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CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL
OF THE INTERESTS OF THE CONTRACTING INDUSTRY

PUBLIC WORKS • TENDERS •
ADVANCE INFORMATION •
AND MUNICIPAL PROGRESS • WEDNESDAY

This paper reaches every week the Town and City Clerks, Town and City Engineers, County Clerks and County Engineers
Purchasers of Municipal Debentures and leading Contractors in all lines throughout Canada.

VOL. 11.

DECEMBER 12, 1900

No. 45.

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publishers of any irregularity in delivery of paper.

Tenders Wanted

Tenders will be received up to 12:15 INST., at the
office of the Treasurer, Main Street, East Toronto, for
the extension of the water mains for about 7,000 feet.
Specifications can be seen and all information obtained
from the Treasurer.

No tender necessarily accepted.

G. L. DAVIDSON,
Reeve of East Toronto.

Dec. 6th, 1900.

Town of Pictou, N. S., Water Works

TO CONTRACTORS

PROPOSALS FOR

Water Pipe, Gates and Hydrants and Pumping Machinery

Separate sealed proposals for Cast Iron Water Pipe
and Special Castings, Gates and Hydrants and Pumping
Machinery, to be respectively endorsed "Proposals
for Furnishing Water Pipe and Special Castings for the
Town of Pictou," "Proposals for Gates and Hydrants
for the Town of Pictou," and "Proposals for Pumping
Machinery for the Town of Pictou," will be received at
the office of the Town Clerk in Pictou, Nova Scotia,
until 4 o'clock p.m. on THURSDAY, THE 3RD DAY
OF JANUARY, A.D., 1901.

The amount of security required will be fixed by the
Mayor and Council after the bids are opened, said
amount to be not less than one-fourth nor more than
one-half of the amount of the contract.

The Mayor and Council also expressly reserve the
right to reject any or all bids should they deem it for
the interest of the Town of Pictou to do so.

Specifications may be obtained of the undersigned
Town Clerk, or of the engineer, Lea & Coffin, 53 State
Street, Boston, Mass., by sending a deposit of two dol-
lars for each specification, which deposit will be return-
ed to any party making a bona fide bid accompanied by
the cheque.

By order of the Town Council.

FRED MACKRACHER,
Town Clerk.

Pictou, N.S., Dec. 4th, 1900.

CONTRACTS OPEN.

BOLTON, ONT.—An electric light plant
may be installed here.

LISBON, ONT.—Geo. Hohl intends
building a house next spring.

DIGBY, N. S.—Mrs. Thos. Waters, of
Somerville, purposes building a residence
here.

NEWMARKET, ONT.—The G.T.R. is
preparing to build a new bridge on Queen
street.

YARMOUTH, N. S.—The congregation
of the Tabernacle church purpose erecting
a parsonage.

STROUD, ONT.—The trustees of Knock
have decided to build a brick school house
next summer.

HARROW, ONT.—There is a strong agi-
tation in favor of securing a system of
street lighting.

BEAVERTON, B. C.—About twenty
buildings and a saw mill are to be erected
here at once.

ST. THOMAS, ONT.—The contract is
about to be awarded for Lassaline & Sons
new building.

MEMRAMCOOK, N.B.—Somier & Rich-
ard, whose store was burned recently, in-
tend to rebuild.

ASBESTOS, QUE.—The Asbestos & As-
bestic Co. are making preparations to re-
build their works.

HINTONBURG, ONT.—The council is at
present looking around for a suitable site
for a new fire station.

GRAND FORKS, B. C.—It is understood
that the C.P.R. is about to extend its line
to the Sullivan mine.

WESTVILLE, N. S.—Sutherland & Co.
are preparing to enlarge their store to
about double its present size.

TORONTO JUNCTION, ONT.—The
Heintzman Piano Company will likely
build an addition to their factory.

WINDSOR, ONT.—Wm. Simpson has se-
cured right of way from Essex to Wheat-
ley for his proposed electric railway.

CARLETON PLACE, ONT.—The Board
of Education is taking steps in the direc-
tion of further school accommodation.

CANNING, N. S.—R. W. Kinsman &
Company, whose barns were burned re-
cently, intend rebuilding in the spring.

WEYMOUTH, N. S.—The project of
building a new summer hotel here is said
to have been abandoned by the American
syndicate.

SOUTHMARCH, ONT.—Thos. Richard-
son, town clerk, invites bids up to Decem-
ber 15th for building brick and stone
town hall.

ALMONTE, ONT.—A special meeting of
the council will be held to discuss the
question of raising funds for street im-
provements.

GODERICH, ONT.—Ogilvie & Hutchin-
son purpose remodelling and enlarging
their flour mill, at a cost of \$100,000, and

have asked the town for exemption from
taxation.

DURHAM, ONT.—The question of
building a new town hall to cost \$70
will be submitted to a vote of the ratep-
ers.

WALKERTON, ONT.—Rife & Co., wool-
len manufacturers, are asking for a loan
of \$10,000 in order to enlarge their fac-
tory.

DUNDAS, ONT.—Mr. Frye, town clerk, in-
vites bids up to December 14th for pur-
chase of \$8,000 20 year 3 per cent debentures.

NEW WESTMINSTER, B. C.—Property
on Columbia street has been purchased
by Dr. Holmes, who will build a two-story
block.

