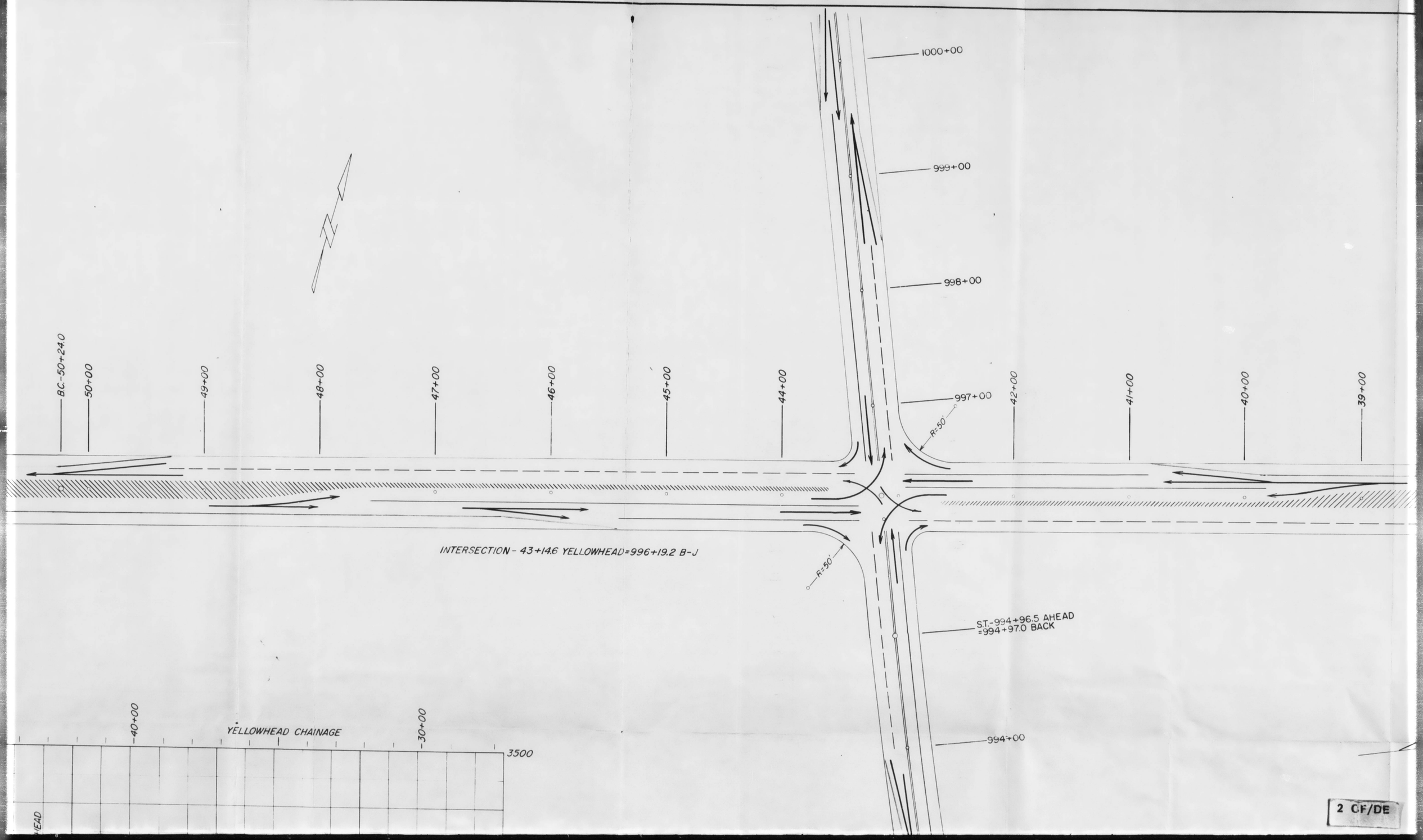
Archives nationales du Canada

001361


1000+00
999+00
998+00
997+00
R-50'
42+00
41+00
40+00
39+00
BC-50+24.0
50+00
49+00
48+00
47+00
46+00
45+00
44+00
INTERSECTION - 43+14.6 YELLOWHEAD=996+19.2 B-J
R-50'
ST.-994+96.5 AHEAD
=994+97.0 BACK
994+00
40+00
YELLOWHEAD CHAINAGE
30+00
3500

2 CF/DE

41+00

40+00

39+00

38+00

37+00

36+00

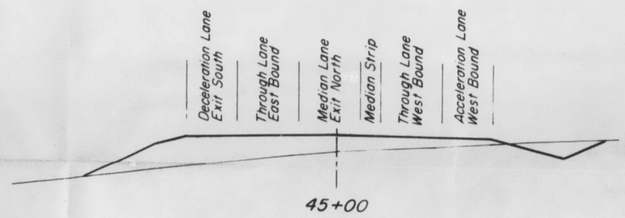
35+00

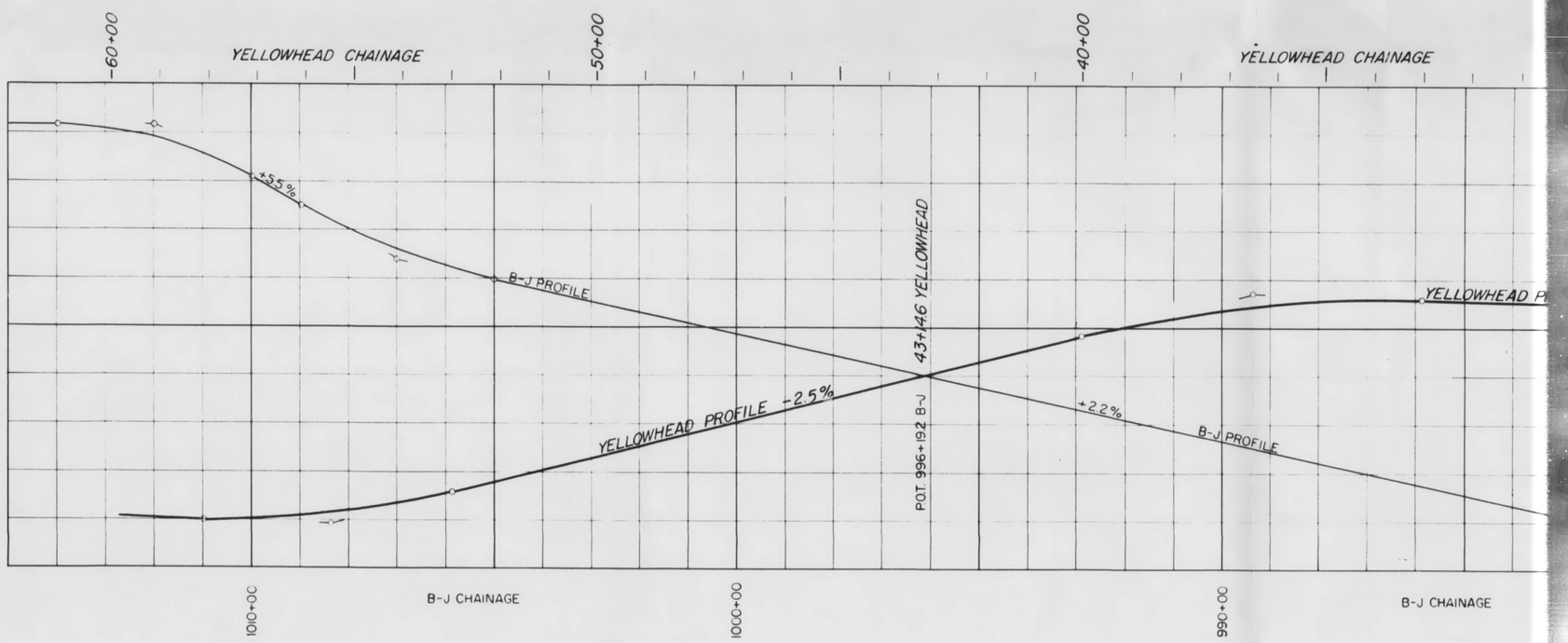
34+00

33+00

TYPICAL CROSS-SECTIONS

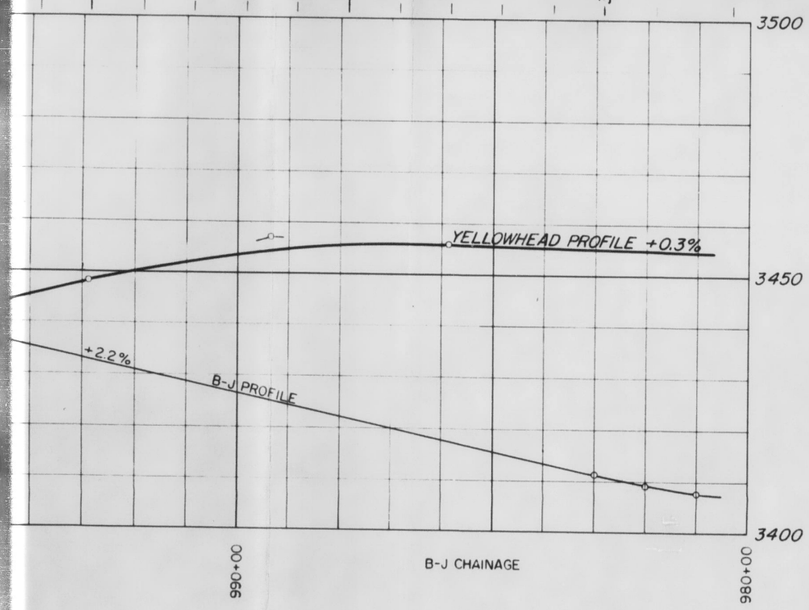
SCALE: Vert. 1"=20' Hor. 1"=20'

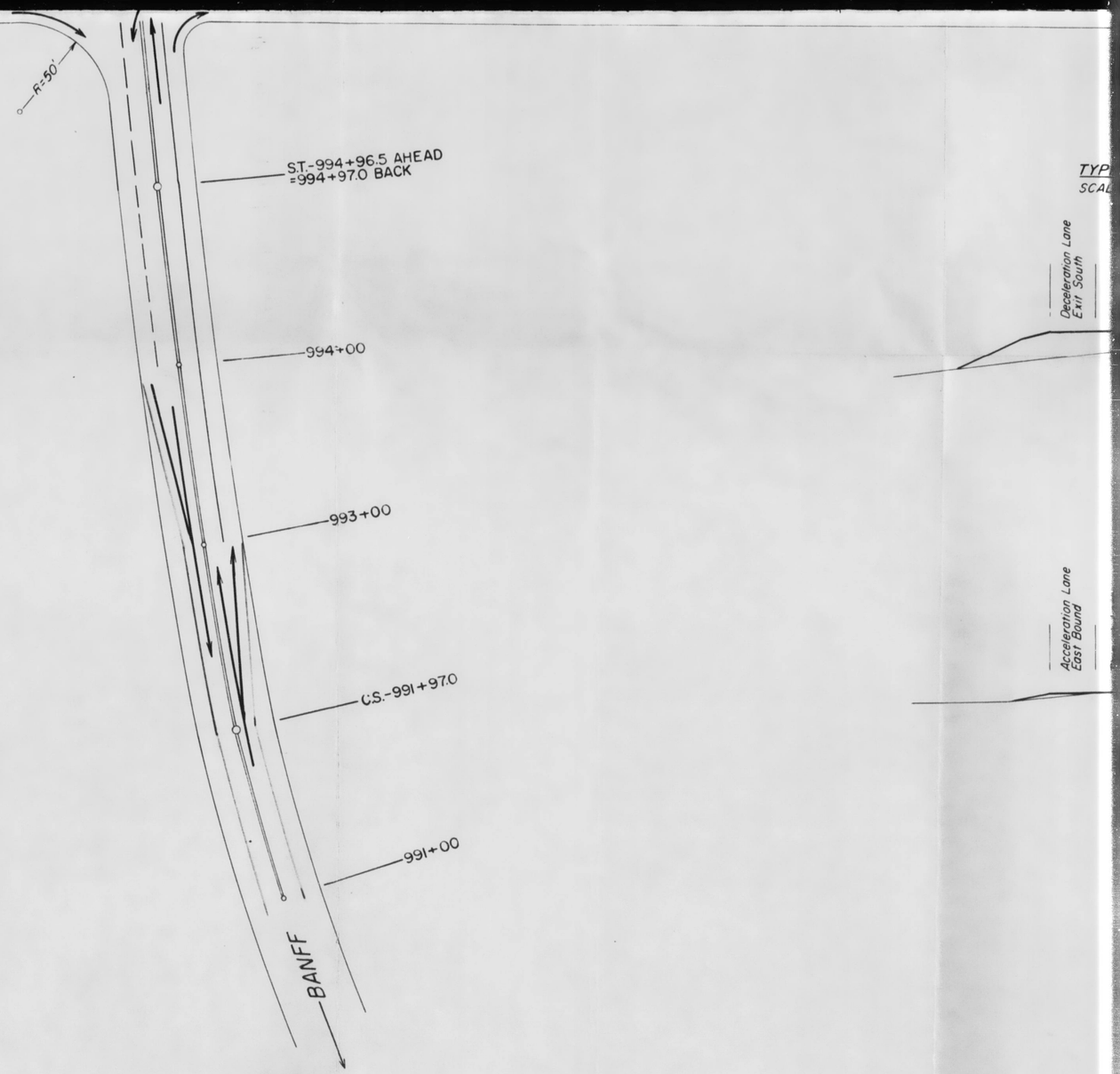



-60+00
YELLOWHEAD CHAINAGE
-50+00
-40+00
YELLOWHEAD CHAINAGE
+55%
B-J PROFILE
YELLOWHEAD PROFILE -2.5%
43+146 YELLOWHEAD
POT. 996+192 B-J
+22%
B-J PROFILE
YELLOWHEAD P
1010+00
B-J CHAINAGE
1000+00
990+00
B-J CHAINAGE

