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Vol. 3.

Toronto and Montreal, Canada, December 3, 1892.

No. 43

THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY SATURDAY A- 20 Intermediate Edition of the "Canadian Architect and Builder,"

Subscription price of "Ganadian Architect and limiter" (including "Canadian Contract Record"), \$2 per annum, payable in advance.

C. H. MORTIMER, Publisher,

CONVEDERATION LIFE BUILDING, TORONTO, Telephone 2362.

Information solicited from any part of the Daminion regarding contracts open to Centler,
ADVERTISING RATES ON APPLICATION

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

The following resolution was unanimous-If adopted at the First Annual Meeting of the Province of Quebeo Association of Arch-steets, held in Hontreal, 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 Concention being satisfied that the CANADIAN CONTRACT RECORD affords us a direct communication with the Contractors,-Resolved, that we pledge our support to it by using its columns when culling for Ten-

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

PEMBROKE WATER WORKS.

Notice to Contractors.

Sealed Tenders will be received by the Chair-nian of the Waterworks Committee, Pendircke, until 6 p.m. on FRIDAY, DECEMBER 9711, 1892, for the construction of a System of Water Works for the Town of Pembroke, as follows:

A-Intake pipe and well.

A—Intake pipe and weil.
B—Buildings and Chimney.
C—Pumping machinery and boilers,
D—Distribution system.
E—Water tower.
"Bulk Tenders" will also be considered

Plans, specifications contracts, etc., can be seen and forms of tender obtained at the Town Clerk's office, Pembroke, or at the office of the Chief Engineer, on and after 25th instant.

WILLIS CHIPMAN.
Chief Engineer. 103 Bay St. Toronto.
WM. O'MEARA.
Chairman W. W. Committee, Pembroke.
Dated November 18th, 1802.

As a result of his recent visit to different American cities, Street Commis-Jones of Toronto is in favor of paving residential streets with vitrified bricks instead of cedar blocks.

Street Railway Rails FOR SALE.

Tenders, marked "Lenders for Rails," will be received by the undersigned up to noon of HHURSDAY, THE 15TH DAY OF DECEMBER, inst., for the purchase of about

NINETY TONS OF HORSE STREET RAIL-WAY STEEL RAILS

in good condition. The rais will be delivered at any of the railway stations or other place in the Town of Chatham, as may be desired by the pur

chaser.
Tenders to state so much per ton,
Terms, cash on delivery of rails.
The Railway Committee of the Council of the
Town of Chatham reserve the right to reject any or all tenders. Address to

JOHN TISSIMAN

Lown Clerk's Office, Chatham, Ont, 15t December 1997

CONTRACTS OPEN.

PARKHILL, ONT.-It is proposed to erect a new town hall, at a cost of \$5,000.

BERLIN, ONT.-The street ra Iway system will shortly be changed to the trolley system.

PERTH, ONT +Archbishop Cleary was in town recently making arrangements for the erection of

WINNIPFG, MAN - The congregation of St. George's church contemplate the erection of a new edifice.

AMHERST, N. S-Nearly \$40,000 has been subscribed for the removal of the Harris car words from St. John to this town,

NEWMARKET, C. T. The Pire and Water Commetee have recommended that another reservoir be put in at the waterworks,

WESTON, ONT. -Mr. E. A. Jaffary contemplates the erection of a fine block of stores at the corner of King and Otteen sis, in this town,

ARTHUR, ONT .- The congregation of St. John's R. C. Church intenderecting a handsome residence for their pastor, Rev. Father Doherty.

WIRITIN, ONT.-It is stated that Mr. Thos. Deverell contemplates tearing down Woodruft's hotel and rebuilding a brick one on the site there-

NORTH TORONTO, ONT.-Extensive alterntions will shortly be made to the Jackson hotel. The driving sheds and stables will also be enlarged.

CALGARY, N.W. I .- A company is applying to the Dommon Government for incorporation for the purp se of constructing a street radway in this town.

STRATIORD, ONT .- The Board of Trade has decided to support the City Council in its efforts to secure for the city a more efficient system of

BROCKVILLE, ONT.-G. T. Fulford, Chairman Finance Committee, will receive tenders until the 28th inst. for the purchase of dependires to the amount of \$245,000.

NEW GLASGOW, N.S .- Lenders are asked for the purchase of debentures to the amount of \$20,-000 for the purpose of extending the waterworks system and improving the streets.

