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# CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF

EVERY

PUBLIC WORKS • TENDERS •  
ADVANCE INFORMATION •  
AND MUNICIPAL PROGRESS

THURSDAY

THIS PAPER REACHES EVERY WEEK THE TOWN AND CITY CLERKS, TOWN AND CITY ENGINEERS, COUNTY CLERKS AND COUNTY ENGINEERS THROUGHOUT CANADA.

Vol. 4.

Toronto and Montreal, Canada, April 20, 1893.

No. 10

**THE CANADIAN CONTRACT RECORD,**  
PUBLISHED EVERY THURSDAY  
As an Intermediate Edition of the "Canadian Architect and Builder."

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C. H. MORTIMER, Publisher,  
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Telephone 2362.

64 Temple Building, Montreal.  
Bell Telephone 2299.

Information solicited from any part of the Dominion regarding contracts open to tender.

ADVERTISING RATES ON APPLICATION.

At its Convention held in Toronto, Nov. 20 and 21, 1889, the Ontario Association of Architects signified its approval of the CANADIAN CONTRACT RECORD, and pledged its members to use this journal as their medium of communication with contractors with respect to advertisements for Tenders.

The following resolution was unanimously adopted at the First Annual Meeting of the Province of Quebec Association of Architects, held in Montreal, Oct. 10th and 11th, 1890: "Moved by M. Perrault, seconded by A. F. Dunlop, that we the Architects of the Province of Quebec now assembled in Convention being satisfied that the CANADIAN CONTRACT RECORD affords us a direct communication with the Contractors, Resolved, that we pledge our support to it by using its columns when calling for Tenders."

Subscribers who may change their address should give prompt notice of same. In doing so, give both old and new address. Notify the publisher of any irregularity in delivery of paper.

### BARTER AND EXCHANGE.

This department has been opened for the speedy barter and exchange of second hand plant or material, or small lots of new or second hand materials by builders and others not regularly engaged in the sale of such articles. Advertisements other than those of the above description will not be inserted.

RATES—12 words and under, 15 cents; each additional word, 1 cent (three figures count one word), on two or more subsequent insertions a discount of 10 per cent. will be allowed. Not more than four insertions of an advertisement can be granted.

Replies to advertisements may be addressed to a box at this office, in which case necessary stamps must be sent for re-mailing replies. Advertisements for this department must be prepaid.

**TO DRAUGHTSMEN.**—About 2½ quires of Whatman's Drawing Paper for sale (Imperial size), only \$6 for the lot. Box 151 at this office.

## TENDERS WANTED.

Tenders will be received by the undersigned up to SATURDAY NOON, MAY 6TH, 1893, for supplying

### Cast-Iron Pipe for a Submerged Main.

Plans and specifications may be seen at the office of this paper. Each tender must be accompanied by a marked cheque or cash deposit equal to 5 per cent. of the amount of the contract.

The lowest or any tender not necessarily accepted.

THOS. F. MCGUIGAN, City Clerk,  
Vancouver, B.C., March 30th, 1893.

## TENDERS WANTED.

Geo. M. Miller, architect, 18 King Street East, is receiving tenders from masons and brick-layers for the erection of the Massey Music Hall.



## Notice to Contractors

### TENDERS FOR PAVEMENTS

Tenders will be received by registered post, addressed to the City Engineer, Toronto, up to 11 o'clock, noon, on SATURDAY, APRIL 22ND, 1893, for the construction of the following

#### Pavements, on Track Allowances:

- Front Street, from Church to Frederick Street, concrete.
- York Street, from Front to Queen Streets, asphalt with tootinging.
- Gerrard Street, from Parliament to River Streets, vitrified brick or cedar with granite tootinging.
- Queen Street, from Yonge Street to River Don, asphalt with tootinging.
- Winchester Street, from Parliament to Sumach Streets, vitrified brick or cedar with granite tootinging.
- Dundas Street, from Queen to Arthur Streets, asphalt with tootinging.
- Parliament Street, from Queen to Gerrard Streets, asphalt with tootinging.
- Parliament Street, from Carlton to Winchester Streets, asphalt with tootinging.
- Carlton Street, from Yonge to Parliament Streets, asphalt with tootinging.
- College Street, from Yonge to McCaul Streets, asphalt with tootinging.
- Bathurst Street, from King to Queen Streets, vitrified brick or cedar with granite tootinging.

Specifications may be seen, and forms of tender obtained on and after April 18th, 1893, at the office of the City Engineer.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for under \$1,000, and 2½ per cent. on the value of the work over that amount, must accompany each and every tender, otherwise it will not be entertained.

All tenders must bear the bona fide signatures of the contractor and his sureties (see specifications), or they will be ruled out as informal. The Committee do not bind themselves to accept the lowest or any tender.

DANIEL LAMB,  
Chairman of Committee on Works.  
Committee Rooms, Toronto, April 12, 1893.

## NOTICE TO CONTRACTORS.

Tenders for Pavements on Track Allowances Postponed.

Notice is hereby given that the time for receiving tenders for the construction of pavements on the

### TRACK ALLOWANCES,

is postponed from Saturday, 22nd of April, to Saturday, 29th of April, 1893, at 11 o'clock a. m.

DANIEL LAMB,  
Chairman Committee on Works.  
Committee Rooms, Toronto, April 18th, 1893.

## TO CONTRACTORS.

Tenders are solicited by the High School Board of Niagara Falls, Ont., for the erection of a 3-Story and Basement Brick School Building, also tenders for the heating and equipment.

Tenders will be received for the various trades separately or the entire works.

Plans and specifications can be seen at the Town Clerk's office after April 10th.

Tenders received by the undersigned to May 2nd, 1893.

A marked cheque for 5 per cent. of the amount of the tender required with each tender. Forms of tenders will be supplied by the undersigned on application. Lowest or any tender not necessarily accepted.

