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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.

AUGUST 27, 1896

No. 30.

THE CANADIAN CONTRACT RECORD,

PUBLISHED EVERY THURSDAY

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

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NOTICE TO CONTRACTORS

TENDERS FOR BRICK PAVEMENTS

Tenders will be received by registered post only, addressed to the Chairman of the Board of Control, City Hall, Toronto, Ont., up to 5 o'clock p. m. of WEDNESDAY, SEPTEMBER 9, 1896, for the construction of

BRICK PAVEMENTS

ON THE FOLLOWING STREETS:

On Lowther Avenue, from Avenue Road to a point 630 feet west.

On Huron Street, from College Street to Bloor Street.

On Opera House Lane, from Adelaide Street to a point 120 feet south.

On Spencer Avenue, from King Street to Huxley Street.

Plans and specifications may be seen and forms of tender obtained at the office of the City Engineer, Toronto, on and after Wednesday, 29th inst., 1896.

A deposit in the form of a marked cheque, payable to the order of the City Treasurer, for the sum of 5 per cent. on the value of the work tendered for up to \$1,000, and 2 1/2 per cent. on the value of the work tendered for over that amount, must accompany each and every tender, otherwise it will not be entertained.

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

Lowest or any tender not necessarily accepted

BERNARD SAUNDERS,
Chairman Committee on Works.

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

Toronto, August 25, 1896.

TORONTO PUBLIC LIBRARY

Tenders will be received at the Secretary's office corner of Church and Adelaide Streets, until 12 o'clock at NOON ON MONDAY, 31ST AUGUST, 1896, for Carpenter's work, Plastering and Painting.

Particulars may be obtained on application as above.

JOHN DAVY, Secretary. FRANK SOMERS, Chairman of Building Committee.

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

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

CONTRACTS OPEN.

BOYLE, ONT.—The post-office building is to be remodelled and improved.

PRESTON, ONT.—The council has recommended the erection of new market buildings.

TRENTON, ONT.—It is said that the Belleville Box & Basket Co. will rebuild in this town.

ST. HYACINTHE, QUE.—It is proposed to construct a waterworks system, at a cost of \$50,000.

KASLO, B. C.—The by-law authorizing the construction of a waterworks system has been carried.

PORT HOPE, ONT.—The Port Hope Preserving & Canning Co. will erect an addition to their factory.

ROSSLAND, B. C.—The Provincial government has appropriated \$4,800 for public improvements in the town.

NEWMARKET, ONT.—The by-law to install an electric light plant has been carried. Debentures for \$10,000 will be issued.

PORRIAGE LA PRAIRIE, MAN.—George Brown, architect, of Winnipeg, will have charge of the repairs to the McClenaghan block.

SAULT AU RECOLLET, QUE.—It is probable that a new canal will be erected here by the Provincial government, at a cost of \$26,000.

BRANDON, MAN.—C. H. Wheeler, architect, of Winnipeg, recently examined

the asylum building here with a view to making improvements.

JONES FALLS, ONT.—A syndicate has leased 18 acres of land near this village on which it is proposed to erect next spring a large summer hotel.

BANCROFT, ONT.—The erection of a smelter at this place is again being agitated. The ratepayers will be asked to grant a bonus towards the project.

COBourg, ONT.—The Minister of Militia at Ottawa was recently interviewed regarding the erection of a drill shed in this town. Consideration was promised.

MONCTON, N. B.—It has been recommended by the council that the city donate \$1,000 to the Johnson Cold Storage Co. towards purchasing a site for the proposed building.

GUELPH, ONT.—The council will advertise for tenders for the laying of the foundation for piers and abutments for the construction of the stone bridge on Wellington street.

BARRIE, ONT.—The Lake Simcoe Hotel Co. has been organized here, with a capital of \$80,000. Among the promoters are George Ball, J. M. Bothwell and S. Wesley.

PORT ARTHUR, ONT.—The Port Arthur Pulp Timber Co. is being incorporated, to manufacture timber and construct electric light and power works. The capital stock is \$200,000.

VANCOUVER, B. C.—The City Engineer advised the construction of a new water main from the reservoir to the city, at a cost of \$24,000. Specifications are being prepared and tenders will be called for.

