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Vol. 3.

Toronto and Montreal, Canada, September 24, 1892.

No. 33

THE CANADIAN CONTRACT RECORD.

PUBLISHED EVERY SATURDAY
As an Intermediate Edition of the "Canadian Architect
and Builder."

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64 Temple Building, -Bell Telephone 2299. Montreal.

Information solicited from any part of the Dominion regarding contracts open to ADVERTISING RATES ON APPLICATION.

At its Convention held in Toronto, Nov. 90 and 21, 1889, the Ontario Association of Architects signified its approval of the CANADIAN CONTRACT RECORD, and Diedaed its members to use this fournal as their medium of communication with contractors with respect to advertisements for

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

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

WANTED,

Boy about 14 years, to learn decoration, a snowledge of arch tecture preferred. Apply box 122 office of Canadian Architect and

Electric and Gas Fixtures.

Sealed tenders addressed to the undersigned and marked "Tenders for Fixtures," will be re-ceived until TUESDAY, THE 27TH INST., for the supply of Combination Gas and Electric Fix-lures for the New Court House at Woodstock.

Specifications and conditions may be seen and information obtained from the Architects, lesses. Cuthbertson & Fowler, at their office in Woodstock, or they may be had on application by thail from the undersigned.

JAMES WHITE,

County Clerk.

Woodstock, 7th Sept., 1892.

TENDERS

Will be received by the undersigned, for the corporation of the township of York, for Grading and Macadomizing &c. MacKenzic Avenue, from Davenport Road southerly to the C.P. railway. MacKenzic Avenue is a short distance east

York Tp. Engineer. Willowdale, 16th Sept., 1892.

NOTICE OF REMOVAL.

The offices of the "Contract Record" have been removed to the Confederation Life Association's new building, Rooms 106, 107 and 108.

USEFUL HINTS.

From a French journal we gain another suggestion for a method of "deafening" floors, attributed to General Loyie, who proposes, instead of loading the floor with plaster, to fill in the space between the boarding and the plastering of the ceiling with shavings, which have been rendered incombustible by dipping them in a tub of thick whitewash. As it is known that soft substances inclosing air spaces form an excellent non-conducting material to sound, it is thought that the shavings so treated will be found of great service, and it is said they are so incombustible as to add considerable to the fire-resisting properties of the building. When it is desired to disinfect the space between the floor and ceiling, the shavings may be saturated with chloride of zinc, or the latter may be added to the lime wash.

W. H. Wakeman, writing to the Northwestern Mechanic on "What should and should not be Done in Steam Fitting," says: In piping for water it is a good idea to avoid the use of globe valves as much as possible, for they cause unnecessary friction, but this does not necessarily mean that we are to use either plug cocks or gate valves, for the former, if they are of the ordinary kind are an unmitigated nuisance, and the latter are more complicated and expensive. In looking over a a certain job of piping we found that where the water of condensation from the heating pipes was returned to a receiver the arrangement was as follows: Short nipples were screwed into the receiver. globe valves were then put on, then followed more nipples and next came the elbows, etc. This is all wrong, for if the first nipples connected to the receiver had been made a little longer and angle valves put on next, there would have been less joints to make and instead of the crooked passage through the globe valves there would have been simply straight pieces of pipe. The outlet from this pieces of pipe. The outlet from this receiver was made up in very much the same way, for a short nipple was put in first, followed by a gate valve, then another nipple, then came an ell, etc. Here was another place where an angle valve would have been an improvement both in first cost and subsequent use.

CONTRACTS OPEN.

HALIFAX, N. S .- \$30,000 worth of street paying debentures were recently sold.

QUEREC, QUE.-A company is being organized here to build an elevated electric street railway.

BROCKVILLE, ONT -The Town Council are taking steps to secure the erection of an isolation hospital.

RENFREW, ONT .- The Village Council has decided to erect a fire hall, 30x40 ft. and two stories high.

WINDSOR, ONT .- The congregation of All Saints' Church have decided to erect a new edifice in the west end.

PENETANGUISHENE, ONT,-The summer hotel is to be enlarged next summer to accommodate 400 guests.

FREDERICTON, N. B.-Steps are being taken toward the erection of a suitable monument to the late metropolitan. SARNIA, ONT .- J. D. Lowrie, township clerk,

will receive tenders until the 1st of October for the construction of the Cox drain THEONBURG, ONT - The Town Council has

passed a by law to raise the sum of \$7.500 for a new high school building and site.