ORILLIA, ONT -E. F. E. Roy, Secretary De partment of Public Works for Dominion, will receive tenders until Monday, the 12th inst., for the construction of a hor water heating apparatus at the public building in this town. Plans may be seen at the Clerk of Works office.

HALIFAN, N. S.-The City Treasurer invites tenders until the 22nd of Decembers for the purchase of \$30,000 worth of delentures, issued for the purpose of building sewers - Plans are now being prepared at Ottawa for the proposed drill hall. It is estimated to cost \$40,000.

FORT QUAPPELLE, MAN. On Monday of last week the raterayers of the numerial ty carried a by-law granting a bonus of \$20,000 to aid in the construction of the Wood Mountain and Qu'Appelle railway from this town to the Canadian Pacific Railway, the road to be completed by the 1st of November, 1893.

NIAGARA FALLS, ONT. -It is stated on good authority that an hotel to cost \$40,000 will be erected here by a joint stock company. It will be sunated near the Government building. It is also said that the Canadian Pacific Railway Company contemplate erecting a \$125,000 hotel during the coming winter, to be located near the park.

HAMILTON, ONL,--Building permits have been granted as follows: George Boulter, pair two story brick dwellings on Grant avenue, between Main and Stuson streets, cost \$5,000; Trustees Christ Church Cathedral, new Sunday school building, cost \$5,000. Robert Campbell, pottery building on Locke street, between Jackson and Canda streets cost \$2,000.

ST. CUNEGONDE, QUE. -At a meeting of the Town Council held during the past week, the hylaw authorizing the Council to proceed with the paying of the remainder of the streets was unani monsly adopted. The expenditure for this work will amount to about \$200,000. A deputation will wait upon the Grand Irink authorities requesting the establishment of a new depot at this

WINDSOR, ONT .- The Peoples' Electric Light Company have purchased a site on Robinson street on which they will at once erect a new power house. - The Euperintendent of the Cana dian Pacific Radway has informed the Mayor that in addition to the erection of an 800 barrel salt plant and cooper shops in this town, at a cost of \$40,000, the company would also expend about the same amount in building a soda ash manufactory.-It is stated on good authority that the Michigan Central Rulway Company contemplate the erection of a new depot there, at a cost of about \$20,000.

OTTAWA, UNI. - the sum of \$5,000 has been subscribed towards the Y. M. C. A. building fund.-Covernment engineers have been engaged during the past week in making surveys for the proposed new bridge across the Gauneau River at Gatineau Point. It is expected it will be located opposite the Grey Nunnery Convent.-The Rocky Mountain Radway and Coal Company will apply to Parliament for legislation to amend its charter so as to construct the milway from Morley station, on the C. P. R., thence north westerly along the footbills of the Rocky Mountains until it intersects the Red Deer over, thence westerly, following the Red Deer river and its

south branch, to the coal mines. It is said that the three lowest tenderers for the construction of Sections 8, 9 and 10 of the Soulanges canal are Randolph Macdonald, of Toronto, Rogers & Brockville, and a New York contractor named Finlayson.

LONDON, ONL. The Board of Health has decided to buy property at the foot of Collorine street as a site for a pest house. The London Lownship Council have passed the necessary by law granting the Burnes Company, of England, a license to establish a pork packing establish ment. Work will be proceeded with at once on the proposed building, - Mr H I Smallman, of the Street Radway Company, was in Montreal recently interviewing General Manager Seargeant of the G. T. R., with respect to a subway on Rid out street under the G. L. R. track. The City Engineer has estimated that the cost of this work would be \$3,000 for the stonework and \$1,000 for the necessary approaches on Ruthurst and Ridout streets.- Mr. O. Graydon, City Engineer, will recerve tenders until Thursday next. Dec. 8th, for the construction of a tile drain on York street, from Ridout street to the River Thames, and from Talbot street to Ridout street.