JOHN ROBINSON,  
Sec. H. S. Board  
Niagara Falls, Ont., April 5th, 1893

## FOR SALE

A waterworks plant consisting of two sets of pumping engines in first class order, and can be seen at the Parisdale Pumping Station, Toronto. One set of 2½ million gals. capacity with fly wheel, steam cylinder 20 inches diameter and 18 inch stroke, gun metal plungers 12 inches diameter and 18 inch stroke, and one set of 1,300,000 gals. capacity, steam cylinder 14 inches and 12 inch stroke, also two boilers, 4 feet diameter, and 12 feet long. The reason for disposing of these is in consequence of Parisdale, a suburb, being annexed to the City of Toronto. These are as good as new, and can be purchased at a large reduction on cost price; also 1,500 feet of 16 inch, and 100 feet of 12 inch, Ward 30 at flexible intake pipe Apply to John Laxton, 1457 Queen st. West, Toronto.



## Tenders for Material and Supplies.

Notice is hereby given that sealed tenders addressed to the City Engineer and endorsed "Tenders for....." as the case may be, will be received by registered post only, up to the hour of Twelve o'clock noon on MONDAY, 1ST MAY, 1893, for the undermentioned material, supplies and work required by the Department during the year, viz.

- |                            |                       |
|----------------------------|-----------------------|
| Excavating and laying      | Lumber.               |
| pipe.                      | General stores.       |
| Building valve and meter   | Brass work for house  |
| chambers.                  | services.             |
| Special castings.          | Iron and steel.       |
| Hydrants.                  | Iron stop cock boxes. |
| Stop valves, 4", 6" & 12". | Rubber valves, boots, |
| Cast iron pipe.            | etc.                  |
| Pig lead.                  | Lubricating oils.     |
| Brass and bronze castings. |                       |

Specifications and forms of tender and full information may be obtained at the City Engineer's office.

All tenders must be made upon the proper form, and bear the signatures of two good and sufficient sureties who will in the event of same being accepted enter into a bond for the proper fulfillment of the contract.

A deposit cash or a marked cheque must accompany all tenders as per specifications.

The lowest or any tender not necessarily accepted.

DANIEL LAMB,  
Chairman Committee on Works,  
City Hall, Toronto, April 17th, 1893.

**PAINT FOR TURNED AND BORED JOINTS.**—One part of white lead, 1 part of red lead. Mixed with boiled linseed oil to the proper consistency.

## TO CONTRACTORS.

Tenders will be received at our office until noon, SATURDAY, APRIL 29TH, for the several works required for the erection of a Dwelling House in Rosedale.

The lowest or any tender not necessarily accepted.

STRICKLAND & SYMONS, Architects,  
18 Toronto Street, Toronto.

### CONTRACTS OPEN.

PRESOTT, ONT.—The Electric Light Co will install an 800 light incandescence plant.

PORT ARTHUR, ONT.—The C. P. R. intend to build another elevator of one million bushels capacity at this point.

GANANOQUE, ONT.—The Gananoque Electric Light Co, intend to erect a new power house, and add to their plant.

MAPLE, ONT.—A two roomed brick school, with stone basement, is to be erected near this village, in Vaughan Township.

WINDSOR, ONT.—Messrs. Maycock and Newman, architects, have completed the plans for the proposed grand stand for the driving park.

OSHAWA, ONT.—The town Council has decided to submit a by-law to the ratepayers to provide funds for the erection of market buildings.

WYOMING, ONT.—A meeting of the Trustees of the Methodist church was held in the church last week to consider the erection of a new church.

EDMONTON, N. W. T.—The Town Council is considering the establishment of a system of fire protection, the cost of which is estimated at \$12,000.

VICTORIA, B. C.—Mr. Rattenbury, architect, for the new Government buildings, is desirous of receiving samples of sandstones from quarry owners.

ETOBICOKE, ONT.—It is said that St. George's church, situated between the villages of Islington and Lambton, is to be replaced by a new brick structure.

NELSON, MAN.—Plans have been prepared for a new opera house to be erected here, to be 35 x 100 feet, with a seating capacity of 500, and to cost \$3,000.

YORK MILLS, ONT.—The ratepayers of school section No. 3 have decided to erect a new school building. The questions of cost and site have not yet been settled.

GUELPH, ONT.—The ratepayers will vote on a by-law on the 17th of May to provide the sum of \$8,000 for the erection of a new fire hall and alterations to the market buildings.

PEMBROKE, ONT.—At a recent vestry meeting of Holy Trinity Church, it was resolved to erect a parish house on the new church lots. The sum of \$1,300 has already been subscribed.

HALIFAX, N. S.—The City Treasurer is asking for tenders until the 5th of May for the purchase of \$50,000 worth of debentures; the money is to be used in the extension of the waterworks.

STRATFORD, ONT.—The scheme to build a bicycle track at Stratford has been merged into the proposal to build an athletic park, the stock list for which purpose already amounts to \$4,000.

ARNPRIOR, ONT.—Mr. Joseph McDougall, Chairman Property Committee, will receive tenders until the 20th inst. for the erect on of a temperance hospital on the east side of the Madawaska river.

NIAGARA FALLS, ONT.—The Niagara Railway Suspension Bridge Company, from which the Grand Trunk Railway Company leases privileges to cross the river at this point, has decided to make a survey for a new steel arch bridge to replace the present structure.

CHATHAM, ONT.—The Chatham Waterworks Company wants the town to subscribe \$50,000 to

the company's stock for the purpose of extending the supply pipes to Lake Erie, as the company claims there is danger of a water famine. The total cost would be \$100,000.

**ST. THOMAS, ONT.**—A movement is on foot to erect a building which shall afford accommodation for the Free Library, St. Thomas Art School and the Elgin Historical and Scientific Institute. The promoters of the scheme are hopeful that the proposed building will be erected in the near future.