STRATHROY, ONT -The Council contemplate spending the sum of \$2,167 in the construction of artificial stone sidewalks, 1. J. Craig. town

VICTORIA, B. C.-It is said that Mr. W. H. Maudesley, of Plumper's Pass, has in contemplation the election of a first-class hotel at that

BROWNSVILLE, ONT .- Tenders are asked until the 1st of October for the construction of the Peares drain, in the township of Dereham, Geo. Lish, clerk.

GLENCOE, UNT .- R. Coad, Secretary Building Committee, will receive tenders until the 5th of October for the erection of a new Anglican church in this village.

PEMBROKE, ONT .- W. O'Meara, Chairman Finance Committee will receive tenders until the 30th inst. for the purchase of \$5,500 worth of public school debentures.

ST. MARY'S ONT -J D Moore Chairman Fire and Light Committee, will receive tenders until the 30th inst. for lighting the town by electricity, are and incandescent.

HESPELER, ONT. - Mr. Fred W. Mellish, architect, of Galt, invites tenders until the 30th inst., for the several trades required in the erection of a brick church in this town.

BRAN1FORD, ONT. - The construction of an implement factory for the Farmer's Binding Twine and Agricultural Implement Company will be commenced at an early date.

PORT ARTHUR, UNT .- An agreement has been arrived at between the municipality of Fort William and the promoters of the Port Arthur electric street railway whereby the company will extend their line to Fort William, a distance of

WESTMINSTER, B. C .- The by-law to raise by way of debentures the sum of \$75,000 for the ex tension and completion of the waterworks has

passed the second reading in council and will be submitted to a vote of the ratepayers on the 12th of October.

VANCOUVER, B. C.-Mr. Stewart, C. P. R. engineer, has completed the survey for the proposed railway between Revelstoke and Nakusp. and the work of construction is to be commenced at once. The sum of \$3,200 per mile has been appropriated by the Dominion Government for this work.

TORONTO JUNCTION, ONT.-The Town Engineer has been instructed to purchase drain tile necessary for the construction of sewers, to advertise for tenders for grading and paving Glendonwynne road. - Mr. Willis Chipman, C.E. has submitted plans for the construction of the storm water sewer.

KINGSTON, ONT. Mr. B. M. Bruton has sent a communication to the City Conneil stating that a number of expitalists from United States and Toronto are willing to form a company to build a large hotel in this city, at a probable cost of \$150,000, provided the Murney Tower field can be secured as the site. The matter will be discussed at the next meeting of the council.

LONDON, ONT .- The City Engineer will receive tenders until the 3rd of October for the erection of a four-room addition to Princess avenue school.- An artificial stone walk is to be constructed on the north side of King st. west of Clarence street - Lenders will be called shortly for heating the Collegiate Institute by hot air.-Mr. A. O. Graydon will receive tenders until the 3rd of October for the erection of two school buildings, one on Quebec street and one on Wortley road, for the Board of Education,

WINNIPEG, MAN. - The Board of Trade of this city is trying to secure the erection of the proposed Agricultural College in this district, -The City Engineer has been instructed to advertise for tenders for the supply of material requied for a new system of waterworks. The amount required is estimated to cost about \$108,000. Mr. H. F. Carter, architect, of Minneapolis, was in the city recently in connection with the proposed opera house to be erected by the Ross-McKenzie syndicate at the corner of Main street and Portage avenue. He stated that the plans have been completed and contracts would be awarded within the next two weeks. The build ing is estimated to cost \$40,000.

OTTAWA, OST .- Tenders will be received at the Department of Public Works until the 15th of October for the furnishing of sundry electric light supplies for the Parliament Buildings in this city.-A movement has been commenced in this city towards securing the erection of a Young Woman's Christian Association building. The sum of \$12,000 is required to be raised for building and site. The City Engineer will receive tenders until Wednesday, the a8th institute the construction of a number of sewers. Tenders will be received by the Department of Public Works until the 11th of October for the extension of piers and dredging at Port Aibert, Huron County.