BUCKINGHAM, QUE.—Ross Bros. have commenced the erection of a temporary saw mill, in which an electric light plant will be placed. A permanent structure will be erected during the coming winter.

WOODSTOCK, ONT.—The Canadian Pacific Railway propose erecting a new station at this place, plans for which are said to be in course of preparation. Work will probably be commenced this fall.

PETERBORO', ONT.—Tenders are asked by Strickland & Symons, architects, Toronto, until the 31st inst. for an iron roof and alterations and additions to the Compound house of the Canadian General Electric Company.

GALT, ONT.—Thomas McGiverin, Chairman of the Finance Committee, will receive proposals until the 5th of September for the purchase of \$4,000 of debentures required for building additions to vegetable market, and \$7,000 for water works extension.

KINGSTON, ONT.—The Board of Trade and City Council will interview the Dominion government in regard to the proposed elevator, drill shed and Rideau canal improvements.—Mr. McClenan, of Montreal, has offered to grant \$100,000 towards the erection of a one million

bushel grain elevator, provided the citizens will furnish the balance of the necessary capital.

ST. CATHARINES, ONT.—Johnson Clench, County Clerk, will receive tenders until Saturday, the 29th inst., for building an iron bridge in the village of Grimsby, to be 20 feet wide and 30 feet long, with stone abutments. Tenderers to furnish their own plans.

HALIFAX, N. S.—H. McC. Hart proposes building a row of stores on the south-west corner of Summer street and Spring Garden road.—Tenders for the purchase of \$4,000 of debentures are invited by R. J. Wilson, Sec. School Commissioners, until the 2nd of September.

DESERONTO, ONT.—A new R. C. church will be erected here.—A public meeting was held last week to consider the formation of a joint stock company for the rebuilding of the flour mill. Mr. Rathbun offered to take \$15,000 stock of the required capital, and a committee was appointed to further the scheme.

WINDSOR, ONT.—Wm. Newman, C.E., has just completed surveys, plans, etc., of some township drains in the township of Tilbury West.—A. Vermette, clerk of the township of Anderdon, will receive tenders until the 29th inst. for the construction of the Sucker Creek drain repairs. Plans may be seen at the residence of A. J. Halford, C. E.

HAMILTON, ONT.—The Ontario Lead & Barb Wire Co., of Toronto, have decided to place additional machinery in their factory here for the manufacture of wire nails.—The proposed location for the sewerage disposal works has been objected to by the residents in the vicinity thereof.—The Markets, Jail and Police Committee have recommended that a shelter be erected on the market, the cost not to exceed \$1,500.

QUEBEC, QUE.—The engineers for the proposed electric railway are said to have made arrangements for the commencement of work on the 1st of September. Some of the supplies have already been ordered.—Building permits have been granted as follows: One house on Chevier street for Mde. Fuclair; contractor, Mr. Trudet. Repairs of a house on Dalhousie street, for the Quebec and Levis Traverse Co.; contractor, A. Cummings.

WINNIPEG, MAN. Charles H. Wheeler, architect, is receiving tenders for improvements to a double house on Fort street.—I. M. Ross, Chairman Committee on Works, will receive tenders until the 29th inst. for laying asphalt pavements on portions of Assiniboine avenue and Kennedy street, in all about 6,000 square yards.—The Union Shoe & Leather Co. will erect a three storey brick and stone factory, 60x30 ft., at the foot of Lombard street; S. Hooper & Son, architects.—A three storey terrace of six houses is being erected by Mr. Cross on Carlton street.—A school building is proposed to be erected in the new district organized east of the Louise bridge.

OTTAWA, ONT.—Tenders are asked by the Department of Public Works, addressed to E. F. E. Roy, secretary, until Thursday, the 3rd of September, for the construction of a hot water heating apparatus in the immigration building at Halifax, N. S. Plans may be seen at the above department, and at the office of C. E. W. Dodwell, C. E., Halifax.—Mr. Langelier will ask in parliament whether it is the intention of the government to build a bridge across the St. Lawrence river at Quebec.—The City Council has given notice of its intention to construct artificial stone sidewalks as follows: On south side Wellington street, cost \$1,053; on south side Queen street, cost \$623.16.