MUSQUASH, N. B.—H. R. McLennan,
F. Stetson, and others, of St. John, are
forming a company to build a pulp mill
here.

HANTSPORT, N. S.—Local capital to
the extent of \$8,000 has been subscribed
towards the erection of a new tannery
here.

SHEDIAC, N. B.—About ten miles of
the proposed Shediac railway from this
place to Cape Tormentine have been
surveyed.

WOODSTOCK, ONT.—Plans are being
prepared by Alex. White, architect, for
Mr. Calbeck's two-story brick residence,
cost \$3,000.

ORTON, ONT.—The Methodist con-
gregation of Grove church are consider-
ing the question of building a new church
at this place.

HAVELOCK, ONT.—Meetings have been
held at several places in the interest of
the proposed electric railway from Brigh-
ton to this place.

PARRY SOUND, ONT.—A by-law to
raise \$30,000 to purchase the electric light
plant will be submitted to a vote of the
ratepayers in January.

WINGHAM, ONT.—Tenders for erec-
tion of Methodist church will be received
by W. J. Grier up to 20th inst. Particu-
lars from Rev. R. Hobbs.

MERRICKVILLE, ONT.—W. H. Postleth-
waite has purchased the site of the Wind-
sor hotel and will immediately commence
the work of rebuilding.

SUSSEX, N. B.—An engineer will make
a report to council upon the scheme of
building a reservoir on O'Connell's hill
for supplying the town with water.

SYDNEY, C. B.—It is reported that the
British Government is negotiating for large
water lots and considerable land here, the
purpose being to establish a naval depot.

SHELBURNE, ONT.—The council open-
ed tenders last week for purchase of \$5,000
waterworks debentures, but the price
not being satisfactory, no tender was ac-
cepted.

BERLIN, ONT.—A. W. Holmes, architect
Spadina Avenue, Toronto, is receiving
tenders for superstructure of new R. C.

church. The estimated cost of the building is \$50,000.

SLICAN CITY, B. C.—A company has been formed to secure a water power from Goat creek and to develop the power electrically; estimated cost of the works, \$40,000.

PETROLIA, ONT.—H. Branston, secretary Public School Board, will receive tenders up to 18th inst. for heating the Middle street school, tenderers to furnish their own plans.

FREDERICTON, N. B.—Tenders close December 17th for rebuilding the Ryan and Copeland bridges in Restigouche county. Plans at office of Public Works Department, this city.

CALGARY, N.W.T.—At a recent meeting of the town council the question of developing the water power of the Kananaskis Falls and transmitting it to Calgary a distance of fifty miles, was discussed.

AYLMER, ONT.—By-laws authorizing the issue of debentures to the amount of \$58,000 for the installation of waterworks and electric light plants were carried by the ratepayers on the 4th inst.

GEORGETOWN, ONT.—At a recent meeting in the interest of good roads A. W. Campbell, Provincial Road Inspector, suggested that the county of Halton should purchase a road crusher.

WELLAND, ONT.—It is proposed to submit a by-law to the ratepayers at the January elections to provide funds for a steam road roller and to complete the macadamizing of Main and Division streets.

EDMONTON, N.W.T.—The construction of a waterworks system is likely to be proceeded with.—The Massey-Harris Co. have purchased property on which they will erect next summer a two-story brick warehouse.

HALIFAX, N. S.—Subscriptions amounting to \$40,500 have been made for the erection of a Jubilee Sunday School building in this city.—Plans are being prepared for the new theatre to be built by H. B. Clarke.

BROCKVILLE, ONT.—The C.P.R. will commence work in the spring on the proposed improvements at this place. The freight sheds will be enlarged, the wharves rebuilt, and the tracks extended. The offices will also be remodelled.

GUELPH, ONT.—The Board of Trade is advocating a scheme for the building of a railway from Guelph to Puslinch.—A scheme is now before the city council with the object of providing funds for construction of a sewerage system and for permanent roadways.

OWEN SOUND, ONT.—The Owen Sound & Georgian Bay Park & Summer Resort Company will issue a prospectus in a few days. The purpose is to erect a large summer hotel at Balmby Beach, owned by J. H. McLoughlan, and to have the building completed for the beginning of next season; estimated expenditure, \$150,000.

ST CATHARINES, ONT.—Richard Westwood, of Guelph, has made a proposition to start a carpet factory here.—The Hamilton, Grimsby & Beamsville Railway Company have asked permission from the county to extend their railway from Beamsville to this city.

NORTH TORONTO, ONT.—The by-law to provide \$10,000 for a water supply for the town will be submitted to the ratepayers on January 7th. The expenditure includes \$2,500 for a reservoir, \$1,500 for engine and boiler house, \$1,200 for a boiler, and \$1,500 for water mains. R. E. Speakman, C.E., of Toronto, is consulting engineer.

VICTORIA, B. C.—The railway ferry project was last week carried by the ratepayers by a large majority.—A building will be erected on Government site

for Moi Chung; Thos. Hooper, architect; cost \$5,000.—The Columbia & Kootenay Railway & Navigation Co. will apply to Parliament for an extension of time to construct their railways and works. The British Columbia Southern Railway Co. will ask a similar privilege.