MONTREAL, QUE, -Mr. Chazot has sent in a proposition to the Council to build an incinerator for \$12,000. The matter has been referred to the Finance Committee. The Road Committee has recommended the construction of the following works, permanent payement or Laval avenue St. Louis square and parts of Ontario and St. Catherine streets, estimated cost \$60,000; asphalt pavement on Pousecours market; dmin on Notre Dame street, from Papineau square to the cotton factory. -The Government will be asked to provide a new morgue built in an isolated place and fitted up with all modern appllances. -It is stated that Mr. Bickerdike, who succeeded in getting an Act of Incorporation empowering him to build electric railways in St. Henri and St. Cunegonde, will commence the construction of the roads early in the spring. It is also proposed to build a suburban line to Lachine and St. Anne's,-The Chy Surveyor will receive tenders until Wednesday, the 28th inst, for the construction of a sewer on Notre Dame street. from Lacroix to Monarque street.-Perrault & Lesage, architects, are preparing plans for a three story building on McGill street, for B. Columbier, also for a three story dwelling on Notre Dame street east for Jas. Deschatelets.-L. R. Montbriant, architect, is preparing plans for a residence at Long Pointe -J R. Gardner architect, is preparing plans for six cottages to be erected at Beaconsfield.

HAMILTON, ONT.-The Council has decided to construct a sewer on Emerald street, south of Stinson street, and a six-meh water main on Wood street, -Plans will shortly be prepared for new huldings for the Hamilton Exhibition Association. The City Council will be asked for a of \$50,000 towards their erection .-Messrs John Eustice and Adam Cook are said to have purchased land for a park at the top of the mountain, with the intention of erecting thereon a hotel, plans for which have been prepared.-A building permit has been granted to John Doherty for two two-story brick houses on Burlington street, between John and Hughson streets, to cost \$1,400. - Messes, C. M. Counsell, Adam Zimmerman, J. H. Tilden, W. J. Copp, W. A. Wood, John Patterson and Thomas Patterson, of this city, and N. Dyment, of Barrie, are applying for incorporation as the Hamilton Radial Electric Railway Company, the object being to construct and operate an electric railway from this city to the following points: To the town of Mount Forest, running through the village of Waterdown and city of Guelph, and the towns of Fergus and Arthur; to the town of Oakville, via Hamilton Beach and the villages of Burlington and Bronte; to the city of Brantford, running through the unincorporated village of Ancaster to the town of Dunnville, Haldimand, or Welland, running through the village of Smithville .-The Board of Works have decided to arrange a conference with the G. T. R. authorities to secure the erection of a street bridge on Barton street.-In view of the heavy tolls collected by the owners of the several municipal road running into Hamilton, it is suggested that the city shall build a series of electric street milways to connect the city with the suburban districts.

TOROLTO, ONT .- Mr. Arthur Burke, barrister, Freehold Loan Building, contemplates erecting a dwelling adjoining his residence on Gerrard street east, near Parliament street, - Mr. Wm Osgooby, with some of his friends, is said to contemplate the erection of a number of cottages in Muskoka.-Tenders are wanted for building three houses on Mutual street. Particulars at office of T. E. Washington, 281/2 Victoria street. -Excavating has been commenced for a dwelling to be erected on the south side of Grosvenor street, immediately east of Surrey Place.-The City Engineer has recommended the construction of a sewer on Wallace avenue, to cost \$2,560. and the repaining of Brock street sewer, from Front street to its outlet, at a cost of \$10,000,-The Municipal Council of North Teronto has given notice of its intention to lay a six inch water main, with necessary hydrants, connections, etc., on Glencairn avenue, from Yonge street to within seventy feet of the easterly limit of Chancellor st. -Petitions have been presented to Council for the construction of water mains on the following streets. Chatham street, 2,000 feet, cost \$3,000, Woodbine avenue, cost \$1,200; Dunedin avenue, cost \$800; Macpherson ave., cost \$300,-Followis the estimated cost of the proposed extensions of sewers into the bay: Berkeley street sewer to windmill line, \$3,400; Sherbourne street sewer to

