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CANADIAN CONTRACT RECORD
A WEEKLY JOURNAL OF
PUBLIC WORKS TENDERS ADVANCE INFORMATION AND MUNICIPAL PROGRESS
EVERY 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. II. NOVEMBER 14, 1900 No. 41

THE CANADIAN CONTRACT RECORD,
PUBLISHED EVERY WEDNESDAY
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Advertising Rates on application.

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

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

SEALED TENDERS, addressed to the undersigned, and endorsed "Tender for Armoury, St. Thomas, Ont.," will be received at this office until MONDAY, 26TH NOVEMBER, 1900 inclusively, for the erection of a building for an Armoury at St. Thomas, Ont., according to plans and specification to be seen on application to Mr. J. Russell, Post Office, St. Thomas, and at the Department of Public Works, Ottawa.

Persons tendering are notified that tenders will not be considered unless made on the form supplied, and signed with their actual signatures.

Each tender must be accompanied by an accepted cheque on a chartered bank made payable to the order of the Honourable the Minister of Public Works, equal to ten per cent. (10 p.c.) of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted the cheque will be returned.

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

By order,
JOS. R. ROY,
Acting Secretary.

Department of Public Works,
Ottawa, November 3rd, 1900.

Newspapers inserting this advertisement without authority from the Department will not be paid for it.

The assignment is announced of John C. Hague, contractor, Montreal.

John Higman, plumber, Ottawa, is said to be offering to compromise at 30 cents on the dollar.

CONTRACTS OPEN.

MOORE MILLS, N. B.—The dam here will likely be rebuilt this fall.

GLENCOE, ONT.—The Grand Trunk are building a new station here.

COLDWATER, ONT.—The village will probably install an electric light plant.

PINKERTON, ONT.—D Stewart has commenced the erection of a residence.

GODERICH, ONT.—J. L. Aitken purposes erecting a brick veneer residence.

GALT, ONT.—Alterations will be made to James Fisher's block on Main street.

WOODSTOCK, ONT.—A company is being formed to bore for oil in East Zorra.

DAUPHIN, MAN.—The Bell Telephone Co. may install a telephone system in this town.

LAKE MEGANTIC, QUE.—G. H. Counter is about to build an addition to his hotel.

MONKTON, ONT.—John Battin has purchased a site on which he will build a residence.

GRAND FORKS, B.C.—The government will be asked to establish a government building here.

WATERLOO, QUE.—The Brome Electric Company has applied for a charter of incorporation.

MEAFORD, ONT.—W. Cock purposes erecting an elevator, 30x50 feet, covered with iron sheeting.

SAWYERVILLE, QUE.—Percival Leavitt has purchased some property on which he intends to build.

EAST ANGUS, QUE.—The Royal Paper Mills Company intend building another pulp mill at an early date.

COBOURG, ONT.—Henry Johnston, of Hastings, has offered $1,500 towards the erection of a poor-house here.

FORT WILLIAM, ONT. — G. Hartley has made a proposition to the council to establish a broom factory here.

NEWMARKET, ONT.—M. Kennedy has commenced the foundation for a new residence to be built next summer.

BARRIE, ONT.—The council is considering the purchase of a 55 light arc machine for the electric light plant.

MITCHELL, ONT. — The corporation offers for sale $7,000 of debentures. Particulars from Jas. Bennett, Box 207.

SANDON, B.C.—Plans for a new town hall to be built here have been forwarded to the Commissioner of Lands and Works at Victoria.

MORRISBURG, ONT.—F. R. Chalmers, village clerk, invites offers up to December 1st for the purchase of $25,000 debentures.

OWEN SOUND, ONT.—The Grey & Bruce Portland Cement Co. are placing orders for machinery for their new cement factory.

BRIDGEBURG, ONT.—Richard White has purchased a site on Jarvis street on which he will build a residence and butcher shop.

ST. JOHN, N.B.—The New Brunswick Telephone Company have purchased a site on which to build their proposed telephone exchange.

CHICOUTIMI, QUE.—The Chicoutimi Pulp Company intend to erect new pulp mills immediately, in which they will install special machinery.

ASHCROFT, B.C.—J. B. Charleston, superintendent of Government telegraphs for this district, states that a telegraph office will be built here.

MANITOWANING, ONT.—Mr. Button, of Wingham, purposes building a factory here for the manufacture of broom handles and other wood specialties.

AYLMER, ONT.—The date of voting on waterworks and electric light by-laws, referred to in last issue, has been changed to Monday, December 3rd.

INGERSOLL, ONT.—A committee of the town council has recommended that tenders be invited for lighting the streets and town buildings by electric light.

WELLAND, ONT.—The Welland Acetylene Gas Machine Co. have leased the Salvation Army barracks and will fit up the building for the purposes of a workshop.

WATFORD, ONT. — Brooke Township council has commissioned Jas. A. Bell, C.E., of St. Thomas, to report on the cost of repairing certain drains in the township.

THOROLD, ONT. — The Mayor has called a public meeting to discuss the advisability of issuing debentures for street improvements, including permanent sidewalks.