MOSTRIAL, QUE, -- The Umance Committee have adopted the report for \$15,000 for a new policistation in St. Lawrence Ward, and \$10. coo for a new station in Hocheliga Ward. - The City Council are considering the question of enlarging the Bonsecours market .-- The municipal council of Lacline have granted to Mr. R. Bick erdike the exclusive privilege, for twenty years of an electric trainway. It is to be in operation not later than 1894, and will connect with the system of the Montreal Street Railway company - The Municipal Council of Notre Dane de Grace is considering the question of the construction of an electric radway round the mountain. Offers have been received from Messrs, Coroveau, Bickerdike, Williamson and Yule, . The masonry at the old lower lock gates at the Laclene Canal is to be entirely renewed, - the Potice Committee has voted the sum of \$30,000 for the establishment of a patrol system, similar to that in operation in Toronto - Deputations from the municipalities of Suilt Aux Recollet, and St. Leonard, Port Maurice, recently wasted on Mr. A. J. Corriveau and presented two largely signed petitions asking him to extend his railway to the lower part of Sault Aux Recollect and to build a branch to Cote Ste. Michael. Both municipalities offered to grant the necessary land

TORONTO, ONT,-The corporation of this city offers prizes of \$500, \$300 and \$200 for the three best plans for the remodelling and enlarging of St. Lawrence Market. The Boar1 of Health will recommend the construction of a new sewer on Shaw street, from College to Bloor street, The Toronto Ferry Company have purchased from the Hanlan estate the large hotel and lot at the Island and contemplate making some perma nent improvements in the spring. The report of the Commissioners of County property states that a new bridge is to be creeded over the Humber nver at Bloor street. - The Council of St. Hilda's College for women has decided that the present building on Shaw street cannot accommodate the increased number of students and are considering the erection of a new building. The City

Engineer has presented a report to Council of the cost of extending Queen street into High Park. He recommends the widening and extension of the street, commencing at Roncesvalles avenue, and continuing west to High Park, the width to be 80 feet. The cost is placed at \$50,-700.—The Street Railway Company are asking permission to lay a car track to their new stables on Yorkville avenue. The paying for this will cost the city \$2,200. - The Separate School Board has decided to expend the sum of \$20,000 on the crection of a ten-roomed high school on Bond street. The Archbishop has donated a site for the purpose on the east side of the street, between the Cathedral, and the convent. Building permits have been granted as follows: Josiah Blackwell, 105 Walker avenue, 1wo 2 story and attack d. bk. dwellings s. side Roxborough st , iear Yonge, cost \$14,000, Win. Jones, pr. s. d. a story and attic bk. dwellings, n side Langley ave., near Broadview ave., cost \$0,000, Wm. Fedford, two det. 2 story and attic bk. dwellings. 180-82 Adelaide st. w., cost \$7,800 ; T. Whittard, a story b. f., add. to 407 Dupont st., cost \$1,000; Wm. Dincen, 1 story bk. add. to 124-26 King st. v., cost. \$1,000; Jno. R. Wood, alterations 653 Ossington ave., cost \$1,000. John Runridge six itt. 2 story and attic b. f. dwellings, 21 to 31 Euclid ave , cost \$7,200 , W. H. Essets , 93 Macdonnell aver, eight att. 2 story and attic lik dwellings, 2 to 14 Drummond Place, \$8,000

FIRES.

The saw and sharele milt at Bernedale Out recently purchased by Kennedy Bros., was completely destroyed by fire on Saturday fast. Loss, 6,000; insuran e, \$2,000. -The Salvation Army Barmeks at Ordaa, Ont., was burned last week. Morningster's grist mill, situated a couple of intles from St. Catharines. Ont., was desiroved by fire on Friday of last week. Loss, \$7,000; insurance, \$3,500; \$2,000 on mill and \$1,500 on nachmery. -- The Commercial hotel at Iona, Ont., owned by Mr. J. S. Waddell, was destroyed by fire on Sunday morning last. Loss, \$2,000. Saylor's block at Trenton, Ont., was badly lamaged by fire on Tuesday last. The insurance on the block is \$3 000.-Mr. Hugh Jack's cheese factory at Carthage, Ont., was destroyed by fire on Thursday last. The total loss is \$7,500, 52,200 of which is on the building, which was in sured for \$1,000.

CONTRACTS AWARDED.

AYLMER, QUE—The Roman Catholics have awarded the contract for a new church, to cost \$30,000.

Belliville, Ost.— The County Council have awarded the contract for a new iron bridge at Iweed, to the Peterboro Bridge Company, whose tender was \$2,325.

MARKDALE, ONF—Messrs. Post & Holmes, architects, Toronto. have let the contract for a new R. C. church to cost \$4,000 to Mr. J. C. Whitten, of Shelbourne.