end of Polson's dock, \$5,900; Church street sewer to end of present duck, \$8,300; Yonge street sewer to windmill line, \$13,000. Jarvis street sewer to end of dock, \$5,200; Brock street sewer to end of present dock. \$1,600.-At a meeting of the Board of Works held on Weinesday last, it was decided to proceed with the construction of the following pavements. Avenue road, between Bloor street and northern city limits, cedar blocks with granite toothing, cost \$22,000; Gerrard street, from River to Parliament street, cedar on concrete, with granite or scoria toothing, cost \$0,800; Parliament st., from Gerrard to Carlton st., asphalt with granue or scoria toothing, cost \$5,900; Carlton st., from Parliament to Yonge st., asphalt with granite or scoria toothing, cost \$27.050. College st., from Yonge to Bathurst st., asphalt with granite or scoria toothing, cost \$11,100; College \$1., from Bathurst st. to Jameson ave., cedar on concrete. with granite or scoria toothing, cost \$39,340. Jameson ave., from College to Dundas st., cedar on concrete, with granite or scoria toothing, cost \$1.584, Queen st., from Yonge to Patliament st., asphalt with granite or scoria toothing, cost \$26,750. Queen street, from Parliament to River st., cedar on concrete, with granite or scoria toothing, cost \$9,800; Dundas \$t., from Queen to Arthur st., asphalt with granite or scoria toothing, cost \$12,700, Dundas street, from Arthur st to the Dundas street bridges, cedar on concrete, with granite or scorn toothing, cost \$26,200. York st., from Front to King st., asphalt with scoria or granite toothing, cost \$7,830, George street, from Front to King st., granite block on concrete, cost \$2,370; Frederick st., from Front to King st., granite block on concrete, \$2,370. Front st., from Frederick to Sherbourne st., granite block on concrete, cost \$2,540; Sherbourne st., from King to Front st., granite block on concrete, cost \$2,370. In addition to the above pavements the City Engineer presented the following list of streets which require to be paved from kerb to kerb : Winchester street, from Parliament street to Ontano street; Prospect street. from Rose arenue to Parliament st.; Amelia st., Sumach to Parliament st.; D'Arcy st., Beverley to McCaul st.; Baldwin st., Beverley st. to Spadina avenue; Cecil st., Beverley st. to Spadina ave.: Henry st., Baldwin to Cecil st.: Bellevile st. College st. to Belleview pl.; Orde st., 120 feet east of McCaul st. to east end, St. Patrick st., McCaul st. to Spadina Ave.; Sullivan st., Beverley st. to Spadina ave.; Grove ave., Dundas to Foxley st.: Northcote ave., Queen st. to Saunn ave.; Rolyat st., Dundas st. to Grove ave., Lisgar st., Queen st. to Dundas st.; Argyle st., Dundas st. to Gladstone ave.; Saurin ave., Northcote ave. to Lisgar st.; Nassau st., Spadina ave. to Lippincott st.: Earl st.: Booth ave.: Melville ave., and lane in rear of Canada Permanent building .-The City Council have approved of the action of the architect, Mr. E. J. Lennox, in taking possession of the works in connection with the new Court house, and tenders will be invited for the completion of the entire work. The architect is desirous of having the masonry completed this fall, tenders for which will be asked immediately. The following building permits have been granted . S. R. Warren & Son, 39 McMurrich st., r. c. add, to factory, cost \$1,000, G. F. Price, 172 Dalhousie st., new shop fronts and bk. foundations to stores, 232 and 234 Queen street w., cost \$1,200. John Maloney, mansard roof to Imperial hotel, cor. Jarvis st. and Commercial lane, cost \$1,000; Thos. Murray, 1524 Queen st. w., 3 story bk. store and dwelling, n. e. cor, Queen st. and Macdonnell ave., cost \$3,500; W. H. Pratt, 198 Jarvis st., det. 2 story and attic bk. residence s. w. cor. Bloor and St. George sts. N cost \$9,000; T. Douglas, 4 story bk. warehouse. 122 Adelaide st. w., cost \$10,000; W. J. Brom ley, det. 2 story and attic bk. dwelling, Bedford rd., first lot south of Bernard ave. Mrs. Bald win, is about to erect a detached residence on the corner of Avenue road and Health street .-A new chapel is to be erected in connection with Mount Pleasant cemetery, also a new vault and conservatory.—Mr. John Ayre, of the Lakeview Hotel, contemplates the erection of a residence at Island Park.

FIRES.

The woollen mills of Messrs, Roben & Fils at Beauharnois, Que., were entirely destroyed by

fire on Thursday of last week,-E. S. Edmonson & Co's, flour mill at Oshawa, Ont., was burned to the ground on Tuesday last. The electric light plant situated in the building was destroyed. The residence of Mrs. J. Hogg, at Wingham, Ont., was burned recently. Insurance \$1.000.-The paint shops of the Canadian Pacific Rallway Company at Toronto Junction, were destroyed by fire on Tuesday last. The loss on the building is estimated at \$4,000.—Slaughenwhite Bros. mill at the head of St. Margarets Bay, N. S., was totally destroyed by fire last week. The loss is estimated at \$5,000.—The Richelieu and Ontario Navigation Co's, steamer Corinthian, was totally destroyed by fire in Cedar Rapids a few days ago. Insurance, \$40,000. -St. Andrew's Roman Catholic church at Port Arthur, was damaged by fire on Thursday last, to the extent of \$3,500.-About thirty dwellings and fifteen places of business were destroyed by fire at Buctouche, N. B., on the 22nd inst. The loss is estimated at from \$60,000 to \$00,000.