SMITH'S FALLS, ONT.—W.H. Frost, of the Malleable Iron Works, has just finished a new addition to his work shop, 40x57 feet, and is about to erect another addition 270 feet in length.

NEW WESTMINSTER, B.C.—Several plans have been received from architects for the proposed city hall to be built here. As soon as a plan is selected tenders for the work will be asked for.

IROQUOIS, ONT. - The Gilbert Blasting & Dredging Co. want to purchase 50,000 cubic feet of 12 x 12 timber, 16 to 30 feet in length, and 50,000 feet run, 10 inches thick, 15 to 35 feet in length.

KINGSCOURT, ONT.—John McCormick, Reeve, invites tenders up to Monday, 26th inst., for repair of the Leitch drain in Warwick. Plans at office of the Guide Advocate newspaper, Watford.

ST. THOMAS, ONT.—Tenders are invited by the Dominion Government up to Monday, 26th inst., for building an armory in this city. Plans on application to J. Russell at post office here.

EAST TORONTO, ONT.—A by-law has been passed in council authorizing the laying down of water mains on Balsam

avenue, Beech avenue, Queen street and Howard avenue. A granolithic sidewalk on Danforth avenue is favored by the council.

TILSONBURG, ONT.—Printler, Payne & Wheaton purpose erecting a canning foctory here and have asked the council for a $5,000 bonus. The by-law will be voted on at the January elections.

KINCARDINE, ONT.—R. C. Stewart, enginee: of the Ontario Public Works Department, has been in town recently in connection with the proposed harbor improvements. He will recommend that a dam be built above the mill.

PHOENIX, B.C.—The authorities of the Presbyterian church are considering plans for a new edifice.—L. C. Crawford has put through a deal by which a two-storey hotel, 35 x 50 feet, will be built on First street, opposite the Eastern Townships bank.

STRATFORD, ONT.—The council is negotiating with the Stratford Gas Co. for a renewal of the contract for street lighting. It is said that unless the company modifies its offer the council will advertise for tenders for lighting or take steps to install a municipal plant.

TORONTO JUNCTION, ONT—D. R. Boucher has commenced the erection of a residence on Quebec avenue, to cost $2,500.—A resolution was last week introduced in council to submit a by-law to the ratepayers to provide $10,000 for an increased water supply.

NIAGARA FALLS, ONT.—The McKinnon Dash & Hardwood Company has absorbed the Niagara Falls Metal Works Company. Both factories will continue as at present for the winter, but in the spring it is proposed to build a new factory and amalgamate them under one roof.

WINDSOR, ONT.—J. H. Lake, of Sandwich street west, is endeavoring to form a company to be known as the Builders' Association, the object being to erect a number of houses in the city.—Major Rothwell is about to erect a two-storey brick building on the Rolph property on Pitt street.

FREDERICTON, N.B.—The Chief Commissioner of Works has invited tenders for the superstructure of a bridge at Upper Corner, Sussex, the Bostwick's bridge, Big Salmom river, and the Tobique Narrows bridge; also for rebuilding the Taxis river bridge in York County, Dunhams wharf, Kingston, and Lee Flewelling's wharf, near Gondola Point.

THESSALON, ONT. — The corporation will raise $2,500 for rebuilding, enlarging and extending the power house, plant and mains of the waterworks system.—The town has just taken tenders for the supply of an electric light plant of 1,000 lights.—A by-law to raise $5,000 for the purpose of installing an electric light plant has been passed in council.

NANAIMO, B.C.—The Board of Trade and City Council are endeavoring to secure the building of an electric railway to the Extension Mines.—The Nanaimo Telephone Company have decided to extend the telephone system to embrace the Extension Mines, with an early probability of a long distance trunk line to connect Nanaimo with Victoria.

HALIFAX, N S.—H B. Clarke is considering a proposition to build a theatre in this city.—The old city market building property has been acquired by the Dominion Government as a site for the proposed custom house, for which plans will be prepared immediately. As soon as the customs house building is completed it is proposed to remodel the interior of the office. There will be installed freight and passenger elevators.

QUEBEC, QUE.—Mr. Worden, representing a large firm in Christiana, was in the Lake St. John region recently to select a site for proposed pulp and paper mills. Messrs. Gysurl and Von Bruysel, representing a Belgian syndicate, have been looking over limits there with a similar object.—Work will shortly be commenced on the new Academy of Music, revised plans for which are being made by Mr. Resther, architect, of Montreal.

SAULT STE MARIE, ONT.—The industries yet to be built by F. H. Clergue and his associates consist of two blast furnaces having a daily capacity of 500 tons, coke ovens for supplying the ovens with fuel, a Bessemer plant of four convertors to transform the product of the blast furnaces into steel, a rail mill capable of turning out 1,000 tons of steel rails a day, and an open hearth plant for ship and boiler plates and structural shapes.

ST. CATHARINES, ONT.—Tenders have been taken at the office of S. G. Dolson, architect, for remodelling the Murray House for the trustees of the Murray Estate. F. H. Herbert, architect, Toronto, is associated with the work. There will be a large cut stone and pressed brick entrance lobby to the hotel, with open rotunda, iron staircase, marble and mosaic floors, electric elevator, etc.—Shelley Bros. purpose building a new block on James street.