4 OF/DE

INTERSECTION - 43+14.6 YELLOWHEAD=996+19.2 B-J

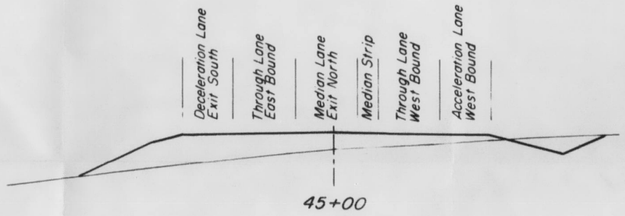


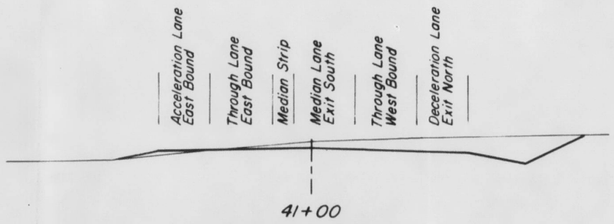


5 OF/DE

TYPICAL CROSS-SECTIONS

SCALE: Vert. 1"=20' Hor. 1"=20'





RECOMMENDED FOR APPROVAL

Department of Northern Affairs & National Resources
ENGINEERING SERVICES DIVISION
PLAN APPROVED
☐ WITHOUT ALTERATIONS
☐ With ALTERATIONS INDICATED
13/4/65 DATE
CHIEF ENGINEER
Plan Checked and Resubmitted
ALTERATIONS MADE:

Pavement Edge
White Line
Yellow Line
Traffic Movement

DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT ENGINEERING BRANCH

PLAN AND PROFILE OF
PROPOSED AT-GRADE INTERSECTION
Mi. 144.1 B-J, Mi. 0.8 Yellowhead
JASPER NATIONAL PARK

SCALE: HORIZ.- 1"=50' VERT.- CONT. INT.-

Resident Eng. Date
Area Eng. 12/22/65 Date
District Eng. Date

REVISIONS

DRAWN BY WA
CHECKED BY G.L.J.
TRACED BY WA

PLAN NO.
ORIGIN DATE
FILE NO.

Removed from letter Jan 26/65 GB.

Parks Canada
Parcs Canada

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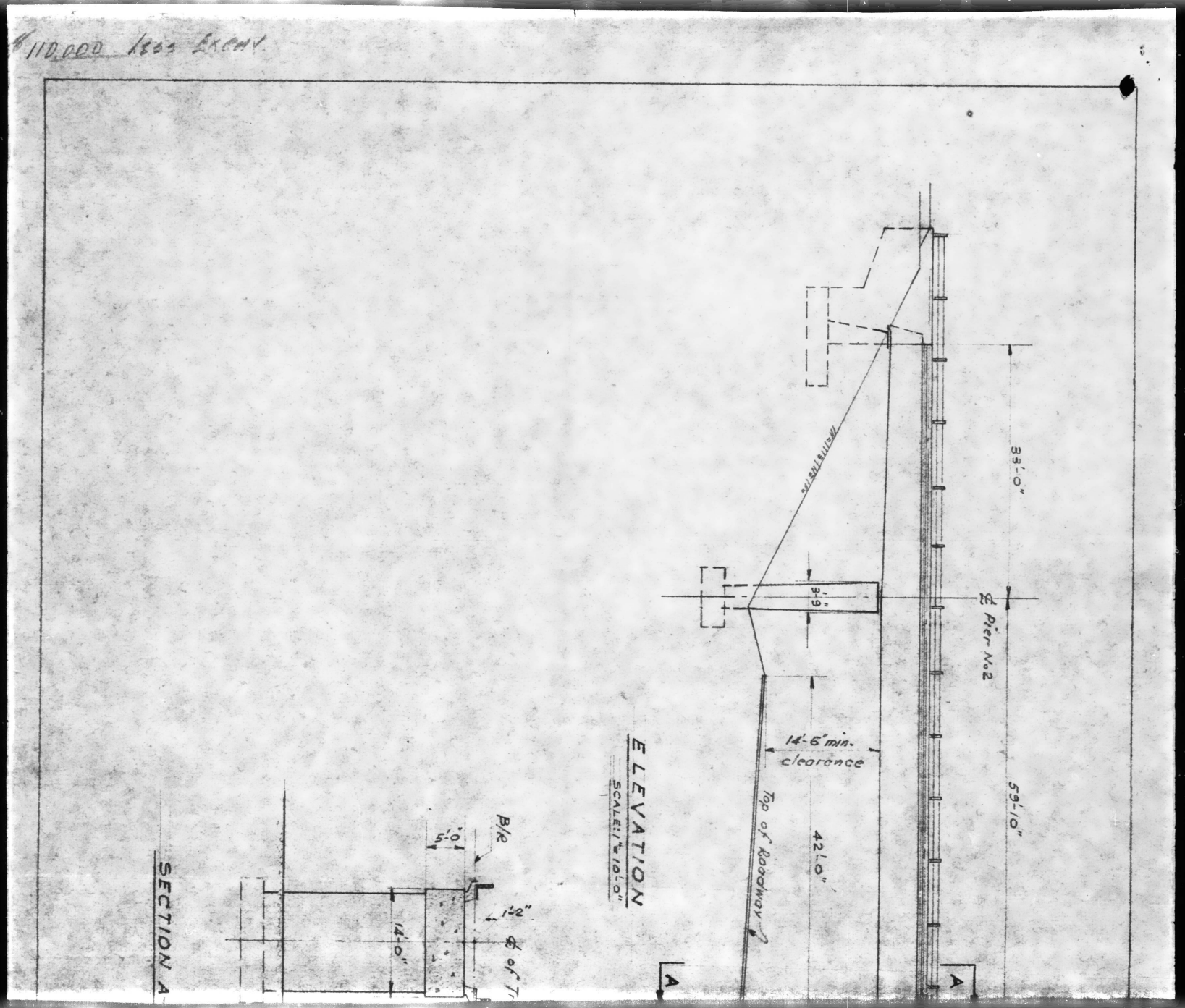
File/dossier J60-23
pt 3

National Archives of Canada
Archives nationales du Canada

001367

$110,000 1865 EXCAV

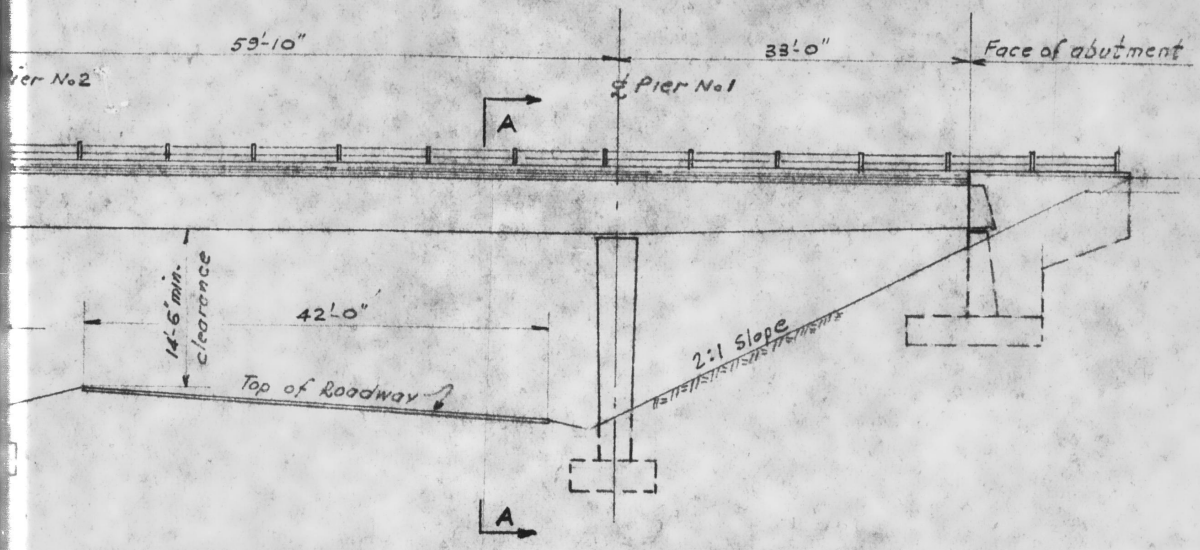


Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3

National Archives of Canada
Archives nationales du Canada

001368



ELEVATION

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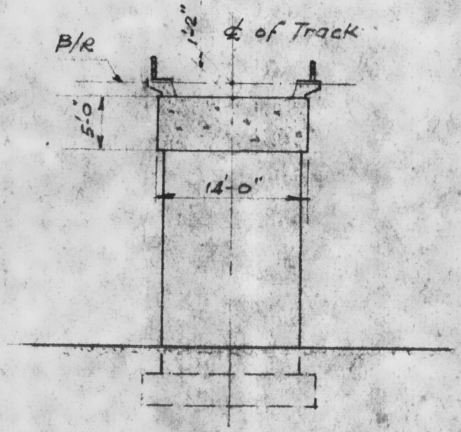
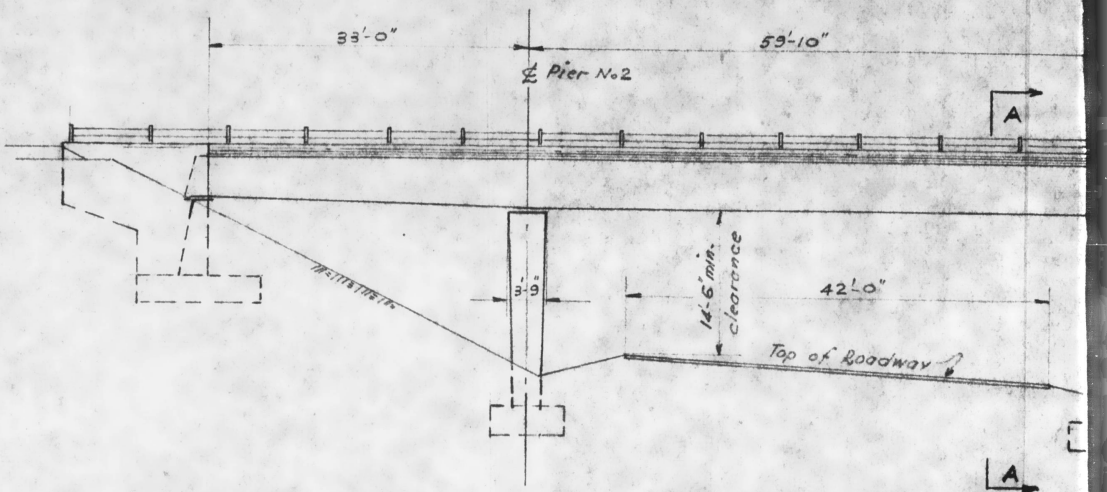


SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M. 0.9
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1" = 10'-0"	DRAWN BY: A.O.	DATE: 20/1/65
SK. 65B		



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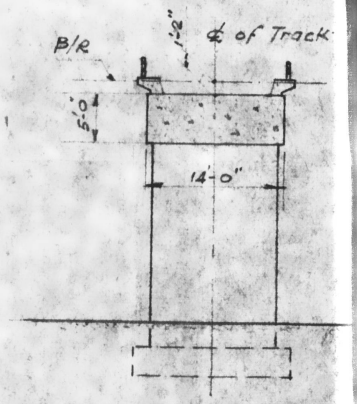


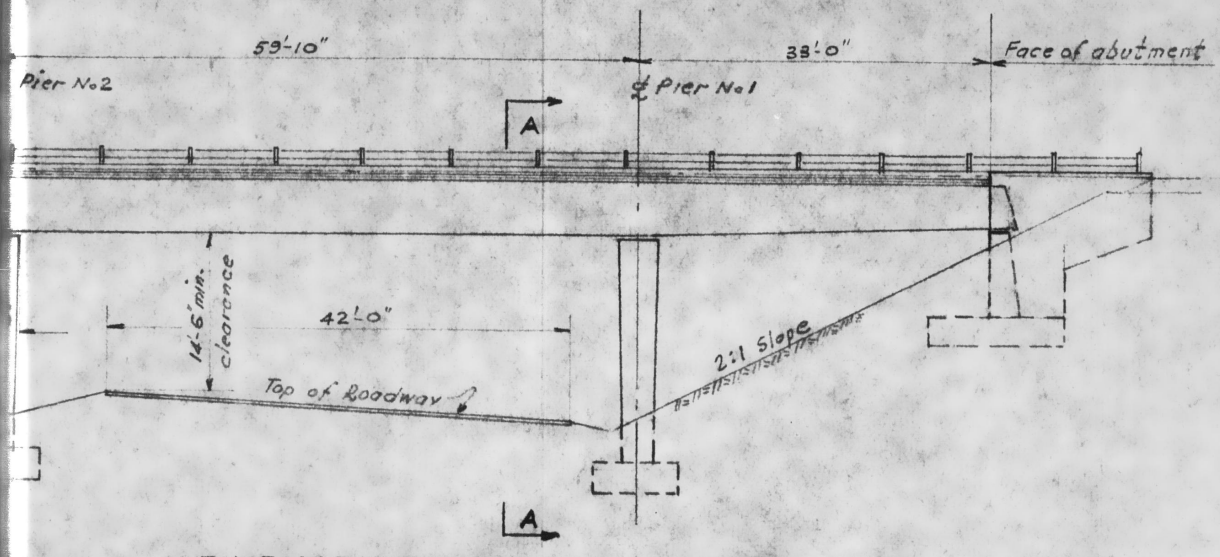
SECTION A-A

001370

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3

National Archives of Canada
Archives nationales du Canada



ELEVATION
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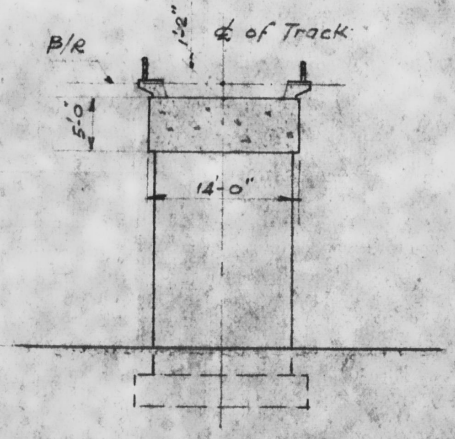