CONTRACTS AWARDED.

TORONTO, ONT,—Mr. Benjamm Kerr has secured the contract for enlarging the Island Park pavilion, at the price of \$1,684.

LONDON, ONT.—Mr. W. Walterworth, of Ingersoll, has secured the contract for the erection of the new C. P. R. station in this city.

OTTAWA, ONT —The Government has awarded the contract for sections 1 and 2 of the Soulanges Canal to Mr. A. Stewart, of this city, the works to be constructed of concrete

TORONTO JUNCTION, ONT. - The Hamilton Bridge Company have secured the contract for the construction of the overhead foot bridge on McMurray avenue, their tender being \$4,976.

Kingston, Ont. - Tenders for Judge Price's house have been awarded as follows: earpentry, E. M. Storey, masonry, H. Sleeman; painting, Robinson Bros.; plumbing, Janueson & Son tinsmithing, Nugent & Taylor,

Hamilton, Ont.—The City Council has awarded contracts as follows for the construction of sewers: Chathani street, John Harris, 79 cents per lineal foot; Ferguson avenue, from Barton to Robert streets, J. C. Kent, 94 cents per foot.

BRANTFORD, ONT.—The contract for the new bridge across the river for the Toronto, Hamilton and Buffalo Railway has been awarded to the Dominion Bridge Company, of Montreal.—The Royal Electric Co., of Montreal, have purchased from the Waterous Engine Co., of this place, one of their clurch pulleys, 93 x 52 feet, for street milway purposes.

GUELPH, ONT.—The Guelich Silica Barytic Stone Company have been awarded the contract for the construction of permanent sidewalks on a number of streets.—Mr. C. M. Reynolds has awarded the contract to Mr. Chubb and Mr. Wideman for the erection of a two story double brick residence on the corner of Dublin and Paisley streets.

WINNIPEG, MAN.—Mr. J. A. McDermid of this city has been awarded the contract for the crection of the new barracks at Fort Osborne, the price being \$28,000. The contract fo. stone work has been sub let to Messrs. Shaw & Co.—The contract for repairs to Jas. Robertson & Co's. warehouse has been let to Messrs. Laird & Hazel, at the contract price of \$3,800. Mr. C. H. Wheeler has charge of the work.

MONTREAL, QUE,—A. C. Hutchison, architect, has awarded contracts as follows for a three story building on Bleury street for H. Lyman masonry, J. B. St. Louis; carpentry, L. Paton & Son; roofing, Campbell & Co.; plastering, L. Phillips; brick work, A. McArthur; plumbing, Hughes & Stephenson.—J. R. Gardner, architect, has awarded the contract for a cottage at Lachine, for W. Kavanagh, to D. Legault, Montreal; also two cottages, for C. P. Salter, and W. G. Slack, to H. Brunet, of St. Anns.—Perrault & Lesage, architects, have awarded contracts as follows, for a three story residence for R. Prefontaine: mason-ry, Plant & Dubuc, brick work, Jos. Brunet & Son, carpentry, plastering, roofing and plumbing, Bourgouin & Cadieux.—L. R. Montbriant, architect, has awarded contracts for a residence for B. Lefebyre, on Ontario st., as follows: masonry, P. Lecompte; brickwork, plastering and panting, A. Racette; roofing and plumbing, Geo, Yon, carpentry, E. Gauthier.

MUNICIPAL DEPARTMENT.

FOUNDATIONS FOR BRIDGES.

By P. Mogensen.

Continued from last week.

When the wells have been sunk to the required depth, they should be filled with cement concrete up to ground level, where neat work may conveniently be commenced. Small arches should be built to support the body of the pier where it overhangs the openings caused by the curvatures of the wells.

