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# CANADIAN CONTRACT RECORD

A WEEKLY JOURNAL OF  
PUBLIC WORKS • TENDERS • ADVANCE INFORMATION • AND MUNICIPAL PROGRESS

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.

VOL. 7.

DECEMBER 3, 1896

No. 44.

**THE CANADIAN CONTRACT RECORD,**  
PUBLISHED EVERY THURSDAY  
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## Notice to Contractors

### Canadian Contractor's Hand-Book

A new and thoroughly revised edition of the *Canadian Contractor's Hand-Book*, consisting of 150 pages of the most carefully selected material, is now ready, and will be sent post-paid to any address in Canada on receipt of price. This book should be in the hands of every architect, builder and contractor who desires to have readily accessible and properly authenticated information on a wide variety of subjects adapted to his daily requirements.

Price, \$1.50, to subscribers of the CANADIAN ARCHITECT AND BUILDER, \$1.00. Address

C. H. MORTIMER, Publisher,  
Confederation Life Building, TORONTO.

## TENDERS

Tenders for the construction of a 36 inch Brick Sewer on Evergreen Avenue and Becher Street, will be received at the office of the undersigned up to 6 p.m. on

ATURDAY, DEC. 5TH.

Plans and specifications can be seen at City Engineer's Office, London, Ont.  
Lowest or any tender not necessarily accepted.

ORMSBY GRAYDON,  
City Engineer, London.  
WILLIS CHIPMAN,  
Consulting Engineer.

## ELECTRIC LIGHTING

Sealed bids will be received by the City Clerk of the City of Guelph up till noon on

Friday, December 18th, 1896,

for lighting the city with 90 or more arc lights, in accordance with the specifications now on file in the Clerk's office.

The contract to be for a term of five or ten years from the first day of July, 1897.

The Council reserves the right to reject any or all bids

RICHARD MITCHELL,  
City Clerk.

D. L. SCHULTZ,  
Chairman Fire and Light Committee



## Tenders for Iron Pipe and Special Castings

Separate tenders, addressed to the undersigned, will be received through registered post up to noon on

Thursday, the 10th December, 1896,

FOR THE SUPPLY OF:

- (1) 24-inch iron pipe and special castings, and
- (2) Three 24-inch cast iron valves.

Plans and specifications may be seen and forms of tender obtained upon application at the office of the City Engineer, City Hall, Toronto.

A deposit in cash or marked cheque (payable to the order of the City Treasurer) equal to 2 1/2 per cent on the value of the work tendered for, must accompany each and every tender as a guarantee of good faith. Should any party or parties whose tender may be accepted fail to execute the necessary contract and give satisfactory security for the due fulfillment thereof, his or their deposit will be forfeited to the city. Deposits of unsuccessful tenderers will be returned.

Tenders must also bear the bona fide signatures of the contractor and two responsible sureties.  
The lowest or any tender not necessarily accepted.

ROBERT J. FLEMING (Mayor),  
Chairman Board of Control.

Committee Room, Toronto, November 25th, 1896.

## CEMENT.

Excess of water in a concrete mixture is bad practice, as only a fixed equivalent of water can be chemically combined with cement. The surplus water simply displaces so much of the solid contents of the mass and leaves voids after it has evaporated. This makes the hardened concrete porous so it will absorb moisture; this is a source of great weakness, as the water held in the interstices during frosty weather expands, and thus the cement begins to show cracks or other defects.



## HEATING BAY STREET FIRE HALL

Tenders addressed to the undersigned will be received through registered post up to noon on

Thursday, the 10th Day of  
December Next,

for putting in a Combination System of Hot Water and Hot Air Heating for the Bay Street Fire Hall.

Plans and specifications may be seen upon application at the office of Messrs. Strickland & Symons, No. 36 Adelaide Street east.

Tenders must be accompanied by a marked cheque or a cash deposit equal to 5 per cent on the amount thereof. Should the party or parties whose tender is accepted fail to execute the necessary contract and give satisfactory security for the due fulfillment thereof, his or their deposit will be forfeited to the city.

The deposits of unsuccessful tenderers will be returned. The lowest or any tender not necessarily accepted.

ROBERT J. FLEMING, Mayor,  
Chairman Board of Control.

City Hall, Toronto, November 30, 1896.

## CONTRACTS OPEN.

STURGEON FALLS, ONT.—Heath & Paget will erect a pulp mill here.

FREDERICTON, N. B.—The City Council have declined to purchase a road plant.

DRUMMONDVILLE, QUE.—It is said that several manufacturers contemplate building here.