SECTION A-A

CANADIAN NATIONAL RAILWAYS		
ALBREDA SUBDIV.		M.O.9
BANFF-JASPER HIGHWAY UNDERCROSSING		
OFFICE OF ENGINEER OF BRIDGES & STRUCTURES		
SCALE: 1"=10'-0"	DRAWN BY: A.O.	DATE: 20/1/65
		SK. 65B

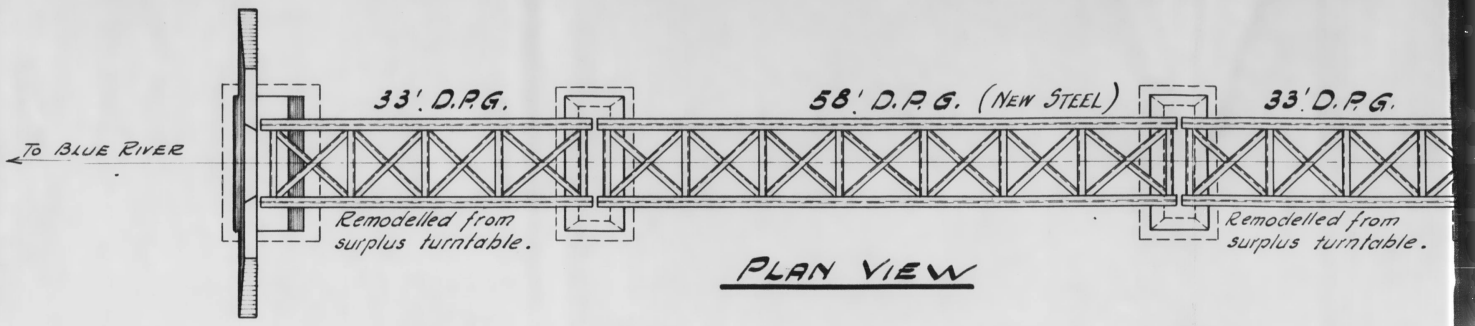
This belongs on the B-J. (Jasper) file and is the plan for the rail crossing at the new west access to the townsite approved about 2 yrs ago.

J 60-23

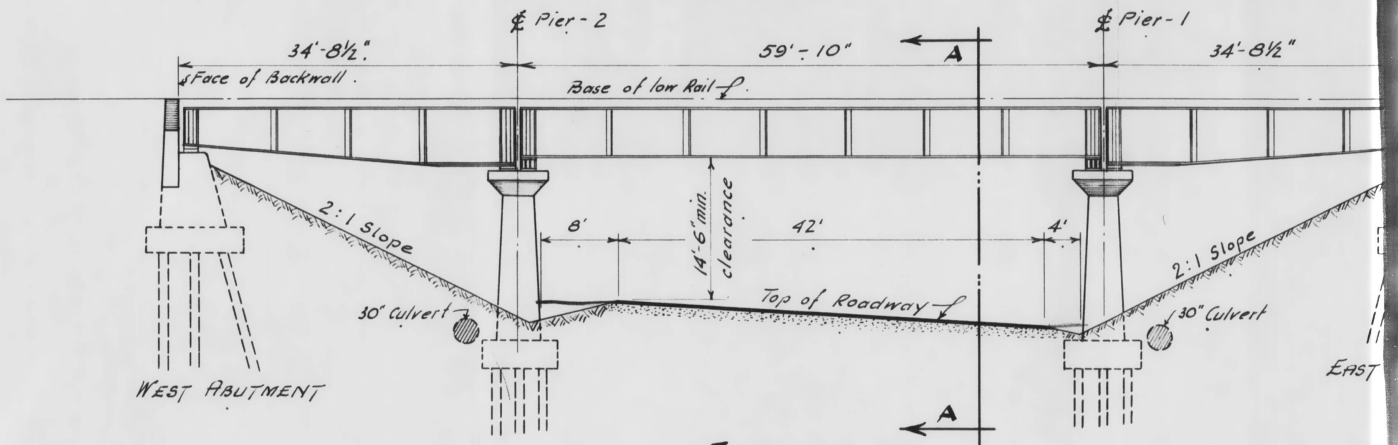
Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3

National Archives of Canada
Archives nationales du Canada

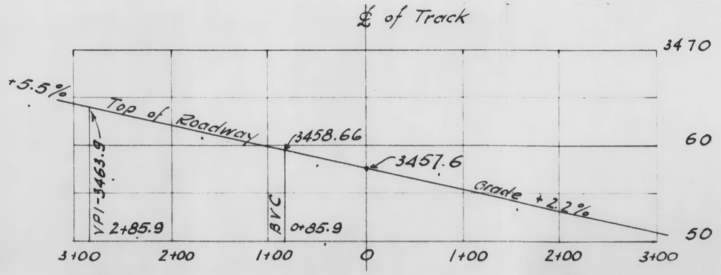


PLAN VIEW

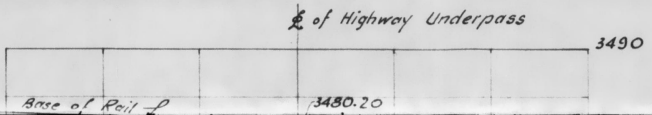


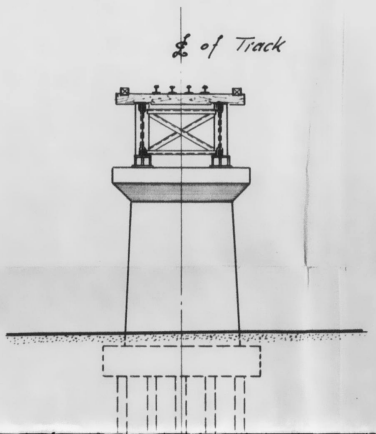
ELEVATION

scale: 1" = 10'

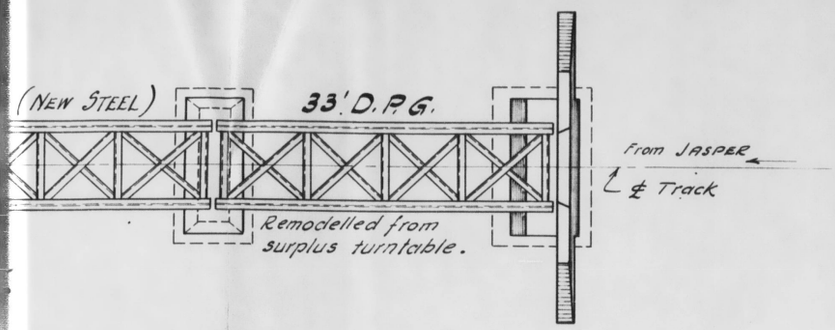


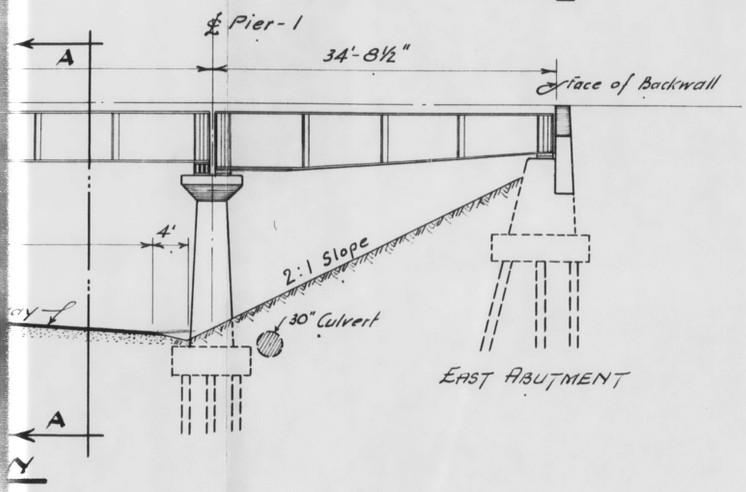
PROFILE ALONG ℄ OF PROPOSED HIGHWAY

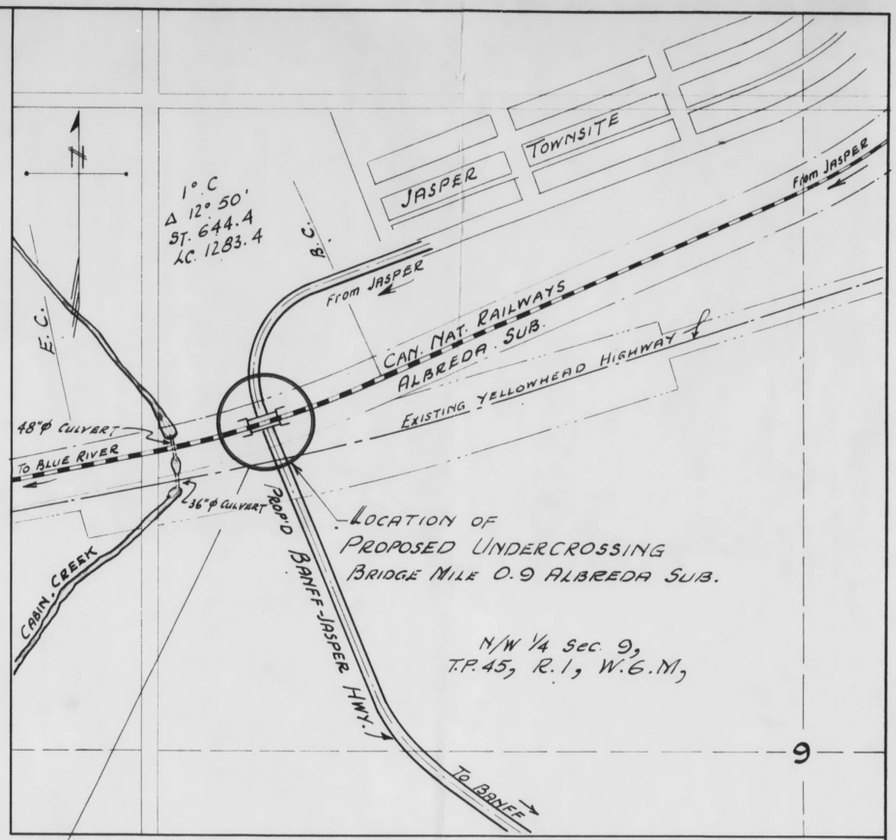




RG 84, A-2-a, vol. 1614
File dossier J60-23
pt 3
Parks Canada
Parcs Canada
National Archives of Canada
Archives nationales du Canada

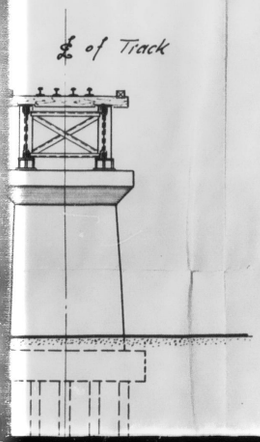


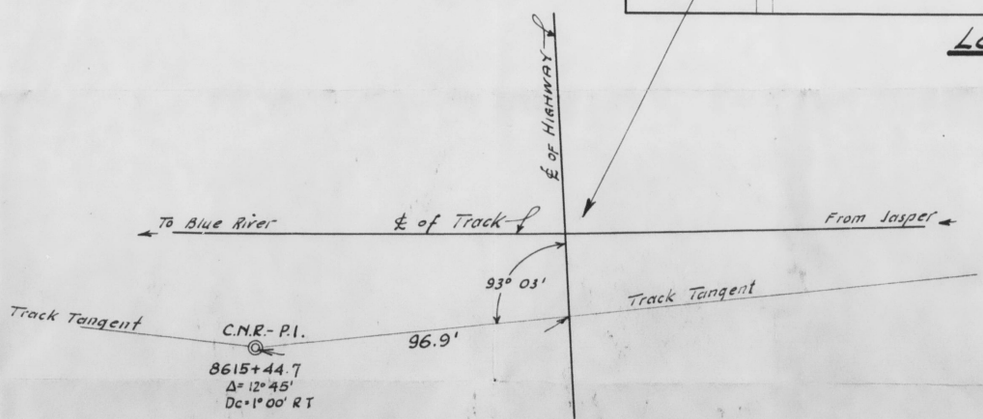




LOCATION PLAN

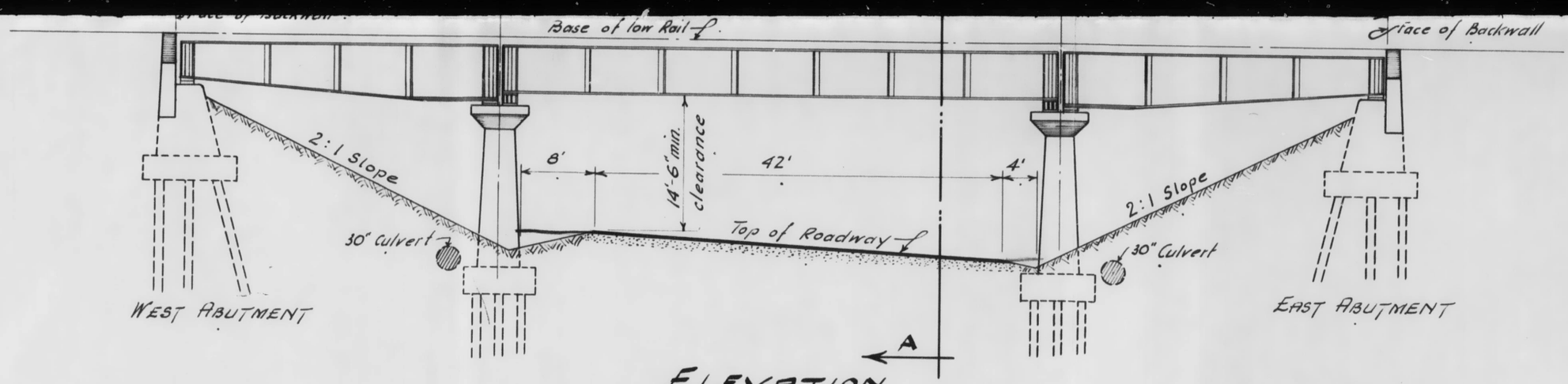
scale: 1" = 400'





