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EVERY THURSDAY

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.

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TENDERS

FOR

STEEL BRIDGE

Tenders addressed to Wm. Campbell, Tara, will be received till 12 o'clock noon, MARCH 3RD, 1896, for the erection of a

STEEL BRIDGE

over the Sauble River, in the Village of Tara.
(1) Tenders for bridge, 105 feet c. to c. of end piers, 18 foot roadway, moving load 100 lbs. per sq foot. Needle beams to extend for a 5 foot sidewalk on each side. (2) tenders for a railing, 3 feet 6 inches high for sidewalks; (3) for steel cylinders filled with concrete, protected with cmlwork filled with stone, (4) and for stone abutments, per cubic yard, as per plan. Separate tenders for each item required, also for whole work completed.

Specifications can be seen with Mr. Campbell, Reeve, Tara, or James Warren, Engineer, Walkerton.
Tenders to state earliest date at which the work can be completed, not later than July 15th, 1896.

Tara, Feb. 21th, 1896.



NOTICE TO CONTRACTORS

Tenders will be received by registered post only, addressed to the City Engineer, Toronto, up to 11 o'clock a. m. on SATURDAY, 22ND FEBRUARY, 1896, for the construction of the following works.

CONCRETE SIDEWALKS

On leader Lane, both sides, from Wellington Street to Colborne Street.

On Terauley Street, west side, from Louisa Street to a point 93 feet 4 inches north.

On Louisa Street, north side, from Terauley Street to a point 60 feet west.

ASPHALT PAVEMENT

On lanes between Adelaide Street and Temperance Street.

Specifications may be seen and forms of tender obtained at the office of the City Engineer, Toronto, on and after Saturday, 8th February, 1896.

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 up to \$1,000 and 2½ per cent. on the value of the work tendered for over that amount, must accompany each and every tender, otherwise they will not be entertained.

Tenders must bear the bona fide signatures of the contractor and his sureties, or they will be ruled out as informal.

Lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

Toronto, Feb. 3rd, 1896.



Tenders for Pumping Engine

Notice is hereby given that sealed tenders addressed to the Chairman of the Board of Administration, and endorsed "Tender for Pumping Engine," will be received by registered post, only, up to the hour of eleven o'clock, a. m., on THURSDAY, 27TH FEBRUARY, instant, for one

COMPOUND DUPLEX PUMPING ENGINE

having a daily capacity of 500,000 imperial gallons, with independent condenser and necessary boiler the whole to be set up on foundation as provided by the city, and delivered in working order as per plans and specifications which may be seen at the office of the City Engineer, on and after Monday, next, the 10th February, inst.

A deposit, cash or marked cheque, payable to the order of the City Treasurer, equal to 2½ per cent. of the amount of the contract (which will be returned to the unsuccessful tenderers as soon as the contract is awarded, and to the successful tenderer upon the proper execution of the contract by himself and his sureties) must accompany each tender or the same will not be entertained. Each tender must bear the signatures of two satisfactory sureties, who will be required to sign a bond for the proper fulfilment of the contract.

The lowest or any tender not necessarily accepted.

DANIEL LAMB,
Chairman Committee on Works.

City Hall, Toronto, 3rd February, 1896.

SEALED TENDERS

Addressed to James Goldie, Esq., Chairman General Hospital Board, Guelph, will be received up to 12 o'clock, noon, on FRIDAY, FEBRUARY 21ST, for the erection of a

WING TO THE GENERAL HOSPITAL, GUELPH.

The plans and specifications may be seen at the office of Messrs. Curry, Baker & Co., 70 Victoria St., Toronto, and at the office of the Secretary of the Board, Guelph.

The lowest or any tender not necessarily accepted.

CURRY, BAKER & CO., Architects,
70 Victoria St., Toronto.



Sealed Tenders addressed to the undersigned, and endorsed "Tender for Dominion Reformatory, Alexandria, Ontario," will be received at this office until Saturday, 15th of February, 1896, for the several works required in the erection of the proposed Reformatory at Alexandria, Ont.

Plans and specifications can be seen at the Department of Public Works, Ottawa, at the offices of the Clerks of Works in the post offices of Montreal and Quebec, and at the office of the Engineer in charge, Mr. N. A. Gray, Confederation Life Building, Toronto, on and after Tuesday, the 28th January instant, and tenders will not be considered unless made on form supplied and signed with the actual signatures of tenderers.

An accepted bank cheque, payable to the order of the Minister of Public Works, equal to five per cent. of amount of tender, must accompany each tender. This cheque will be forfeited if the party decline the contract or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.

The Department does not bind itself to accept the lowest or any tender.

By order,
E. F. E. ROY,
Secretary.