BOBCAYGEON, ONT.—M. M. Boyd & Company are preparing to build a new boat this winter.

ST. THOMAS, ONT.—The contract for the new Salvation Army barracks will probably be let this week.

HALIFAX, N. S.—There is an agitation on foot to place all telephone and electric light wires underground.

GODERICH, ONT.—Mr. Clark, of Goderich township, whose residence was burned recently, will rebuild at once.

BORNHOLM, ONT.—Messrs. Batten & McDonald are said to have engaged an architect to prepare plans for a new stable.

COWANSVILLE, QUE.—The ratepayers will vote on a by-law this week authorizing the construction of a system of waterworks.

ST. MARY'S, ONT.—The plans of Wm. Newman, C. E., of Windsor, have been accepted for a waterworks system for this town.

WELLAND, ONT.—The School Board has purchased a site for a new school building, and will likely commence operations in the spring.

CHATHAM, N. B.—D. Maxwell, C. E., was in town last week, presumably conferring with the authorities regarding the construction of a waterworks system.

PAKENHAM, ONT.—Tenders for the erection of a Presbyterian stone church

here close on the 11th inst. For particulars address B. Dillon, architect, Renfrew.

**ST. GEORGE, N. B.**—It is stated that a pulp mill will be erected here.

**CHICOUTIMI, QUE.**—The shareholders of the electric light company here are said to have decided on the erection of a pulp mill.

**PORTAGE LA PRAIRIE, MAN.**—The council have received the plans and final report on the river dam and slough from the town engineer.

**DUTTON, ONT.**—Plans have been prepared by M. L. Buffy, of London, and J. Z. Long, of St. Thomas, for a new town hall to be erected here.

**CARLETON PLACE, ONT.**—A by-law will be submitted to the ratepayers authorizing a bonus of \$20,000 to the C. P. R. to erect permanent shops at this place.

**CHATHAM, ONT.**—The Council is considering the question of submitting a by-law to the ratepayers providing for the purchase of an electric lighting plant.

**KINGSTON, ONT.**—It is probable that a by-law will be submitted to the ratepayers granting a bonus of \$25,000 towards the erection of a grain elevator.

**ST. CATHARINES, ONT.**—V. M. Roberts, C. E., has submitted a report to the City Council showing the estimated cost of proposed sewers, which is about \$8,000.

**GUELPH, ONT.**—Tenders for a hook and ladder truck for the city are invited until the 18th inst. Address D. L. Shultz, Chairman Fire, Water and Light Committee.

**WENTWORTH, ONT.**—It is proposed to erect a new building for the Wentworth Baptist church congregation. A considerable sum therefor has already been subscribed.

**LEAMINGTON, ONT.**—W. F. McKenzie contemplates erecting a new building in the spring. It will be two stories, 80 feet deep, and will probably be provided with steam power.

**ORONO, ONT.**—Proposals are invited until the 10th inst. for the purchase of debentures of the township of Clarke amounting to \$2,200. Address, John Jackson, reeve.

**QUEBEC, QUE.**—According to plans and estimates prepared by the City Engineer, the cost of the proposed extension of Richelieu street will be in the neighborhood of \$7,000.

**TRAIL, B. C.**—F. Aug. Heinze has advertised for bids for the construction of the Columbia and Western railroad. Estimates will be received for both narrow and standard gauge.

**WOODSTOCK, ONT.**—The congregation of the Norwich Avenue Methodist church have decided to either build a new edifice or make extensive alterations in their present place of worship.

**PARRY SOUND, ONT.**—The Ottawa, Arnprior and Parry Sound Railway Company will build two large grain elevators at Parry Sound Harbor, having a storing capacity of one million bushels.

**MONTEBELLO, ONT.**—Wm. Russell, C. E., of Ottawa, has made surveys for a line of railway which it is proposed to build from Montebello or Papineauville to Hartwell, a distance of 22 miles.

**ELPHIN, ONT.**—Joseph Smith, Secretary-Treasurer of the School Board, will receive tenders until the 21st inst. for building a school house in school section No. 2, Township of North Sherbrooke.

**VICTORIA, B. C.**—A motion has been passed by the City Council that a by-law be submitted to the ratepayers authorizing the expenditure of \$125,000 for the construction of the Point Ellice bridge.

**MIDWAY, B. C.**—Incorporation will be sought by the Cascade Water, Power &

Light Company, for the purpose of supplying light, water and power to Midway, Anacosta, Greenwood, Grand Forks and Cascade City.

**MAGOG, QUE.**—George Addie, P. L. S., was in town recently locating a site for a dam on the property of B. A. Land Company. The Town Council have in view the purchase of this site in order to secure power for electric lighting purposes.

