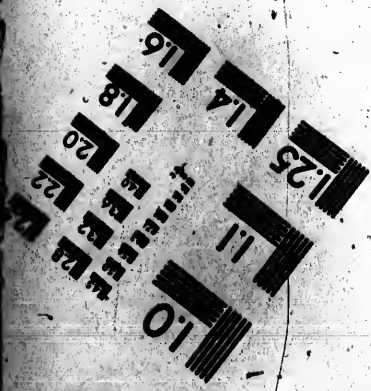
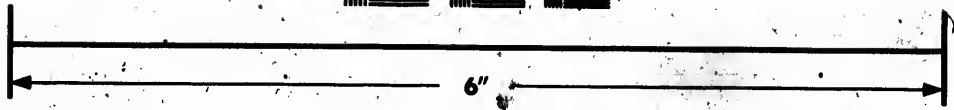
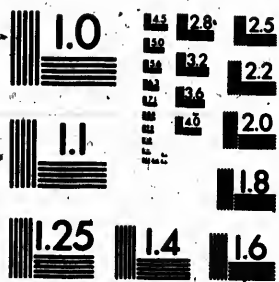


**IMAGE EVALUATION
TEST TARGET (MT-3)**



**Photographic
Sciences
Corporation**

25 WEST MAIN STREET
WEBSTER, N.Y. 14590
(716) 872-4503

Can

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1991

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge inférieure
- Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Généralité (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

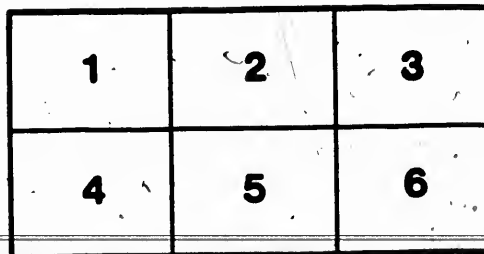
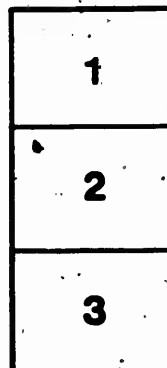
Library of the National Archives of Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

La bibliothèque des Archives nationales du Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

TORONTO WATER WORKS.

SPECIFICATION FOR CAST IRON WATER PIPES.

1. Quantity.

The maximum quantity of Pipes required will be about 7,500 tons, and the minimum about 3,600 tons.

In the following Schedule is given the maximum and minimum number of Pipes, the class to which they belong, their diameter, thickness, standard weight, permitted deviation, greatest proposed head, the pressure to which they are to be proved, and the approximate weight of the maximum and minimum quantity that the Commissioners may accept:

Maximum number of Pipes	Minimum number of Pipes	Class	Nominal diameter in inches	Length in feet	Thickness in inches	Standard weight in pounds	Permitted deviation	Greatest proposed head, in feet	Pressure to which the Pipes are to be proved	Weight of maximum order in tons	Weight of minimum order in tons
192	192	A	30"	12'	1 1/8"	4,075	100 lbs.	150'	300 lbs.	358	358
360	360	B	30"	12'	1 1/4"	4,309	108 lbs.	180'	300 lbs.	693	693
100	100	C	30"	12'	1 1/2"	4,544	112 lbs.	215'	300 lbs.	203	203
225	225	B	24"	12'	1"	3,174	80 lbs.	180'	300 lbs.	319	319
5,005	2,280		12"	12'	1/2"	1,012	30 lbs.	180'	300 lbs.	2,261	1,030
29,888	8,175		6"	9'	3/8"	274	8 lbs.	180'	300 lbs.	3,656	1,000

2. Shape.

The pipes are to be made to conform accurately to the drawings to be furnished by the Engineer, the thickness of the body of the pipe being such as to give the proper weights. All pipes above six inches in diameter to be twelve feet long, exclusive of flange. The specified diameters are nominal, but no casting of any class, shall have less interior diameter than the specified nominal diameter, and the interior diameter shall approximate as closely to the nominal diameter as is consistent with other requirements herein specified.

The exterior diameters of all classes or thicknesses of pipes shall be the same for each specified nominal diameter, the variation in thickness of metal being made by changes in the interior diameter.