TORONTO, ONT.—The Harbor Master has requested an annual grant of \$10,000 for dredging purposes.—In response to

the request of a deputation from this city it is probable that a grant of \$3,000 will be made by the Minister of Public Works to extend the island protection works.—In connection with the widening of the Queen street subway, the City Engineer states that the specifications provide that the present bridges be removed and new ones erected by the railway companies for and on account of the city. The steel superstructures are to be provided by the city. The estimated cost of the new steel bridge required by the C. P. R. is \$6,933 and the estimated cost of the new steel bridge for the G. T. R. is \$14,760.—The Board of Works have decided to send on to council the following recommendations for street pavements: Afton avenue, Northcote to Lisgar, cedar block, cost \$1,350; Lisgar street, Queen to Dundas streets, cedar block, cost \$5,200; Beaconsfield avenue, Queen to Afton, brick or gravel, wooden kerbs, cost \$5,900; Dovercourt road, Queen to College, brick or concrete, stone curbs, cost \$26,400; Front street east, Yonge to Church, asphalt, cost \$14,000; York street, Front to Queen, asphalt, cost \$22,400; King street west, Simcoe to Strachan avenue, asphalt, cost \$74,000; Queen street west, Yonge to Bathurst, asphalt, cost \$77,600; King street, Sherbourne to river, asphalt, cost \$46,200; Gerrard east, Yonge to Jarvis, macadam, with stone curbs, cost \$10,700; Victoria street, Queen to Gerrard, macadam, cost \$6,100.—Strickland & Symons, architects, are receiving tenders for an iron roof and alterations and additions to the Compound house of the Canadian General Electric Co. at Peterboro.—Notice has been given by the City Council that it is proposed to construct cement concrete sidewalks on York street, e. s., Front street to 76 ft. N. Piper street, cost \$1,020, and from Front to Wellington street, cost \$1,365.—Building permits have been granted as follows: F. W. Green, det. 2 story and attic bk. dwelling, South Drive, east of Sherbourne st., cost \$3,500; Arthur Howe, 2 story and attic bk. dwelling, south side Starr ave., near Dunn ave., cost \$2,000.

MONTREAL, QUE.—The Montreal Park & Island Railway Co. has received tenders for erecting two buildings near Rockfield.—The Fire Committee will take steps at once to select a suitable site for a new building for No. 7 station.—Green-shields & Greenshields, solicitors, have given notice that the Drummond County Railway Co. will apply to the parliament of Canada, at its next session, for power to construct an extension of their line of railway from St. Hyacinthe to St. Lambert, opposite the city of Montreal, and for power to construct a railway bridge over the River St. Lawrence, to connect said railway with the city of Montreal.—Edward Maxwell has prepared plans for a four storey building to be erected at the corner Latour street and Beaver Hall hill. The proposed structure will be 90x140 ft., of red pressed brick, with Bath stone trimmings. Estimated cost \$50,000.—Duncan McIntyre is erecting a three storey building, corner of Victoria square and Fortification lane, the plans being in the hands of Mr. A. C. Hutchison, architect. The material for the front will be buff pressed brick, with olive green stone trimmings. The interior plans have not yet been decided upon.—The Montreal Bridge Co. invited competitive designs some time ago for a bridge to be built from Montreal to Longueuil, the consulting engineer being Mr. Walter Shanley. Twenty-four designs were sent in and the commission has been awarded to E. S. Shaw, C. E., of Boston, the second prize going to Mr. A. L. Bowman, of Roanoke, Va.—It is stated that steps will be taken to erect the new chemistry, mining and metallurgy building in connection with McGill University, funds for which were donated by Mr. W. C. Mc-

Donald.—J. Alcide Chausse, architect, is preparing plans for a stone house to be erected on Rachel street.—L. R. Montbriant, architect, is preparing plans and specifications for a block of houses to be erected on Esplanade street for Joseph Martel. The same architect is preparing plans for one house, stone and brick, to be erected on Montcalm street, for Mr. A. Collins.—J. H. Macduff, architect, is preparing plans for a convent at St. Henry, for the School Board Commissioners. The convent will be 4 stories high, stone front, 150x70 ft. Same architect has plans in course of preparation for two cottages on Clandeboye, Westmount, for Macduff, Itzweire & Co., for which tenders will be invited shortly.—C. Amyot has been granted permission to erect an observatory tower on the mountain. It is to be 53 feet high.—Tenders for the construction of an aqueduct will be received by the Secretary-Treasurers of the villages of Chambly Basin and Chambly Canton, up to Tuesday, September 1st. Particulars may be obtained from E. L. De La Vallee & Cie, civil engineers, 17 Place d'Armes Hill, this city.