Department of Public Works,
Ottawa, January 6th, 1896.

AN INTERNATIONAL GAUGE.

At the recent annual meeting of the Canadian Society of Civil Engineers, held in Montreal, the committee appointed to report on a standard gauge for thickness, applicable specially to rounds and flats in metals, presented a report unanimously approving of the resolution of the joint committee of the American Society of Mechanical Engineers and the Railway Master Mechanics' Association, in "earnestly deprecating the use of any of the numerous wire and sheet metal or other trade gauges now in vogue, and in strongly urging the use of thousandths of an inch for all kinds and classes of small measurements." The Committee recommended that all gauges be in terms of thousandths of an inch, and that the Canadian Society of Civil Engineers recommend to its members and to all persons interested in uniform practice, the abandonment of the use of arbitrary gauges in favour of gauges expressed in thousandths of an inch.

CONTRACTS OPEN.

EGANVILLE, ONT. It is probable the Methodists will erect a new church.

ARNPRIOR, ONI. W. Mackay will erect a new building on the post-office lot.

SPRINGFORD, ONI.—W. & M. Bell are making preparations to build a brick house.

ST. THOMAS, ONT.—Tenders for lighting the streets by electricity or gas are invited.

LANARK, ONT.—A bonus of \$10,000 for on electric railway between Perth and Lanark has been granted.

ST. STEPHEN, N. B.—A committee has been appointed to report on the advisability of building a poor house.

WOLFVILLE, N. S.—A deputation has requested the Provincial Government to enlarge the School of Horticulture.

KINMOUNT, ONT. The Victoria county council are considering the advisability of building a lock up at this place.

BROCKVILLE, ONI.—The Public School Board has decided to erect a new school on James street. Probable cost \$10,000.

WELLAND, ONI. Plans for the extension of the sewerage system have been approved by the Provincial Board of Health.

SEAFORTH, ONI.—William Elliott, clerk, invites tenders until the 1st of March for the yearly supply of lumber and gravel.

LINDSAY, ONT.—A J. Peuchen, of Toronto, is endeavoring to establish a factory here for the production of paints and chemicals.

HINTONBURG, ONT.—The building of the proposed new Roman Catholic separate school will not be commenced until the early spring.

HUNTINGDON, QUE.—J. E. Vanier, C. E., of Montreal, has submitted to the council plans and estimates for a system of sewerage and water works.

REVELSTOCK, B. C.—A dispatch from Ottawa states that plans of the Columbia River bridge at this place have been approved of by the privy council.

NEW WESTMINSTER, B. C.—A committee of the city council will request the provincial government to undertake the construction of the Fraser river bridge as a government work.

BELLEVIEW, ONT.—The County Council have granted permission to the Belleview Traction Co., to construct an electric railway one and one-half miles in length, from the city limits westward.

HULL, QUE.—An engineer will inspect the bridge over Brewery creek between Hull and Eddyville, and if the structure is found to be in an unsound condition the council will build another in its place.

COLLINGWOOD, ONT. John Wilson has prepared plans for a brick residence for C. Cotterill, corner Beach and Fourth streets. The building will be two storeys high, 36 x 40 feet, and built of solid brick.

ST. JOHN, N. B.—A memorial has been sent to the Dominion Government asking that certain work be done to the channel leading to St. John harbor. The chief engineer will look into the matter at once.

NIAGARA FALLS CENTRE, ONT.—The contract is about to be let for an addition to the Onondaga Community's factory, 100 x 40 feet. The new portion of the works will be used for the manufacture of steel traps.

GUELPH, ONT.—A movement has been commenced to secure the erection of a large athletic club house. Messrs. McLean, Torrance, Dunbar and others have been appointed a committee to further the scheme.

PETROLEA, ONT.—A scheme to build a

railway from Florence to Thamesville is under consideration. Mayor Edward and John D. Noble have been appointed a committee to interview the Government in the matter.

COMPTON, QUE.—It is understood that the Compton Model Farm has been sold to the Quebec Government. It is believed that the Government intends to build an addition to the house, to make room for pupils.

BERLIN, ONT.—Colquhoun & McBride, solicitors, have given notice of application to the Ontario legislature for permission to construct a railway from Berlin in a southerly direction to the village of Cope-town.—The Board of Trade will request the G. T. R. Co. to build a new station.

ELMA, ONT.—Plans are being prepared for a stone house for T. K. Maybury. It will have slate roof and furnace heating, etc.; cost about \$1,500.—Jas. Dickson, reeve of Elma, will build a new house this year. It will be slate roof, plate glass windows, plumbing, and furnace heating. Cost \$1,800.