**TRENTON, ONT.**—The difficulty between the Waddell Water Works Company and the Trenton Waterworks Company has been satisfactorily settled. The two systems will be amalgamated, and the work of extension will be commenced without delay.

**NEW WESTMINSTER, B. C.**—The Colonial Canning Company has been incorporated, with a capital stock of \$30,000, and will erect a new cannery on the Fraser river next spring. Among those interested are Isaac Churchill and W. G. Spracklin, of this city.

**FRASERVILLE, QUE.**—The Fraserville Company, Limited, is seeking incorporation, with a capital stock of \$50,000, the object being to erect a pulp mill and to engage in the manufacture of pulp. Among those interested are John McFarlane, of Westmount, George White-Fraser, electrical engineer, of Toronto, David Cooke, of Fraserville, and others.

**KEEWATIN, ONT.**—Mr. John Mathers, manager of the Keewatin Power Company, states that if the city of Winnipeg will contract to take the necessary power, the work of developing the power at Keewatin will be commenced without delay. The company have had in view for some time the erection of a large electric plant for generating and transmitting power to Winnipeg.

**LINDSAY, ONT.**—McLaughlin & McDiarmid, solicitors, of this town, give notice that application will be made to parliament to incorporate the Minden & North-Western Railway Company, with power to construct a railway from Irondale Junction to Minden, thence through the townships of Anson and Longford to a point on the Georgian Bay, with a branch to Mountain Lake.

**NANAIMO, B. C.**—Yarwood & Young, barristers, will make application to the local legislature for incorporation of a company to build a railway from Nanaimo to Alberni.—The Esquimalt and Nanaimo railway bridge, which spans Niagara Canyon, was carried away by a recent flood. The bridge was built of wood, 154 feet in height, and about 200 feet long. It is understood that the Esquimalt and Nanaimo Railway Company will at once begin the erection of a steel structure to replace the one destroyed.

**HAMILTON, ONT.**—A final order has been issued by the Railway Committee of the Privy Council in reference to the T. H. & B. crossing at the Desjardins canal. It is said that the order confirms the previous decision of the Committee, and orders the T. H. & B. to build the high level bridge.—T. Beasley, City Clerk, will receive tenders until Thursday, the 10th inst., for the purchase of \$85,000 of 20 year debentures, bearing interest at the rate of 4 per cent. per annum, payable half yearly.—The City Council has decided to build a fire hall at Victoria park, at a cost not exceeding \$2,600.

**OTTAWA, ONT.**—Application will be made for incorporation of a company to construct a railway from a point at or near Wabigoon, Ont., to the mining camps. The projectors are Toronto capitalists, who propose utilizing water power to generate electricity. The road will be 75 miles in length.—Bryson, Graham & Company have leased the store adjoining their property and will remodel the same.—A number of New York capitalists were in this city recently for

the purpose of asking privileges from the Dominion government with regard to the construction of the International bridge at Niagara Falls.—It is rumored that Mr. J. R. Booth will extend the Ottawa, Arnprior and Parry Sound railway to Mattawa. An important deputation waited upon the Nepean Council to advocate the establishment of a High School in Carleton county. A suitable building was estimated to cost \$6,000.—It is probable that some steps will be taken towards utilizing the hospital on Porter's island, the Grey Nuns having offered to tear down the present building and erect and furnish two new buildings, three stories high, in solid brick walls and stone foundation, and to construct a building for laundry and disinfecting purposes.

**MONTREAL, QUE.**—W. E. Doran, architect, is inviting tenders this week for alterations of a house, corner of St. Dominique and Vitre streets, for Mrs. J. P. Cuddy.—Gamelin & Huot, architects, are preparing plans for two houses to be erected on Victoria street for M. Bean. Tenders will be asked for shortly.—S. Frappier is calling for tenders for seven cottages at Longueuil for A. W. Glassford.—It is reported that George Carslake has purchased the vacant lot opposite the Grand Trunk depot and will erect a large modern hotel, from plans prepared by James Wright & Sons, architects.—Tenders are being received this week at 180 St. James street for the heating of the club house on Upper St. Lawrence street.—An agitation is on foot for the establishment of a permanent museum in this city. The corporation has agreed to place the necessary space in Bonsecours market at the disposal of the promoters for a term of years, and is estimated that suitable buildings could be erected at a cost of \$9,000.—The proposition to expend the sum of \$100,000 on the improvement and extension of Bonsecours market is not likely to be carried out for some time to come.—Alderman Kinsella has written a letter to the City Council urging the construction of a bridge over the G. T. R. tracks at Mountain street.—The City Surveyor has presented a report to the Road Committee showing the necessity of extending the Mill street and Commissioner street sewers to the western end of the guard pier. The estimated cost is \$88,540. The city surveyor has been asked to prepare a detailed report thereon.—The by-law to grant the sum of \$10,000 towards the erection of a brewery at Maisonneuve was carried by the ratepayers last week. The site for the building has been purchased and tenders will be invited at an early date.—The Jesuit Fathers are said to have purchased a site on which to erect a college building, to cost \$200,000.—The Montreal Hunt Club have acquired property behind the mountain and will build a new club house and kennels.—A report has been prepared by the Board of Trade making suggestions regarding the extension of the trade of the city, in which it is recommended that our canals be deepened to a uniform depth of 14 feet and that the channel between Montreal and Quebec be deepened and widened to permit of all the ocean steamers passing through.