FIRES.

The residence of Mrs. Thornton at St. Stephen, N. B., has been burned. Insurance, \$2,000.—Three houses at Yamaska, Que., owned by Michael Bergeron, Narcisse Brouillard and William Pellhsei, were destroyed by fire on the 20th inst. Damage about \$3,000, partially covered by insurance. The West Ward Academy at Napanee, Ont., has been gutted by fire. The loss, \$4,000, is fully covered by insurance.—Murphy's saw mill at Murphy's Siding, Ont., about five miles from Owen Sound, was destroyed by fire on the 23rd inst. The loss is in the neighborhood of \$25,000, with insurance of \$7,000.—Newman's cottages, King street west, Kingston, Ont., were burned a few days ago. Loss \$2,000, small insurance.

CONTRACTS AWARDED.

QUEBEC, QUE.—Jos. Gosselin, contractor, of Levis, has the contract for the church of Victoriaville in this city.

TORONTO, ONT.—The City Engineer has recommended the acceptance of the tender of W. F. Grant & Co. for widening the Queen street subway.

AMHERST, N. S.—Rhodes, Curry & Co., of this town, have been awarded the contract for erecting a new building at Campbellton, N. B., for the Bank of Nova Scotia, to cost \$15,000.

LONDON, ONT.—The London and Port Stanley Railway Board have awarded contracts for the building of the new freight house, round house and other terminals. The total cost will be \$7,362.

CHATHAM, ONT.—The School Board have accepted tenders as follows for the new school building on the Central school site; carpenter work, John Darling, \$6,362; mason work and drainage, Moore & Bechard, \$9,658; basement floor, Moore & Bechard, \$675; plastering, Jas. Smith, \$640; painting, A. Phelps & Son, \$850; roofing (slate), John Riddle, \$1,480; tinning, Westman Bros., \$214; cutstone, J. J. Cousins, \$400; plumbing and gas fitting, Watts & Sons, \$330. Total, \$20,709.

WINNIPEG, MAN.—T. M. Harrington has been given the contract for improvements to Mrs. Zinkan's residence on Donald street.—G. W. Plaxton will erect a brick and stone residence on Vaughan street; C. H. Wheeler, architect; Ritchie & Wood, contractors.—Meldrum & McDougall have closed a contract with R. B. Roblin for the erection of three elevators at Gretna, Avstin and Deloraine. This firm have also contracted to build three

elevators for Dyell & Co., of Souris, and are building a number for the Northern Elevator Co.

MONTREAL, QUE.—J. Alcide Chaussé, architect, has awarded the following contracts: Agriculture school at L'Assumption, Que., five stories, for the L'Assumption college: Masonry, carpenter and joiner's and brick work by day labor, plastering, not let; plumbing and heating, L'Espérance & Terriault; steel work, Canadian Bridge Co. For one brick house, corner St. Catharine and Papineau avenue, for Charles Vezina: Masonry, Belanger & Guernon; brick, E. Morache; plastering, not let; steel work, Imperial Bridge Co. For the reconstruction of the Congregation Chapel, St. Brigid church: carpenter and joiner's work, Joseph Cote; cement plastering work, F. H. Decary; heating, David Ouimet; painting and glazing, Ernest Belanger; bench, Corbeil & Leveille.—R. Findlay, architect, has let contracts as follows for two houses, corner of William and Shannon streets, for H. B. Ames: Masonry, Heggie & Stewart; carpenter and joiner's work, D. Long; roofing, G. W. Reed; plumbing and heating, Padden & Nicholson; brick, McArthur & Son; plastering, S. Gosselin; painting and glazing, G. & R. Fletcher; iron work, Canadian Bridge Co.

HINTS FOR BUILDERS.

The following information of service to contractors is taken from W. A. Sylvester's book on "Modern Carpentry and Building".