PETERBOROUGH, ONT.—A proposition has been made to the town by Senator Geo. A. Cox, of Toronto, on behalf of the American Cereal Co., to establish a large factory here. In return for certain concessions the company undertake to expend \$100,000 in acquiring and improving the Dickson property, and \$250,000 on buildings and equipment within six months.

QUEBEC, QUE.—The Metropolitan Life Insurance Co. are about to commence work on a new building to be built on St. John street.—The Jacques Cartier Water & Power Co. are completing plans for their new building to be built on the corner of St. John and d'Ancenis streets, although the work of construction will not likely be commenced until spring.

NANAIMO, B.C.—The city council have decided to accept the offer of Samuel M. Robins, superintendent of the New Vancouver Coal Company, to give a site and \$2,500 in cash for the erection of an isolation hospital, provided the city raise a like amount.—Owing to a technicality the by-law to provide funds for acquiring the waterworks plant may be submitted to the ratepayers again.

INGERSOLL, ONT.—Bids are wanted by W. R. Smith, town clerk, up to 14th inst., for purchase of \$9,151 45 4 per cent. local improvement debentures.—The county council have decided to build a bridge on the line between East Oxford and North Norwich and to rebuild the approaches to a large steel bridge between East Oxford and Woodstock.

HAMILTON, ONT.—The Cataract Power Company have asked the Barton township council for permission to build a branch from the radial railway station at Irondale to the smelting works.—The T. H. & B. Railway Company have taken out permits for an addition to warehouse, corner Maria street and Ferguson avenue, cost \$2,500, and brick addition to roundhouse on Garth street, to cost \$5,000.

HULL, QUE.—The new office building for the E. B. Eday Co. is about to be commenced. It will be of stone.—If St. Joseph's Society can sell their property on St. Joseph street, they will build a new hall on another site, at a cost of \$8,000.—The city council has decided to grant a bonus to H. J. Beemer, of the Pontiac & Pacific Junction and the Gatineau Valley railways, provided the railway employees live in Hull and the companies build a station in the city, to cost \$4,000, within one year.

WINNIPEG, MAN.—Plans for the new bridge of the C.P.R. over the Red river have been prepared and tenders will be called about December 15th.—The Keewatin Power Co. is said to be negotiating with the city with a view to supplying electric power. The Lac du Bonnet Power Co. have a similar object in view.—The city will construct a cedar block pavement on lane between Smith and Donald streets, cost \$2,740.—C. H. Wheeler, architect, is this week taking tenders for heating the Tribune building on McDermott avenue by steam.

ST. JOHN, N. B.—The city council has decided to issue \$4,000 of 3½ per cent. debentures.—The Director of Public Works has been instructed to call for tenders for furnishing 17,000 square yards of blocks for repairing pavements.—The Department of Public Works at Ottawa desires tenders by January 4th for construction of a breakwater at Mispec, near this city. Plans at office of E. T. P. Shewan, of this city, and on application to

post master at Mispec. Cheque for \$12,000 to accompany tender.

LISTOWEL, ONT.—W. E. Binning, architect, has in hand the following buildings to be erected next year: Pressed brick residence for Jas. Fox, Brussels, with plumbing, hot air heating, mantels, etc.; farm residences for John Spearin and T. C. Stevenson, Tp. Grey, white brick, with all convenience., business block for James Morrison, Kincardine, 60 feet frontage, including a large livery barn 135 feet in depth, and store and dwelling in connection, white brick, and fitted in the most modern style; new school house in Section No 9, Tp. Emma, with basement, hot air heating, slate blackboards, etc.

KINGSTON, ONT.—The Advisory Board of the First Baptist church have decided on the erection of a new church.—H. P. Smith, architect, is taking tenders this week for erection of school building on Wolfe Island. It will be a one-storey building.—The new drill hall has been taken over from the contractors, and it is understood that the old artillery barracks will be remodelled at once and used as a barracks for a new battery to be created.—John McLeod states that he will likely rebuild his tannery.—Tenders have just closed for placing an electric light plant in the Rockwood asylum for the insane.

BRANTFORD, ONT.—The following building permits were issued recently: Chas. Churchill, brick residence on Brock street, cost \$1,000; Chalcraft Screw Co., brick addition to factory on Dalhousie street, cost \$1,700.—The Bain Wagon Co. intend installing a complete system of waterworks and sprinklers; estimated cost \$22,000.—A by-law for macadamizing streets and for purchase of a road roller will be submitted to the ratepayers at the January election.—The Brantford Carriage Co. may build an addition to their factory.—Geo. W. Hall, architect, invites tenders for erection of brick residence for Dr. H. Mark, cost \$3,000, also for the new Technical school building, being 26x50 ft. Plans are being prepared for the new Y.W.C.A. building; G. W. Hall, architect.

VANCOUVER, B.C.—Parr & Fee, architects, are taking tenders for a dwelling to be built on Pender street.—A company composed of American capitalists has been organized by J. Keith Fisher, of the British Columbia Portland Cement Co., the object being to establish extensive cement works near Sidney, on Vancouver Island. The buildings and plant will be arranged for a capacity of 2,000 barrels of cement a day, and it is expected to commence work as soon as a suitable site can be decided upon. It is intended to operate the works by electric power.—John McSenckie, owner and contractor, will soon commence to build a large brick and stone warehouse on Water street for Messrs. Kelley & Douglas, wholesalers.