**TORONTO, ONT.**—The Toronto and Suburban Street Railway Co. have been granted an extension of time until July 1 next in which to complete their line to Islington. It is anticipated that a new power house will be erected at that point.—The City Council has given notice of its intention to construct the following works: Asphalt roadways—York street, Front to Queen street, exclusive of space between the rails, cost \$22,400; Queen street, Yonge to Bathurst street, exclusive of space between rails, cost \$77,600. Brick roadways—Beaconsfield avenue, Queen street to Afton avenue, cost \$5,900; Gladstone avenue, Queen to Dundas

street, cost \$18,200; Hazleton avenue, Yorkville avenue to Davenport road, cost \$9,770; Johnston's lane, Adelaide street to south end, cost \$840. Macadam roadways—Terauley street, Queen to College street, cost \$9,270; Queen's Park crescent, east side, Queen street College avenue to junction of said crescent with the road running north therefrom, to Bloor street, cost \$6,300. Concrete sidewalk on Church street, east side, King to Adelaide street, cost \$960.—The recommendation of the City Engineer to construct a 24 foot asphalt pavement on Brunswick avenue, from Ulster street to Bloor street, has been referred back.—At the last meeting of the York County Council a report was presented by the County Engineer recommending the building of a new steel bridge at York Mills, at a cost of \$11,000. The recommendation was adopted and the work will be carried out at once.—The ratepayers will be asked to grant the sum of \$275,000 to complete the city hall and court house.—A furnace will be placed in the Bay street fire hall, at a cost of \$900.—The Board of Harbor Commissioners have decided to repair and build an addition to the Deputy Harbor Master's residence on the Queen's wharf, at a cost of \$600. The light-houses are also to be improved.

### FIRES.

Jas. Thompson's bottling works at Kingston, Ont., owned by R. J. McDowell, was damaged by fire recently. The loss is heavy.—The Nelson Saw Mill Company's mill at Trail, B. C., was destroyed by fire on the 27th of November. The loss is \$5,000, with no insurance.—The residence of A. G. McLean on Catharine street, Toronto, has been destroyed by fire. The loss is estimated at \$2,000, partially covered by insurance.—A saw mill at Two Rivers, N. S., owned by G. B. Barnhill has been burned. The mill and machinery was valued at \$10,000, half of which is covered by insurance.—A livery stable at Aurora, Ont., owned by G. Lemon, was recently burned; small insurance.—Hardy & Dubord's linseed oil and match factory at Quebec was completely destroyed by fire on the 1st inst. The loss is about \$30,000, partially covered by insurance.

### CONTRACTS AWARDED.

**BROCKVILLE, ONT.**—O'Hara & Company, of Toronto, were the successful tenderers for \$20,000 of debentures, their figure being \$20,802.

**ST. JOHN, N. B.**—D. W. Clark has been awarded the contract to build a warehouse on North Rodney wharf, for C. H. Peters & Company.

**NEW WESTMINSTER, B. C.**—Layfield & Salt, of this city, have obtained the contract for erecting the buildings for John Peck's Foundry & Machine Works.

**TORONTO, ONT.**—The tender of the Jones & Moore Electric Company, for installing the electric light fixtures at the Horticultural Gardens, has been accepted. The figure is \$575.

**GODERICH, ONT.**—The tender of E. A. Cawsey and C. A. Humber for the construction of a sewerage system for this town was \$11,000, instead of \$10,000 as given in the RECORD of November 19th.

**HALIFAX, N. S.**—Power & Co. have been awarded the contract for placing heating apparatus in Keith's new building on Barrington street and George Wright's two buildings. The contract amounts to nearly \$10,000.