3. Deviation in Weights.

No greater deviation in weights than that in the table will be admitted; any excess above this in any pipe will not be paid for, and any pipe falling short will be rejected. The gross weight of pipes of each size is not to exceed that due to the specified mean weight by over two per cent.

4. Metal.

The metal is to be melted grey pig iron, of the best quality, of approved mixture, and of such a character as to make strong, tough castings, not too soft nor so hard but that it will satisfactorily bear drilling and cutting or chipping, and at each casting a specimen bar is to be cast, three and a half feet long, two inches deep, and one inch thick, which is to be placed on supports three feet apart, and bear a weight of three thousand two hundred pounds in the centre, without breaking. This test is to be made by the Contractor in presence of the Commissioners' Engineer or any one appointed by him for this purpose.

The thickness of the metal of the castings will be tested by calipers after they have been freed from sand, and thoroughly cleaned, and no pipe will under any circumstances be received when the thickness of metal is in any part less by more than one-sixteenth of an inch, than the thickness required by the Plans and Specifications.

- 8 Casting. All pipes to be cast vertically in dry sand, faucet down, and to have sufficient length (from six to eight inches) cut off the spigot end to insure a perfectly sound spigot; they are to be cast without core nails or chaplets, each size to be uniform in bore and thickness of metal, to be straight, smooth, and well cast, free from flaws, lumps and defects of any kind.
- Each pipe shall have cast upon it the letters T. W. W., the year in which it is made, the letter of the class to which it belongs, and the running number of the casting of the same size.
- The letters and figures to be cast back of the faucet in block letters, two inches in length and one-eighth of an inch in relief.
- 9 Coating. The pipes are to be thoroughly cleaned and dressed under cover; and, before being allowed to rust in the slightest degree, they are to be coated, by immersion for the requisite time, in Dr. R. A. Smith's patent coal pitch and oil, heated to the proper temperature, and put on in such a manner as to produce a smooth, tough and tenacious covering, not to be brittle or liable to scale off. The whole to be done under the inspection of an agent for the Commissioners.
- 7 Turning and boring. In pipes with turned and bored joints the spigots are to be turned and the faucets bored, as shown on plans, and the greatest care is to be taken that they are made truly circular, as well as uniform in taper and diameter, so that any two pipes of the same specified size will fit accurately together. The taper to be at the rate of 1 in 36, or $\frac{1}{36}$ of an inch in 4 $\frac{1}{2}$ inches. The turning and boring is to be done after coating, and the cut surfaces to be coated with tallow on leaving the lathe.
- 3 Proof. After being coated all the pipes are to be proved by the contractor, in the presence of an Inspector, to a pressure of 300 lbs. per sq. inch, to be well hammered while under proof, and to show no defect whatever. If lead, putty, rust or any other preparation be found in holes in any pipe it will be forfeited to the Commissioners, and the Contractor will be held responsible for all expenses and damages arising from any such stuffing, should the pipe have been laid before it is discovered.
- 9 Inspection, Acceptance not final. The inspection and proof at the works shall not relieve the Contractor of responsibility for defective pipes, and any defective casting which may have passed the Inspector at the works or elsewhere, will be at all times liable to rejection when discovered, until the final completion and adjustment of the contract.
- 10 Weights. The pipes are to be weighed and proved by the Contractor in presence of an Inspector, appointed by the Engineer acting for the Commissioners, and the weight is to be marked on the inside of each pipe in plain figures, with white lead.
- 11 Alteration. The Commissioners shall have it in their power to alter to any extent the relative quantities of the different sizes of pipes, or to substitute one size for another, down to and including six-inch; and also to increase or diminish the total weight stated in the table, to the extent of twenty-five per cent. of the total quantity named at the time notice to such effect is given, and also to direct which sizes shall be first delivered.
- 12 Inspection. The pipes will be inspected during and after manufacture by an Engineer appointed by the Commissioners for this purpose, who by himself, or deputy, shall have access at all times to the foundry, and all are to be subject to approval by him in terms of this Specification.
- 13 Wide Socket. In case turned and bored pipes are adopted, a portion of each size, not exceeding three per cent., may be required to be cast with wide sockets, the pattern drawing of which will be given by the Commissioners' Engineer, and must be strictly followed.
- 14 Delivery. Delivery of pipes in good order will be taken F.O.B. at specified ports in Britain, or "over the side" on barges at Montreal, or in Toronto, free of all charges, except customs duty. Eight hundred tons of the 30-inch pipe must be delivered in Toronto by the first of August, and the remainder of the 30-inch, and all of the 24-inch, by the first of September. Five hundred tons of the 12-inch must be delivered by the first of August, and the remainder of the order by monthly instalments of three hundred tons. Three hundred tons of the 6-inch must be delivered by the first of August, and the balance of the order at the rate of three hundred tons per month during the season of navigation. If delivery be accepted at any other place than Toronto, then the pipes must be delivered at such earlier dates as will enable the Commissioners to have them forwarded to Toronto by the dates above specified.