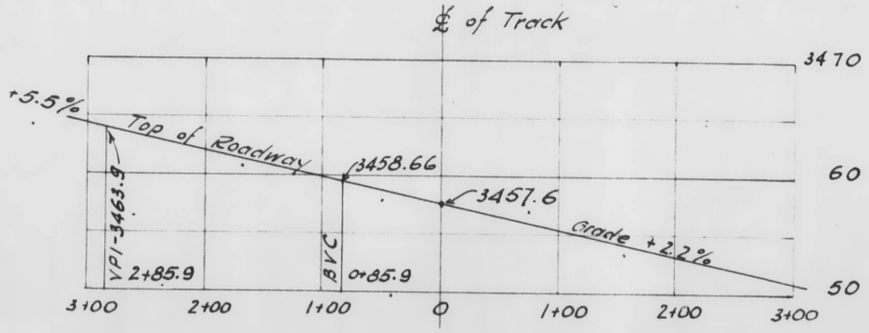
PLAN OF INTERSECTION C.N.R. TRACK AND HIGHWAY.

1" = 30'

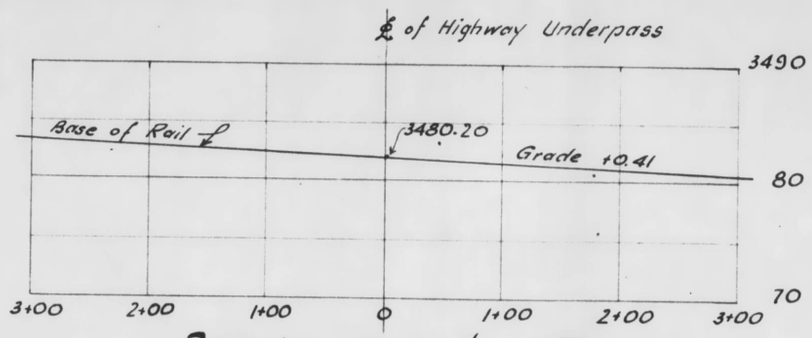


ELEVATION

scale: 1" = 10'

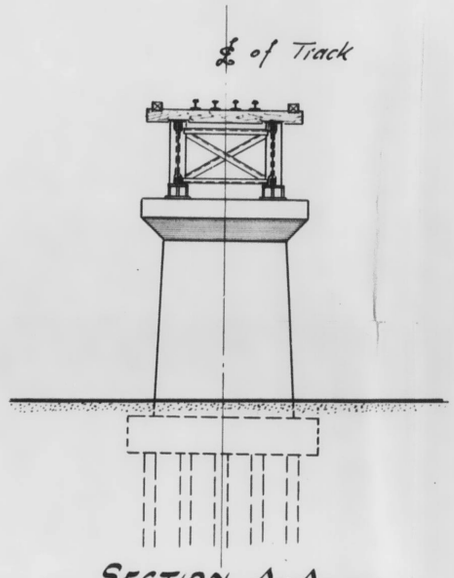


PROFILE ALONG ℄ OF PROPOSED HIGHWAY



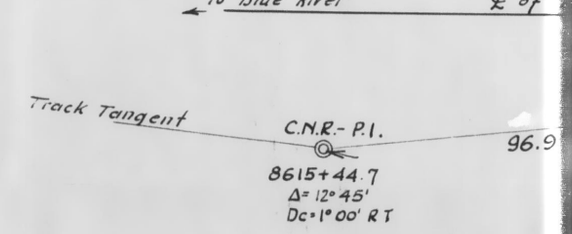
PROFILE ALONG ℄ OF TRACK

Scale: 1" = 100' Horizontal
1" = 10' Vertical

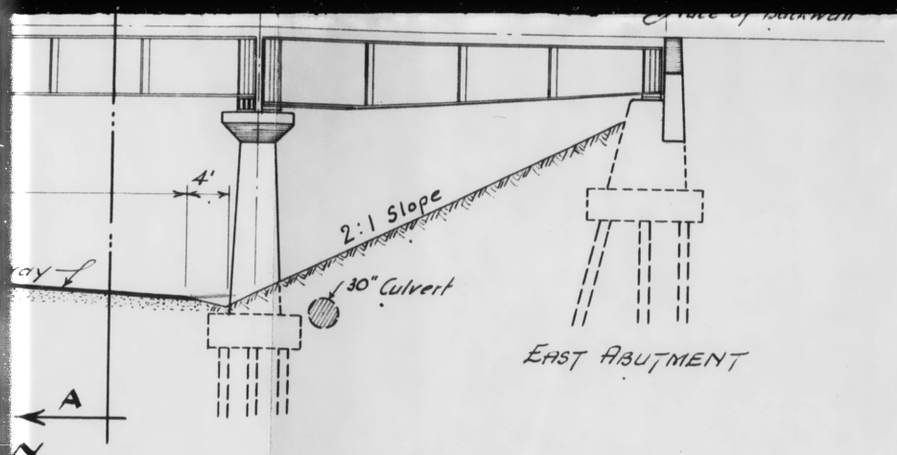


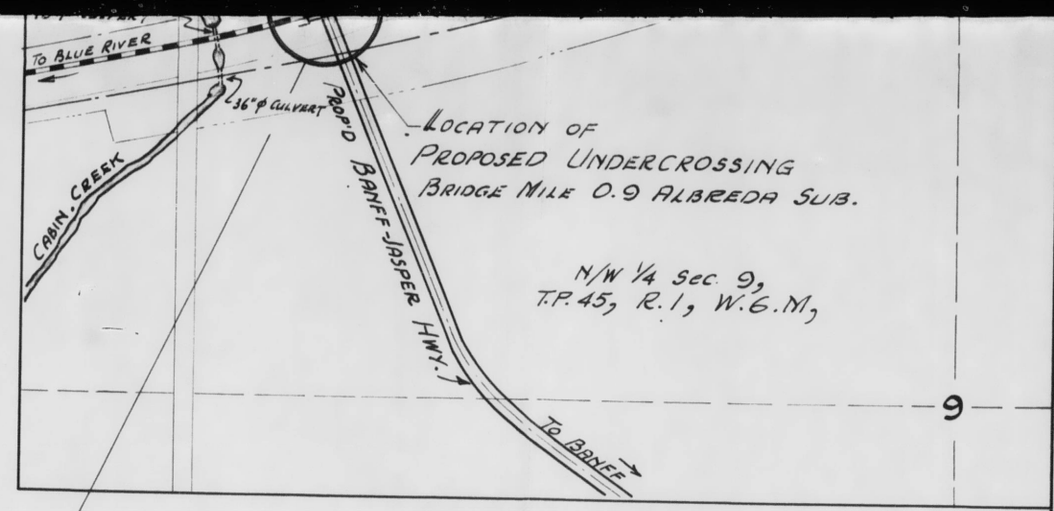
SECTION A-A

1" = 10'



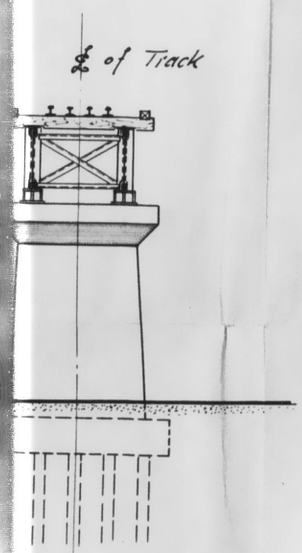
PLAN OF INTERS





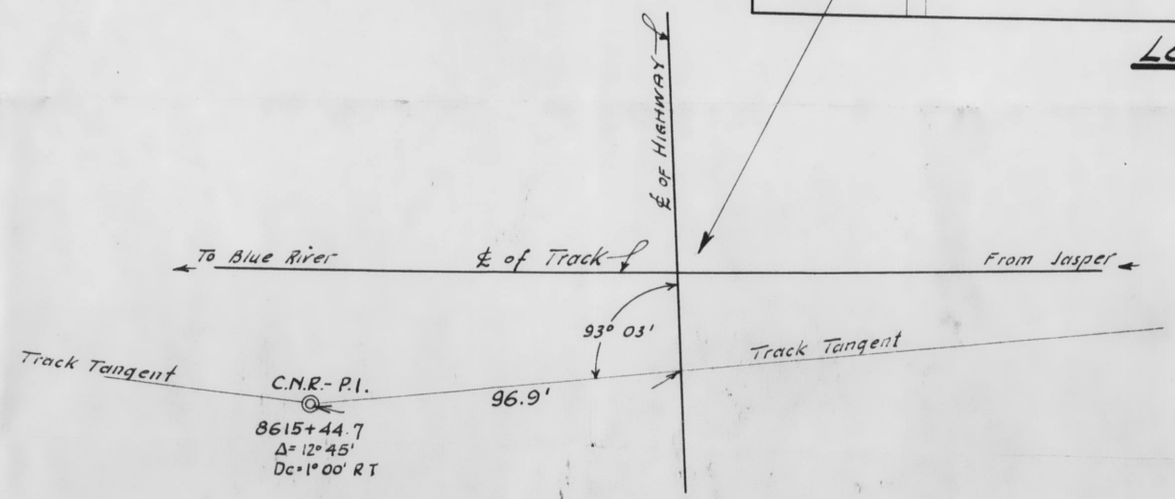
LOCATION PLAN

scale: 1" = 400'



TION A-A

1" = 10'



PLAN OF INTERSECTION C.N.R. TRACK AND HIGHWAY.

1" = 30'

DATE	REVISIONS

CANADIAN NATIONAL RAILWAYS
MOUNTAIN REGION

B.C. AREA ALBREDA SUBDIVISION, MILE 0.9

LOCATION nearest siding - JASPER

SUBJECT BANFF-JASPER HIGHWAY UNDERCROSSING

DETAIL PROPOSED GENERAL LAYOUT

DESIGNED BY _____ DRAWN BY R.S. CHECKED BY A.G.L.

SCALES AS NOTED.