MONTREAL, ONT.—The council is considering the purchase of a new hook and ladder truck.—It has been learned that the contracts for the building of the new locks at the Montreal entrance to the Lachine canal have not yet been given out. It is estimated that the work will cost about \$400,000. The two locks now used will be replaced by one lock.—A meeting of the shareholders of the Windsor Hotel Company was held last week, at which it was decided to build a large addition as soon as the demand for accommodation warranted it.—The directors of the Bell Telephone Company have been authorized to issue \$2,500,000 of debenture bonds.—The city hospital representatives held a meeting a few days ago to discuss the proposed new civic hospital project. A proposition was laid before the meeting to erect four pavilions,

connected by means of a covered way with a central administration building, the cost of the whole being estimated at \$100,000.—The Road Committee has decided to call for tenders for paving Jacques Cartier square with asphalt in the center and stone blocks on the sides.—Building permits have been issued as follows: J. R. Wilson, three-storey house, 955 Sherbrooke street, cost \$40,000; R. A. White, architect; Dominion Transport Company, three storey stable, Notre Dame and St. Ignace streets, cost \$50,000, Hutchison & Wood, architects.

LONDON, ONT.—The county council have passed a resolution in favor of the erection of a consumptive sanitarium in this county.—H. C. McBride, architect, has taken tenders for the excavation necessary for the Sanitary Dury Co.'s new building.—The county council has instructed the bridge commissioner to prepare plans and secure tenders for the construction of the following bridges: Buttery's flats, over Sydenham river, Mud creek bridge; bridge opposite lot 16, con. 16, London township, and a bridge opposite lot 1, con. 2, London. Regarding Beattie's bridge on the townline, between Dorchester and London, the committee suggested that a steel structure be erected, but that definite action be deferred until the January meeting.

OTTAWA, ONT.—Plans have been prepared for increasing the capacity of the power house of the Capital Power Co. at Deschenes, Que.—Jas. R. Roy, acting secretary Department of Public Works, will receive tenders up to Tuesday, January 1st next, for erection of post office at Nelson, B.C. Plans at above department and at office of J. A. McDonald, architect, Nelson.—It is said that at the coming session of Parliament an appropriation will be granted for a new departmental building to accommodate the supreme court.—The Public School Board have decided to purchase the Pinhey property on which to build a school to replace the one destroyed by fire on Wellington street in April last.—The Ottawa Improvement Commission are obtaining figures from manufacturing firms for the supply of a steam road roller. They are also taking tenders for supply of 2,000 tons of rubber stone.—The authorities of St. Patrick's asylum for the orphans and aged have decided to build an addition to the institution, to cost about \$12,000.—Parliament will likely be asked at the coming session to appropriate from \$50,000 to \$60,000 for a new wing to the printing bureau.—The following building permits have been granted: John Black and Theo. St. Germain, brick veneered house, Gilmour street, cost \$1,500; Madrick Linderville, brick stable, Albert street, cost \$5,000; Ald. S. J. Davis, three brick veneered dwellings on Hickey street, cost \$6,000; Albert Lester, frame dwelling, Bay street, cost \$1,100; L. R. Gauthier, six tenement brick veneered houses, Lorne avenue, cost \$3,600; H. N. Bate, dairy building, Canal street, solid brick, 33x80, cost \$7,500.

TORONTO, ONT.—It is reported that arrangements have been made for the erection of a large residence and a smaller one on Lowther avenue, at the corner of St. George street.—The plans of the National Sanitarium Association include the building of a large sanitarium at Gravenhurst within a year, and at a later date a receiving hospital for advanced cases and an institution for incurable cases.—Tenders are wanted for slating, roofing, tinsmithing, plastering and painting of pair of houses, corner Bathurst and Uster streets.—The council will be asked to take some steps towards paving the approaches to the York street bridge.—At the municipal elections on January 7th the ratepayers will be asked to declare whether or not they are in favor of the city

purchasing and operating the gas works.—Building permits have been granted as follows: Authorities of Bishop Strachan's school, three storey brick addition to present building, cost \$7,000; W. J. Brown, two storey brick residence, 105 Tindill avenue, cost \$3,000; F. H. Little, two two-storey brick dwellings, 254 6 Avenue road, cost \$5,000; Mrs. Marjorie Murray, two storey store and dwelling, 26 Westmoreland avenue; The Separate School Board, two storey brick and stone school, Bond street near Wilton avenue, cost \$20,000, A. W. Holmes, architect, William Kean, contractor; John McIvor, pair semi-detached brick dwellings, 44 and 46 Pearson avenue, cost \$2,400, James Harvey, architect, Dunkley Bros., contractors; King Bros., pair semi-detached brick dwellings, west side Albany avenue, near Bloss street, cost \$4,000, Self Bros., builders; W. C. Jephcott, two storey frame and plaster summer residence on Conner avenue, Island Park, cost \$1,200, J. F. Brown, architect, Whitlan Bros., contractors.

FIRES.

Planing mill of W. F. Lawrence at Maple Creek, N. W. T., almost totally destroyed; loss \$2,500, insurance \$500.—Building of Whitby Evaporating Co. at Whitby, Ont., partially destroyed.—Fire at Parkhill, Ont., on 9th inst., destroyed Owen's furniture store, the Bell Telephone office and Dr. Caw's residence.—The following business places in Winnipeg were destroyed by fire last week: Joseph Watson, confectionery; Charles Dowell, tobacco; Jas. Collins, tailor; Bowes & Reeves, hatters; Roberts' cobbler shop; Auer Gas Company's ware-rooms.