SHINGLES.—A bundle of shingles, if full size, should have 25 courses on each end, and be 20 inches wide; or else have 22 courses on one end, and 23 courses on the other, and be 22 inches wide. Four such bundles contain 1,000 shingles, each supposed to be 4 inches wide. They are usually 16 inches long; sometimes in the nicest class of shingles they come 18 inches long. It is poor economy to use an inferior quality of shingles; it costs rather more to lay them than it does good ones, and they make a leaky roof, almost from the first. Spruce shingles are used considerably by some, but are not suitable to make a good roof, as they warp and twist, and very quickly split to pieces. Some soft pine or cedar shingles, best quality, are the cheapest in the end; but even bundles of the best quality will contain some hard, glassy shingles, which will act almost as badly as spruce; they should be thrown out.

It takes about 5 pounds of four-penny nails per thousand shingles; or 3 or 4 pounds of three-penny coarse, which we think are preferable.

One thousand shingles, laid 4 inches to the weather, will cover 111 square feet. One thousand shingles laid 4½ inches to the weather will cover 125 square feet. One thousand shingles, laid 5 inches to the weather, will cover 139 square feet. One thousand shingles (18-inch shingles only, except on walls), laid 5½ inches to the weather, will cover 153 square feet.

The above does not include waste, which must be allowed.

Laths are 4 feet long and come in bundles of 100 each. (We have seen some lots, the bundles of which were short some 20 or 30 laths.) Ten bundles make 1,000, which will cover about 60

square yards, which requires about 7 pounds of three-penny fine nails.

CLAPBOARDS are usually 4 feet long, and come 25 in a bundle; 4 bundles make a hundred, which requires about 3½ pounds of five-penny nails. One hundred clapboards, laid 4 inches to the weather, will cover 133 square feet. One hundred clapboards, laid 4½ inches to the weather, will cover 150 square feet. This does not include waste, which must be allowed.

SANDPAPER.—No. 00, 100 fine. No. 0, 100 fine. No. ½, fine enough for rubbing down paint or shellac. No. 1, fine for carpenters. No. 1½, generally used. No. 2, 100 coarse.

SHEET LEAD AND ZINC FOR FLASHINGS.—Sheet lead 1/32 inch thick weighs 2 pounds per square foot; 3/64 inch thick, weighs three pounds per square foot (generally used); 1/16 inch thick, weighs 4 pounds per square foot; 3/32 inch thick, weighs 6 pounds per square foot; 1/8 inch thick, weighs 8 pounds per square foot. Sheet zinc comes in sheets 3×7 feet. A sheet of No. 9 zinc (commonly used) weighs 14 pounds, that is about 3/4 pounds per square foot.

TO BEND A GOOSENECK.—Fill the lead pipe full of sand, ram it in well and plug up both ends, bend it carefully over your knee, or around a barrel or smooth tree.

TO BEND BRASS OR COPPER PIPES.—Fill them with melted rosin, bend carefully, and then melt out the rosin.

GLUE AND GLUEING.

There are many varieties of glue, ranging in price from twelve cents to fifty cents per pound. For general use, a good quality of glue can be purchased for twenty or twenty-five cents per pound. Previous to cooking, glue should be soaked in cold water till it becomes quite soft and pliable; the length of time required depends on the kind and quality of the glue; poor, cheap glue will nearly, and sometimes completely, dissolve in cold water, while good glue will require several hours soaking; some kinds require to be soaked twenty-four hours or more, but such glue is not commonly used. When the glue has been soaked sufficiently, drain off what water remains, and set the dish holding the glue into a dish containing water, and set it over the fire to cook. The object of setting the glue dish into water is to prevent the glue from getting scorched. The water cannot get hotter