OFFICE OF REGIONAL ENGINEER, EDMONTON, ALTA. Dec. 21st. 1962

APPROVED

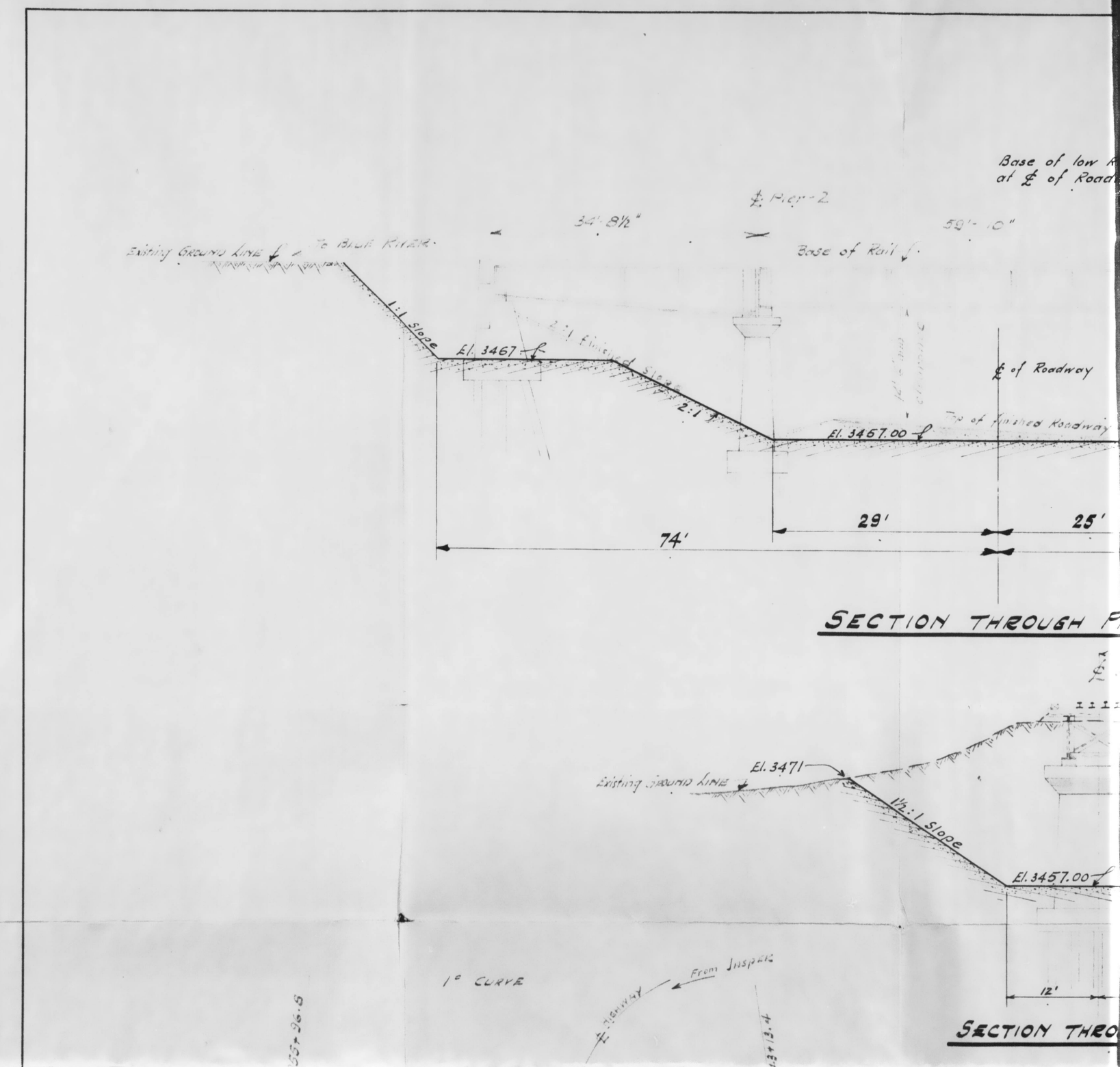
L.R. Morris
BRIDGE AND STRUCTURES ENGINEER

E.L. English
REGIONAL ENGINEER

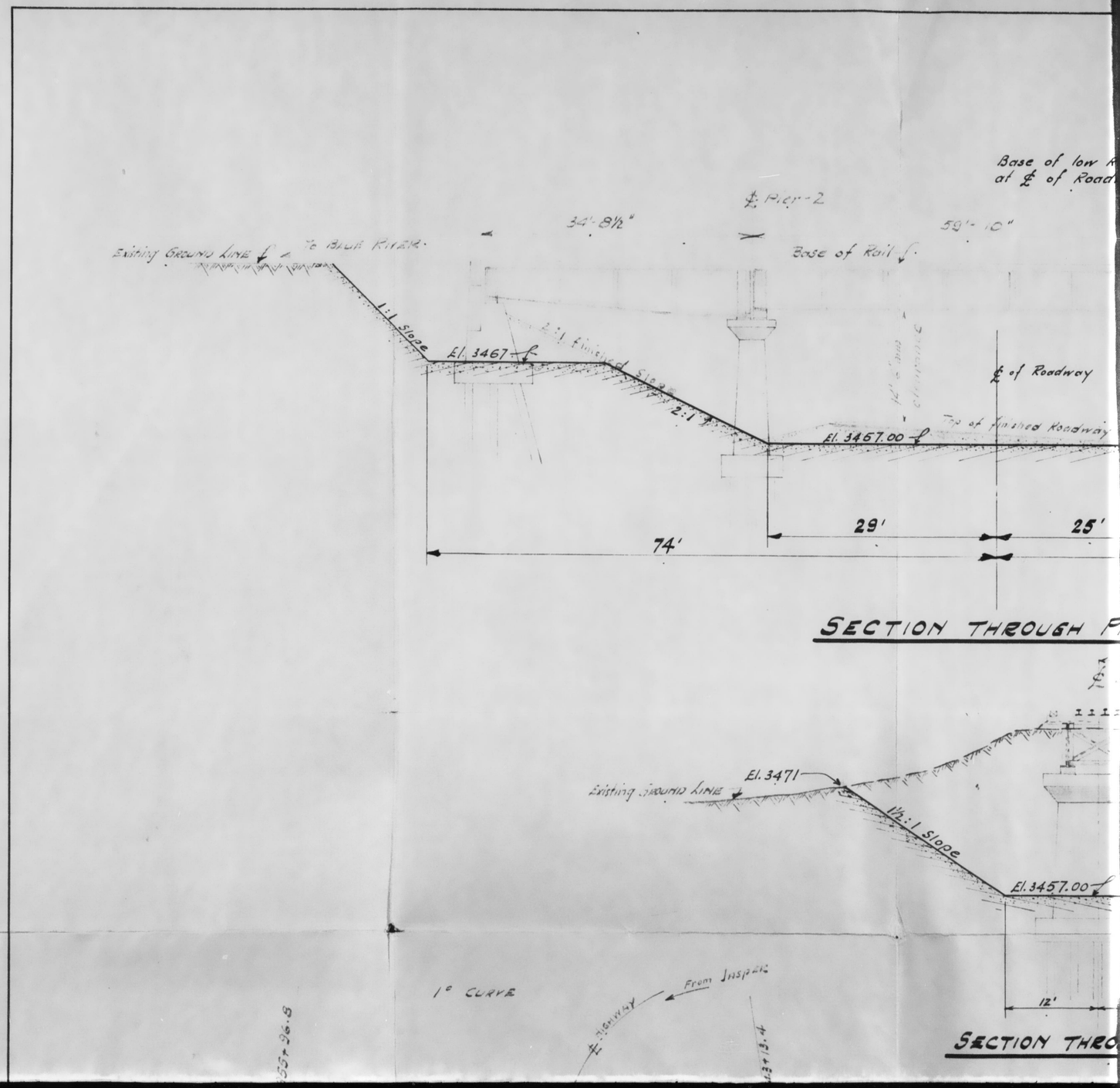
GENERAL MANAGER

PLAN No. SHEET No.

B-8069-1



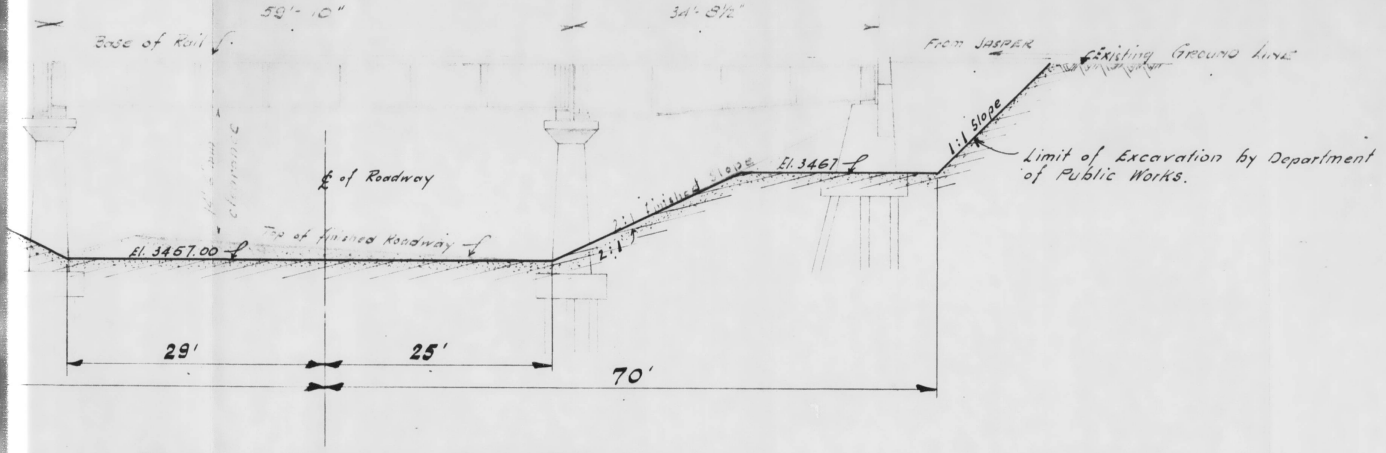
Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3
National Archives of Canada
Archives nationales du Canada



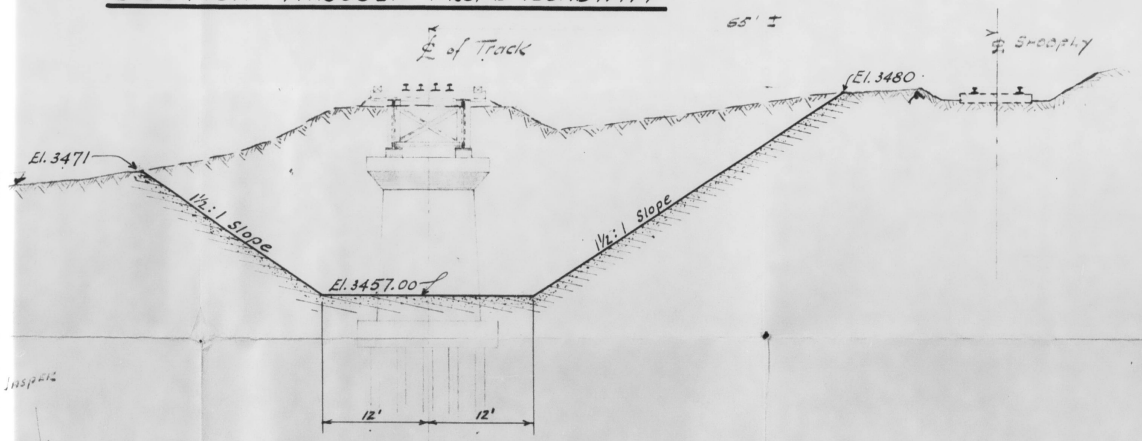
Parks Canada
Parcs Canada
RG 84, A-2-a, vol. 1614
File/dossier J60-23
pt 3
National Archives of Canada
Archives nationales du Canada

- Proposed new structure shown thus
- Existing ground line shown thus
- Limit of Excavation by Dept. of Public Works shown thus

Base of low Rail Elevation at ℄ of Roadway = 3480.20



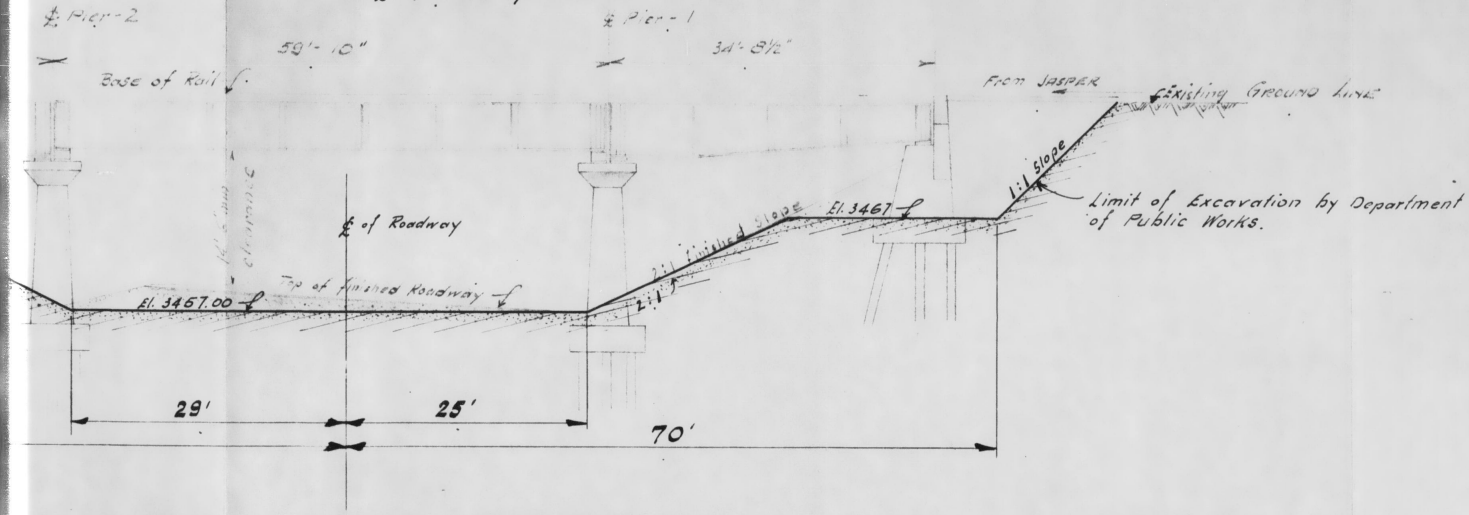
SECTION THROUGH PROP'D ROADWAY



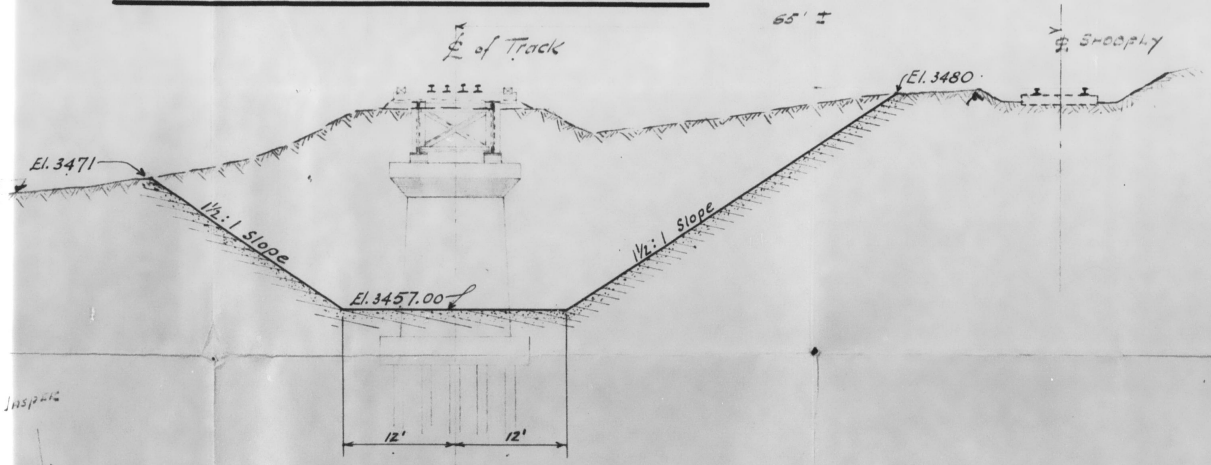
SECTION THROUGH TRACK

· Proposed New Structure shown thus
· Existing Ground Line shown thus
· Limit of Excavation by Dep't. of Public Works shown thus