**PETERBORO', ONT.**—The Peterboro' Water Company invite tenders until the 15th of May, for one set of waterworks pumps, of a capacity two and a quarter million gallons per twenty-four hours to be driven by water power. The same company also want tenders until the 1st of May for 300 tons of 16-inch cast iron water pipe.

**BROCKVILLE, ONT.**—Mr. Chipman, Town Engineer, has asked the council for permission to make the necessary surveys and call for tenders for the construction of sewers on the following streets: Daniel street from James to Brock; Brock street from Daniel to Perth; Perth street from Abbot to Perth, and Kincaid street from Jane to Gourlay, a total of about 2,300 feet.

**TORONTO JUNCTION, ONT.**—The tenders received for the erection of the new High School building have been found to be far beyond the sum at the disposal of the Board, the architect has been instructed to modify the plans and call for new tenders. At the last meeting of the Works Committee it was decided to recommend the paving of Dundas street, from Humberstone avenue to Victoria street, with cedar blocks and scoria block toothling.

**MELITA, MAN.**—Among other large buildings to be erected this season will be the grist mill, costing in the neighborhood of \$25,000. Mr. A. E. Thompson, talks of building a large block this year, as also does Asher Pierce. A number of persons contemplate erecting residences, among them being J. A. McInyre and A. M. Livingston.

**LONDON, ONT.**—Mr. White, Engineer of the Militia Department, Ottawa, was in the city yesterday, and went out to inspect the camp grounds on Carling farm. The location and character of the buildings to be erected, if this is to be made the permanent camp grounds were settled. The City Engineer has granted the following building permits: Captain A. W. Porte, addition to his Queen's avenue residence, cost \$1,300; Wm. McGarvey, addition to Queen's avenue residence, cost \$2,500—John Roddy, brick veneer residence, No. 178 John street, cost \$1,400; G. W. Armstrong, three brick cottages on Colborne street, near St. James, cost \$1,400 each.

**HAMILTON, ONT.**—Mr. W. A. Edwards, architect, has called for tenders for erecting a moulding shop for the Gurney-Tilden Co.—The O'Reilly property on Catharine street south has been definitely chosen by the Board of Education as the site for the new Collegiate Institute building.—The following permits have been granted: Frank Kidder, two-storey brick dwellings on Ferguson avenue, between Maria and Hannah streets, to John Moodie, alterations to 38 King street west, cost \$1,000.—Henry Robson, two-storey brick dwelling on Oak avenue, between Cannon and Barton streets, cost \$1,000.—At a meeting of the directors of the Watertown Electric Railway Company, held in this city a few days ago, the chairman, Sir W. P. Howland, of Toronto, was authorized to secure the services of an electrical expert to locate the power houses and prepare an estimate of the cost of the necessary plant.

**OTTAWA, ONT.**—An agreement has been arrived at between the Hull city Council and the Gatineau Point council regarding the construction of the proposed bridge across the Gatineau river. It will be situated opposite the property of Mr. Bouviers, about 450 feet above the church. The plans will be sent to the Government for the approval of the Governor-in-Council, after which tenders for the work will be asked for.—Major-General Herbert leaves in a few days for England, one of his objects being to arrange with the Imperial authorities regarding the fortifications and military work to be constructed at the Esquimalt harbor in British Columbia, and for which the sum of \$155,000 was voted by Parliament at its last session.—Mr. H. Champagne, Chairman Waterworks Committee, will receive tenders until the 24th inst. for the supply of oils, lead pipe, brass work, hydrants, valves, castings, steel tanks and fire alarm supplies, etc., required by the department for the current year.—Mr. G. W. Bayly, architect, will receive tenders until Saturday next for the erection of a spire, etc., to a church in Manotick village.—The Ottawa Board of Health will at once proceed with the erection of a properly equipped isolation hospital, the funds to be raised by the issuing of debentures.—The City Council proposes to erect an insincerator for the burning of garbage.

**WINNIPEG, MAN.**—It is said that the Bell Telephone Company will shortly erect a new building in this city.—The water power committee of the city council will receive propositions up to noon of Saturday, June 3, for the construction of the works necessary to make available the water power of the Assiniboine river in the city of Winnipeg. Further information may be obtained

from Mr. L. A. Nares, Chairman Special Water Power Committee, to whom tenders are to be addressed.—Messrs. Croty & Cross have decided to turn the Davis block, corner of Princess and Market streets, into offices.—The City Clerk has been instructed to advertise for tenders for the construction of a sewer on River avenue, from Clark street to Henry street, tenders to be sent in before the 13th of May.—Mr. John Mather was in the city recently making arrangements for the erection of the new building for the Bank of Ottawa. The plans are now being prepared, and building operations will be commenced in a short time.—Mr. Geo. Brown, architect, is preparing plans for a nine-room residence for Mr. Wm. Clark, of the Hudson Bay Co. It will be built of frame on stone foundation, and will be situated at the corner of Cooper and Colony streets. The cost will be about \$5,000.—Mr. Hugh Ross, contractor, has purchased seventy-five feet on Carlton street and will erect two residences thereon.—Arrangements are now being made by the Northern Pacific Railway Company for the construction of the Lake Dauphin railway. The road will start from Portage la Prairie, and tenders for the construction of the first 50 or 60 miles will be invited shortly.