than 212°, which is not hot enough to injure the glue. To secure the best possible results, the following conditions must be complied with, namely, the glue must be of good quality and newly made; it must be of the proper consistency, neither too thick nor the two surfaces will not come together—nor yet too thin, the glue must be as hot as boiling water can heat it; the work must be properly fitted, and should be as warm as can be borne against the cheek; the room should be very warm, especially in gluing large surfaces and in veneering; the glue should be plentifully applied to both surfaces, and then the work should be clamped together firmly; and the clamps should not be taken off until the glue is hard clear into the middle of the joints. Very large jobs of gluing should set two or three days before the clamps are removed. The consistency of the glue will depend somewhat on the kind of work to be done. For large surfaces the glue may be quite thin and plentifully used. For small work, the glue may be of thicker consistency; but it must be applied hot. For gluing wood endways, the ends should first be sized with a very thin coat of glue; when the sizing gets thoroughly dry, smooth the raised grain with a piece of fine sandpaper used over a straight stick: then coat each end with hot glue, and clamp firmly together; let it set over night, sure. In gluing boards together edgewise, many workmen do not bother to joint them both true, but depend on the clamps to force them to a joint. If the glue is good, the work may hold together some time; but there is always a strain on the glue. Some spell of damp weather may soften the glue a very little, and open goes the joint. Of course, the glue gets the blame instead of the workman, who deserves to be blamed. While many workmen make rubbed joints six feet or more in length, it is a bad practice; no joint longer than two feet ought merely to be rubbed together, and it is safer to apply clamps in every case. In veneering, put a thickness of newspaper between the veneer and the caul. This prevents the glue, which strikes through the veneer, from sticking the veneer to the caul. Some accomplish the same purpose by using sheets of zinc, which they rub with a piece of hard soap or wax. This is better than using paper, as it saves the

(Concluded on Page 4.)

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BRIDGE BUILDERS

BELLEVILLE, ONT.

labor of cleaning the paper off from the veneer.

To keep glue from smelling, take the dish holding the glue out of the dish containing the water, when done using, so as to let the glue get cold as soon as possible. Also do not keep the glue boiling all day long, but heat it only when it is needed. It is a good plan to make up only enough at a time to last two or three days, especially in the summer time, so as to have it fresh and good. A piece of sheet zinc as large as will lay in the bottom of the glue-pot, will also greatly aid in keeping the glue from smelling. Some put in a little alcohol, but it is doubtful whether it does any good; it is probably very quickly evaporates. Oil of cloves would be better.

N.B.—Keep thin-shaved veneers, such as ash and walnut burls, in rather a damp place until wanted; as they will curl and split up badly if kept in a dry room.

THE PARAGON OF EXHIBITIONS.

The major part of the entries having now been made for Toronto's big exhibition, which is to be held from August 31st to September 12th, it is possible to state definitely that the scale of the exhibition will really be greater than ever. Never before did the exhibits cover such a wide range as they will this year. It almost looks as if every province had striven to do its best to make the exhibition worthy of the country. At the forthcoming exhibition in Toronto there will be seen food products of Prince Edward Island; food products, manufactures, fruit and live stock, of Nova Scotia and New Brunswick; an extensive display of horses and cattle, manufactures and minerals, from Quebec; the products of forests, waters, mines, gardens, farms, studs, workshops and art studios of Ontario; the grain, minerals and horses of Manitoba; the grain and minerals of the North-West; and cereals, fish and minerals of British Columbia. The governments of Ontario, the Dominion and British Columbia will make special exhibits of the wealth of the earth, while the Canadian Pacific Railway will supplement these displays by showing cereals, vegetables and minerals from many points on their lines, to the extent of double what the company has shown in other years. In art especially will the exhibition be strong, with the three pictures painted by F. M. Bell-Smith, illustrating incidents connected with the death of Sir John Thomp-

son, at Windsor Castle, for one of which pictures Her Majesty the Queen, Princess Beatrice and members of the Royal household gave special sittings. There will be Edison's wonderful Edoloscope, an electric theatre; Ontario Trotting Horse Breeders' stake races; Lockhart's performing elephants; the magnificent historical spectacle, entitled the "Feast of Nations" and commemorating the "Taking of the Bastille," and a thousand and one other things; while in consideration of the cattle being on show the first week the railways have agreed to grant one fare for the round trip for the entire exhibition from all points in Canada, and to run a special cheap excursion the first week, on Sept. 3rd, and two the second week.