Instead of brick wells iron cylinders are advantageously employed where they can be procured at a relatively low price, and especially where a large diameter is required, and in this case the brick wells are hable to collapse. The iron eximiter has the further advantage of presenting a smaller annulus to be cleared at the bottom, and having a smoother outside surface us own weight is often sufficient to force it through the ground. The methods of sinking iron cylinders and masonry wells are essentially the same.

Where the river bed consists of layers of sand and rough gravel mixes, with or without a certain amount of smaller and larger stones interspersed, it will be found cheapest and quickest to make an open exeavation without lining or shoeing of any-kind except in the pump-well. This can be done by giving the sides a slope of one half or three-quarters to one. The excavated material can be taken out either with a craine or with wheelbarrows, and should be placed in such a position as to offer additional security against and breakage in dams, floods caused by heavy rains, or other natural agencies.

The pump-well should be made in one corner of the excavation, and for a bump of from five to ten inches bore a well with an area of twenty to twenty-five feet is required. This can be sunk advantageously by placing planks about six feet long on end and outside of two wooden frames, one about a foot from the bottom end and the other close to the top.

As excavation inside this lining proceeds, the suction tube should be lowered, and whenever the lower end of a plank has been left free by ficking out the obstructing material, it should at once be driven down as far as possible. By giving the part of the well above the lining a slope of about one-half to only one length of planks will be required, and this method will be found the cheaper and more convenient than lining the well throughthe whole depth. The well should be continually at least two feet lower than the excavation so that this may be the better drained.

Many engineers, when not directly interested in the cost of the work, disapprove of the alea of making an open excavation in water bearing ground without lining, and generally suggest some more complicated method. It is true this the open excavation requires of the constructing engineer his personal supervision of details, which means hard work; but it is also true that, when at all practicable, this is by far the cheapest way of doing the work.

Under circumstances such as those described at is customary to place the brick or stone masonry on a concrete foundation of from one to two inches in thickness, and with an offset of nine or twelve inches on all sides. When, therefore, the excavation is down to its proper depth and the bottoni has been made as nearly as possible the exact size of the concrete foundation, the latter can be made very satisfactory by letting concrete, mixed in the ordinary way, down a chute to the bottom of the excavation. To prevent the inflowing water from washing the cement of the concrete into the pump-well, the water should be allowed to rise to a convenient height so as to become culm with no applicable current towards the well. When good Portland cement or its equivalent is used and the earth acts as a casing, it will be quite safe to commence building on the top of the concrete foundation twelve to eighteen hours after it has been made.

Before any masonry is started the work should be carefully marked off. If the pier has a base with one or more offsets, as is usually the case, no great accuracy is necessary until the level of neat work is reached, but if at any stage of the

*Read before the Civil Engineers' Club of University of Illinois.

MUNICIPAL ENGINEERS, CONTRACTORS, AND MATERIALS.

work below ground-level it is necessary to mark off the work, this should be done in accordance with some one convenient method. I have found the following process simple, rapid and reliable: A thin wire is stretched between two center line points, across the execution; and with a plummet this line is projected on the work below. The centre of the pier is found by measuring along the center-line the required distance from the nearest fixed points. This measurement can be accurately made with a steel tape held as nearly level as possible, on which the distance is read off and projected on the center line in the usual ways The pier can now be marked off with an ordinary wooden square or a straight edge.

Another way of marking the cross center lines of the piers is to place stakes on both sides of the excavations and at right angles to the center line of the bridge, before work is commenced. But as these stakes are much exposed and likely to be disturbed during the progress of the work, they should be used only for marking off excavations. foundations, and such work as does not require any great accuracy.

A good centrifugal pump is very efficacious for drawing the water from the wells and excavations, As it occupies little space, it is simple to erect, easy to move, and seldom gets out of order, it is more sintable for this kind of work than any other form of pump.

An easy-working, sliding suction and a simple, effective foot-valve are essential to a successful and economical management of the work. The sliding suction tisually consists of a pipe or extinder having a stuffing-box at one end and a flange for the foot-valve at the other. It is preferably made of sheet-iron, so as not to be unnecessarily heavy, Inside this cylinder is placed a pipe of the same bore as the pump. The gland of the stuffing-box should run easily on the pipe, so that the cylinder may be moved freely up and down when the gland is loosened. A good foot valve is made of an ordinary valve-chamber with an iron flap on hinges, moving freely, and with a leather edge to make a water-tight joint with the valve-seat.