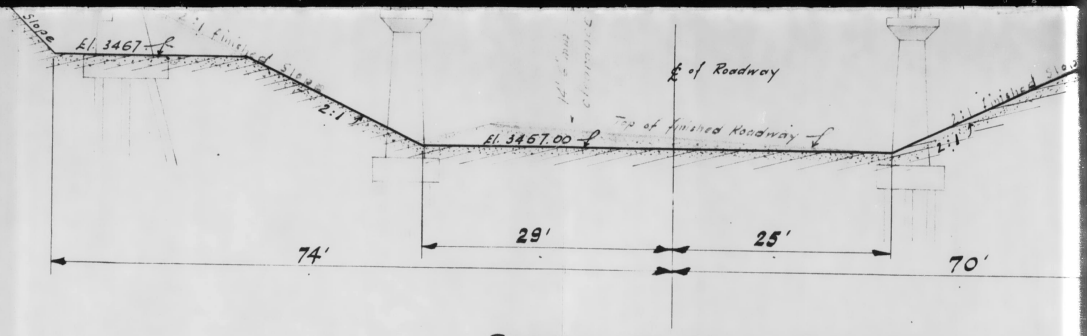
Base of low Rail Elevation at ℄ of Roadway - 3480.20



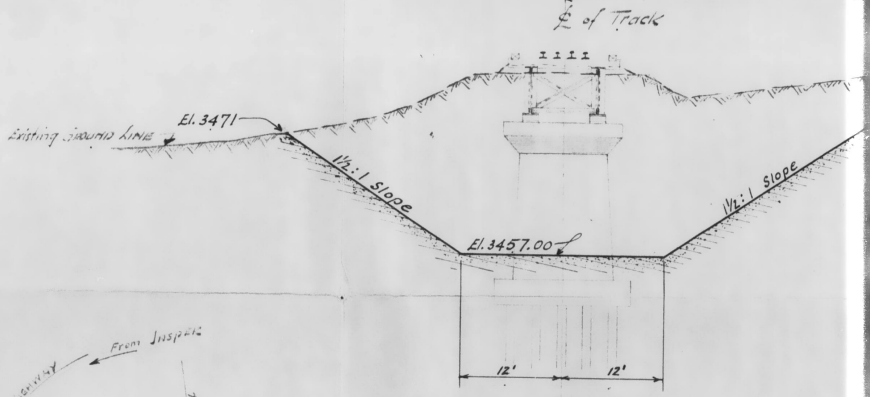
SECTION THROUGH PROP'D ROADWAY



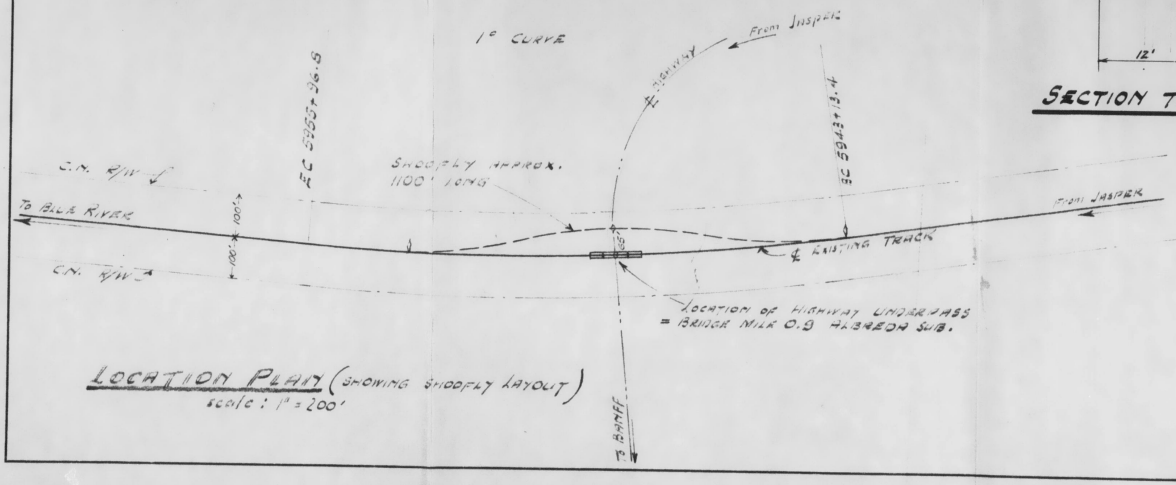
SECTION THROUGH TRACK



SECTION THROUGH PROP'D ROADWAY



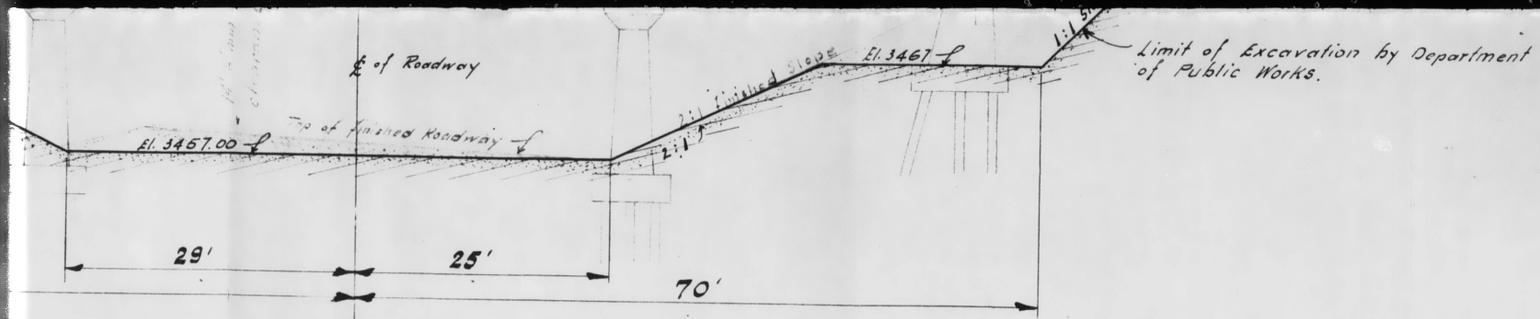
SECTION THROUGH TRACK



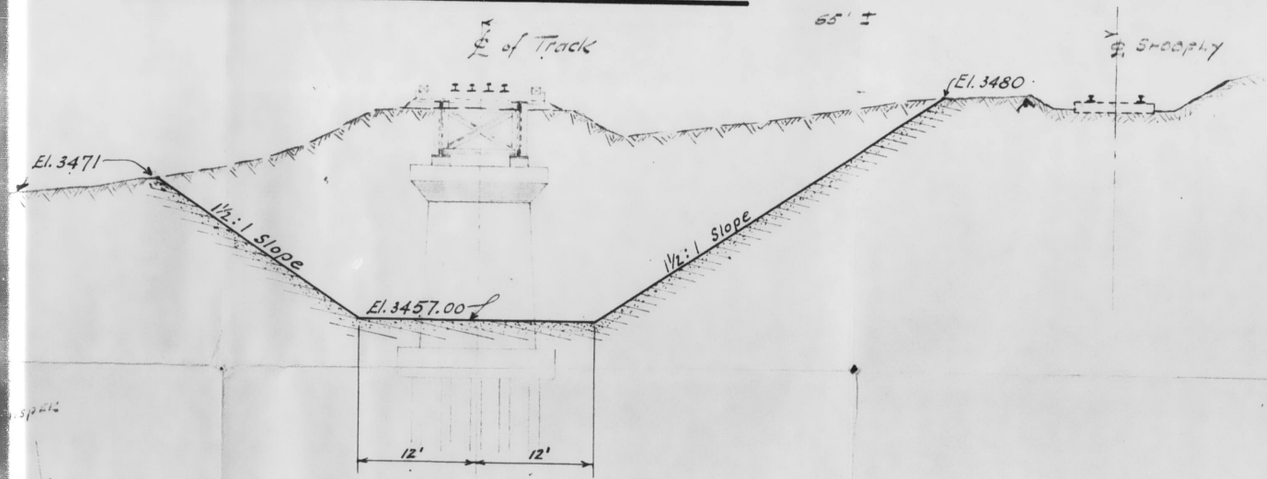
LOCATION PLAN (SHOWING SHOOFLY LAYOUT)

scale: 1" = 200'

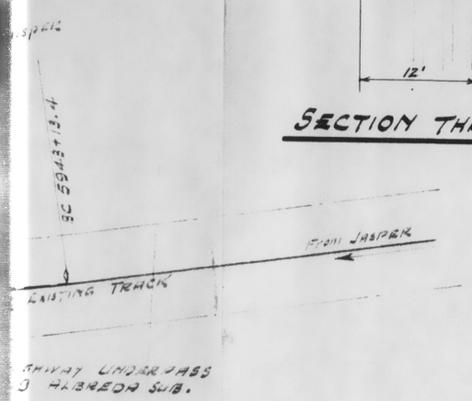
3 OF/DE



SECTION THROUGH PROP'D ROADWAY



SECTION THROUGH TRACK



DATE	REVISIONS

CANADIAN NATIONAL RAILWAYS
MOUNTAIN REGION

B.C. AREA ALBREDA SUBDIVISION, MILE 0.9
LOCATION nearest siding - JASPER
SUBJECT BANFF-JASPER HIGHWAY UNDERCROSSING
DETAIL LIMIT OF EXCAVATION BY DEPT OF PUBLIC WORKS
DESIGNED BY _____ DRAWN BY R.S. CHECKED BY A.G.L.
SCALE 1" = 10'
OFFICE OF REGIONAL ENGINEER, EDMONTON, ALTA. Dec. 21st. 1962
APPROVED L.R. Morris
BRIDGE & STRUCTURES ENGINEER
E.L. Eaglish
REGIONAL ENGINEER
GENERAL MANAGER
PLAN No. SHEET No.

PLAN No.: V-8069-1

FILED WITH

PARKS CANADA

CENTRAL REGISTRY FILES,
HEADQUARTERS, 1897-1969

PARCS CANADA

DOSSIERS DU SERVICE
CENTRAL, ADMINISTRATION
CENTRALE, 1897-1969

FILE/DOSSIER	TITLE/TITRE	DATES
	RG 84, A-2-a, VOLUME 1614	
J60-2	Jasper National Park - Maligne - Medicine Lake Road pt 8	1968/04-1968/07
J60-2 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.
J60-3	Jasper National Park - Administration of Road Allowances pt 1	1965
J60-23	Jasper National Park - Banff - Jasper Highway - Plans and Specifications pt 1=1959-1961 pt 2=1962 pt 3=1962-1965	1959-1965
J60 Plans (1)	Jasper National Park - Roads - Enclosures for File	n.d.

E82-003

Parks Canada
Parcs Canada

RG 84, A-2-a, vol. 1614
File/dossier J60 Plans (1)

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J – 60 Plans + Specs.

Vol 1

Roads - General.