NEW WESTMINSTER, B.C. — The contract for the new Industrial school at Chilhwhack, plans for which were prepared some time ago by Mr. Thos. Hooker, has been awarded to A. Ackerman, of this city, at the price of \$17,000.

OTTAWA, ONT.—The tender of Mr. James Summers has been accepted for the construction of the public swing bridge at Oliver's Ferry, the Government to supply all the material. The bridge will have oak piers and iron superstructure.

TORONTO, ONT.-The Works Committee of the City Council have accepted the following tenders for general supplies. Loam, Taber Bros. o cents per cubic yd., delivered east of Yonge st. and 65 cents west of Yonge street: Macadam stone, P. Wilson, \$10.50 per toise delivered at Portland street yard, J. Goulding, \$8 40, delivered at Frederick street yard, crossing stone, A J. Brown, 24 cents per lin. ft.; ironwork, Ontario Foundry, \$1.60 per 100 lbs. for eastings and \$2.50 for wrought; sand, A. W. Godson, 95 cents per cub. yard, wire nails, Ontario Lead and Barb Wire Co., \$2761/2 per 100 lbs., lumber, Wm. Bryce & Co., \$12.78 per M. it , B. M. for gang inch plank and the same price for scantling, pressed spikes, F. W. Unitt, \$3.20 per too lbs. for 7x1/ and 8x1/4; gravel, Taber Bros., 95 cents.

both east and west of Yonge street; sewer pipe, Standard Drain Pipe Co., 6 in. 83/2 cents, 19 in. 14 cents, 12 in 22 cents, 15 in. 22 cents, 18 in. 48 cents. Inverts, 18 and 27 cents. Stoppers, 6 and 9 in., 4 and 5 cents. Curves 6 and 9 in. 20 and 35 cents. Bends and elbows, 12, 15 and 18 in., 80 cents, \$1.20 and \$1.50. Junctions, 2 ft. lengths, from 80 cents to \$1.70. The contract for the Bathurst street sewer, from the U.P.R. to Consulescent Home, was awarded to Messrs. Smith & Wilson, at \$860.

THE STRENGH OF MATERIAL.

In estimating the strength of different parts of buildings, it should be borne in mind that beams decrease in strength much faster than the length is increased, for instance. If a beam of any given size, twenty feet long, will sustain a load of 100 pounds per foot, one of the same size and forty feet long will only sustain 25 pounds per foot, and that with much more deflection, while the same beam cut down to ten feet in length, would carry four hundred pounds to each foot in length.

With posts, the ratio of strengths to their lengths differs somewhat with different proportion; but roughly speaking posts of sizes in common use diminish in strength as they increase in length, in a ratio of about !, to 2, that is if a post of a given size and to feet long is capable of supporting 12 tons, one of the same material and size but 20 feet long will support but 4 tons. The comparative strength of rods sustaining loads by suspension is not materially affected by their length; a long rod of a given size is nearly as strong as a short one of the same dimensions.

Now, with these general principles in mind, let us remember as a base of calculation a few examples Take first a mill lation a few examples 50 feet wide, three 10-feet stories in height, of the usual "mill construction," center posts and beams 8 feet between centers, making beams 25 feet long from posts to wall. To safely carry the ordinary load of 200 pounds per square foot the beam should be of Southern pine, 12x16 inches, with round posts, 11 inches in diameter or 10 inches square, posts in the first story to support the second and third story and roof; to-inch round posts, or 939 in the second story for the support of the third floor and roof, and 9 inch round or 8-inch square to carry the roof. A 15-inch 1beam 150 pounds per yard, this length would be of about the same strength as the 12x16-inch beam. A 6-inch round wrought tron column of 5s-inch shell, or a 6 inch cast-iron column, free from defects, with a 15-inch shell, would be the same strength as the 10x10 inch posts, cast-iron being stronger in columns than wroughtiron, except where they are very slender. Iron will not reists heat as long as wood, wrought- iron becoming soft and pliable and cast-iron cracking with heat and water If a brick pier is to carry the load of 10×10 inch posts it should be of good masonry, 2 feet square, or at least 20x24 inches, and it will resist the action of heat longer than any other of the materials mentioned. A 11/4-inch iron rod will safely support by suspension the same amount of floor surface of a single floor as is carried by one of these posts.