CONTRACTS AWARDED.

HULL, QUE.—Pressed brick residence on Main street for N. Page: Christie Lynott, contractor.

SHAWINIGAN FALLS, QUE.—Carrier, Luine & Co., of Lewis, have secured the contract for supply of 10,000 feet of water-works pipe to be used here.

ST. THOMAS, ONT.—Steel bridge for Lake Erie & Detour River railway: Superstructure, Walkerville Steel Co.; masonry, Ponsford Bros, this city.

ST. JOHN, N. B.—Thos. Gilliland has been awarded the contract to build new wharves at Gondola Point and at Dunham's, on the Reach above Oak Point.

TORONTO, ONT.—The Board of Control have accepted the tender of G. N. Reynolds & Co. for 400 chairs for the new technical school building, at the price of \$1,470.—The Separate School Board have accepted the tender of W. J. McGuire for the heating, ventilation and plumbing of St. Michael's school, at \$4,100.

VANCOUVER, B. C.—Mr. T. Bradbury, has secured contract to build the government building at Rossland.—Mr. E. Cook has contracted to build a brick and stone building on Carrall street, for Messrs. Todd & Son, of Victoria; Mr. Thos. Hooper, architect.

WINNIPEG, MAN.—Tenders have been accepted by the city as follows: E. Doidge, 1,500 cords cedar paving wood, at \$9.70 per cord; W. F. Lee, sewer on Nena street and Elgin avenue, \$1,705; Dobson & Jackson, granolithic walk on Bannatyne avenue, \$440.

MONTREAL, QUE.—The harbor commissioners have accepted the following tenders for stone work for the flood protection wall: Cut stone for coping, O. Martineau & Fils; cut stone for ashlar, Roche & Lemay; rubble stone, Martineau & Prenouveau; broken stone, Z. Dufresne; sand, Montreal Sand & Gravel Company; cement, F. Hyde & Co.

OTTAWA, ONT.—Three tenders were received by the city for supply of steam

fire engine, as follows: American Fire Engine Company, Seneca Falls, N. Y., weight 7,000 pounds, capacity 750 gallons per minute, with a five year guarantee, \$5,619.25; Waterous Engine Company, Brantford, same capacity and otherwise in concurrence with the specification, \$4,995; Manchester Locomotive Works, Manchester, New Hampshire, \$6,150. The tender of the Waterous Co. has been accepted.

THE ASBESTOS HOUSE OF COUNT VON WALDERSEE.

Readers of the Engineering Record who have taken part in military operations may be interested in the asbestos house which has been shipped to China as the field headquarters of Count Von Waldersee. It was made by the firm of Alfred Calmon in Hamburg from the plans of Mr. H. Hagn, a German civil engineer. When first assembled 8 hours were necessary to put the house together, and 3 hours were needed to take it down. This time was apparently considered a trifle long for military operations, and the designer was induced to prepare a "carefully worked-out plan of setting up," which was followed when the house was put on exhibition in Bremerhaven, resulting in a marked reduction in the time required. The beams, timbers and similar long pieces of the structure can be made up into bundles, and the asbestos plates, doors, windows and the like can be packed in 150 chests, each provided with four handles "for easy transportation."

The house has a length of 55½ ft. a width of 37 feet, and a height to the top of the walls of 11¼ feet and 15½ feet to the ridge-pole. Internally it is divided into five rooms of 195 to 450 square feet floor space each, for the field marshal and his adjutants, a bath-room, and a room for two servants. The timber framework is made of selected fir put together with screws and mortises so as to be easily assembled and taken apart. The floor girders, which are laid on the leveled surface of the ground, are three in number and carry 16 crossbeams on which the flooring is laid and to which the timbers of the walls are bolted. The framing is further strengthened by guys of wire rope. The asbestos plates are very light, water-tight and incombustible. The outer walls are double, with a ½-inch air space between them, while the partitions consist of but one thickness of these plates. Each is held by a light wood frame which fits into the framing of the house. The plates for the roof are held by clips. The planks forming the floor have been given an asbestos protection on their lower side in order to keep out the cold, dampness and "vapors from the ground." Mats of cocoa fiber and carpets have also been provided. The glazed windows are provided with shutters and window screens to keep out insects. Five German stoves with stovepipes of plate iron have been provided to heat the rooms.

HEAT DEVELOPED IN THE SETTING OF CONCRETE.

Although the fact has long been recognized that during the setting of Portland cement a considerable rise of temperature takes place throughout the mass, with an accompanying disengagement of heat, but little attention has been bestowed hitherto upon this peculiar property of one of our most important constructive materials. One reason for this apparent neglect of so interesting and instructive a subject is no doubt due to the fact that the testing of all samples of cement, concrete, and of nearly every other substance in testing works, laboratories, and similar establishments for the same purpose, is carried out upon so very limited a scale, and upon specimens comparatively so exceedingly small. Under these restricted conditions the particular phenomenon referred to very rarely becomes sufficiently developed to attract any appreciable notice; and even if it did, the absolute rise or difference in temperature would be so small that it would be a matter of great difficulty to measure it with any degree of accuracy.