MONTREAL, QUE.—Building permits have been granted as follows: V. Forest, Craig street, alterations to store; Edward Lusher, three storey residence, corner Stanley and Burnside sts., cost \$7,000.—Messrs. Brown, McVicar & Heriot, architects, are calling for tenders for hotel Albion at Chambly, Que.

GRANBY, QUE.—J. Bruce Payne proposes erecting a 20 x 40 ft. extension to his factory and raising the present building to three stories. Materials to be employed, hemlock and spruce lumber, tar and gravel roof 54 x 40, plumbing, hot water heating, cost \$1,500. Wm Cox. is in charge of the work, which will be commenced in about a month.

STRATFORD, ONT.—The committee appointed to examine sites for the new House of Refuge have decided to erect the building in Listowell, Mitchell, Milverton or Stratford. A further report will be presented on the 3rd of March.—It is probable that two new bridges will be constructed by the county council this year. A report thereon will be presented at the June session.

PORT MEDWAY, N. S.—Mr. Harvey, the promoter of the line from Shelburne to New Germany, has obtained another extension of time until May 1st to commence operations.—A charter has been obtained to build an electric railway from Greenfield to this place, a distance of about 16 miles, along the Medway river. The company who are promoting it purpose building three pulp mills, working the Gold mine at Greenfield, also going into lumbering and milling.

HALIFAX, N. S.—The Whitehaven Railway Company propose to construct a new railway.—Henry Tremnaman, secretary, invites tenders until the 17th inst., for the erection of an engine house, corner West and James streets, from plans prepared by W. D. Fidler.—The special committee on agriculture has reported to the Nova Scotia Legislature in favor of a grant of \$50,000 to provide suitable grounds and buildings for the holding of exhibitions of agricultural products.

RENFREW, ONT.—Mr. Potter, C. E., has presented his report on a system of waterworks. Hurd's Lake is recommended as the source of supply, and the cost is placed at \$65,707.90. The construction will include the following: 11,000 ft. of 10 in. cast iron pipe in conduit line; 9,496 ft. of 12 in. Scotch tile in conduit line; 4,000 ft. of rock cut; 400 ft. of intake pipe in lake; gate house; steel reservoir 50 ft. diam. x 15 ft. high; filter plant; 6,950 ft. of 10 in. cast iron pipe in distribution system; 6,950 ft. of 8 in. cast iron pipe in distribution system; 19,580 ft. of 6 in. cast iron pipe in distribution system; 11,510 ft. of 4 inch cast iron pipe

in distribution system; 67 fire hydrants; 70 valves.

VICTORIA, B. C.—The following appropriations for British Columbia are contained in the Dominion estimates: Dominion public buildings, renewals, improvements, repairs, etc., \$5,000; New Westminster drill hall, \$6,000; Victoria drill hall and accessory buildings, \$4,000; Victoria post office, \$100,000; Columbia river improvements above Golden, \$4,600; Victoria harbor, dredging in the inner harbor, \$10,000; Fraser river, improvement of the ship channel, \$10,000; Fraser river, general repairs and improvements to harbor, river and bridge works, \$3,000; Skeena river, \$3,500.

LONDON, ONT.—The Wortley Road Baptist church congregation propose building a new church in the spring, to cost \$5,000.—Application will be made to the Ontario legislature for authority to provide a sum not exceeding \$50,000 for the purpose of improving the sewerage system.—Messrs. Herbert Matthews and B. McBride are applicants for the position of architect to the Public School Board.—Thomas Tapp is building a brick cottage corner Pall Mall and Colborne streets, to cost \$1,200.—William Webster has been granted a permit for a brick veneer cottage on William street, to cost \$1,000.—H. O. McBride, architect, of this city, has been engaged to prepare plans for new German Methodist church at Crediton, to be built of brick; cost \$7,000.

HAMILTON, ONT.—Robert Clohecy, architect, is receiving tenders for the erection of a brick dwelling on McNab street.—Mr. Stewart, architect, has completed plans for the new Collegiate Institute and Ontario Normal school. The building will be built on the Wanzer property, and will be 460 x 280 feet in size; main building three storeys high, to accommodate 1000 scholars. The basement and first storey will be of Credit Valley brown stone. There will be an assembly hall, gymnasium, and running track. The interior will be of black birch and red pine; estimated cost \$100,000.—The Fire and Light Committee will ask for \$3,500 for building a new fire station in Victoria Park. The committee will also ask leave to report on a plan to improve the waterworks system. Engineer Haskins estimates that it will cost \$74,900 to carry out the report of Messrs. Keefer & Kennedy. This does not include the cost of a site for a new reservoir recommended to be built.—Ex-Alderman Hancock has suggested a plan to abate the nuisance caused by the discharge of sewerage into the bay by constructing a series of catch pipes, at a cost of \$28,223.—The Coleman Planing Mill Company have taken out a permit for nine two-storey brick dwellings, corner Catharine & Cannon streets, to cost \$12,000.—The Lincoln County Council has granted the Hamilton, Grimsby & Beamsville Electric Railway a twenty year franchise for running power over the Queenston & Grimsby stone road, and work will be commenced at once to build the extension from Grimsby to Beamsville.—A sub-committee of the Markets Committee have decided to recommend to the City Council that a shelter be erected on the Central market 600 feet in length, at a cost not to exceed \$6,000.