If it is desired to use this building for a warehouse, to be filled with barrels of flour, it should be estimated at 400 instead of 100 pounds to the square foot, and it would require another row of posts between the center posts and outer wall, thus making the beams about 12 feet between bearings, the beams remaining the same size and the posts increased a little, the wood about 1 inch, or ½ inch for the iron. National Builder.

LEGAL DECISIONS.

A case of great importance to the building trade and others who make use of Belgian girders has been determined on appeal in the Edinburgh Courts. A firm of builders in Glasgow entered into a contract with Messrs. P. & W. Maclellan, the well-know iron merchants of that city, to supply beams and girders for new tenement buildings. One of the conditions was that

the girders were to be delivered "at such times as may be required by the mason." There was some difference of opinion as to the meaning of the words, but when the case was first tried it was held that what was intended was that the rate of delivery was to be regulated by the needs of the masons, in order that the works might not be blocked up by the girders, which would be the case if all were supplied at one de-livery by Messis. Maclellan. The girders were obtained from Belgium; some arrived in good time, but owing to strikes and other causes the supply was retarded. Afterwards it became necessary to take an action for the recovery of the balance of 2447, due on the account, whereupon the builders took a counter action for damages on account of the delay. The sheriff who tried the case held that Messis, Maclellan had proved that it was a custom in the trade that the buyer in such cases took the risk of delay from strikes and other unforeseen causes beyond the seller's control, and in both actions judgment was given in favor of Meisrs. Maclellan with costs. The builders appealed. The judgment of the courts below was affirmed on the ground that Messrs. Maclellan had exercised due care in placing the order for the from with a proper and suitable manufac-turer in Belgium; that they were not responsible for the delay which occurred, not having been able to anticipate its causes; that they were therefore not chargeable with breach of contract in unduly delawing delivery. It will be observed that in the judgment of their lordships the custom of the trade is not recognized, and that the issue was made to depend on the facts stated in evidence

Thin brass tubing used for gas fixtures is fashioned into the various complicated ornamental shades required for such purposes by placing the tube between two steel moulds which are heavily clamped, and then the tube is expanded by hydraulic pressure reaching has high as 10,000 pounds to the square inch. The shell of this tubing is about 1-16th of an inch in thickness, and made of highly annealed brass. In order to complete the process for some of the more complicated forms, it is necessary to apply the water pressure four or five times, annealing the tube between each operation. The use of pressure for expanding a pipe is not fundamentally novel, as that is the method used in hining cotton hose with tubber. The lining is carried through the hose and expanded by steam-pressure, which completes the vulcanization of the tubber and presses it into the fabric so firmly that it adheres closely.

Stones of uniform texture commonly decay by disintegration at the surface, losing grain by grain in proportion to time and exposure. But they sometimes suffer a singular change, as if baked at the surface. An external enveloping crust is thus formed, as at Stonehenge, were the interior is soft, but the exterior hard. This process appears to render such a stone durable, but if carried further, so as to produce a new texture of the surface. the external shell separates from the interior mass, desquinates and falls off, leaving a rough, soft inner core. This happens even to molded surfaces, like those of balusters. Stones composed of parts unequally mixed suffer unequal waste in different parts. Shell, corals, concre-tions and crystallized masses thus appear prominent from limestones, and indicate the general fact that in proportion to the force of molecular aggregation in the stone is the resistance which it offers to decay. Again, the circumstances under which a stone is exposed in a building influence its conservation. It is not the amount, but the kind of exposure which governs the The southern and western parts decav. of our cathedrals yield, while the northern and eastern resist. Prominent cornices often are perfect, while below them the moldings are reduced to shreds. The drip-moldings remain and are even hardened, while parts which it was destined to protect have mouldered away .- The Architect.

MUNICIPAL DEPARTMENT.

LEGAL DECISIONS AFFECTING MUNICIPALITIES.

The County Council of Elgin, has decided to defend the validity of the bylaws granting and to high schools, action to set aside which has been taken; to petition the Ontario Legislature to amend the High School Act making only those portions of a country not in a high school district liable for the maintenance of county pupils, and to petition the Dominion Parliament to require ditches to be opened up through Indian reserves; also to require railways to open culverts under the rroads where there are natural water-courses.