KINGSTON, ONT.—It is reported that $25,000 will be expended in the purchase of additional machinery for the Kingston Locomotive Works.—At a recent meeting of the Board of Trustees of Queen's University, it was decided to erect two new buildings, one for Arts, to cost $50,000, and one for the School of Mining, to cost $35,000. An addition to the Medical building and a new power house may also be built. Architects are invited to submit plans for the Arts and School of Mining buildings. Particulars from J. B. McIver.

VANCOUVER, B.C.—Tenders are being taken for remodelling the Sullivan-Cameron block on Cordova street.—It is announced that work is to be commenced at once on the Stave Lake power project. The construction of the waste flume will be the first work undertaken.—McKenzie Bros., Limited, have decided to build two freight vessels.—It is said that the owners of the McLaren mills at Barnet are considering the building of several lumber schooners this winter.—The addition to the St. Alice hotel at Harrison Hot Springs will cost about $10,000. Tenders are being taken at the office of Wm. Blackmore, architect.

VICTORIA, B.C.—The corporation offers for sale local improvement debentures to the amount of $15,350, payable in ten years, bearing 4 per cent. interest. Bids received by W. J. Dowler up to Monday, 25th inst.—W. S. Gore, Deputy Commissioner of Lands and Works, invites bids up to Tuesday, 20th inst., for construction of wooden bridge across the Thompson river at Kamloops. Plans at the Lands and Works Department, at office of Provincial Timber Inspector at Vancouver, and at the Government office, Kamloops. Cheque for $2,000 to accompany tender.—Architects are invited to submit plans by December 22nd next for a government house to be built in this city. Particulars from W. S. Gore, Deputy Commissioner of Lands and Works.—It is likely that the work of paving Government street, from James Bay bridge to Johnson street, will be undertaken next spring, although no decision has as yet been reached regarding the class of pavement.

WINNIPEG, MAN.—At the municipal elections on December 11th by-laws will likely be submitted to the ratepayers to provide for the erection of a public hall, to raise $60,000 for the main street subway, and $70,000 for suburban fire and police stations.—The following works have been recommended. Asphalt pavement on Carlton street, from Portage avenue to Qu'Appelle avenue, cost $11,000; macadam pavement on Spence street, from Portage avenue to Notre Dame avenue, cost $10,475; sewer on Qu'Appelle avenue, cost $1,940; sewer on Furby street, from Notre Dame avenue to Ellice street, cost $6,300.—Ald. Barclay is in favor of submitting a by law to the rate payers to raise $50,000 for a public bath. The proposition is to erect a building with a hall to accommodate 2,000, and stores underneath. A by law to provide for the paving of the market square has also been spoken of.—The Ladies' Hospital Aid Society have granted an appropriation of $3,000 for the purpose of installing a laundry plant in the general hospital.

HAMILTON, ONT.—T. Beasley, city clerk, wants tenders by Wednesday, 25th inst., for supply of three street watering wagons and six tanks. Tenders are also wanted by Friday, 16th inst., for constructing a pipe sewer on Chestnut avenue.—Brown, Boggs & Co. have taken out a permit for alterations to factory, corner King William and Victoria avenue, cost $2,000—The Finance Committee of the council last week considered the question of right of way through the city for the Galt and Guelph electric railway, proposed by the Cataract Power Co. Engineer Wingate submitted plans of two alternative routes. These plans include the widening of York street from 50 to 56 feet west from Queen street. No definite action was taken. — The Board of Governors of the General Hospital have decided to abandon for the present their proposal to erect a building for the accommodation of outdoor patients. The proposition to build a nurses' home may also be deferred until more money is available.

OTTAWA, ONT.—The Department of Public Works invites tenders up to 26th inst. for erection of armory at St. Thomas. Plans at above department.—Mr. Howe, of Rideau street, is understood to have had plans prepared for a large building to replace the one destroyed by fire last spring.— M. C. Edey, architect, has prepared plans for a new market building.—Building operations at the Chaudiere promise to be very active during the next year. The Ottawa Electric Railway Co. are preparing a site for a new power house The Ottawa Investment Co. have erected a temporary building, but next spring will put up a fireproof stone and brick structure. The site of the McKay mill is being cleared, and it is understood that J. R. Booth will next spring erect a planing mill and pulp mill on the site.—The following building permits have been granted: Ottawa & New York Railway Company, car and machine shops on Nicholas street, main building 120x60 feet, with two additions 40x50 feet and 16x36, Low Bros., contractors; Hornerite congregation church on Mutchmore street, cost $1,000; Edg. F. Dey, brick veneered house on St. James street, cost $2,450; Thomas Hastey, brick veneered house, McLeod street, cost $1,800; John B. Picken, brick veneered house, Second avenue, cost $1,000; Thomas Fewks, brick veneered double house, Lorne avenue, cost $1,300; Mrs. Violette Kerr, brick veneered house, Eccles street, cost $1,600; Henry Mulligan, brick veneered house, Division street, cost $1,000.