**QUEBEC, QUE.**—Contracts have been awarded as follows: A sacristy to be erected at St. Epiphane, Temiscouata—contractor, Thadee Bernier, of Cap St. Ignace. Finishing of a church at St. Leon of Standen—contractor, Jos. St. Hilaire; David Ouellet, architect.—Ten-

ders have been opened for Somerset church, but the award has not yet been made.—Building permits have been granted as follows: One house, two stories, brick front, on Bedard street, for J. A. Paquet—contractor, Mr. Cantin. One annex on Bayard street, for F. X. Lachance—contractor, Jos. Berube. Reparation of a house on Victoria street, for Geo. Bussiere—contractor, M. Fecteaault.

**MONTREAL, QUE.**—The municipality of St. Louis du Mile End have let a contract to Bastien & Valiquette for the construction of sewers at \$17 per yard, and macadamizing and grading the streets at 70 cents per cubic yard.—Contracts have been awarded as follows: Eric Mann, architect, one house, five stories, to be erected on St. Paul st. for James Corestine Co.—masonry, Hagan & Stewart; brick, Jos. Brunet & Son; other trades not let. W. E. Doran, architect, modifications of a store on Chaboillez square for Thos. Lamb, contractor for all trades, J. B. Gratton.—Building permits have been granted as follows: Two houses, two stories, stone and brick, to be erected on Summerhill avenue, for D. N. Deslauriers—architect, Theo. Daoust; masonry, Latreille Bros.; carpenter and joiner's work, M. Baril; probable cost \$5,000. One building, 24 x 40 feet, wood lined with brick, corner Fullum and Nellada street, for Joel Blain. One house, three stories, 25 x 98 feet, brick front, corner St. Catharine and Mountain streets, for Alex. Scott—architect, David O'Gilvie; masonry, O. Martineau; estimated cost, \$15,000. One house, two stories, stone front, to be erected on Drummond street, for J. L. Morris—Robert Findlay, architect; masonry, Weighton & Morrison; carpenter and joiner's work, J. Allan; brick work, P. C. Wand; cost, \$12,000.

### BUSINESS NOTES.

Joseph Bussieres, a well known contractor of Quebec, has assigned, with liabilities of \$33,360, and assets of \$11,869.

The St. John Bolt & Nut Works Company, St. John, N. B., have suspended payment, and a meeting of creditors has been called.

F. Gougeon, contractor, of Hull, Que., is reported to have assigned to Emanuel Tasse, with liabilities of \$10,000 and small assets.

### SCAFFOLDING.

We have always been in favor of good, safe scaffolding, and in a building experience of more than thirty years, in which large numbers of men have been subject to our instruction, we have been fortunate enough to never have an accident to limb or body of any employee caused by defective scaffolds, says a writer in the National Builder. A little

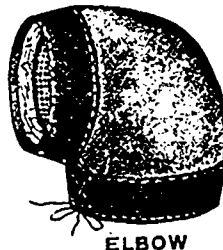
extra care and labor and a trifling additional expense, devoted to this important matter at first, will insure big returns on the outlay. Make a scaffold so secure that your workmen have full confidence in its ability to carry all that is to be put on it, with safety, and the workmen will do much more work and do it better than if they were compelled to crawl round on a rickety affair, that gives notice at every movement made that it is about to tumble down.

To scaffold for a frame building is not much of a task. Movable brackets with poles to raise or lower them are the handiest, and the best way, to prepare a scaffold for the outside work of wooden buildings, but for inside work they are not permissible, unless the floors are not laid, when the lower ends of the poles may run into the cellar or against the foundation walls. The bracket scaffold is so well known by every workman who has ever sided a house, painted an out-cornice or hung a gutter, that it is not necessary it should be described this time, though we may do so in a future issue, as there may be some readers who would like to know more about this sort of scaffolding.

In brick and stone buildings it is better to use round poles—spruce, tamarack or balsam—for uprights, with other poles "lashed" across them at proper heights. On these cross-poles, at suitable distances, lay a hardwood futtock—elm, oak or hickory—about "3 x 4," one end of which may rest in the wall and the other on the cross poles. On these futtocks planks or two thicknesses of boards may be placed, which will make a strong and substantial platform to work from and to carry the load of bricks, stone and mortar intended for it. This, of course, is intended for outside walls, but sometimes it may not be convenient to place the ends of the futtocks in the wall, then it is best to raise two series of upright poles, lashing cross poles to each series as described before, with the futtocks lashed to both series and to uprights and cross poles.

For inside scaffolding the same system should be followed, observing that the poles are well lashed together and that all the ropes—or lines as a sailor would call them—are in good order and sound. In inside work no futtocks are necessary, unless the work being done is close to the

(Concluded on Page 4.)