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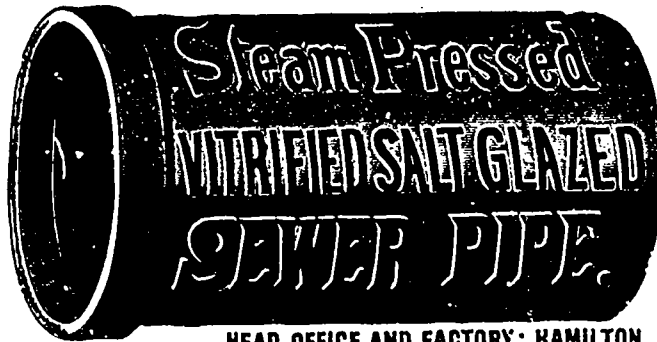
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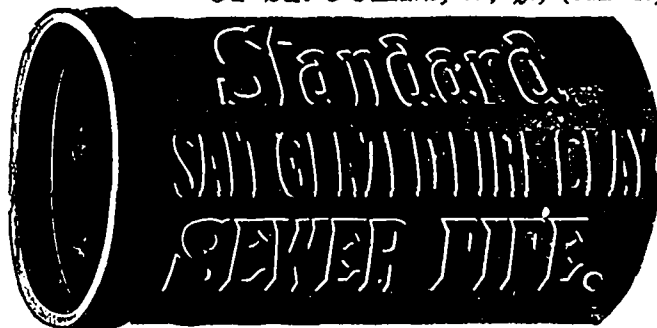
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MUNICIPAL DEPARTMENT

CRUSHED STONE FOR ROADWAYS.

By A. W. CAMPBELL, C. E., Provincial Road
Instructor.

It is impossible to discuss the wearing qualities of different kinds of stone for macadam roads from the standpoint of names. Granite, limestone, sandstone, are names of different rocks common in this province, but to say that granite is better than limestone, or that limestone is better than sandstone, while true perhaps of the best qualities of each, may be totally incorrect; since a sandstone may be infinitely preferable to a poor limestone or granite. The best stone for macadam is hard and tough, not easily affected by the atmosphere, moisture, and the varying conditions of climate. The choice will generally lie between a cheaper and less durable stone near at hand, and a more costly but better stone from a distance. The city of Cleveland, Ohio, is for example importing trap rock from Poole Island near Bruce Mines on the north shore of Lake Superior. This rock is very hard, tough, and for qualities of endurance can scarcely be surpassed on the continent.

By far the greater portion of macadam roads in Ontario, however, will be constructed of limestone, since this rock is the most common, quarries being within easy access of almost any part of the province. In quality it ranges from that which is useless to that which is almost equal to trap. Limestone which is tough and close grained is excellent material for roads on which the weight of traffic is not excessive. Some dolomitic limestones, while hard, appear to lack in toughness. Other limestones of a slaty texture have few wearing qualities, are rapidly disintegrated on exposure to the atmosphere, and should be avoided. Some limestones of open, porous nature yield readily in this climate to the effects of moisture and frost. But the excellent binding qualities of limestone make up largely for a lack of hardness, a sort of cement being formed by the dust, which adds very much to its solidity.

Some qualities of granite rank high, but much of it will crumble readily, and wear into sand. It is to be had in many parts of Northern Ontario, and is easily reached by boat or rail. Except when the traffic is unusually heavy on the road to be paved, and the best granite is obtained, the cost of transportation will debar it from use in the greater portion of Ontario.

Sandstone is seldom of service except when used for very light traffic on country roads, since it also readily crumbles and wears to sand. It is quarried chiefly at the Forks of the Credit.

Limestone is quarried very largely at Queenston, along the Grand River, at Kingston, and in the counties east; granite

is obtainable in the more northern part of the province. Trap rock occurs in dikes and is quarried in considerable quantities near Kingston and Gananoque. While elaborate trials may be made, a practical man can judge of the qualities of a stone by applying some simple tests; by breaking the stone with a hammer; wearing it on a grindstone; crushing it in a blacksmith's vice; scratching with an iron nail; breaking small pieces with the fingers. By such simple means a general idea of the stone can readily be formed, but no test is conclusive except actual wear, climates and other conditions lead to varying results.

There is considerable objection to the use of boulder as road metal. Exposure to the weather softens many varieties of stone, while their rounded sides do not consolidate readily. In many parts of the country, however, they are by all means to be recommended, care being taken to discard soft and disintegrated sandstone, limestone, gneiss and granite.

The town of Ingersoll has recently contracted for a crusher with screen attachment, and, their beds of gravel containing much cobble stone, it is intended to put all material through the crushing and screening process. This should make an excellent metal for residential streets on which the traffic is light, and is a method which will probably commend itself to other localities in the province.

STREET CONSTRUCTION FOR MEDIUM TRAFFIC.*

By ARTHUR E. COLLINS, A. M. I. C. E., City
Engineer, Norwich, Eng.