WINNIPEG, MAN.—Mr. S. Hooper, architect, has prepared plans for a brick addition to St. Mary's R. C. church, to cost about \$1,500. Hot air heating apparatus will be required.—The excavations have been completed for the Parsons Produce Co.'s new stone and brick warehouse.—Chas. H. Wheeler, architect, is inviting tenders for a residence for D. Lemon.—The request from the Exhibition Association for a loan of \$30,000 for improvements to the exhibition buildings has been laid over until the estimates for the year are presented to the city council.—Repairs have been recommended to the

Main street bridge, at a cost of \$10,560.—The City Engineer has recommended the construction of macadam pavements to cost upwards of \$100,000. The list of streets is as follows: Assiniboine avenue, from Main street to Kenne'y street; York avenue, from Smith street to Kennedy street; St. Mary's avenue, Main street to Donald; Graham, from Main to Donald; Ellice avenue, Notre Dame avenue to Donald street; Market, from Main to Bertha; Rupert, from Main to Amy; Henry avenue, from Lilly street to Princess street; Fonseca avenue, Main street to Princess street; King street, James avenue to Point Douglas avenue; Charlotte street, Notre Dame avenue to William avenue; McDermott avenue, Main street to Rorie street; Bannatyne avenue, Princess street to Charlotte street; Rorie street, from Lombard to Market; Lilly street, Pacific avenue to Henry avenue; Bertha street, from Market to James; Kennedy street, Assiniboine avenue to Broadway; Donald street, Assiniboine avenue to Portage avenue; Smith street, Broadway to Notre Dame avenue; Garry street, Broadway to Notre Dame avenue; Louisa street, from Market to Rupert; Pacific avenue, Main street to Princess street.

TORONTO, ONT.—Stapleton Caldecott, chairman of the Industrial School Board, invites tenders until the 15th inst., for the purchase of \$35,000 of debentures.—The Haliburton, Lindsay and Mattawa Railway Company have requested the Ontario Government to make a grant of \$3,200 per mile for an extension of 125 miles of railway which they propose to construct connecting Haliburton and Mattawa. The government has promised consideration.—The York county treasurer has reported on the advisability of appropriating \$35,000 for road improvements.—The property at the north-west corner of King and Yonge streets is in the market to lease for a term of years, with privilege of renewal. The lot is 60 x 90 feet in size, and owing to the high rental likely to be obtained, a new building will probably be erected thereon by the lessee.—The Toronto and Suburban electric railway is completing plans for extending its line to Lambton and Islington, a distance of 3 miles beyond the present terminus.—The Secretary of the Public School Board invites tenders until to-day, (Thursday), for text books, pencils, and other school supplies.—Building permits have been granted as follows:—John Morrison, bk. add. and alterations to dwellings, s. w. cor. Bloor and Jarvis sts., cost \$6,000; R. L. Gibson, alterations to front and 1 storey bk. factory in rear, 88 Wellington st. w., cost \$3,500; E. Baldwin, 75 Spadina rd., alterations and 2 storey bk. add. to rear of dwelling, cost \$2,500; T. A. Rowan, 15 Toronto st., 2 storey and attic bk. and stone dwelling, 218 Bloor st. w., cost \$5,500; Caleb Evans, 436 Markham st., 2 storey and attic bk. dwelling, 532 Huron st., cost \$5,700; Eden Smith, architect, 2 storey bk. dwelling, east side Indian rd., cost \$2,000.

OTTAWA, ONT.—The following bills are before the Dominion Legislature: Respecting the St. Lawrence and Ottawa Railway Company; respecting the Nelson and Fort Sheppard Railway Company; respecting the Lindsay, Bobcaygeon and Pontypool Railway Company; to incorporate the Huron and Ontario Railway Company; respecting the Guelph Junction Railway Company; respecting the Hudson's Bay and Pacific Railway Company; respecting the Winnipeg Great Northern Railway Company; to incorporate the Canadian Electric Railway Power Company; to incorporate the South Shore Suburban Railway Company; respecting the Montreal and Ottawa Railway Company; respecting the St. Lawrence and Adirondack Railway Company; respecting the South Ontario and Pacific