**MONTREAL, QUE.**—Mr. Kennedy, Chief Engineer of the Harbor Commissioners, has presented the following estimate of the expenditure of his department for the present year: Harbor dredging fleet, \$110,000; harbor repairs, \$70,000; guard pier, labor and sundries, \$10,000; three new scows, \$7,500; new derricks, balance due to contractor, \$7,500; new pile driver, and fitting up, \$3,500; new latrines, 5 at \$400, \$2,000; harbor railway extension of tracks for Grand Trunk railway and Canadian Pacific railway to St. Lawrence sugar house, \$15,000; sundries and contingencies, \$10,000. The commissioners also require some two or three hundred tons of macadamizing stone.—The City Clerk will receive tenders until Tuesday, the 25th inst., for the erection of two police stations, one in St. Lawrence ward, under the supervision of Mr. Eric Mann, architect, 30 St. John street, and the other in Hochelaga ward, under the supervision of Messrs. Resther & Sons, architects, 107 St. James street.—The Road Department has given notice that sewers are to be constructed on Milton street, from St. Lawrence to St. Urban street, and on St. Charles Borromeu street, from Milton street northward.—The municipality of Pointe-aux-Trembles has granted the franchise for an electric railway and electric light system to the Coriveau Williams syndicate. The franchise is for thirty years.—J. Alcide Chausse, architect, is preparing plans for three stores and dwellings, with marble front for Mr. Joseph St. Martin, to be erected at the corner of St. Catherine and Parthenais street, cost \$20,000; two stores and dwellings on St. James street, for Philias Vanier, cost \$8,000; and extensive alterations and additions of two stores and six dwellings at the corner of St. Catherine and Marsoonneuve street for Joseph Gareau, cost \$5,000.—J. B. Resther & Son, architects, have prepared plans for a large chapel for the Franciscan Fathers at No. 122 Dorchester street.

**TORONTO, ONT.**—The Property Committee of the City Council is advertising for tenders for a site on which to erect a central fire hall, to be situated between King, Yonge, Simcoe and Queen streets.—At a meeting of the Senate of the University of Toronto, held last week the report of the committee appointed to consider the accommodation for the department of geology and mineralogy was taken up. It recommends the erection of a new building, the three sites being: On the south side of Hoskin avenue, on the west side of the grounds opposite the residence, or the present residence. The report will be considered.—It is stated that Messrs. W. A. Murray & Co., the well known dry-goods merchants of King street, contemplate the erection of a large building suitable for their business, the present premises proving too small.—The special committee appointed by the Public Library Board to consider the question of electric lighting presented their report at a meeting held last week. It recommended that an electric plant be purchased, at a cost of \$1,828; also that the new reference library be lighted by electricity when completed.—Senator Sanford, of Hamilton applied to council for a renewal for 25 years of the lease of Oak Hall property on King street. He offered to build a building to cost about \$10,000 if his application was accepted. The matter was referred to a committee.—The Board of Works has adopted the recommendation of the City Engineer for the construction of a sewer on Elliott street, from Broadview avenue to Hamilton street and an asphalt pavement on Linden street, from Sherbourne to Hunley streets.—The City Clerk has received sufficiently signed petitions asking for the construction of cedar block pavements on Huron street, from Phoebe street to Grange avenue, and on Euclid place, from Euclid avenue to the east end.—Messrs. T. Eaton & Co. have purchased 62 feet of land on the south side of Albert street, and extending down to the company's store, and propose to immediately erect a large building thereon.—Building permits have been granted as follows: Authors & Cox, bk. store front and additions 135 Church st., cost \$2,000; Howarth Estate, alterations 247 Church st., cost \$1,000; John LeDrew, 21 Pacific ave., pr. s. d. 2 story and attic bk. dwellings, Grand ave w. side South King st., cost \$6,000; German Lutheran church, bk. addition to church on Bond st., cost \$1,500; Chas. Somers, 124 Chest-

nut ave., 4 att. 2 story bk. dwellings, s. side Agnes st. w. of Chestnut ave., cost \$6,500. R. M. Scott, det. 2 story and attic bk. dwelling, 118 Lyndall ave., cost \$5,000; Geo. McKinnon, s. d. 2 story and attic bk. and stone dwelling, 39 Spadina Rd., cost \$3,000; R. C. Waterson, 161 Dunn ave., det. 2 story and attic bk. dwelling, 39 Dunn ave., cost \$3,000; Geo. Boxall, 73 Grenville st. pr. att. 2 story and attic bk. dwellings, 72 and 74 College st., cost \$5,000. Dr. Lorratt, W. Smith, eight att. 2 story bk. dwellings, 92 Scollard st., cost \$8,000.

## FIRES.

Garland, Elliott & Co.'s clothing store at Port Arthur, Ont., was gutted by fire last week.—Mr. William Butchart's hardware store at Menford, Ont., has been destroyed by fire. The loss on the building is covered by insurance.—On Sunday morning last the Dominion Saw and Lead Works, situated on King street West, Toronto, and owned and operated by Messrs. James Robertson & Co., were badly damaged by fire, entailing a loss of about \$75,000. The lead department suffered the greatest loss, as much costly machinery was destroyed. The loss is covered by insurance.—A block of thirteen frame houses located at Montreal Annex, and owned by Mr. C. R. S. Dinnick, Toronto, was destroyed by fire on Saturday morning last. The loss is placed at \$13,000, on which there is an insurance of \$7,800.—The old Christie foundry building on Baker street, Owen Sound, occupied by M. E. Bebee as a harness factory and waterroom, was damaged by fire recently to the extent of \$1,600.—The Presbyterian manse at Wardsville, Ont., together with the residence of Mr. E. C. Acheson, was burned on Sunday of last week.—The village of Granby, Que., was visited by a disastrous fire last week, commencing in the store kept by W. D. Bradford, and extending to the post-office block, belonging to J. L. Dozois. The great North-western Telegraph and the telephone exchange were also destroyed, also a dwelling house owned by Mrs. Bray. The loss is estimated at between \$40,000 and \$50,000.—The Glenroding saw mill, owned by Messrs. N. G. and J. McKechie, and situated about five miles from Durham, Ont., was completely destroyed by fire on Saturday morning last. Loss, \$5,000, insurance \$1,300.

## CONTRACTS AWARDED.

**PARK HILL, ONT.**—Contracts have been let for a new town hall, to cost \$5,000.

**BELLEVILLE, ONT.**—The G. & J. Brown Mfg. Co. have been awarded the contract for an iron bridge at Delhi.

**TORONTO, ONT.**—The contract for extending the Brock street wharf has been awarded to Mr. Robert Grant. The contract price is \$4,375.