A very recent experiment has been carried out with the view of obtaining some reliable information upon the whole question, with a mass of solid concrete amounting to nearly 300 cubic yards. The concrete was composed of one part by weight of pure cement, one of sand, and two of rather coarse gravel, so that it had considerable strength and tenacity. In the mass of concrete there was a large number of welding down bolt holes, which served as ready receptacles for the thermometers. Some of these, which were of the ordinary mercurial description, were inclosed in small zinc sheaths or tubes $\frac{1}{2}$ in. diameter, while others were of larger size, registering maxima and minima, and were placed in tubes $3\frac{1}{2}$ in. diameter in various parts of the monolith. These thermometers were also differently located with respect to the sides or boundaries of the concrete block. Those of the ordinary pattern were inserted at a distance of 3ft. from the outer surface of the mass; but the maximum and minimum instruments were placed at a distance of 8ft. from the external surfaces. The thermometrical observations were made with great rapidity, in order to avoid the registered temperatures being affected by the temporary contact of the instruments with the out-

side air. They were drawn up by means of a small wire attached to each, the readings quickly taken, and they were then redeposited in their little cavities, and a small wooden wedge was inserted, to hold them securely in place.

At the commencement of the experiment, before the setting of the concrete, the temperature was 43° Fahr., and the maximum reached was 86° Fahr. The observations extended over three weeks, and at the expiration of that time all the instruments recorded practically the same temperature as that of the external atmosphere, although the latter had varied in its diurnal and nocturnal limits as much as 20°. There does not appear to be any law regulating the rate of the setting of the concrete subsequent to its commencement and the rate of the rise of temperature, for in the experiment described the maximum temperature was attained at the end of six days after the process of setting had begun. There is a point in connection with the subject of our article which deserves attention. It is that the decrease in temperature after the maximum had been arrived at was slow and gradual, and not of a sudden or spasmodic character. On a future occasion we shall refer to some very interesting experiments undertaken to ascertain the effect upon masses of concrete, of sudden and violent cooling, as in the case of frost. It is perfectly well known

that the origin of fissures and cracks in concrete structures have been attributed to this and collateral causes, and bearing in mind how largely that material is at present employed in engineering and architectural works of very considerable magnitude, there is no necessity for mentioning in a good deal of additional information respecting those causes and their validity, or otherwise, would be very acceptable.

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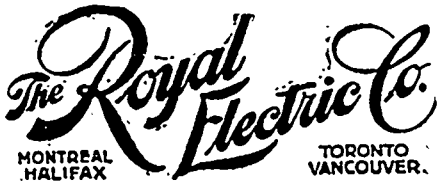
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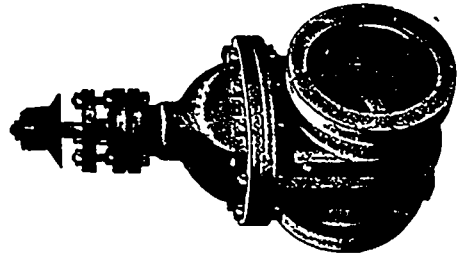
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These objections are more or less compensated for by the better footing it gives to the horse in hauling heavy loads.

There are two methods of constructing this pavement, viz., as a first pavement, on unimproved or light traffic streets, it is generally laid with a sand base or bed, and joints of the same material; then on improved heavy traffic streets, or as a repaving, it is laid with concrete base and sand cushion or bed, the joints of gravel and bituminous paving composition or Portland cement grout.

It is absolutely necessary that the foundation or underlying material should be rendered uniformly firm and unyielding before beginning the work of construction. If the street has been sewered the matter of sub drainage is well provided for; if not, care should be exercised to secure good sub-drainage by other means. It may be that excavations have been made for pipes or for other purposes, and the openings may not have been solidly filled and compacted; it is therefore advisable before completing the forming of the sub-grade to require that a steam boiler weighing at least 12 tons be run over the whole surface several times until there is no yielding. This will reveal any soft places, and will compact those of shallow depth. If any appear to be of considerable depth it is well to slightly hollow or depress the surface over them, making openings with a bar, then flush with water, letting it flow until the voids below are thoroughly filled and solid. After it is allowed to dry out somewhat the roller should again be passed over this surface.

In the excavation for sub-grade it is sometimes provided that no plowing be done, but that should be an unnecessary provision where the rolling, above referred to, is required. If no rolling be done, then the plowing is objectionable for the reason that it will leave a sub-surface of uneven hardness.

* A paper presented at the Milwaukee Convention of the American Society of Municipal Improvements by Mr. Josiah A. Briggs, Chief Engineer, Department of Highways, Borough of the Bronx, New York City, and published in the Engineering Record.

The paving blocks should be hauled upon the work and piled on the sidewalk at least 2 feet back of the curb, for the length of one or more blocks, depending somewhat on the requirements of business, etc., leaving openings for access to buildings and being careful not to obstruct fire hydrants, mail boxes, etc. After these are delivered and before the final forming of the sub grade, the curbstones on either side of the roadways should be reset to the correct lines and grades, damaged stones to be replaced with perfect ones. The crosswalks at the intersecting and terminating streets should then be relaid on a sand bed and made to conform to the finished surface of pavement.

When the blue stone is reset as above, the sub grade should be brought to a true surface uniformly parallel with the proposed finished surface of the pavement, and where a sand base is used 10 inches below the same. Where a concrete base is laid the sub-grade should be 16 inches below the finished surface of pavement, allowing for 6 inches of concrete, 2 inches of sand and 8 inches for blocks.