It is very important that close and constant attention be given to the pumping machinery, as any interruption in the discharge of the water will cause it to rise in the excavation, and when it is afterwards pumped out it is likely to wash down the material of the sides and entail considerable loss.

These remarks have been written with reference mainly to work on new railways. Other conditions will often suggest changes to be made in the methods of working, of obvious advantage.

DATES TO BE REMEMBERED.

October 1-Last day for returning Assessment Roll to clerk, in cities, towns and incorporated villages, where assessment is taken between 1st July and 30th September. - Assessment Act, Section 52.

October 1-Last day for delivery by Clerks of Municipality to Collectors of the Collectors' Rolls, unless some other day be prescribed by by-law of the Local Municipality.-Assessment Act. Section 120.

October 1-Notice by Trustees of cities, towns, incorporated villages and township boards to Municipal Clerks to hold Trustee elections on same day as Municipal elections due.-P. S. Act, Section 103, (2)

The city of Montreal maintains it own crushers for turnishing broken stone for macadamizing, and finds the outlay for machinery has been a very profitable one, according to City Surveyor Percival W. So. George. During 1891 the quarry was kept open all the year and furnished 37,-350 tons of stone, at an average expense of \$1.14½ delivered at the work. The lowest contract price for the stone was \$1.65 a ton, hence there is a saving of 50½ cents, which is probably more than enough to cover the deposition and interest on the plant. The city of Toronto proposes to follow the example of Montreal in this matter. in this matter.

THOROLD CEMENT

WELLAND CANAL ENLARGEMENT, RESIDENT ENGINEER'S OFFICE. WELLAND, April 17th, 1884.

JOHN BATTLE, ESQ., Thorold.

John Battle, Esq., Thorold.

Dear Sir.—Yours of yesterlay, relative to Thorold Hydraulic Cement, is received. In reply, I beg to say that my tests of the Thorold Hydraulic Cement have extended over a period of twenty-reght years, and have been on a large scale, as exemplified in the locks, bridges, culverts and other masonry on the Welland Canad and Welland Railway, and that the record, which has been invariably satisfactory, is to be found in examination of the structures. The necessity tearing down of masonry and concrete, during the Welland Canal Enlargement, has afforded abundant evidence of the reliability of the Thorold Hydraulic Cement, both in masonry and concrete, and above and under water. I desire no better cement for the class of work referred to I am, dear sir, yours truly,

I am, dear sir, yours truly, W. G. THOMPSON, Resident Engineer.

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CAR OR CA	RUO LO	r>•		
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	\$ _	\$	\$	S
156 to a clear picks, Am. ins.	ეი თდ	33.00	40 000	₹45 œ
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Hard Building	per	8 00		
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Common Rubble, per to	ise,	14 00		14 00
Large flat Rubble, per to		15 oo		18 00
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" vermillion	1 00	1 00	≥ 60 90	2 75
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Green, chrome	7	13	75	30 30
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Toronto. Montreal.	Toronto. Montreal.
	3d to 5d cold cut, not polished
Blue, ultramarine	or blued, per 100 lb1 90 90
10 66 11 bolled " 15 66 65	PINE BLUED HAILS.
" " tefined, " 75 ås 75 72	3d, per regibt
	CASING AND IN'X, FLOORING, SHOOK AND TOBACCO BOX
Paris white, Eng., dry 90 1 25 91 1 10	NAIL.4
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	6d and 7d, " " go go
CEMENT, LIME, etc.	40 10 50, 110 110
Cement, Portland, per bbl. 200 257	301 130
" Thorold, " 140	FINISHING NAILS.
и Нарашее, и 150	3 inch per 100 lbs. 85 85
11 Hull, 11 . 150	2103% " " " 11" 116
Ontario	135 135
ii London 245 200	1% 11 11 175 175
11 Newcastle " 235 250	t 235 235
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и Сваціан "	4d, " " 65 85
Parian 11 410 475	3d, " " 125 t 25 2d, " " 175 7 25
" Superfine " 6 to 700	COMMON BARREL NAILS.
Keene's Coarse "Whites" 450 475 Calcined plaster, per barrel. 2 50 170	t inch, per 100 lbs
Fire Bricks, Newcastle, per M 20 10 24 00	75 75
" Scotch " to no 11 co	
Lime, Per Barrel, Grey 40	CLINCH NAILS. 3 inch, per 10 lbs. 85 85
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or blued, per scolbs 50 50	Sheared steel bridge plate. 2 25 2 35
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