TORONTO, ONT—Tenders are wanted at 20 Buchanan street from all trades for erection of pair of houses.—Increased accommodation at the Toronto Custom House is required. It is proposed to extend the present building northerly over Custom House lane.—The Anti-Consumption League has suggested the submission of a by-law to the ratepayers to raise $50,000 for the establishment of a consumptive sanitarium. The proposition

is to invest $100,000 in building and equipment.—The Separate School Board have had plans prepared for an addition of two rooms to the Sacred Heart School. A resolution that a new school site be purchased in the west end has been referred back to permit of inspection of other sites.--Tenders for building the new small-pox hospital were opened last week and referred back, in order that legislation might be obtained for the expenditure of $6,000 instead of $4,000 as now provided.

Building permits have been granted as follows: Public School Board, two storey brick and stone school on Bathurst street, near College, cost $20,000 (Holtby Bros., contractors); H. McCarter, 2 storey bk. fronted dwelling, Brooklyn ave., cost $1,200; J. Northway & Son, four storey bk. and steel warehouse, 91 Wellington st., cost $30,000 (Burke & Horwood, architects, Dancy Bros., builders); Beatty Manufacturing Co., 5 storey bk. factory, n. e. cor. King and Portland streets, cost $14,000 (Chadwick & Beckett, architects, Davidge & Lunn, contractors).

MONTREAL, QUE.—Building permits have been issued as follows: C. S. Reinhardt, four storey house, 381 Mountain st., cost $17,000, S. Findlay, architect; J. B. Ratelle, three storey house 116 Montcalm st., cost $2,700, S. Trappier, architect; N. Nolin, repairs to four houses, 94 St. Norbert st., cost $1,600; R. Chartrand, repairs to two two-storey houses, 436 to 444 Centre st., cost $1,000; L. Dupont, two two-storey houses, Delormier and Lafontaine sts., cost $3,000.

FIRES.

Saw factory at St. Catharines, Ont., owned by William Chaplin, totally destroyed; loss $75,000, insurance $24,000. —Saw mill of Alex. McLaren at 107 Papineau avenue, Montreal. The loss on mill and yard is in the vicinity of $50,000, largely covered by insurance.—Windsor Hotel at Merrickville, Ont., a three storey brick building owned by Mrs. Payne and leased by John Wright; loss on building $8,000, insurance $4,000.—Dry house of D. G. Loomis & Sons at Ascot Corner, Que.—Paper mill of Taylor Bros. at Toronto, damaged to extent of $15,000.

CONTRACTS AWARDED.

KARS, ONT.—Storehouse for Craig & Son: E. Lindsay, contractor.

ST. CATHARINES, ONT.—Residence for Thos. Eustice: S. G. Dolson, architect; Newman Bros., contractors.

DESERONTO, ONT.—The contract for building post office here has been let to Alex. Newman, of Kingston.

PARIS, ONT.—Mr. Griffiths, of Woodstock, is putting in the foundation for the new post office to be built here.

FORT WILLIAM, ONT.—Alex. Cameron has secured the contract for installing hot water heating system in S. C. Young's residence.

RAT PORTAGE, ONT.—Stephens & McKinnon have been awarded the contract of adding another storey and building a wing to F. Hockley's residence.

ROBSON, B. C.—The Domion Bridge Company will commence work immediatly on the new C.P.R. bridge over the Columbia river from Stoke's Landing to Castlegar.

BELLEVILLE, ONT.—The city council has just accepted the following tenders for debentures: La Caisse d'Economic de Notre Dame de Quebec, $40,000 at 100¼; J. Gay & Co., $50,000 at par.

PRESCOTT, ONT.--The Imperial Starch Co has awarded to E A. Wallberg, C.E., of Montreal, Toronto, and Buffalo, the contract for the complete equipment of machinery and plant for its new starch and glucose factory, the contract price being $60,000. He will let sub-contracts at once from his Toronto office, Temple Building, for many parts of the equipment.

TORONTO, ONT.—The contract for lighting the streets of the city by electricity has been awarded to the Toronto Electric Light Co., at $74.82½ per light for 1,100 lights. The contract for low candle power lighting has been awarded to the Hydro-Carbon Light & Power Co., at $31 per light for the first thousand lights.—Tenders were awarded by the city council last week as follows. Asphalt pavement, Harbord street, Bathurst to Markam, Warren-Scharf Co., $2,288; cedar-block pavement, Parson avenue, Sorauren to Roncesvalles, Dominion Paving Co., $2,300; scoria block pavement on track allowance, Parliament, Queen to Winchester, Constructing & Paving Co., $14,900; concrete sidewalks, St. Vincent street, west side, Grenville to Grosvenor, A. Goodwin & Co., $1,300; Rose avenue, west side, Prospect to Wellesley, Gardiner & Co., 73 cents; Bloor street, south side, Brunswick avenue to Bathurst, Harvard Paving Co., 74 cents; Bloor street, south side, Huron to Major, Harvard Paving Co., 74 cents; Bathurst street, west side, Mc Donell square to 100 feet south of Queen, Constructing & Paving Co., $1.19; tile pipe sewer, Bain avenue, Pape to Carlaw, F. J. Beharriell, $867; Custom House lane, Yonge to Bay, F. J. Beharriell, $483.