Where concrete base or foundation is used the concrete should be composed of one part of Portland cement, three parts of clean, sharp sand, and six parts of broken stone, or sufficient to make up of the latter the proportion necessary to cause the voids to be filled and the mortar to flush to the surface when rammed.

The broken stone should be good, hard stone, equal to the good trap, granite or limestone. It must be free from dust and

dirt and broken to such size that all will pass through a revolving circular screen having circular holes 2 inches in diameter and be retained by a screen having circular holes 1 inch in diameter.

In mixing the concrete without machinery it should be mixed on tight platforms of wood or metal (thin metal is to be preferred) about 12 feet square. Batches containing no more than one barrel of cement with the proper amounts of the other materials are preferable. Mix the sand and cements together dry and spread in a layer; over this distribute the broken stone after it has been thoroughly wetted, then turn the mass with shovel and mix thoroughly, adding gradually sufficient water to bring the whole mass to a proper consistency, so that when moved to its place and rammed, all voids will be filled and the mortar will be flush to the surface. Care should be taken that there is no more mortar than will just fill all voids. If the mixing is done by machinery proper proportions of materials must be secured and a mixture of uniform character and quality obtained. No delay should be tolerated in the mixing and moving into place of the concrete mixture, nor should concrete be used which has been mixed more than 15 minutes. While being put in place it should be carefully spread and rammed until well compacted and mortar flushes to the surface. In connecting with a batch partially set the face must be broken down and washed clean so that there will be perfect union between the new and old work. As to how much time should be allowed for the concrete to set, that will depend largely upon the kind of cement used and the temperature, but under ordinary conditions seven days should be sufficient. This, however, should be a matter of judgment.

(Continued next week.)

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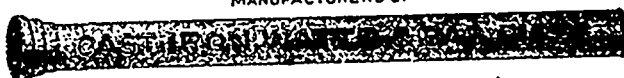
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Architectural Sculptors and Carvers. Holbrook & Mollington..... i	Orescote Stains Cabot, Samuel... IV Canada Paint Co... ix	Lime. Ontario Lime Association... xi Robertson & Co..... ii	Roofers Campbell & Gilday... 21 Duthie & Sons, G... 21 Forbes Roofing Co... 21 Nicholson & Co., D... 21 Ormsby & Co., A. B. I Rennie & Son, Rbht. 2 Stewart & Co., W.T. 2 Williams & Co., H... 2
Architectural Iron Work. Canada Foundry Co viii Dominion Bridge Co. I Hamilton Bridge Works Co..... IV Watson, John..... vii	Chimney Tops Morrison, J. H..... x	Legal. Quinn & Morrison.. III	Stained and Decorative Glass Bloomfield & Son, Henry..... I Horwood & Sons, H. Leonard, B..... I Mackey Stained Glass Co..... I McKenzie's Stained Glass Works..... I The Robert McCausland Stained Glass Co..... I Wood, S. F..... I
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Artists' Materials. Hearn & Harrison... III	Elevators Fensom, John..... I Leitch & Turnbull... I Miller Bros & Toms. vi Turnbull & Russell ColV	Mail Chutes. The Cutler Mfg. Co... I	Soil Pipe. Toronto Foundry Co. III
Builders' Supplies. Bremner, Alex..... i Montreal Directory... xi Ontario Lime Association... xi Robertson & Co. D... ii Rice Lewis & Son..... IV Toronto Directory... xi	Embossed Moulding Boytun & Co.....	Ornamental Iron Work. Dennis Wire & Iron Co vi Toronto Fence & Ornamental Iron Works. vi	School and Church Furniture. Can. Office & School Furniture Co..... 2
Building Stone Dealers. Credit Forks Stone Co ii Broie Jat..... ii Heod & Son..... ii Pi. kaau, C..... ii Robertson & Co., D. ii	Engravers. Can. Photo-Eng. Bureau..... II	Painters. Montreal Directory... xi Toronto Directory... xi	Wall Plaster Albert Mfg. Co..... I Bremner, Alex..... I
Builders' Hardware. Rice Lewis & Son..... IV Wheeler & Pain..... xi	Folding Partitions. Springer, O. T..... xi	Plumbers Montreal Directory... xi Toronto Directory... xi	Wire Lathing The B. Greening Wire Company..... x
Boiler Covering. Mca Boiler Covering Co..... xii	Grilles and Railings. Dennis Wire & Iron Co. vi Toronto Fence & Ornamental Iron Works. vi Southampton Mfg. Co II	Plate Glass The Consolidated Plate Glass Co..... III Toronto Plate Glass Co..... vi	
Bricks. Beamsville Brick & Terra Cotta Co. III Toronto Pressed Brick & Terra Cotta Co. III	Granite Brunet, Jos..... ii	Parquetry Floors Elliott & Son Co..... v	
Conductors. Wire & Cable Co... vi	Heating. Canada Radiator Company..... iii Clare Bros. & Co..... xii Dominion Radiator Mfg. Co..... i-iv Gurney Foundry Co v Leonard & Sons, E... xi Ormsby & Co., A. B. I Smart Mfg Co, Jas... xii Reed & Co., Geo. W. xii	Reflector Frink, I. F..... III	
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" red.....	17 50	20 00	
" purple.....	8 50	10 00	
" ding green.....	8 50	7 00 8 00	
" black.....	7 50	6 50	
Terra Cotta Tile, per sq.....	20 00	25 00	
Ornamental Black Slate Roofing	8 80	6 80	

CEMENT, LIME, etc.