Railway Company; respecting the Lake Erie and Detroit River Railway Company; respecting the Canada and Michigan Bridge and Tunnel Company; to incorporate the Queenston Heights Bridge Company; to incorporate the Schomberg and Aurora Railway Company.—Mr. T. Viau, of Hull, has sold his franchise for building an electric railway from Hull to Aylmer and Gatineau Point, and for electric lighting of the city of Hull, to a company of Ottawa capitalists. Work will be proceeded with early in the spring.—The City Council have decided to ask for special legislation to borrow \$125,000 for waterworks improvements, and to raise \$40,000 for new buildings at the Central Fair grounds.—Arrangements are said to have been completed by which the erection of the new Central Depot will be commenced at an early date.—The Pontiac & Pacific Junction Railway Company have been granted an extension of time for the completion of their line from the Ottawa River to Pembroke and Sault Ste. Marie, also for the building of a bridge across the Ottawa river.—Messrs. Arnold & Ewart have completed plans for the new building to be built by Orme & Son on Sparks street. It will be four storeys high, 30 x 100 feet, faced with Nova Scotia sandstone, and built of mottled pressed brick; estimated cost, \$30,000. Adjoining this building A. J. Stevens will erect a similar structure as to finish, but one storey less in height.—The directors of the Protestant hospital, it is understood, have not yet finally adopted the plans for the new wing. The report, recommending the acceptance of Arnold & Ewart's plan, was referred back for further consideration.—The city will seek legislation to permit of the construction of a number of asphalt pavements.—Work has been commenced on the new McLeod street church, the contract for which calls for completion on the 15th of October.—Mr. Choquette will ask in Parliament whether the government is negotiating with the Quebec government for the purchase of the Baie des Chaleurs railway, for the purpose of making it a branch road of the Intercolonial, and, if so, whether it is intended to extend the road to Gaspé Basin.

FIRES.

W. R. Cunningham's boot and shoe store at Antigonish, N. S., has been burned. Loss, \$6,000; insurance, \$4,000.—The residence of Mrs. Fortier, at Rimouski, Que., has been burned.—The residence of C. P. Coulson, at Comber, Ont., was destroyed by fire on the 7th inst. Loss partially covered by insurance.—Geo. Hawkin's glue factory at Port Hope, Ont., was damaged by fire recently to the extent of \$2,000. No insurance.—At Cypress river, Man., the following business places have been burned. White's Hotel, Herron's general store and dwell-

ing, Houston's hardware store and Pearce's general store and dwelling. The loss is covered by insurance.

CONTRACTS AWARDED.

NORTH HATLEY, QUE.—The Hatley Township Council has awarded a contract for a new steel bridge, to the Imperial Bridge Company, of Montreal.

QUEBEC, QUE.—The Quebec Central Railway has awarded the contract for the construction of 100 freight cars to Rhodes, Curry & Co., of Amherst, N. S.

NIAGARA FALLS, ONT.—The Niagara Falls Metal Works Co. have let the contract for their new factory. The building will be of brick, with stone foundation, 120 x 40 feet, two storeys high, and will be ready for occupation about the 1st of June.

COLLINGWOOD, ONT.—J. H. Findlay will erect a brick building 26 x 60 feet, two storeys high, contracts for which have been awarded as follows: Wilson Bros., carpenter work, McFadden & McQuade, tin work and roofing. Mr. John Wilson prepared the plans.

OTTAWA, ONT.—The sub-contractors for the construction of forty-seven miles of the Ottawa, Arnprior & Parry Sound Railway are D. D. McDonald, Wilkaton, first ten miles, O. Neil & Ferguson, next eleven miles, Mr. Fauquier, six miles, Poulin & Fitzpatrick, twenty miles. The following tenders have been accepted for the supply of limestone: J. McKinstry, 50 toise, \$3.15 per toise; John King bury, 25 toise, \$3.20; Edward Casey, 25 toise, \$3.60; T. Shea, 25 toise, \$3.60; T. Patterson, 25 toise, \$3.60; J. Jardine, 25 toise, \$3.50; J. Mahoney, 50 toise, \$3.50; L. Ade, 25 toise, \$3.60.

MONTREAL, QUE.—Mr. A. J. Cooke, architect, has awarded the contract for alterations and additions to a house on Wellington street for ex-ald. Thompson to Isaac Collins, and also for a summer cottage at Chateaugay, for W. G. Ross, to M. Desantels.—Messrs. Brown, McVicar & Heriot, architects, have awarded contracts as follows for a house at Westmount for T. Chs. Davidson, mason, Heggie & Stewart; brickwork, Amos Cowen; carpenter, Jas. Shearer; roofing, Montreal Roofing Co.; plumbing, R. Mitchell & Co.; plastering not let; painting, W. P. Scott. House at Montreal west for S. C. Oxtan, mason and brickwork, W. Skitch; carpenter, T. & D. Kneen; roofing, G. W. Reed; painting, E. T. Houghton. Four houses on Rousseau st., for A. D. Fraser: general contractor, T. & D. Kneen; plumbing, Jos. Ballantyne; painting, Wm. Young.