COMMON ELECTRIC TERMS

People who are not actively engaged in electrical work are becoming familiar with the names of the common electrical units, volt, ampere, ohm, and watt, but few of them have any idea of what these words mean. A simple analogy may be of assistance to them. Imagine a pipe carrying a stream of water—an ordinary service pipe from a street main entering a house, for example. If water is flowing through it its analogy to a wire carrying a current of electricity is quite close. The pressure of the water is measured in pounds per square inch. The corresponding pressure of electro-motive force, which forces the electric current through the wire, is measured in volts.

The rate of flow of the water in the pipe is measured in gallons per minute; the electrical flow is measured in precisely cerresponding units called amperes. Suppose, with a given pressure on the pipe, its area of cross section is made smaller or its length larger, or it is roughened inside, less water will flow through it, or we may say its resistance is increased. This property of all substances and objects which conduct electricity—resistance—is of great importance. It is measured in units called ohms.

To illustrate these units practically, an ordinary cell or battery, wet or dry, such as is used with electric bells, keeps up a pressure of about one and one-half volts on wires connected with it. The current used in ringing an electric door bell is about one-tenth of an ampere. The resistance of iron telegraph wire is about twenty ohms per mile for the ordinary size.

Whenever a current of an ampere passes under a pressure of one volt it does one watt of work. The watt is an exceedingly useful unit; it represents work done at a given rate of power, and it is the connecting unit between electrical and mechanical measurements. It represents work equal to lifting ¾lb. 1 ft. in 1 second. A 16 c.p. lamp uses about fifty watts. A fan motor of the usual kind requires about eighty watts, both taking current from mains kept at a pressure of 125 volts. Larger powers are expressed in kilowatts, a kilowatt being 1,000 watts, and equivalent to about 1⅓ h.p.

All these units are named for famous electricians, the ohm in recognition of Dr. George Francis Ohm, a Danish physician, who discovered the laws of electrical resistance The volt is named after Alessandro Volta, who invented the electric battery just a century ago this year. The ampere commerorates the name of Andre Marie Ampere, a French electrician, who did brilliant work in the early years of the nineteenth century, and the watt is named for James Watt, the man who made the steam engine practical.

QUANTITY OF MORTAR REQUIRED FOR 1,000 BRICKS.

The amount of mortar required to lay 1,000 bricks will vary with the size of the bricks used, and with the thickness of the joints. With the standard size of bricks, which should be 8¼ in. × 4 in. × 2½ in., a cubic yard of brickwork laid with half-inch joints will require from 0.35 to 0.40 per cubic yard. If the joints are one-quarter to three-eighths thick, says the St. Louis Builder, a cubic yard of brickwork will require from 0.25 to 0.30 cubic yards of mortar; or 1,000 bricks will require from 4 to 5 cubic feet of mortar. If the joints are one-eighth of an inch thick, as for pressed brickwork, 1,000 bricks will require from one and a half to two cubic feet of mortar. This being known, it should not be difficult for an estimator to be able to tell exactly the cost of the materials required to build up 1,000 bricks in a wall, having the cost of bricks, sand and lime at hand, including hauling, with the above data before him. It is a little difficult to tell exactly how many bricks a man will lay in a day of ten hours, as conditions vary, and some men are much more expert than others; but if well supplied with material, and no scaffold to adjust, and a long wall to work at, from 15 to 16 hundred may be considered a pretty good day's work. If, however, there are many openings to fit around, or neat facing to do, from 1,000 to 1,200 will be a good average day's work. In good ordinary street fronts, from 800 to 1,000 is a good day's work; but in the finest front work, when there are numerous angles, doorways, belting courses or cornice work, from 200 to 400 is a fair day's work. In large works, such as factories, warehouses, or similar buildings, or where walls are very thick and the work coarse, a good man will lay from 1,700 to 2,000 bricks per day; this, however, is rather the exception than the rule, and the lower figure is the safest to estimate upon. A good laboring man will mix mortar and carry it and bricks for three bricklayers, if mortar and bricks are not more than 25 feet from the building, and provided he does not have to carry water or climb a ladder. In all cases, however, the lime must have been slaked and is in a putty state, and this is an item the estimator must consider. To slake lime and run it off and have it ready for the laborer to make into mortar, as a matter of cost, depends on the quantity made at each slaking. As the brickwork of a building rises so also does the cost. Whatever may be the figures obtained as the cost of laying 1,000 bricks for the first storey, 5 per cent. should be added to it for laying the bricks of the second storey, and 12½ for the third storey, and a corresponding percentgeorf the work laid in higher storeys. Getting the figures giving the cost in situ of brickwork, is one of the easiest problems in estimating, yet how seldom two estimators give in figures alike!

SETTING STONE WORK.