Portland Cements -			
German per bbl.....	2 90	3 10	2 55 2 65
London ".....	2 95	3 00	2 25 2 45
Newcas le ".....	2 70	3 00	1 95 2 10
" Jossen " Brand Portland.....	3 95	3 25	2 70 2 80
" Dyckerhoff.....	3 05	3 25	2 75 2 90
North's "Condor.....	2 95	3 10	2 65 2 80
English, artificial, per bbl.....	2 85	3 00	2 35 2 45
Belgian, natural, per bbl.....	2 50	2 75	2 00 2 20
Canadian, artificial, ".....	2 85	3 00	2 60 2 70
Roman ".....			2 20 2 25
Parian ".....	5 25	5 25	5 75 5 75
Keene Superfine "Whites", 11 c.....	12 00	10 00	10 00
Keene's Coarse "Whites", 8 c.....	8 50	8 10	9 00
Karlstadt " (German).....	3 05	3 25	2 75 2 90
Germania " (German).....	3 05	3 25	2 75 2 90
" Rooster " (Belgian).....			2 15 2 20
" Keystone " (Belgian).....			2 05 2 20
" Anvil " (Belgian).....			1 95 2 05
" Burham " (English).....	2 95	3 00	2 25 2 45
Hydraulic Cements.-			
Thorold, per bbl.....	1 50		1 60
Queenston, ".....	1 50	1 50	1 60
Napanee, ".....	1 50		1 50
Hull, ".....	1 50		1 50
Ontario, ".....	1 50		
Fire Bricks, Newcastle, per M.....	30 00	35 00	16 00 21 00
" Scotch.....	30 00	35 00	19 00 21 00
Lime, 100 lbs., Grey.....			35 30
" White.....			2 00 1 50
Plaster, Calcined, N. B.....			2 00 1 50
" " N. S.....			2 00 1 50
Hair, Plasterers', per bag.....	80	1 00	00 0

HARDWARE.

The following are the quotations to builders for nails at Toronto and Montreal:

Cut nails, 50d & 60d, per keg	2 85	2 85
" " " " " "	2 95	2

TORONTO, Montreal.

	Toronto.	Montreal.
40d, hot cut, per 100 lbs.....	2 45	2 85
10 to 12d, hot cut.....	2 55	2 95
8d, 9d, " " " ".....	2 60	3 00
6d, 7d, " " " ".....	2 75	3 15
4d to 5d, " " " ".....	2 85	3 25
3d, " " " ".....	3 10	3 50
2d, " " " ".....	3 45	3 85
Cut spikes, 10 cents per keg advance.		
Steel Nails, 10c. per keg extra		
Wire nails, 2.85 base price.		
Iron Pipe:		
ron pipe, 3/4 inch, per 100 feet.....	\$3.25	
" " 1/2 " " " ".....	3.35	
" " 3/4 " " " ".....	3.60	
" " 1 " " " ".....	5.00	
" " 1 1/2 " " " ".....	7.00	
" " 2 " " " ".....	7.60	
" " 2 1/2 " " " ".....	11.00	
Lead Pipe:		
Lead pipe, per lb.....	7c.	15 per cent. dis.
Waste pipe, per lb.....	7 1/2c.	
Galvanized Iron:		
Adam's-Mar's Best and Queen's Head and Opello: -		
16 to 24 gauge, per lb.....	4 1/2c.	4 1/2c.
26 gauge, ".....	4 1/2	4 1/2
28 " ".....	5	5 1/2
Cordon Crown -		
16 to 24 gauge, per lb.....	4 1/2	4 1/2
26 gauge, ".....	4 1/2	4 1/2
28 " ".....	4 1/2	4 1/2
Note.-Cheaper grades about 1/4c. per lb. less.		
Structural Iron:		
Steel Beams, per 100 lbs.....	2 75	2 10
" channels, ".....	2 85	2 31
" angles, ".....	2 50	2 60
" tees, ".....	3 80	2 66
" plates, ".....	2	2 00
Sheared steel bridge plate.....		3 35

ARCHITECTURAL VARNISHES.

THE IMPERIAL VARNISH AND COLOR CO., LIMITED.

(Highest grade)

	(Cans free.)	Per gal.	Per gal.	Per gal.	Per gal.	Per gal.	Per gal.
Exterior wearing body.....	\$5 50	\$5 50	\$5 85	\$6 50	\$6 60		
Exterior rubbing.....	3 50	3 75	3 85	4 20	4 60		
El stonia.....	3 50	3 75	3 85	4 20	4 60		
Ivory Enamel.....	5 00	5 25	5 35	5 70	6 10		
Crystalline.....	4 50	4 75	4 85	5 20	5 60		
Yachtline.....	3 00	3 25	3 35	3 70	4 10		
Architectural Coach.....	2 50	2 75	2 85	3 20	3 60		
G anti-d floor finish.....	2 50	2 75	2 85	3 20	3 60		
Architectura. flattng.....	2 00	2 25	2 35	2 70	3 10		