The Robert Mitchell Co., Ltd., Montreal, will take over the business of Robert Mitchell & Co., plumbers and steam-fitters.

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BRIDGE BUILDERS

BELLEVILLE, ONT.

MEASUREMENT OF STONE.

There is no more prolific source of trouble to a quarryman than the measurement of his product. It is extremely difficult to measure rough stone accurately. No two men, if actuated by no motive but to get accurate results, will measure a lot of rough stone alike. They may closely approximate as to grand totals, but they will differ considerably as to each separate piece. How much more apt, then, are two men to disagree when one is selling and one buying on the measurements made? Every inch lost to the quarryman means lost rock, lost labor and excessive freight paid. To the mason that inch gained is all profit and therefore an object worth fighting for.

To eliminate this uncertainty as to measurements. This chance of turning a narrow margin of profit into an ugly loss and to get paid for what stone is actually shipped, has been the subject of much thought and discussion among quarrymen, but as yet without result. It is doubtful if quarrymen can ever be made to agree and insist on one rule for measurements, such as hold among lumber dealers, brick manufacturers and manufacturers of other building material. A rule governing the measurement of stone might apply satisfactorily to one class of rock and yet work a very great hardship to one operating in a different kind of stone. Naturally such a rule could not be enforced.

The suggestion made some time ago of selling stone by the ton would be a good thing for the quarryman, but it could not be carried out in practice. Its particular and fatal fault is that it would put a premium on poorly scabbled stone. Riprap and hand rubble stone might be sold that way, and is in some localities, but with this class of rock the conditions are not the same as with bridge rock. With these kinds of rock everything goes into the work and, knowing the weight of the stone per foot, any contractor can readily calculate his prices when buying by the ton. But with bridge rock the case is different. This stone must be cut and the rougher the stone comes the heavier the waste and the greater the cost of labor of cutting. Buying by the ton a masonry contractor would be at a loss to know what the rough stone was costing.

Wall, or engineers' measurement, seems to be a fair method of buying and selling stone, but is not fully satisfactory. Contractors object to paying for the gain of the stone in the wall even though the price is made with this gain taken into consideration. As for the quarryman he will find that the stone is wastefully used and that coping and other dimension stones are used as backing, or anywhere in the place they were quarried to fit, necessitating much quarrying of costly pieces. He will find, too, that no effort will be made

to check up the material on hand, and unless he is very watchful he will have a quantity to ship back to the quarry on completion of the work.

This leaves but one method, to measure on the cars at the quarry. If the stone are measured by a skilled cutter and reasonable allowance made, not only for squaring the stone but just a little more for good measure's sake, and the dimensions are marked on the stone, a quarryman is pretty sure to get paid for what he charges out. Couple with this arrangement a strict agreement with the contractor, that in case a stone does not measure out that it be set aside and be measured by the quarryman and contractor, or their representatives, jointly, and in case such stones are not set aside the measurement charged at the quarry to stand. Such an arrangement as this will prevent a stupid foreman, an overzealous clerk or a dishonest contractor from cutting the measurements to suit themselves, and with an honest contractor, will recommend itself as a plan for adjusting any errors in an amicable and expeditious manner.

Errors are more apt to be made by the contractor than by the quarryman. At the quarry it is part of the daily routine for a man, selected for his skill, to measure stone. With the contractor, a clerk, a foreman or any handy man who happens to have the time is sent to measure up the stone on its arrival, and no one can be found responsible when flagrant errors are proven.

It seems to be the almost universal practice among contractors to cut the quarry measurements. Not because they are wrong, but because it has grown to be

such a common practice that it seems to be expected. This practice comes from the fact that not many quarrymen can afford after making heavy shipments to wait an indefinite time for their money, and rather than bring the offender to book by taking the matter to court they settle on almost any basis offered. This sort of thing should not be allowed but should be relegated to the shelf with the bakers' dozen and other antique practices of that sort. If the quarryman will study his customer and keep his business well in hand there is no reason why he should always be assessed by the contractor without chance of recourse. F. C. Neeb, in Stone.