SUSKEY V. TOWNSHIP OF ROMNEA.—Judgment on motion by Suskey to quash a by-law of the township of Romney assessing upon the lands of cetain rate-payers a sum of \$3,000 paid by the township out of its general funds for extra work upon a drain after it had been constructed and completed. The Chancellor holds that the by-law falls fairly within the scope of sec. 573 of the Municipal Act of 1892, which gives power to amend a drainage by-law when sufficient means have not been thereby provided for the completion of the work, so as to make it an efficient work, though there may be some deviations and variations or addition to the work as originally planned by the engineer. Application dismissed with costs.

REG. V. ABELL, REG. V. HUGH, REG. V. McKENZIE - A motion by the defendants to make absolute the rules hisi granted in these cases in respect to the conviction of the defendants for illegal collection of tolls on the Vaughan road. The defend-ant Abell is the president, and the other defendants are toll-keepers of the Vaughan Road Company, between whom and the township of Vaughan a dispute had arisen with regard to the company's right to col-lect tolls. It was contended by the resi-dents of Vaughan that the road company could not collect toll until the township engineer certified that the road was in a proper state of repair. A Justice of the Peace endorsed this view and fined all the defendants for collecting toll while their road was in a state of unrepair and condemned by the township engineer. The judges held that the fine was correctly imposed and that the defendants were barred from collecting any toll until their road is put in a proper state of repair and certified by the township engineer. Mo-

BRIDGE BUILDING IN AMERICA.

Mr. T. Kennard Thomson, C. E., writing on the above subject in the Engineering Magazine, among other things says: "In this country to day the best practice in bridge building is to use eye-beams for spans up to 18 ft., plate girders for spans 18 ft. to 80 ft., or even 100 ft., lattice or open-riveted girders from the last limit to 120 ft.; pin-connected trusses to 550 ft.; cantilevers from this limit to a span somewhere between 1,000 ft. and 1500 ft.; after which economy requires suspension bridges. Continuous guders, or bridges connected or made continuous over two or more spans, have gone out of favour, owing to the ambiguity of strains, least settlement of a pier rendering the strains uncertain. Of course, where these bridges are built they are provided with adjustable shoes, so that if the piers settle the bridge can be raised, but this requires great watchfulness. The above limits are necessarily subject to change, owing to local circumstances, such as the difficulties of crection, etc. For instance, in the Lachine Bridge, where the St. Lawrence River made false work out of the question, the two channel spans of 408 ft. each were built as cantilevers, but turned into continuous girders when coupled up or completed.

The inspection of a bridge from the first drawing to the last coat of paint cannot be too thorough. Many think it un-

MUNICIPAL ENGINEERS, CONTRACTORS, AND MATERIALS.

necessary to inspect the erection, but this is very important. I was once instructed to inspect the crection of a long bridge of which the first span of the approach had already been completed. The field riveting had been so badly done that the sup-erintendent of construction was instructed to go over the work himself, and was kept going over it until he had marked and cut out about 400 bad rivets. The riveting on the work thereafter was really well done;

the bad work had cost too much.

The Railroad Commissioners of the State of New York have done good service. by condemning many unsafe bridges and requiring the railroad to have the strains calculated on all their bridges. Every state should have a similar commission for both railroad and highway bridges. As most railroads have some sort of inspection, however poor, and most highway bridges have none, the latter are, as a rule, much more dangerous than the former.

CONVICT LABOR IN ROAD MAKING.

The Georgia Road Congress has adopt ed a resolution approving of the use of convict labor in road making, and holding that labor and property should cach bear their fair proportion of road duty the latter to be an ad valorem tax. Each county is to decide as to the amount and character of the work to be done and own and furnish the tools to be used. A complete revision of existing roads laws is earnestly recommended. At the congress the Highway Improvement Association was formed, with all citizens of Georgia eligible to membership on the payment of 50 cents per annum.

Canada Pipe Foundry,

HAMILTON, ONTARIO.

ALEY, GARTSHORE, .. Proprietor Manufacturer of

CAST IRON WATER, GAS AND SEWER PIPES.

-- ALSO --

Special Castings of every description. CAPACITY: 50 TONS PER DAY.

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THOROLD CEMENT

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

JOHN BATTLE, ESQ. Thorold:

Dear Sir,—Yours of yesterday, 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-eight years, and have been on a large scale, as exemplified in the locks, bridges, culverts and other masonty on the Wel and Canal and Welland Raidway and that the record which has been are made to the test of the foot of the property of the program of the well and the mason which the state of the test of the second of the program of the pro and Welland Radway and that the record which has been invariable satisfactory, is to be found in examination of the structures. The necessary terring down of masonry and concrete, during the Welland Co. of Pringrenal Los off whet abundant exidence of the reliability of the Phorold Hydraulic Cement, both in masonry and concrete, and allowe and under water. I desire no better coment for the class of work referred to.