After the blocks are properly prepared and the surface on which they are to bed being truly level, the setting is an operation demanding great care in order to secure good joints and solid trustworthy work. In stonework, it must always be borne in mind, only fine mortar is admissible, and this should be clean and the materials sharp, and it is important that no dirt, clay, or other uncementitious substance be interposed, as this destroys the binding of the cement, and, if of hard texture, is liable to fracture or chip off the delicate arrises of the blocks. Large stones should be first tried on their beds before setting, and then raised and withdrawn, the bed finally cleaned, well wetted, and the mortar laid even; the stone should then be brought near its place and gently lowered upon wooden wedges, by withdrawing which it is brought exact to its bed, when it may be pounded down home by a suitable wooden mall or block of timber. Stones are raised and lowered by aid of a lewis, which is a contrivance for securing a firm hold of them, without defacing the faces or injuring the joints, the lewis hole being made on the top of the block, which becomes in turn the bed for the stone above. Cramps, joggles, dowels and plugs are names commonly applied to four different forms of connections respectively, thus: A cramp, which may be of lead or copper, is from six to ten inches in length, and from five-eighths to one and one-fourth inches in thickness, having each end turned up to act as the cramp, and from one to two inches wide, according to the size of the stones to be joined together. If the cramp is of copper it is forged to the form and run in with lead. Lead cramps are formed at once by running the molten lead into the channels prepared for it. Joggles are of a double wedge sometimes cubes, inserted so that their diagonals coincide with the form and usually of slate. They are joints. Slate joggles and dowels are laid in fine cement or oil putty. Dowels are of a common square section, and are more frequently applied vertically, that is, to the beds of the stones, being inserted in the top of one block of stone and the bottom of another. A plug is similar to a dowel, but is formed by the mortices being run with cement or lead. Mason work is known as "plain" when worked to a smooth face; "sunk," when "cut in"; "stopped," when not finished to the end of a stone moulded, straight, cornices, strings, etc., without a bend; "circular," moulded circular, neckings, columns, etc.; "circular circular," as niches, domes and spheres; "dressed" or "cleansed" on face, and "tooled" on face. About one-eighth the volume of ashler masonry should be mortar. Rubble masonry per cubic yard requires, of stone, one and one-fifth, and of mortar, one-fourth. Masons' specifications require very careful consideration, in so far as the description, quality, and mode of working stone goes, but the architect's drawings should furnish all necessary information as to the quantity and disposition of the stonework of a building. Half-inch scale drawings should be prepared of the masonry of windows, doors, and other features, and the jointing should be well shown on drawings. These details may be supplemented with one-eighth or quarter full-size sections of window jambs, sills and mullions, door jambs and moulding, piers with their arch mouldings, bases and caps, cornices, columns, etc. The net amount of stonework can thus be actually computed by the estimator, and the contractor can obtain a fair idea of the amount of labor on the work. Such details are also most useful to the architect when the preparation of the full-size working drawings has to be undertaken, as he can discover exactly how much stone is required for any feature.—St. Louis Builder.

MEASURING PLASTER CORNICES.

In making an estimate for a plaster cornice, several things are to be taken into consideration, says the St. Louis Builder. Measure the whole length around the wall, and deduct one projection of the cornice each way from the main length. If the girt of the mouldings from the ceiling to the wall line is under six inches, take it by the foot running measure, but if more than six inches, charge by the foot superficial. When there are eaves to the cornice, charge then by the foot superficial, bending a tape-line round in the concave; count all angles and mitres above four, taking measurements on longest lines. When there are enrichments in connection with the cornice, other than running mouldings, such as lambrequins or set ornaments, charge them extra according to their value, at so much per running or superficial foot. All quirks, arrises, heads or ovolos should be charged by the running foot. Pateras, which save mitring of enriched soffits, are not to be taken unless in frame or coffer; these must be charged under their own department. Plastering on brick walls to be measured from top of ground to lowest member of cornice, but where the walls are lathed, the whole height of wall must be measured. Stucco should be measured by the yard superficial, and charged according to the style and quality of the work.

MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

MUNICIPAL DEPARTMENT

PAVEMENTS.

The City Engineer of Toronto recently prepared a report regarding the various classes of pavement. It shows that heavy asphalt, at $2.80 per square yard, costs nothing for repairs for the first ten years, and 30 cents a yard for the next five years. At the end of this time it is worn out, and costs $1.70 per yard to put in good repair, making a total cost of $4.80 per yard for 15 years. Light asphalt has the same wearing qualities, costing $2.30 originally and $4.10 altogether, after 15 years of wear. Scoria on 6 inch concrete costs $4 per yard to put down, needs no repairs, and is in fair condition at the end of 15 years. Granite on 6- inch concrete costs the same and wears a little better. Brick on 4-inch concrete costs $1 80 to put down and 10 cents per yard to keep in repair for the second five years and 25 cents for the third five years. At the end of 15 years the pavement is worn out and will cost $1.20 per yard to repair, making a total cost of $3.25. If laid on broken stone, brick costs $1.55 to put down, 15 cents to repair during the second five years, and 30 cents to repair during the third five years. After 15 years the pavement is worn out and costs $1.20 to repair, making a total cost of $3.20 per yard. Both classes of brick are fit for residential streets only, and are guaranteed by the contractor for five years, as the asphalt is for 10 years. Hence there is no charge for repairs during these periods.