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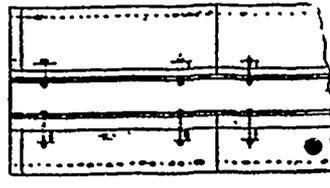
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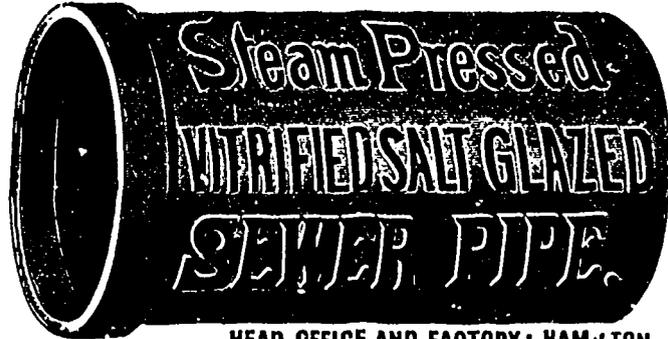
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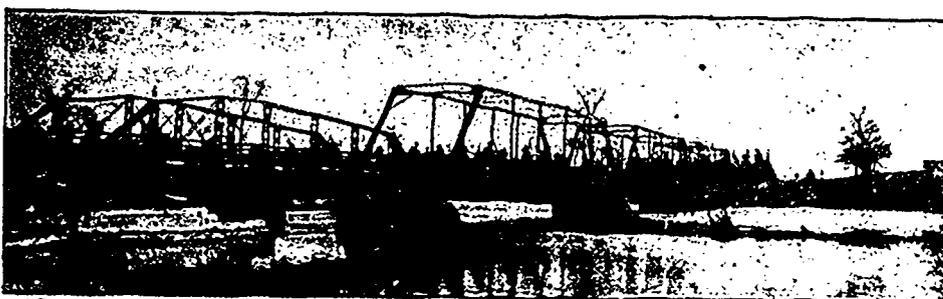
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Editor CANADIAN CONTRACT RECORD.

SIR,—I note in your December number of the ARCHITECT AND BUILDER your article on "Asphalt," stating that the number of accidents in London, Eng., on asphalt was much larger than on granite and wood.

I thought you might be interested to know that the London, England, pavement is an entirely different material from what is used in Toronto and the American cities. The London material is a limestone which is impregnated with asphalt and then ground up, being almost as fine as flour. This pavement when subject to traffic becomes highly polished and almost as slippery as glass, so in many of the London streets the pavements have to be constantly sprinkled with sand.

The Toronto pavements, on the contrary, are composed of 75% of sharp sand, the asphalt cementing the sand together. If the streets are kept moderately clean, these grains of sand are always protruding and afford a splendid foothold for horses. It is only when the streets are allowed to accumulate mud and when the horse's shoe slips on this mud that accidents occur.

Superintendent Franklin, of the horse-car railway, has said that there were fewer falls of his horses on the Bloor street east pavement, which has asphalt between the rails, than there was on King street, which was then block paved, and it was a well known fact from parties using the Sherbourne street route, where there is granite between the rails, that the horses soon got to know that they had a better foothold on the flat, even-surfaced asphalt than on the granite, and the outside horses on the heavy grades almost invariably pulled off from the granite to the asphalt.

Yours sincerely,

W. G. MACKENDRICK.

FIRE ENGINE AND STAND-PIPE TEST.

To test the height to which a stream of water could be raised through an exterior stand-pipe to reach a fire in a tall building, "a sky scraper," an experiment was made on 28th November, in Chicago. It was shown that an ordinary fire engine connected with a stand-pipe could throw an inch and a quarter stream 316 feet above the ground with force enough to reach another building half a block away. The Engineering News describes the test as follows:—"A 3 inch stand-pipe was connected with the engine 150 feet away, by two lines of 2½ in hose, and to the top of the stand-pipe was attached 50 feet of 2½-in hose, with a 1¼ in. nozzle at the end. The total distance from the engine to the nozzle was 523 feet, made up of 150

feet of hose at the base, 323 feet of stand-pipe, and 50 feet of single hose. A water-gauge was attached to the base of the stand-pipe and another to the nozzle on the roof, and pressure readings were taken at the nozzle with different pressure at the engine. The following were the results obtained:

Press. at engine,	lbs.	100, gave press. at nozzle	lb.
"	150,	"	5
"	175,	"	12
"	200,	"	18
"	225,	"	20½
"	240,	"	54

"The engine weighed 8,500 lbs. It had double cylinders and plungers 7½ x 8 inches and 4¾ x 8 inches respectively. The diameter of the boiler was 36 inches, and it had 212.03 feet of heating surface. The area of grate surface was 6.23 feet. As it was, the tests demonstrated conclusively that with 200 lbs. pressure at the engine a good fire stream can be secured at the top of the tallest buildings yet erected. In view of the recent newspaper talk about the inefficiency of present apparatus for fighting fires in tall buildings, this test is of much interest."