**ST. THOMAS, ONT.**—Mr. James Walthow, of this place, has been awarded the contract for frescoing the Grove Methodist church at London.

**BROCKVILLE, ONT.**—Messrs. Crain and Mix have been awarded the contract for rebuilding the residence on the corner of King and Park streets for Mr. Robert Bowie. Work will be started at once.

**OTTAWA, ONT.**—Messrs. Brudes & McNaughton, of this city, have been awarded the contract by the Dominion Government for the work to be done at Goderich harbor. The amount is in the neighborhood of \$38,000.

**TORONTO JUNCTION, ONT.**—The Board of Works has accepted the tender of the Hamilton and Toronto Sewer Pipe Company for the season's supply of sewer pipes, at the following prices: Eighteen inches, 50 cents; fifteen inch, 30 cents; twelve inch, 20 cents; nine inch, 11 cents.

**LONDON, ONT.**—Contracts have been awarded as follows for the erection of the new St. James' Episcopal Sunday School in South London. James Johnston, brickwork, Tumbling & Jones, carpentering; H. & C. Colerick, painting; R. Gash plastering. The total cost will be about \$5,000.

**MONTREAL, QUE.**—W. Livermore, architect, has awarded the contracts for a convalescent home at Long Point for Mr. James Moore to cost \$37,000. The successful contractors are: Stone, Isaac Lewis; brickwork, Peter Wand; Carpentry, Geo. Roberts; roofing, Montreal Roofing Co.; plastering, Thos. Phillips; plumbing and heating, John Date; painting and glazing, A. Craig.

**WINNIPEG, MAN.**—Messrs. Rourke & Cass, contractors, have been awarded the contract for the new academy of music, to be erected here. The building will cost about \$40,000.—Mr. G. Brown, architect, has let the contract for the improvements to Mr. R. P. Roblin's house on Garry street. Mr. M. S. Burnham was the successful tenderer, the price being about \$5,000. A stone foundation will be placed in the building and several rooms added.—The School Board have accepted the tender of Kelly Bros. & Co. for the erection of the two new school buildings, at the price of \$19,608 for each building.

**POLISH FOR IRONWORK.**—Melt 2 lbs. of asphalt with 1 pint of boiled oil in an iron pot; remove it from the fire. Thin with spirit of turpentine.

**TO BEND A GLASS TUBE.**—Heat about two inches of the tube to an even temperature. Then bend quickly without pulling. This keeps the tube from flattening at the bend.

## MUNICIPAL DEPARTMENT.

### VITRIFIED BRICK, THEIR MANUFACTURE AND USE.

By W. S. WILLIAMS, CANTON, OHIO.

The clay should contain the proper amount of silica, aluminum and iron, with the necessary amount of alkalis to thoroughly flux it. The silica, aluminum and iron are practically non-volatile, and will receive a high degree of heat without injury.

The clay must be tempered or pugged not with so much water as to produce hydraulic resistance in compressing it, but with just a little water, just enough to induce a molecular change in the clay. It should be compressed to its utmost density, so as to assist nature as much as possible in forming a compact mass. In drying, the clay will creep together and shrink until the particles touch each other, and then stop.

The rest of the water must be taken off at a red heat, when more shrinking takes place. The brick at this stage is ready to become a semi-molten mass, and if properly treated when done the product should be a dense homogeneous mass from centre to exterior.

Vitrified so to speak throughout, not in structure or series of structures, but a dense compact mass, they should be so treated as not to become crystalline, or of a vitreous nature, but tough, or annealed as it were, so as to have the greatest cohesive strength possible. This gives us a material with greater strength than any known. In a crushing test as shown by our testing laboratories, the vitrified brick proves to be about one-third stronger than granite.

Troutwine, who is regarded as authority by all civil engineers, assumes the weight of ordinary brick work as one hundred and twelve pounds per cubic foot, and that it would crush under thirty tons per square foot; then a vertical column of it, six hundred feet in height, would crush at its base under its own weight, and average granite that weighs one hundred and sixty-five pounds per cubic foot, would sustain a vertical column of eight thousand one hundred and forty-five feet before crushing on its own base. Hence, as vitrified brick stand over one-third more under a crushing strain than granite, the brick vertical column will be over ten thousand feet in height before crushing at its base under its own weight. Troutwine gives the average crushing strength of granite as six hundred tons per square foot, and from the best information we can get, our testing laboratories give the average crushing strength of good vitrified brick as over nine hundred tons per square foot.

Vitrified brick are comparatively new to our architects, and their value are as yet almost unknown to them, but in the near future this brick must of necessity take a very important place with them when they once thoroughly understand that they take no dampness, and are stronger and more durable than granite.

In our larger cities where the air is tunneled with fifteen and twenty story buildings, the width and strength of walls is a very important matter. Space can be economized in thickness of the walls by reason of great strength of the brick. In case it is necessary, they may be buttressed either exterior or interior or both, and thus more room secured in the structure.

In vitrified brick building, there should be a brick used in the interior of the building made of the proper proportions of clay and saw dust or its equivalent. This brick should be burned until it is thoroughly vitrified, the saw dust being consumed in burning, the brick left honey-combed, or full of air cells as it were. This brick should be carried up with the masonry as an inside lining of the walls in the interior of the structure, no firing, no lath required, plastering can be applied directly on the walls. The cellar should be paved with vitrified brick, and no brick allowed in the entire structure that is not vitrified. This would give us a structure, the walls of which would have great strength, fire proof, practically a non-conductor of heat and cold by reason of the air cells in the inside course of brick walls, perfectly dry, as they would not absorb a particle of moisture from turrett to the bottom of the foundation, a fact which can not be said of any other known building materials, and with this end in view it is absolutely requisite that we make the very best vitrified brick, that quality instead of quantity should be the end to accomplish. The people of this country are now investing their money in permanent improvements and they demand the very best material that can be produced.