ELBOW

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walls and the walls are not finished, or are being repaired, a circumstance that may occur after a fire, or similar disaster, then futtocks are sometimes used, but there will have to be poles made in the wall to take in the inner end of them. Sometimes, when the buildings are lofty, as in public halls, churches or theatres, it may be necessary to use two lengths of poles to raise the scaffold to sufficient height to get at the work requiring to be done. When this is the case, use the heavier poles below and make the first tier of scaffolding strong and secure before attempting to build the upper tier. Lash braces in the form of a St. Andrew's cross to each set of poles, placing the brace or tie at the foot of one pole and at the top of another. Then on the other side of the upright poles lash another pole as a brace, in reverse order to the first brace. Lash the braces in the center and well to every pole they come in contact with. Never make use of nails or spikes in a pole scaffolding, not even to nail boards to the poles, as by doing so the poles will soon be ruined. The second tier of scaffolding is formed by lashing poles to the poles of the first tier, bracing them in the same way as in the first tier. In many cases if the scaffolding is extensive it may be in some instances necessary to brace it horizontally as well as vertically to stiffen it and make it secure. Poles will be required to be lashed horizontally to the uprights to receive the planking for the platform, and great care should be exercised in the selection of these bearing poles, and in lashing them to the uprights, as they will require to be strong enough in every direction to bear all the strains and shocks that can possibly be cast on them. Bearing poles should not be too far apart, for that would necessitate the plank forming the platform to be too long and consequently too weak. The workmen who are to work on the scaffold should be able to judge to what distance apart the bearing poles should be placed, though, of course, the length of the plank will have something to do in regulating this distance.

The mainly important matter to be

thought of in the erection of a scaffold is that men have to risk their lives and limbs on it and that true economy in its erection is that which makes it safe beyond a peradventure, and there should be no sparing of either time, labor or money in accomplishing that end.

Prof. Geikle has estimated the amount of sediment carried to the sea by the Thames in a year at 1,865,903 cubic feet, while it is estimated that the Mississippi deposits in the sea in a year solid matter weighing 812,500,000,000 pounds.

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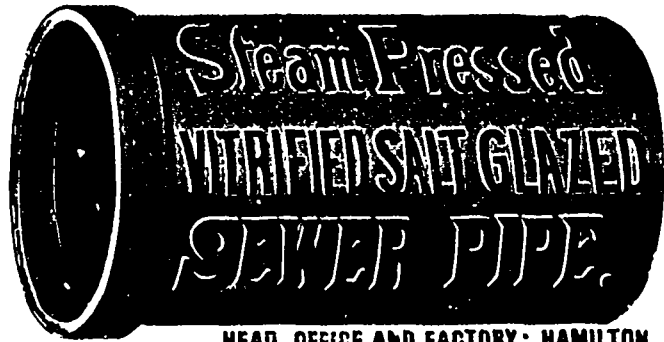
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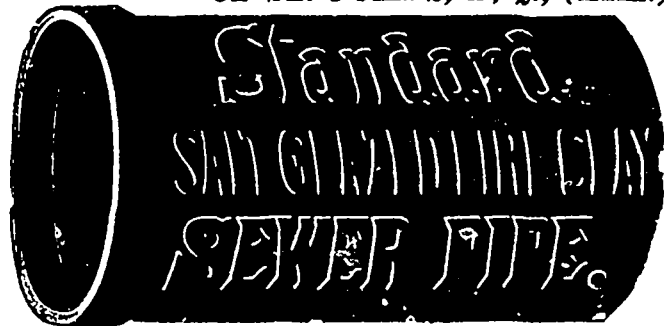
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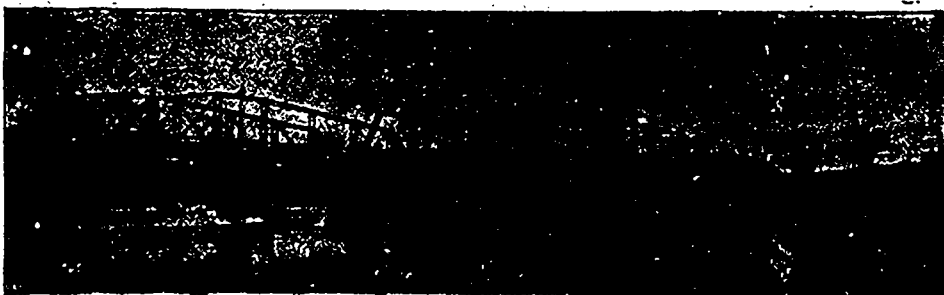
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# MUNICIPAL DEPARTMENT

## WATERWORKS SYSTEM FOR PETROLEA.

The town of Petrolea, Ont., has for years suffered from an insufficient supply of water, the townspeople buying their supply in the same manner as milk is purchased from the dairyman. This supply was obtained from a spring water well in the vicinity, and was sold at one cent per pail. The average family purchased two pails per day, which cost an average of \$7.30 a year.