16. Proposal.

The proposal must be made upon the printed form annexed, addressed to "The Water Commissioners," Toronto, and endorsed "Tenders for Pipes."

The Tenders to state the price per ton of 2,240 lbs. for each size of pipe, with "turned and bored joints," and also for ordinary loose spigot and faucet pipe—to be made according to Plans to be furnished by the Engineer.

The Contractor shall be at liberty to make in his tender any special conditions as to length of pipe, rate, and time and place of delivering; time and manner of payment, &c., &c.

Tenders not from principals to state where and by whom the pipes are to be manufactured, and are also to show that the manufacturer has seen the Specification, and is a party to the tender.

16. Reservation.

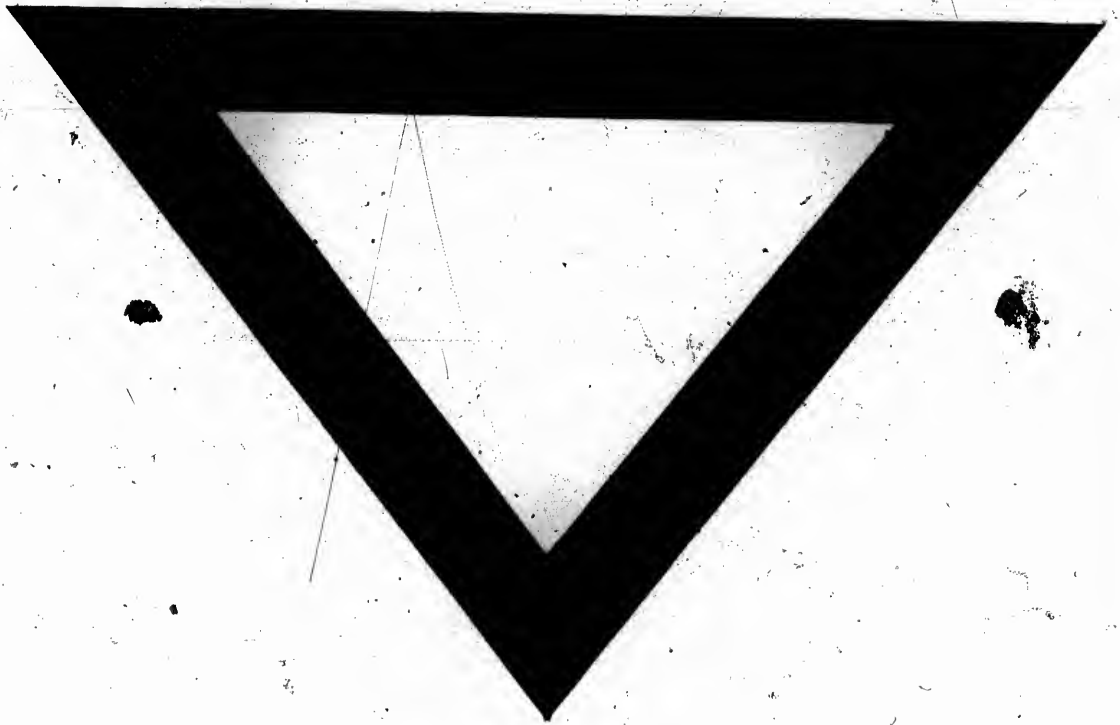
The Commissioners reserve the right of accepting the best tender, whether the same be the lowest or not, also of rejecting all the tenders should the interest of the City require that course.

17. Time for receiving Tenders

Tenders will be received until noon of Monday, the 28th day of June, 1876.

P. ALEX. PETERSON
Chief Engineer.

TORONTO, CANADA,
May 21st, 1876.







7



8



10