The paving of streets, and roadways, has for a long time been a source of much anxiety to the engineer. Granite is expensive, noisy and eventually slippery and becomes as rough as a cobble-stone pavement. Asphaltum costly, slippery, and does not wear well. Macadam grinds up and forms a paste, when wet, and is carried off by

Paper read at the Seventh Annual Convention of the National Brick Manufacturers' Association of the United States.

MUNICIPAL ENGINEERS, CONTRACTORS, AND MATERIALS.

the wheels in the shape of mud, when dry, it blows away, and is lasting and wears well only when there is one or two feet of snow upon it. Wood is not lasting and is a great absorbent, consequently unhealthy. Vitrified brick however has taken a great load from the engineer's mind. It is durable, comparatively noiseless, inexpensive, and easily repaired.

In the vitrified brick treated as before spoken of, we have the combined silica, aluminium, and iron, the resultant product gives us a material that will not be affected by the iron or steel tires of wagons nor the calk and toes of the horseshoes. Thetwelve chisels on the shoes of each horse is undoubtedly the greatest enemy paved streets have to contend with. The ingenious blacksmith may change from iron shoes to steel and keep these chisels in excellent repair, yet this steel must give away to the vitrified brick. This is the first paving material yet found, that would resist the horse's shoe. When the brick is manufactured as heretofore described, there is no way of calculating the life of a brick pavement, as there seems to be nothing that can wear it. The brick are hard, and yet do not become slippery, the draft horses always securing a good foot hold.

In vitrified brick, the civil engineer will find just what he has been looking for, in permanent structures, such as arches, tunnels, sub-structures of all kinds, conduits, and especially in sewers. If he is constructing a sewer, where there is much grade, he will find a material that will withstand the rasping filing of all the sand and gravel that will pass through it; being vitrified, it is non-absorbent. Acids and noxious gases will not affect them, and find no place there. In a sanitary point of view, this fact the engineer dares not overlook.

Vitrified bricks have come to stay and have been staying on the face of the earth for a long time. By the rivers of Babylon and Nineveh we find there have been unearthed glazed brick, and brick enamel. In the great brick City of Babylon, Babylon the city of brick, occupying in extent five times more than the present site of London, environed by a wall of brick, three hundred feet in height and eighty-five feet in width, we find that the hanging gardens were sustained with brick arches, brick laid in bitumen the equivalent of our combined coal tar and asphalt; the bed of the river paved with brick, and in their temples brick vitrified to an azure hue, after being placed in position in the structure. Stamped in the brick their first system of writing is given us, viz., the cuneiform. On what were once the banks of the Euphrates and Tigris Rivers we find handed down to us the history of thousands of years ago. It tells us of the deluge, when the face of the earth was covered with the waters. It informs us of the first great kingdom after the subsidence of the waters. We have stamped upon brick the name of one of their first great rulers, viz., Nimrod, the mighty hunter before the Lord. This history was not handed down written upon columns of stone, nor monuments of brass—such material seems to have succumbed to the action of the ages—but it is given us upon clay tablets—simply brick, and nothing more.

PERSONAL.

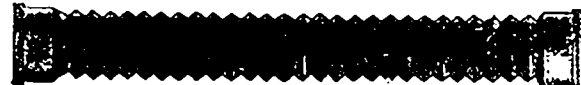
Philip Embury, for 15 years town clerk of Napance, has resigned.

Mr. James Hutcheon has been appointed City Engineer of Guelph, Ont.

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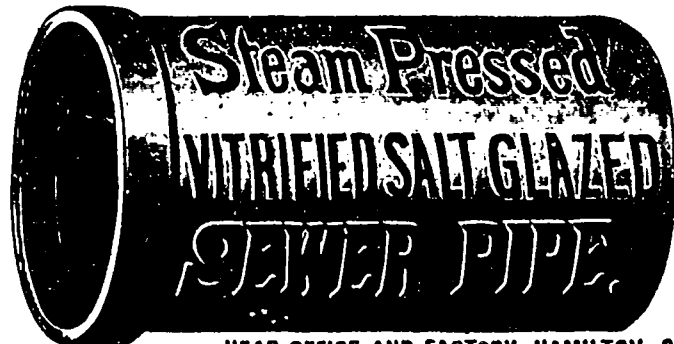
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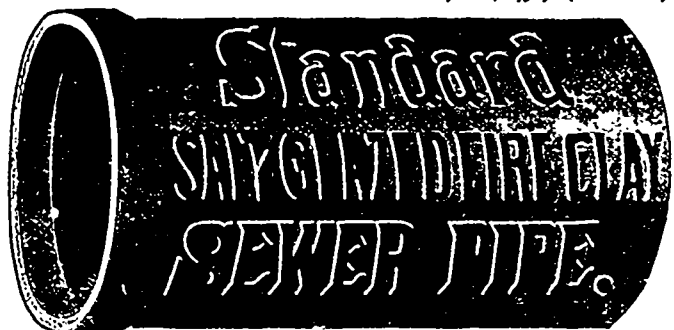
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1 1/2 to 2 clear picks, Am ins.	34 00@36 00	40 00@45 00
1 1/2 to 2 three uppers, Am ins.	37 00	40 00 45 00
1 1/2 to 2, pickings, Am ins.	27 00	27 00 30 00
3 inch clear.		32 50 60 00
1 x 10 and 12 dressing and better.	20 00	22 00 28 00 20 00
1 x 10 and 12 mill run.	20 00	14 00 19 00
1 x 10 and 12 dressing.	14 00	16 00 18 00
1 x 10 and 12 common.	12 00	8 00 10 00
1 x 10 and 12 spruce culls.	10 00	11 00 12 00
1 x 10 and 12 maple culls.		9 00
1 inch clear and picks.	28 00	33 00 35 00
1 inch dressing and better.	18 00	20 00 28 00 20 00
1 inch siding, mill run.	14 00	16 00 14 00 16 00
1 inch siding, common.	12 00	12 00 12 00 14 00
1 inch siding, ship culls.	10 00	11 00 12 00 11 00
1 inch siding, mill culls.	8 00	9 00 8 00 9 00
Cull scantling.	8 00	9 00 8 00 9 00
1 1/2 and thicker cutting up plank.	22 00	25 00 22 00 25 00
1 inch strips, 4 in. to 8 in. mill run.	14 00	15 00 14 00 15 00
1 inch strips, common.	12 00	12 00 11 00 12 00
1 1/2 inch flooring.	14 00	15 00 14 00 15 00
1 1/2 inch flooring.	14 00	16 00 14 00 16 00
XXX shingles, sawn, per M		
16 in.	2 30	2 30 2 30
XX shingles, sawn.	1 30	1 30 1 35