Macadam costs $1.60, $1.25, or 90 cents per yard, to put down, according to grade. At the end of 15 years it is in good condition, but the cost of keeping in repair is rather high—40 cents for the first five years, 50 cents for the second five years, and 50 cents for the third five years. The cost of repairs is the same in each grade. The total cost of macadam for 15 years is, first grade, $3 per square yard; econd grade, $2.65; third grade, $2.30.

As for cedar blocks, if laid on -inch concrete, they cost $1.60 per yard to put down, and 75 cents for repairs during the second five years. This includes the cost of renewing once in seven years. The same charge has to be met in the next five years, two renewals being made in 14 years. This leaves the pavement in good condition at the end of 15 years at a total cost of $3.10 per square yard. Under the same treatment cedar blocks laid on boards cost $2.20 to put down and $2.70 altogether, in 15 years. If relaid on gravel the blocks cost 60 cents a yard to put down and $2.10 altogether. With the exception of this last class of block, any class of macadam appears to be the cheapest pavement at the end of 15 years

WATER SUPPLY IN HALIFAX.

Water meters have been strongly urged by City Engineer F. W. W. Doane, of Halifax, N. S., as by far the best solution of the water problem in that city. The low-service district is supplied from Chain Lakes, and the supply is strained to its utmost day and night in winter. Any pumping from it to higher districts would be fatal to its efficiency. The high-level section of the city is supplied from Spruce Hill Lake through a pipe line large enough to deliver all the water collected in a dry year, and an addition to the supply will cost $1,000,000. The consumption, waste and leakage in this section is so great that some houses are without water and fire hydrants are empty. The last inspection showed hundreds of places in which water was running to waste unnecessarily. Inspection has been found to do no good and the adoption of meters seems to be the only cure; for, if the waste is stopped the supply is ample. When a meter was placed on a wharf, for instance, it registered 1,400,000 gallons the first month, but only 12,000 gallons since then. At a stable the first month's reading was 40,000 gallons and is now 4,000. A water closet wasting 1,000 gallons a day when the meter was put in now requires only 6 gallons for its operation. Mr. Doane states that if the water running into Halifax were used at the same rate per head as in Fall River, the supply from the high source alone would be sufficient for the whole city. In the face of this it seems absurd to talk of an expenditure of $1,000,000, besides the necessity of tearing up the streets to alter the distribution pipes so that more water could be brought in.

TREATMENT OF SEWAGE.

A novelty in sewage treatment has been recommended for Chester, England, by Major H. Tulloch, late engineer-in-chief to the Local Government Board. The volume of dry-weather sewage to be treated is about 1,250,000 imperial gallons. It is pumped from a screening well at the end of an outfall sewer into a channel along eight precipitation tanks holding about 68,000 gallons each. The clarified effluent from these is run through eight roughing filters having a total area of 888 square yards, and then passes to circular aerobic polarite filters 50 feet in diameter and having a combined area of nearly 3,500 square yards. Before passing to these the sewage is collected in a small chamber from which, when a certain height has been reached by the surface of the liquid, the latter is discharged over the filtering bed. The chamber holds enough sewage to flood the filter to a depth of 2½ to 3 inches, and is emptied automatically. The filters are placed in two tiers, and double filtration is thus possible. The effluent from the upper tier drives a small turbine and fan which draws the carbonic acid gas from the bottom of the filters, allowing air to enter freely the pores of the lower part of the bed.

Mr. L. J. Marien, superintendent of the Montreal waterworks, died on October 31st, from typhoid fever.

MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

Prices of Building Materials.

PRESSED BRICK, Per M.

TORONTO PRESSED BRICK AND TERRA COTTA WORKS.

	F.O.B. Milton, Ont.	F.O.B. Montreal.
Red No. 1	$12 50	$18 00
" 2	10 50	16 00
" 3	8 50	14 00
Buff No. 1	14 50	20 00
" 2	13 00	18 50
Brown	20 00	25 50
Roman Red	25 00	30 50
" Buff	28 00	33 50
" Brown	35 00	40 50
Hard Building	6 50	12 00
" Sewers	6 50	12 00
" Backing	5 00	11 50

Moulded and Ornamental from $7.00 to $5.00 per 100.
Terra Cotta String Courses and Frieze, from 50c. to $2.00 per ft. run.
Roofing Tiles, $20 00 per 1,000, $23.00 Montreal.

BEAMSVILLE BRICK AND TERRA COTTA CO.

	F.O.B. Beamsville.	F.O.B. Montreal.
Red Peerless Facing	$5 00	$10 50
" No. 1	13 00	18 50
" No. 2	11 00	16 50
" No. 3	8 50	14 00
Brown Peerless Facing	20 00	25 50
" No. 1	18 00	23 50
Buff Peerless	20 00	25 50
" No. 1	18 00	23 50
" No 2	15 00	20 50

Moulded and Ornamental Brick from $3 to $10 per C.