Parks Canada
Parcs Canada

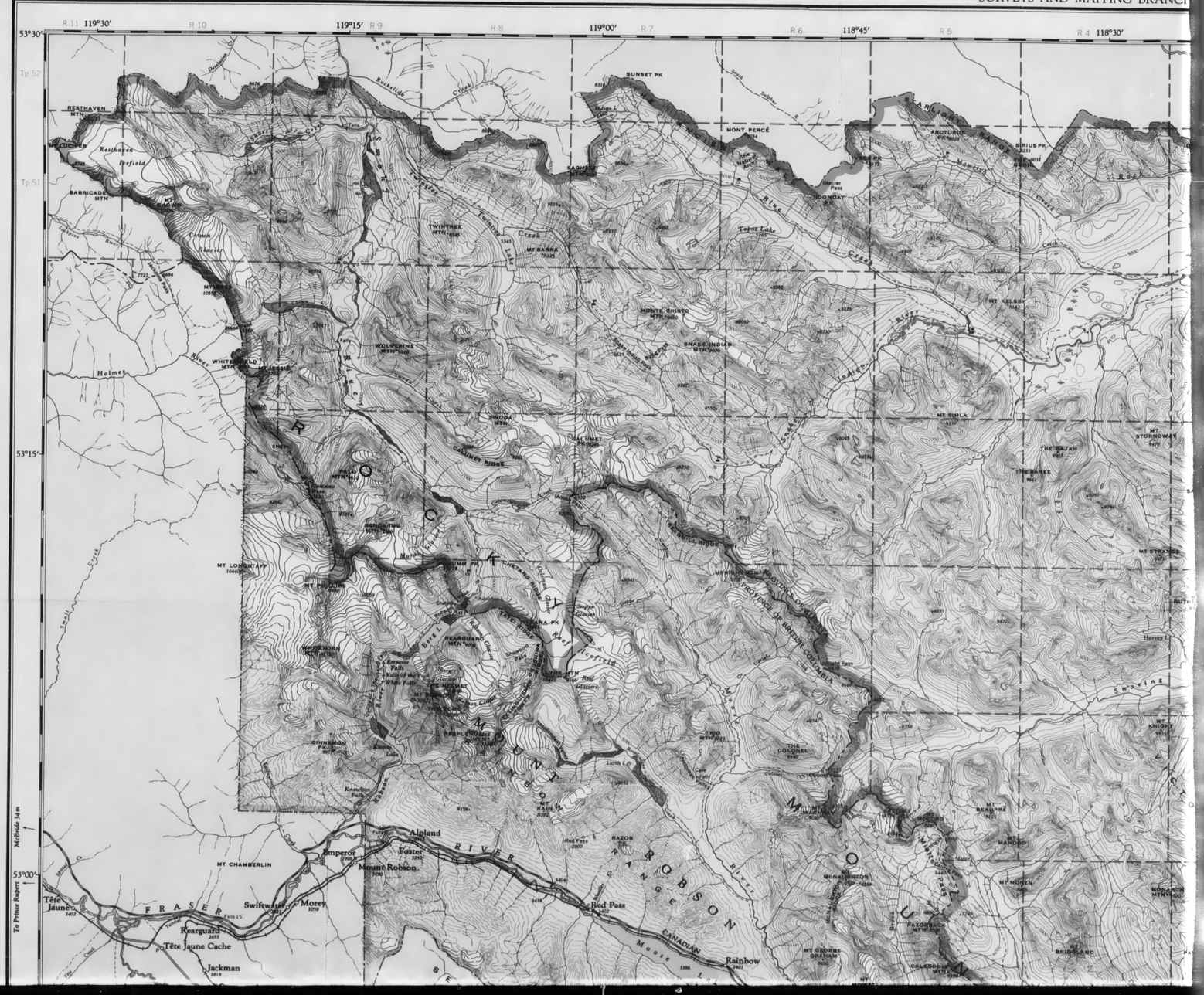
RG 84, A-2-a, vol. 1614
File/dossier J60 Plans (1)

National Archives of Canada
Archives nationales du Canada

001384

NATIONAL PARKS OF CANADA

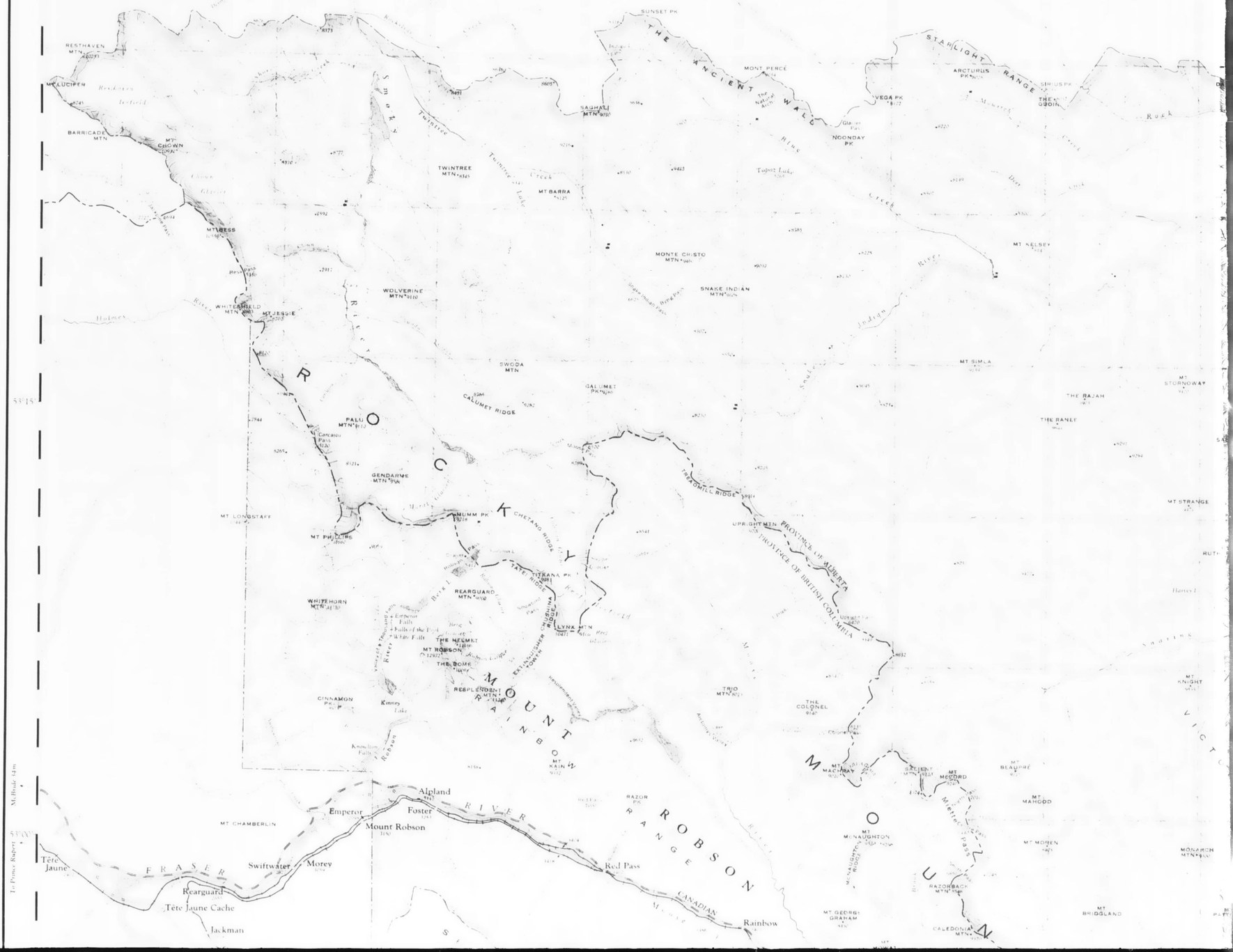
CANADA
MINES AND TECHNICAL SUR
SURVEYS AND MAPPING BRANCH



RG 84, A-2-a, vol. 1614
File/dossier J60 Plans (1)
Parks Canada
Parcs Canada
National Archives of Canada
Archives nationales du Canada

NATIONAL PARKS OF CANADA

CANADA
MINES AND TECHNICAL SURV
SURVEYS AND MAPPING BRANCH



National Archives of Canada
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CANADA

MINES AND TECHNICAL SURVEYS

SURVEYS AND MAPPING BRANCH

THIRD EDITION

118°45′ R 5 R 4 118°30′ R 3 118°15′ R 2 R 1 118°00′ R 27 R 26 117°45′ R 25 R 24 117°30′

53°30′ Tp 52 Edmonton 183 m To Edmonton Tp 51 Tp 50 53°15′ Tp 49 Tp 48 Tp 47 53°00′ Tp 46

Wildhay River
Rock L
Rock Creek
Mowitch Creek
Ridley Creek
Snake Creek
Snake Indian Falls
Ladigo Creek
Swoffer Creek
Swan Creek
Harvey L
Swan Lake
Swan Creek
Swan Pass
Glacier Pass
Boonday Mtn
Arcturus Pk
Sirius Pk
Davidson Mtn
Mt Kelsey
Mt Simla
Mt Stornoway
The Rajah
The Dukes
Mt Sassenach
Mt Tory
Mt Strange
Mt Hendon
Mt Howard
Mt Mountain
Mt Clitheroe
Mt Thornton
Mt Knight
Mt Beaupre
Mt Greegbach
Mt Mandon
Mt Oliver
Mt Morkin
Mt Bridgland
Mt Patteson
Mt Kinross
Mt Sir Alexander
Mt Kephala
Mt Aeolus
Coronach Mtn
Roche Ronde
Roche à Perdrix
Roche à Bosse
Roche Miette
Mt Sir Sandford
Mt Cumnock
Mt Bisette
Mt Brennan
Mt Bruennor
Mt Ogden
Mt Colin
Mt Merlin
Mt Zendel
Mt Hardy
Mt Hooker
Mt Edith
Mt Fitzwilliam
Mt Robson
Mt Resplendent
Mt Clark
Mt Longstaff
Mt Lucifer
Mt Sir Wilfrid Laurier
Mt Alberta
Mt Columbia
Mt Forbes
Mt Brazeau
Mt Fryatt
Mt Geikie
Mt Macdonald
Mt Edith Cavell
Mt Kitchener
Mt Athabasca
Mt Andromeda
Mt Saskatchewan
Mt Wilcox
Mt Amery
Mt Castleguard
Mt Wilson
Mt Chephren
Mt Forbes
Mt Lyell
Mt Murchison
Mt Alexandra
Mt Alverstone
Mt Warren Taylor
Mt Bryce
Mt Outram
Mt Lefroy
Mt Victoria
Mt Temple
Mt Hungabee
Mt Deltaform
Mt Biddle
Mt Goodsir
Mt Balfour
Mt Stephen
Mt Dennis
Mt Daer
Mt Niblock
Mt Ringrose
Mt Hector
Mt Gordon
Mt Gordon
Mt Lefroy
Mt Victoria
Mt Temple
Mt Hungabee
Mt Deltaform
Mt Biddle
Mt Goodsir
Mt Balfour
Mt Stephen
Mt Dennis
Mt Daer
Mt Niblock
Mt Ringrose
Mt Hector

CANADA
MINES AND TECHNICAL SURVEYS
SURVEYS AND MAPPING BRANCH

THIRD EDITION

118°45' 118°30' 118°15' 118°00' 117°45' 117°30' 53°30' 53°15' 53°00'

Edmonton 184 km To Edmonton

STARLIGHT RANGE
ARCTURUS PK
SIRIUS PK
THE SPHINX
VEGA PK
NOONDAY PK
DAYBREAK PK
Whirlpool River
Rock Creek
MOBERLY HILL
Jurus Lake
Peppers Lake
ATHABASCA RIVER
Dennan
Hinton
MT SOLOMON
Old Entrance
Entrance
MT KEPHALA
BOULE RANGE
Solomon
Jasper House
BOULE ROCHE
BLACK CAT MTN
BRÛLÉ HILL
Brûlé Mines
ERRINGTON HILL
Brûlé
Brûlé Lake
NATIONAL
BEDSON RIDGE
MT KELSEY
MT SIMLA
MT STORNOWAY
THE RAJAH
THE RANEE
MT SASSENACH
MT TORY
MT STRANGE
MT HENDAY
MT RUTHERFORD
MT ROWAND
MT HAULTAIN
MT BISTRE
MT CUMNOCK
MT AEOLUS
CORONACH MTN
ROCHE RONDE
ROCHE A BOSCHE
BEAVER BLUFFS
Miette
ROCHE À PERDRIX
FOLDING MTN
Pocahontas
Fiddle River
FIDDLE RANGE
ASHLAR RIDGE
ROCHE MIETTE
Jasper House
Devona
MIETTE RANGE
CAPITOL MTN
Miette Hot Springs
UTOPIA MTN
MAKWA RIDGE
NIKANASSIN RANGE
Talbot Lake
Snaring
CANADIAN
Jasper Lake
GRASSY RIDGE
REDAN MTN
ROCHE DE SMET
MT GREENOCK
WHITECAP MTN
GARGOYLE MTN
ESPLANADE MTN
CLIFF MTN
MT KNIGHT
MT BEAUDRY
MT McCORD
MT GRIESBACH
SNARING MTN
CHETAMON MTN
CINQUEFOIL MTN
ROCHE JACQUES
MORRO PASS
HAWK MTN
EMIR MTN
MT COLIN
COLIN RANGE
MT MERLIN
COLIN RIDGE
MT MAHOOD
MT OLIVER
CONSORT MTN
MT McNAUGHTON
MT MOREN
MONARCH MTN
BUTTRESS MTN
Henry House
RAZORBACK MTN
MT BRIDGLAND
MT PATTISON
MT McKEAN
MT ZENGEL
ELYSIUM MTN
PYRAMID MTN
MIGRATE
ROCHE BONHOMME
MT MOWAT
CALEDONIA MTN
GEORGE GRAHAM
Harvey L.
Indian R.
Rock R.
Snake Indian R.
Smoky R.
Muskeg R.
Athabasca R.
Rocky R.
Miette R.
Jacques L.
Talbot L.
Jasper L.
Brûlé L.
Pepper L.
Jurus L.
Whirlpool R.
Indian Pass
Miette Pass
Yellowhead Pass
Jasper Park
Jasper Park Lodge
Maligne Lake
Maligne Canyon
Medicine Lake
Maligne R.
Athabasca Falls
Miette Hot Springs
Pocahontas
Fiddle River
Brûlé Lake
Jasper
Jasper Park Lodge
Maligne Lake
Maligne Canyon
Medicine Lake
Maligne R.
Athabasca Falls
Miette Hot Springs
Pocahontas
Fiddle River
Brûlé Lake
Jasper

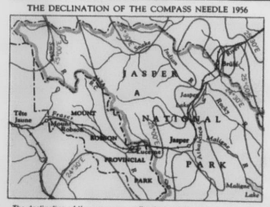
JASPER AND VICINITY

Scale 1:63,360 or 1 Inch = 1 Mile

Miles ½ 0 ½ Miles

Kilometres 0 1 Kilometres

THE DECLINATION OF THE COMPASS NEEDLE 1956



The declination of the compass needle at any place along a red line is the declination given on that red line. At other places the declination is between those given on the neighbouring red lines; thus at the place marked A, the declination is between 25°00'E and 25°30'E. The declination of the compass needle is decreasing 4 minutes annually.