**YARD QUOTATIONS.**

Mill cull boards and scantling	10 00	10 00
Shipping cull boards, promiscuous widths.	13 00	13 00
Shipping cull boards, stocks	16 00	16 00
Hemlock scantling and joist up to 16 ft.	11 00	12 00
Hemlock scantling and joist up to 28 ft.	12 00	13 00 12 00
Hemlock scantling and joist up to 30 ft.	13 00	14 00 13 00 14 00
Scantling and joist, up to 16 ft	14 00	14 00
" " " " " " 18 ft	15 00	15 00
" " " " " " 20 ft	16 00	16 00
" " " " " " 22 ft	17 00	17 00
" " " " " " 24 ft	19 00	19 00
" " " " " " 26 ft	21 00	21 00
" " " " " " 28 ft	23 00	23 00
" " " " " " 30 ft	25 00	25 00
" " " " " " 32 ft	27 00	27 00
" " " " " " 34 ft	29 00	29 00
" " " " " " 36 ft	31 00	31 00
" " " " " " 38 ft	33 00	33 00
" " " " " " 44 ft	36 00	36 00

	Toronto.	Montreal.
Cutting up planks, 1 1/2 and thicker, dry.	25 00	26 00 25 00 26 00
Cutting up planks, 1 1/2 and thicker, board.	18 00	22 00 18 00 22 00
Cedar for block paving, per cord.		5 00 5 00
Cedar for Kerbing, 4 x 14, per M.	14 00	14 00
1 1/2 in. flooring, dressed, F.M.	28 00	31 00 28 00 31 00
1 1/2 inch flooring, rough, B.M.	18 00	22 00 18 00 22 00
1 1/2 " " dressed, F.M.	27 00	30 00 27 00 30 00
1 1/2 " " undressed, B.M.	18 00	20 00 18 00 20 00
1 1/2 " " dressed.	18 00	22 00 18 00 22 00
1 1/2 " " undressed.	12 00	15 00 12 00 15 00
Headed sheeting, dressed.	22 00	25 00 22 00 25 00
Clapboarding, dressed.	12 00	12 00
XXX sawn shingles, per M		
18 in.	2 65	2 75 2 60
Sawn lath.	2 00	2 25 2 00 2 20
Cedar.		2 90 2 90
Red oak.	30 00	40 00 30 00 40 00
White.	35 00	45 00 35 00 45 00
Basswood, No. 1 and 2.	18 00	20 00 18 00 20 00
Cherry, No. 1 and 2.	70 00	70 00 70 00
White ash, No. 1 and 2.	25 00	35 00 25 00 35 00
Black ash, No. 1 and 2.	18 00	30 00 18 00 30 00
Dressing stocks.	16 00	22 00 16 00 22 00
Picks, American inspection.	40 00	40 00
Three uppers, Am. inspection	50 00	50 00

	Toronto.	Montreal.
Common Walling.	7 50	6 00
Good Facing.	9 00	8 50
Sewer.	8 50	9 00 8 50 9 00
Pressed Brick, Per M:		
Plain brick, f. o. l. at Milton	16 00	16 00
" " and quality	14 00	14 00
" " 3rd	8 00	8 00
Hard Building.		4 57
Moulded and Ornamental, per 100.	3 00	10 00
Roof Tiles.	74 00	74 00
Diamond locking tile.		16 00
First quality, f. o. b. at Campbellville.	28 00	25 00
and quality, f. o. b.	14 00	20 00
3rd	11 00	17 00
Ornamental, per 100.	3 00	10 00 3 00 10 00
Tiles.		24 00 26 00
Plain brick, "A" f. o. b. Don Valley	18 00	25 00
" " " " " " " " " "	16 00	22 00
" " " " " " " " " "	15 00	18 00
Trojan or Buff.	24 00	30 00
Ornamental, per 100.	3 00	60 00 3 00 60 00
Plain brick, f. o. b. Port Credit	18 00	18 00
" " and quality.	13 00	13 00
" " 3rd	10 00	10 00
Hard Building.		8 00
Ornamental, per 100.	3 00	10 00

	Toronto.	Montreal.
Per Load of 1 1/2 Cubic Yards	1 25	1 25
Common Rubble, per ton, delivered.	14 00	14 00
Large flat Rubble, per ton, delivered.	18 00	18 00
Foundation Blocks, per c. ft.		50
Kent Freestone Quarries Moncton, N. B., per cu. ft., f. o. b.	1 00	1 00
River John, N. S., brown Freestone, per cu. ft., f. o. b.	80	95
Balochmyle	80	90
New York Blue Stone.		65 75
Granite (Stanstead) Ashlar, 6 in. to 12 in., rise 9 in., per ft.		1 05
Most Freestone.	70	25
Thomson's Gateawbridge, cu. ft.	75	80
Credit Valley Rubble, per ton, delivered.	13 00	14 00
Credit Valley Brown Coursing, per superficial yard.	2 50	3 00 2 90
Credit Valley Brown Dimension, per cubic foot.		90
Credit Valley Grey Coursing, per superficial yard.	1 50	2 00 2 15
Credit Valley Grey Dimension, per cubic foot.		75 80
Madoc Rubble, delivered, per ton.	14 00	14 50 14 00 14 50
Madoc dimension floating, f. o. b. Toronto, per cubic ft.	70	30
Ohio Freestone, No. 1 Blue Promiscuous, f. o. b.		60
No. 2 Blue Dimension.		65
No. 1 Buff Promiscuous.		80
No. 2 Buff Dimension.		85