During the past summer, however, there has been in course of construction a complete system of waterworks, under the supervision and from the plans of Mr. Willis Chipman, C. E. The supply is obtained from Lake Huron, about twelve miles away, at a point about nine miles east of the mouth of the St. Clair river, and the water is stated to be very pure. From the London Free Press the following particulars of the system are obtained:

The point near where the intake is laid is known as Perch station, where the pumping station and the pumping engineer's residence have been erected.

From Perch to Petrolea is a distance of sixteen miles by the road. Following the pipe line through fields and orchards and woodlands the distance is slightly more than 58,000 feet, or eleven miles.

The pipes have been laid upon a direct line the whole distance, save at a point near the London road, where a heavy bit of cutting is avoided by taking a small circuit. The heaviest cutting made is over fifteen feet, while the average depth is six feet. Practically no rock is encountered. When the loam was removed, the shovellers found everywhere a light blue clay. In places the clay is very hard, requiring constant picking, often coming out in chunks like rocks. But, after all, it is easier to handle than big stones, and the contractors have rushed the work through in a commendable way.

Never were many more than one hundred men employed on the trench. It was not necessary to employ a larger force, because the pipes would then have been ready far in advance of the pumping station and other necessary equipment.

The principle upon which it is proposed to take the water from the lake to the town is very simple. The intake pipe lies on the bottom of the lake eleven hundred feet from shore, and well protected by piles. The lake bottom splendidly suited for the purpose. It inclines very gradually the whole distance. Only near the shore had dredging to be done, which was accomplished with the aid of a homely affair, constructed on the spot—a sort of amphibious animal that could float or travel on wheels. Homely as it appeared, the rudely-constructed affair did its work well, and has now taken up a position on the shore where to watch the progress of the men who are busily engaged sinking the intake line. This work was not pursued without difficulty. One day a pipe was being carried out to be placed in position when a sudden gust of wind from an unexpected quarter caught the craft upon which the

pipe was resting and dumped the latter into the lake in eleven feet of water.

Happily, however, it will not be necessary to lay the intake in any great depth of water. So gradually does the hard clay bed of the lake recede from shore, at a distance of 1,100 feet the depth is only 14 feet. At the end of the intake pipe a strainer will be placed. This is a heavy iron tank, about four feet in diameter and circular in shape. It will be placed upon one end, and close to the bottom the intake pipe will be connected with it. Surrounding the lower part are no entrances for the water; a door is inserted for purposes of cleaning out. But the upper half of the affair is perforated with holes an inch in circumference, through which the lake water will rush to the intake. This arrangement is provided to keep out obstacles of ice and sand which might otherwise be sucked into the pipe.

Mr. Chipman has devised a capital idea for cleansing the intake pipe. By filling the water tower in town and then suddenly letting it go lakeward the whole system will be flushed out.

The water flows through the intake pipes of its own accord to a well constructed at the front of the pump-house. But apparatus will also be constructed whereby, should the water not flow rapidly enough, it may be pumped into the well. The well is solidly walled with brick and has a depth of 30 feet, ten or twelve feet below the lake level. It is fifteen feet in diameter. A peculiarity noticed in the construction of the well was, that while it was taken away below the lake level, and not over 100 feet from shore, the clay was so dry water had to be thrown in to moisten it.

The next important feature of the system is the pumping station. The station is connected with the well—both under one roof. It is a long building, with a rather low elevation, but solid-looking. The actual dimensions of the pump house are 100 x 30 feet. A massive brick chimney seventy-five feet high is erected at one side of the building, and between the front and the rear. The pumping station comprises the well, pumping station, engine and boiler room and shed.

The engine room is 44 x 30 feet, and is excavated to a depth of ten feet below the level of the earth. This was done in order to give the engines as little "lift" from the lake as possible. The interior walls are "pointed" black, and around them, and overlooking the machinery, a gallery will be placed for the use of visitors. At the rear of the engine room the boilers will be placed, and after this is a commodious coal shed. Forkin & Simpson, of Sarnia, built the pumping station and the engineer's residence, and R. Clark & Son, of Petrolea, built the engine and boiler foundations.