Roman Red (Size 12 x 4 x 1½ in.)	28 00	33 50
" Buff " "	28 00	33 50
" Brown " "	34 00	39 50
Vitrified Paving Brick No. 1	18 00	23 50
" " " No 2	15 00	20 50
Sewer	6 50	12 00
Roofing Tile	22 00	26 00

COMMON BRICK, Per M.

	F.O.B. Toronto.		F.O.B. Montreal.	
Common Walling	7 00	8 00	7 50	8 00
Good Facing	8 00	9 00		8 50
Sewer	8 00	9 00	8 50	9 00

STONE.

Common Rubble, per toise, delivered	10 0	11 00
Large flat Rubble, per toise, delivered	14 00	18 00
Foundation Blocks, per c. ft.	30	50
Granite (Stanstead) Ashlar, 6 in. to 12 in., rise 9 in., per ft.		25
Amherst Red Sandstone, Amherst, N.S., per cub. ft.	1 00	75
Kent Free stone Quarries, Moncton, N.B., per cu. ft.	1 00	95
River John, N. S., brown Freestone, per cu. ft.	95	95
Port Philip, N. S. Brown Sandstone		
"Scoriæ" Paving Blocks, 8"×3½"×5"	55	
"Scoriæ" Paving Blocks, 8"×3½"×4"	45 00	
Masillon	30 00	
Quebec and Vermont rough granite for building purposes, per c.ft f.o.b. quarry	40	1 00
For ornamental work, cu. ft.	40	
Granite paving blocks, 8 in. to 12 in. x6 in. x4½ in. per M.		50 00
Granite curbing stone, 6 in. x 20 in. per lineal foot		70
Buctouche Olive Freestone	85	60

INDEX TO ADVERTISEMENTS
In the "Canadian Architect and Builder."

CREDIT VALLEY STONE.

	F.O.B. Quarries.	
Rubble, per car of 15 tons		7 00
Brown Coursing, up to 10 in., per sup. yard	1 50 to	1 75
Brown Dimension, per cub. ft		60
Grey Coursing, per sup. yard		1 00
Grey Dimension, per cub. ft.		45

LONGFORD STONE.

Rubble, per 30 M. car		5 50
Ashlar, per cub. yd		2 00
Dimension, per cub. ft		18

SLATE.

	Toronto.	Montreal.
Roofing (*per square*).		
" 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
Newcastle "	2 70	3 00	1 95	2 10
"Jessen" 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 00	12 00	9 00	10 00
Keene's Coarse "Whites"	8 50	8 50	8 00	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		30		
" White		35		30
Plaster, Calcined, N. B.		2 00		1 50
" " N. S.		2 00		1 50
Hair, Plasterers', per bag	80	1 00		000

HARDWARE.

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

	Toronto.	Montreal.
Cut nails, 50d & 60d, per keg	2 85	2 85
Steel " " " "	2 95	2 9

CUT NAILS, FENCE AND CUT SPIKES.	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 02
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 extr
Wire nails, 2.85 base price.

Iron Pipe:

Iron pipe, ⅜ inch, per 100 feet	$3.25
" " ½ " " "	3.35
" " ¾ " " "	3.60
" " 1 " " "	5.00
" " 1¼ " " "	7.00
" " 1½ " " "	7 60
" " 2 " " "	1 00

Lead Pipe:

Lead pipe, per lb	7c.	15 per cent. dis.
Waste pipe, per lb	7½	

Galvanized Iron:

Adam's—Mar's Best and Queen's Head and Opollo:		
16 to 24 guage, per lb	4½c.	4¾c.
26 guage, "	4¾	5
28 " "	5	5¼
Gordon Crown—		
16 to 24 guage, per lb	4¼	4½
26 guage, "	4½	4¾
28 " "	4¾	5

Note.—Cheaper grades about ¼c. per lb. less.

Structural Iron:

Steel Beams, per 100 lbs	2 75
" channels, "	2 85
" angles, "	2 50
" tees, "	2 80
" plates, "	2
Sheared steel bridge plate	

ARCHITECTURAL VARNISHES.

THE IMPERIAL VARNISH AND COLOR CO, LIMITED.
(Highest grade)

(Cans free)	In 5 gal. cans. Per gal.	In 1 gal. cans. Per gal.	In ½ gal. cans Per gal.	In ¼ gal. cans Per gal.	Pint Cans Per doz.
Exterior wearing body	$1 50	$1 75	$1 85	$1 95	$2 00
Exterior rubbing	3 50	3 75	3 85	4 00	4 00
Elastica	3 50	3 75	3 85	4 00	4 00
Ivory Enamel	5 00	5 25	5 35	5 75	6 00
Crystalite	4 50	4 75	4 85	5 00	5 00
Yachtine	3 00	3 25	3 35	3 50	4 00
Architectural Coach	2 50	2 75	2 85	3 00	3 00
Granitine floor finish	2 50	2 75	2 85	3 00	3 00
Architectural flatting	2 00	2 25	2 35	2 50	2 50

CORRECTED UP TO NOVEMBER 13TH