	Toronto.	Montreal.
The above prices means freight and duty paid.		
2 in. sawed flagging per sq. ft.	11	11 1/2
3 1/2 " " " "	12	12 1/2
4 " " " "	13	13 1/2
5 " " " "	14	14 1/2
6 " " " "	15	15 1/2
Duty to be added to these prices.		
Quebec and Vermont rough granite for building purposes, per c. ft. f. o. b. quarry	33	1 50
For ornamental work, cu. ft.	35	2 00
Granite paving blocks, 8 in. to 12 in. x 6 in. x 4 1/2 in., per M		50 00
Granite curbing stone, 6 in. x 20 in., per lineal foot.		70

	Toronto.	Montreal.
White lead, Can., per 100 lbs.	6 25	6 50 6 00 6 25
" zinc, Can., " "	6 50	7 50 6 50 7 50
Red lead, Eng.	5 1/2	6 1/2 6
" venetian, per 100 lbs.	1 60	1 75 1 60 1 75
" vermilion.	90	1 00 90 1 00
" Indian, Eng.	10	12 10 12
Yellow ochre.	5	10 4 6
Yellow chrome.	15	20 15 20
Green, chrome.	7	12 7 12
" Paris.	25	40 25 40

	Toronto.	Montreal.
Black lamp.	15	25 12 25
Blue, ultramarine.	15	20 12 18
Oil, linseed, raw, & imp. gal.	63	68 63 65
" " " boiled.	68	71 66 68
" " " refined.	78	81 75 77
Putty.	2 1/2	2 1/2 2 1/2
Whiting, dry, per 100 lbs.	75	1 00 60 75
Paris white, Eng., dry.	90	1 25 90
Litharge, Am.	6 1/2	8 6 1/2
Sienna, burnt.	25	30 12 15
Umber, "	8 1/2	12 12 15

	Toronto.	Montreal.
Cement, Portland, per bbl.	2 50	2 50
" " English	2 75	2 75
" " Belgium	3 25	3 25
" " Thorold	1 50	1 50
" " Queenston	2 25	2 25
" " Napanee	1 50	1 50
" " Hull	1 50	1 50
" " Germar.		2 65 2 85
" " London		2 43 2 90
" " Newcastle		2 35 2 50
" " Belgian		2 31 2 40
" " Ca-adian		2 25 2 30
" " Roman		2 75
" " Parian		4 50 4 75
" " Superfine		6 50 7 00
Keene's Coarse "Whites"		4 50 4 75
Calced plaster, per barrel.	1 52	1 70
Fire Bricks, Newcastle, per M	20 00	24 00 20 00 24 00
Scotch	30 00	35 00

	Toronto.	Montreal.
Lime, Per Barrel, Grey.	40	40
" " White.	55	55
Plaster, Calced, N. B.	2 00	2 00
" " N. S.	2 00	2 00
Hair, Plasterers', per bag.	80	1 00
Cut nails, 5 d & 6d, per keg	2 40	2 25
Steel " "	2 50	2 35
CUT NAILS, FENCE AND CUT SPIKES.		
40d, hot cut, per 10 lbs.	5	5
30d, " "	10	10
20d, 16d and 12d, hot cut, per 100 lbs.	15	15
10d, hot cut, per 100 lbs.	20	20
8d, 9d, " "	25	25
6d, 7d, " "	40	40
4d to 5d, " "	60	60
3d, " "	1 00	1 00
2d, " "	1 50	1 50
4d to 5d cold cut, not polished or blued, per 100 lbs.	50	50

	Toronto.	Montreal.
3d to 5d cold cut, not polished or blued, per 100 lbs.	90	90
PINK BLUED NAILS.		
3d, per 100 lbs.	1 50	1 50
2d, " "	2 00	2 00
CASING AND BOX, FLOORING, SHOOK AND TOBACCO BOX NAILS.		
12d to 30d, per 100 lbs.	50	50
10d, " "	60	60
8d and 9d, " "	75	75
6d and 7d, " "	90	90
4d to 5d, " "	1 10	1 10
3d, " "	1 50	1 50

	Toronto.	Montreal.
FINISHING NAILS.		
3 1/2 to 2 1/2 inch, per 100 lbs.	85	85
2 to 2 1/4 " " "	1 00	1 00
2 to 2 1/2 " " "	1 10	1 15
1 1/2 to 1 1/4 " " "	1 35	1 35
1 1/4 " " "	1 75	1 75
1 " " "	2 25	2 25

	Toronto.	Montreal.
SLATING NAILS.		
5d, per 100 lbs.	85	85
4d, " "	85	85
3d, " "	1 25	1 25
2d, " "	1 75	1 75
COMMON BARREL NAILS.		
1 inch, per 100 lbs.	1 50	1 50
3/4 " " "	1 75	1 75
1/2 " " "	2 25	2 25
CLINCH NAILS.		
3/4 and 5/8 inch, per 100 lbs.	85	85
2 1/2 and 2 3/4 " " "	1 00	1 00
2 and 2 1/4 " " "	1 25	1 25
1 1/2 and 1 1/4 " " "	1 35	1 35
1 1/4 " " "	2 00	2 00
1 " " "	2 50	2 50
SHARP AND FLAT PRESSED NAILS.		
3 inch, per 100 lbs.	1 35	1 35
2 1/2 and 2 3/4 " " "	1 50	1 50
2 and 2 1/4 " " "	1 65	1 65
1 1/2 and 1 1/4 " " "	1 85	1 85
1 1/4 " " "	2 50	2 50
1 " " "	3 00	3 00

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