Produced and printed by the Surveys and Mapping Branch, Department of Mines and Technical Surveys, 1956.

REFERENCE

- Road, hard surface, all weather
- Road, loose surface, all weather
- Other roads
- Footpath or trail
- Contours: elevation
- Contours: depression
- Contours: approximate
- Spot elevation (in feet) .3524
- Railway: normal gauge
- Boundaries: provincial
- Boundaries: national park
- Boundaries: provincial park
- Boundaries: township, surveyed
- Boundaries: township, unsurveyed
- Telephone line
- Telephone line along road or trail

JASPER PARK

ALBERTA

NORTH SHEET

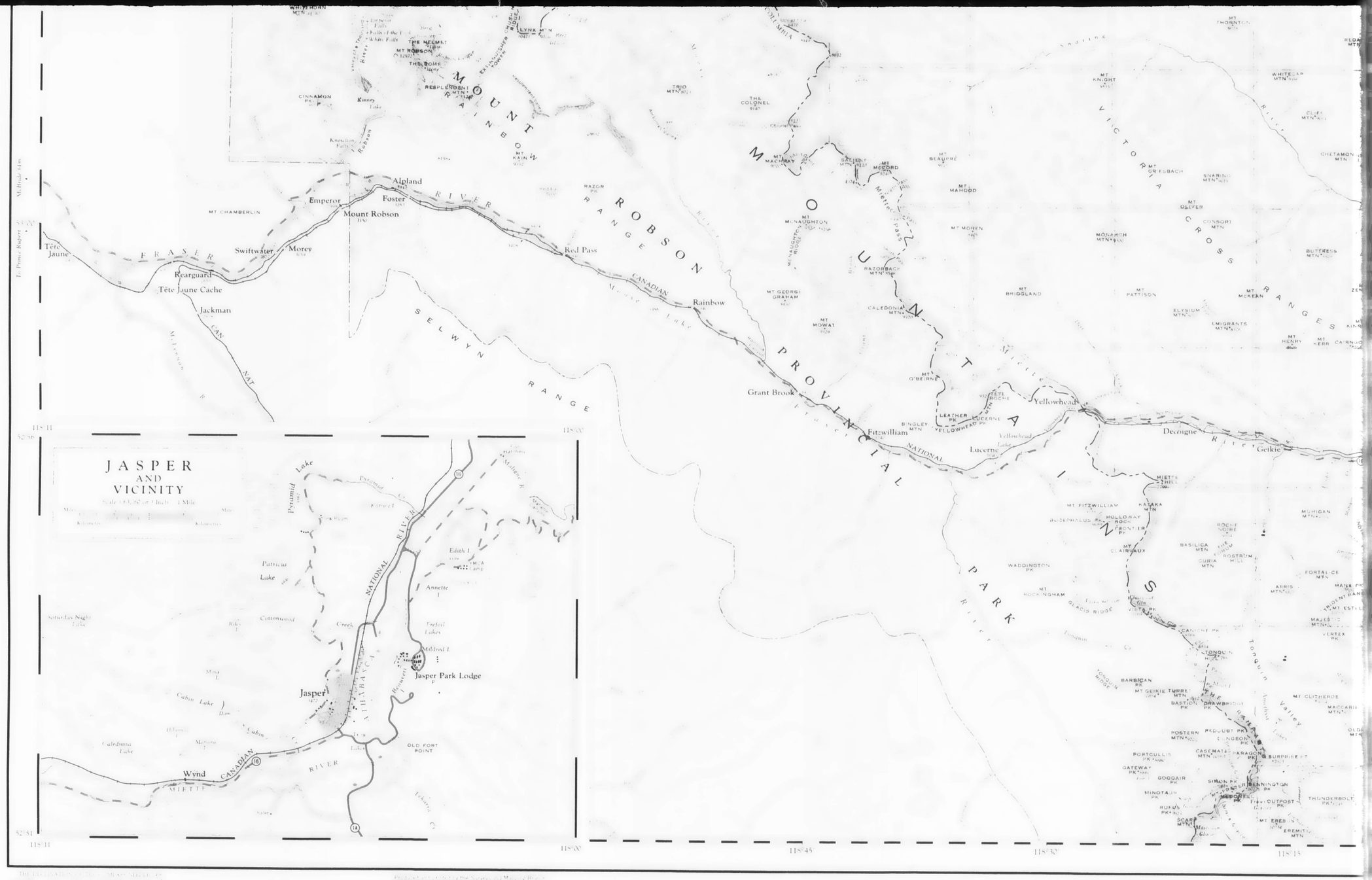
Scale 1:190,080 or 1 Inch = 3 Miles

Miles 5 0 5 10 15 Miles

Kilometres 5 0 5 10 15 20 Kilometres

Contour interval 200 feet
Datum is mean sea level

3 OF/DE


JASPER
AND
VICINITY
Scale 1:63,360 or 1 Inch = 1 Mile
Miles
Kilometres
Alpland
Emperor
Foster
Mount Robson
Tête Jaune
Swiftwater
Morey
Rearguard
Tête Jaune Cache
Jackman
Red Pass
Rainbow
Grant Brook
Fitzwilliam
Lucerne
Yellowhead
Decoigne
Geikie
Jasper
Jasper Park Lodge
Wynd
Patricia Lake
Pyramid Lake
Edith L.
Annette I.
Trefoil Lakes
Mildred L.
Cottonwood Creek
Cabin Lake
Caledonia Lake
OLD FORT POINT
Miette
Yellowhead Lake
Leather Pk.
Bingley Mtn.
Yellowhead Pk.
Lucerne Pk.
Mt. Fitzwilliam
Holloway Ridge
Frontier Pk.
Mt. Clairvaux
Waddington Pk.
Mt. Rockingham
Glacier Ridge
Barbican Pk.
Mt. Geikie
Tower Mtn.
Bastion Pk.
Drawbridge
The Ramparts
Mt. Clitheroe
Postern Mtn.
Portcullis Pk.
Gateway Pk.
Goodair Pk.
Minotaur Pk.
Rufus Pk.
Scarp Mtn.
Casemate Mtn.
Paragon Pk.
Surprise Ft.
Simon Pk.
Pennington Pk.
Medore Pk.
Outpost Pk.
Thunderbolt Pk.
Mt. Ereb
Eremite Mtn.
Basilica Mtn.
Curia Mtn.
Rostrum Mtn.
Fortalice Mtn.
Arris Mtn.
Michigan Mtn.
Roche Noire
Mt. Thornton
Whitegar Mtn.
Cliff Mtn.
Chetamon Mtn.
Mt. Knight
Mt. Beaupré
Mt. Mahood
Mt. Oliver
Consort Mtn.
Snaring Mtn.
Gregsbach
Mt. Moren
Monarch Mtn.
Buttress Mtn.
Mt. Pattison
Mt. Bridgland
Mt. McKean
Elysium Mtn.
Emigrants Mtn.
Mt. Henry
Mt. Kerr
Cairngorm
Mt. Robson
Mt. Chamberlin
Razor Pk.
Razor Range
Selwyn Range
Canadian Northern Railway
Grand Trunk Pacific Railway
Canadian National Railway
Fraser River
Athabasca River
Miette River
Fiddle River
Yellowhead Pass
Victoria Cross Ranges
Park Ranges
Tonquin Valley
Mt. Robson Provincial Park
Jasper National Park
Caledonia Mtn.
Razorback Mtn.
Mt. Mowat
Mt. Georgi Graham
Mt. O'Beirne
Mt. McAuley
Mt. McCord
Mt. McNaughton
Mt. Hardy
Mt. Hardy 4 km
Trio Mtn.
The Colonel
Lynx Mtn.
Mt. Robson
The Helmet
The Dome
Resplendent Mtn.
Mt. Kain
Cinnamon Pk.
Kinney Lake
Knowlton Falls
Robson River
Whitehorn Mtn.
Extinguisher Glacier
Berg Glacier
Valenciennes River
Mt. Lyell
Mt. Lyell 4 km
Mt. Fitzwilliam 4 km
Mt. Fitzwilliam
Mt. Clairvaux 4 km
Mt. Clitheroe 4 km
Mt. Geikie 4 km
Mt. Ereb 4 km
Mt. Robson 4 km
Mt. Hardy 4 km
Mt. Lyell 4 km
Mt. Fitzwilliam 4 km

JASPER PARK

ALBERTA

NORTH SHEET

Scale 1:190,080 or 1 Inch = 3 Miles

Miles 5 0 5 10 15 Miles

Kilometres 5 0 5 10 15 20 Kilometres

Contour interval 200 feet
Datum is mean sea level

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa, at 25 cents each.

REFERENCE

Village or settlement	o	Building or cabin	▪
Post office	P	Warden's cabin with telephone	▪
Historic site	+	Warden's cabin without telephone	▪
Aerodrome	⊕	Shelter cabin with telephone	T▪
Streams: intermittent or dry		Marsh or swamp	
indefinite		Sand or gravel	
Rapids; falls		Glacier or snowfield	
Intermittent lake		Ferry	
Bungalow camp		Camp ground	



KEY MAP

Initial construction of access road to new logging area 2½ miles

JASPER PARK

ALBERTA

NORTH SHEET

Scale 1:190,080 or 1 Inch = 3 Miles

Contour interval 200 feet
Datum is mean sea level

REFERENCE

Initial construction of access road to new logging area 2½ miles

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Date produced - Date d'exécution

Day / Jour	Month / Mois	Year / Année
25	May	92

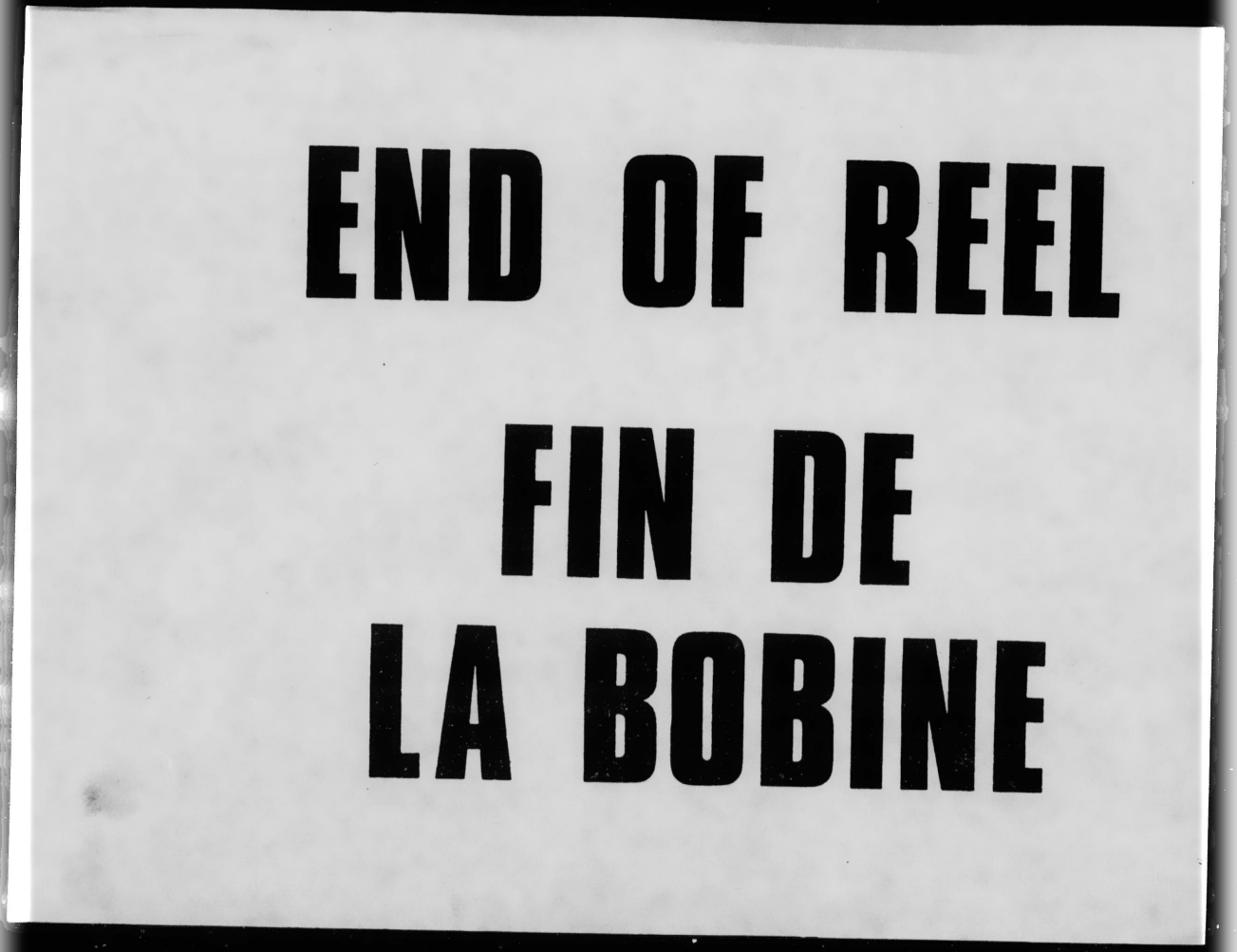
Camera location - Emplacement de la caméra

79 Bentley Ave

Camera operator - Opérateur de la caméra

[illegible signature]

ARC 740 (r.87/07)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