That is satisfactory, and seems to reduce sky-scraper hazards, says the Insurance Chronicle, but how about men being raised to the top of a 21 storey building, 316 feet high? Unless firemen are on hand to direct such a stream it would be a mere waste of force and water.

WATER-WORKS SECURITIES.

Speaking of the safety of investments in the above mentioned securities, the American Investments cites the distressing culmination of such enterprises which have been built almost entirely on future possibilities. Although when many of the franchises were given conditions seemed to justify the construction of the plants, as soon as the hard times came, private consumers fell off, being "unable to accommodate their pocket-books to the demand of city luxuries," consequently, it is claimed "many plants are unable to earn enough to pay the interest on their underlying securities and actual running expenses." It is natural that the question should be asked "what are the lessons to be learned from this condition of affairs?" Evidently the first and most important one is the factor of permanency in the demand for water and the ability of the community to meet the expense necessary to furnish the supply. And the task of determining this is by no means small. It involves a knowledge of existing conditions and future possibilities of growth.

"Another very important thing for purchasers of water-work securities to observe, is that of ascertaining whether or not the works have been completed and accepted by the city or town in which they are located.

"Still another point worthy of observation, is that purchasers of water works securities owe it as a duty to themselves to ascertain beyond any question of a doubt, that the communities granting the franchises have signified that the works have come up to the requirements stipulated in the franchises. Otherwise the hydrant rentals will be held back, de-

priving the water works company of its principal source of revenue.

"Investors buying these securities from reputable bond dealers have a good measure of protection, for these details are carefully looked after before the bonds are accepted for disposition. But where purchases are made direct from the company or its authorized agent, there needs to be great caution used that these points are well guarded. Taking it all together, the buying of securities of the class of water works without the intervention of some third and perfectly reliable and competent party, is indeed a ticklish one, requiring a high degree of intelligence, discrimination and wisdom."

SEWERS AND SEWER GAS.

The excellent article in the August number of Paving and Municipal Engineering, by Wm. Paul Gerhard, C. E., suggests to me the pertinency of a few remarks on sewer building and sewer gas. I do not propose to go into an elaborate technical treatment of these subjects.

There is nothing that so much concerns the health of a city as perfect drainage and disposition of sewer gas. As yet, there is not a city in the world that can show a perfect system of drainage, so that sewers (with few exceptions) have been built too small, often badly built and with insufficient grade or "fall" to carry off the water. I need not cite instances of these facts. They have been too common to escape the notice of intelligent people. Some of the main troubles are that the city officials undertake to figure out just exactly the needed capacity of a sewer. If we grant that science can forecast the storms, God only can know just how great the wind or water will be: so that it is mere futile assumption to say just how much water will fall on a given space of ground, and therefore calculate the needed capacity of a sewer. The only way to even approximate the needed size of a sewer, to be right, is to multiply the unit of ascertained size based on ordinary rainfall by at least three, then see that the materials and workmanship are perfect, and this will reach the best economy and efficiency.

As to sewer gas and mephitic air in sewers, man-holes in sewers, and gas traps for water closets, are some of the most fruitful breeders of disease in cities. Various attempts have been made to dispose of this trouble. Disinfectants and filtering have been scientifically applied, all to no practically good result. The only feasible and sure economical way to dispose of sewer gas is by cremation. If a furnace with a sufficiently large smokestack be kept in constant operation, at the highest point or grade of sewers, and suitable pipes be laid from the sewers, to connect with the smokestack, all the gas in the sewers within a long distance of the smokestack will be drawn to it by its vacuum and consumed.

I have tried this plan of disposing of gases in houses and found it efficient and perfect. As to the chemical disinfectants usually employed to cleanse water for family use, they can never be applied to large reservoirs: they would be too uncertain and expensive. Aluminous earth or pure clay is nature's cleanser. If pure clay, in solution or in a dry, pulverized condition, be stirred in foul water in a short time all animal and vegetable filth will be precipitated to the bottom, and the water will be comparatively pure. The waters of the Mississippi river magnificently illustrate this fact.—J. W. Crary, Sr., in Municipal Engineering.

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CONDITION OF THE MARKET.

TORONTO: The spring trade has not yet commenced to move, and builders' supplies are consequently quiet. Some shipments of galvanized iron have been made during the week at fair prices. A fair number of import orders for glass are being booked, while paints and oils show a slight improvement.

MONTREAL: Business for the past week in builders' supplies has been dull in the extreme. A firm tone is reported in the glass market, which is about the only line in which sales of any size are being made. Small lots of fire-bricks have been sold at \$15 to \$21 per thousand. Higher prices for cement are announced from abroad.

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