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

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	Toro	nto.	Montreal.			
	S	S	\$	s		
15f to a clear picks, Am. inc.			40 000			
134 to 2 three uppers, Am in		37 00	4000	4500		
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r inch dressing and better.		20 ∞	1800	50 00		
s inch siding, mill run.		16 00	14 00	1600		
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1 % inch flooring		16 00	14 00	1600		
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Toronto. Montreal.	
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Toronto. 1	iontreal.	Toro	nto.	Montreal.
lifack, famp 15 25	12 75	ad to ad cold cut, not po lahed		
Blue, ultramarine ce go	19 75 12 18	or blued, per 100 lbs	90	90
Oil, linaced, taw, & Imp. g.al. 65 68	63 65	FIRE BLUKD NAM	3.	
	66 63	ad, per a cilbs	~t 5>	1 90
truned, 78 65	33, 33	id.	201	9 · O
Whiting, dry, p r too lbs 75 r too	9}4 9}4 00 75	CANING AND BOX, FLOORING, SHOUL	YMD.	PURACED BOX
Paris white, tong., dry ou t as	0 110	NAILS		
Litharge, Am 616 8	614 8	12d to 3cd, per 100 lbs	\$0	50
Sienna, burnt 15 20	13 15	100,	60	to
Umber, "	12 15	8d and od, " "	75	75
ORMENT, LIME, etc.		6d and 7d, "" 4d to 5d, ""	1 10	90 1 10
		3d, " "	1 50	1 50
Central, Portland, per bil. 260 25.		PINISHING NAILS	-	. 30
" Queenston, " 150				
Napanee, 150		3 inch, per roolly.	85	85
Bull, "		2 to 2 1/2 " " " "	100	1 00
u Ontario u tro		136 10 134 " " "	1 35	1 35
" German	265 285	167	1 75	175
ii Lonuon - ,,	# 45 # 91	17	2 75	3 15
ii trementie	1 13 2 50	SLATING NAILS.		-
" Deigian	#3 #40	3d, pe: 100 lbs	85	85
44	225 23)	40, 41 41	85	85
Parian "	275 419 475	34,	1 32	1 25
	05) 700	2U ₁	1 75	1 75
Keene's Coarse "Whites"	457 475	COMMON BARREL NA		
Calcined plaster, per barrel.	155 170	r inch, prio lbs	1 50	1 50
	0.0 24 00	***************************************	1 75	75
	0 00 35 00		* * * *	2 25
Lame, Per Barrel, Grey 40		CLINCII HAII S	٠.	
Plaster, Calcined, N. d		inch, per 10 lbs.	£5	85 100
" " N S 2 17		s and significant	1 15	1 15
Hair, Plasterers', per bag 8, 100		134 and 134 " " "	1 35	1 35
· · · · · · · · · · · · · · · · · · ·		112 11 11 11	2 00	200
HARDWARB.		1 " " "	2 50	2 50
Cut nails, 5 d & 6 d, per keg 240 Steel " " " 23	3 25	SHARP AND PLAT PRESSE	D NAII	A.
Steel " " " " " " 3 5 CUT NAILS, FENCE AND CUT SPIKE	2 35	3 inch, per 00 lbs.	1 35	1 35
40d, hot cut, per 10 lbs 5	. ,	alf and alf	1 50	1 50
3/d, 11 " " 11	เว๋	2 and 23	1 65	1 65
aod, 16 a d 12d hot cut, per		129 8:0 11	1 72	t 85
scollis	15	1X	2 50	2 50
rod, ho, cut, per 100 lbs 20	30		3 on	3 0
8d, 9d 75	25	Structural Iro		
60, 70,	40	reel beam, per too lbs	2 75	2 50
40 10 30,	10 100	" channels, " " ingl s, "	285	3 5
30,	150	tees,	3 20	2 30
2d. 1 50 4d to 5d cold cut, not polished	• 23	" plates "	2 55	2 35
or bued, per to ibs 50	ço	Sheared steel bridge plate.	2 35	2 35
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				- , ,
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