The pumping engines were contracted for by a Cleveland firm, but the contract for the larger, or "high duty" engine, was sub-let to the London Tool Company. The "high duty" engine will be used almost entirely until both are required. The other engine will be a duplex, and each will have a capacity of one million gallons per day. But the high duty engine possesses the advantage of being a large coal saver.

Two immense boilers, capable of developing 200 pounds of steam each, will be utilized. They are being manufactured at the Stevenson Boiler Works, Petrolea.

Leaving the pumping station, the rather unique system takes a cut across country for its destination—Petrolea. The pipes are of cast iron, and were made by the Gartshore-Thomson Co., of Hamilton. This force main is 12 inches in diameter, and capable of carrying an immense volume of water. The main leaves the pumping station at a depth of about six feet, and very soon arrives at Perch Creek. Then comes Deer Creek, and a

few miles further on is Cow Creek, and before Petrolea is reached Bull or Stonehouse Creek have to be overcome—or, rather, undercome, for the main goes beneath the bed of each stream. The old idea of carrying a pipe over a creek or larger stream has long since been left behind in the rapid march of modern engineering. The force main is also taken beneath two railway tracks, the main line of the Grand Trunk and the Great Western Division.

Thirty-nine farms are crossed, and sixty taps have been placed along the line for the use of farmers, who will, of course, pay for the water perhaps at the same rate as the residents of Petrolea.

The height of land is reached about four miles from Petrolea, on the Denver farm. To and from this point the mains are graded.

Petrolea is entered by way of Centre street, and at a distance of probably 600 feet north of Main street and just off Centre street the circular water tower will be erected. When fully "loaded" the tower will weigh 1,200 tons. This enormous weight will be borne by a foundation of solid masonry and Canadian Portland cement, running over eighty feet into the ground. The water will enter from below, and be forced to the top of the tower, 85 feet. The tower is to be constructed of the very best "mild" iron. The iron will be put into the tank in great sheets, and so fine is the quality of the metal, it will bend double without cracking or breaking.

The tower is not intended to furnish a fire supply, except in the case of small fires. It will give all the necessary force, however, for the domestic supply of the whole town.

In the case of a large fire water will be pumped direct from the station at the lake. A telephone line is already constructed from the town to the lake shore, and by this means the pumping engineer will be notified.

Practically the whole town will have the water at its door. The original contract for pipe for town distribution was 38,000 feet, in addition to 10,000 feet purchased from the private company which failed in an attempt to establish a waterworks system for the town a few years ago. Then six to ten thousand feet more will be laid at once, or a total of 58,000 feet—the same length as is the force main. The mains through the town are exceptionally large, so as to avoid friction as far as possible. The fire hydrants are of the same substantial nature as characterizes the whole system. Each hydrant weighs one-third of a ton, and is fitted with two ordinary branches, and a third large one, the latter being for the purpose of attaching a fire engine and pumping water from the main in the event of insufficient force. A valve is also supplied whereby the hydrants may be repaired without cutting off the water from the main.

Garson & Co., of St. Catharines, have the contract for pipe-laying and building the system throughout, with the exception of the machinery at the pumping station, and their contract price was \$132,000. Their tender was the lowest of eighty-two received, but so close was the figuring that the highest tender was only \$154,000. The pumping machinery will cost \$14,500. Other items of expenditure, but included in the Garson contract, are \$1,500 for the pumping engineer's residence at the lake; \$7,000 for the pumping station, and \$10,000 for the steel water tower.

The total cost of the system will be between \$160,000 and \$180,000. The sum of \$172,000 was appropriated for the purpose by by-law.

Mr. Chipman strongly urges the adoption of meters by the town, and should his proposition be carried out, Petrolea will be the first town in Canada to possess meters upon every service,

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CONDITION OF THE MARKET.

TORONTO: The volume of business in building material remains about the same, with perhaps a falling off in demand for brick and stone. Lumber is in more request, and prices have advanced, while indications point to a further rise before the end of the year. Building paper is moving freely, cement is quiet, and galvanized iron is firm and in light supply. A Chicago paper states that the wire nail trust has collapsed, and goods are being sold at \$1.70 per keg, which is \$1 less than the trust's circular price.

MONTREAL: A little more enquiry for some lines of builders' supplies is reported, and trade is in as good condition as might be expected at this season of the year. Nails are selling well, also building paper and small hardware. The heavy metal trade is firm. An active business has been done in paints and oils, but cement is weaker and orders limited. The arrivals last week were 2,950 English and 6,922 Belgian, making a total to date of 85,452 and 76,443 respectively. Firebricks are steady.

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Table with columns for Toronto and Montreal prices for galvanized iron.