In the great majority of provincial towns the provision of such high-class and of necessity expensive pavements as those required and constructed in Liverpool, parts of London, and other large towns, would cause unnecessary and extravagant expenditure; on the other hand, gravel, flint, or macadam are not found to be adapted to the requirements of many streets in such provincial towns, and the engineer has to adopt methods of construction which, whilst not so expensive in first cost as the high-class pavements, shall have most of their advantages and shall avoid the mud, dust, and heavy charges for cleaning, watering and maintenance always accompanying the use of gravel, flints, or ordinary macadam in the streets of towns.

The three intermediate classes of carriageway paving of which the author has had more or less experience are the following: (1) sett paving, with and without concrete foundation; (2) wood paving, with and without concrete foundations; (3) t. red macadam on pre-existing macadamised road foundations.

It is probably universally admitted that a syenitic granite-sett pavement forms the most durable street surface known; when its joints are made in such a manner as to remain watertight, it is a good paving from the sanitary point of view. It is, however, so noisy that, in the opinion of the author, it should never be laid in

* Paper read before the Association of Municipal and County Engineers, London, Eng.

streets having good residential property, offices, or shops abutting upon it. For streets through manufacturing districts, and in similar situations, it is difficult to find sufficient reasons against its use to outweigh its undoubted advantages. The author has laid such pavements with both cement and pitch grouted joints, and is of opinion that, with equal care, one method is as good as the other as regards stability and imperviousness; each method has its own advantages and disadvantages. Cement grouting can be done at any time, excepting during frosty weather, but the pavement must not be subjected to traffic for at least a week after it is grouted. Pitch grouting cannot be done to be sure of good results in cold or wet weather. The pavement may be opened for traffic immediately it is completed, and it is not so noisy as where cement grouting is used. The success or failure of pitch grouting depends on the efficiency of the person in charge of the pitch boiler. If the mixture be too hard, it pulverizes in very cold weather; if it be too soft, it runs and becomes sticky in very hot weather. When it is intended to use pitch grouting, the joints of the pavement must be filled with clean dry shingle or stone chippings, and after thorough ramming and regulating the joints must be again so filled; the pavement is then ready for grouting, which is best done with a lipped iron can. The pitch should be poured into the joints, leaving as little on the tops of the setts as possible.

For the average class of traffic found in provincial towns, and where granite paving is substituted for a macadam surface over a well consolidated bed, an impervious granite-sett paving will last for many years before depressions make it necessary to relay it; if, however, water is permitted to penetrate the surface the paving soon becomes uneven. To avoid this, a thin layer of cement concrete has been found efficacious, the principal office of which, in the author's opinion, has been to increase the imperviousness of the construction, thus preventing churning and local yieldings of wet material below the setts. The author sometimes lays down such thin layers of concrete in the following manner: a layer—say, 3in. thick—of gravel having been laid, watered and rolled, it is thoroughly sluiced with water, so as to wash down all loamy matter, and cement grout is swept into the interstices. The granite paving is laid upon this in the usual manner, after an inch layer of sand has been spread on the concrete. Time is allowed for the cement to set before any running or other operation likely to disturb it is commenced. Where granite paving is used in a town where macadam is prevalent there are, the author thinks, more accidents to horses in proportion to traffic than where granite is more general. This is due to the fact that horses in the former case are not so well accustomed to the sort of foothold. Further, horses in such towns are not usually shod in a suitable manner to enable them to travel with safety on granite paving.

(To be Continued.)

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Prices of Building Materials.

CONDITION OF THE MARKET.

MONTREAL: The volume of business in builders' supplies remains much the same. The demand is chiefly for repair work. In the heavy metal trade there is a fair demand at current quotations. A slight improvement is also to note in window glass and paints and oils. The arrivals of cement for the past week were 2,600 barrels of English and 1,100 Belgian, as against 2,000 English and 3,400 Belgian for the preceding week. This makes a total to date of 41,163 barrels English and 30,415 Belgian. The tone of the market is steady, although sales are principally in small lots.

TORONTO: An improvement in some lines of building material has taken place within the past week, mainly in wire nails, cut nails, and plumbers' supplies. Orders are also coming in with some freedom for iron pipe, galvanized iron and soil pipe. Prices of glass are unsettled on account of the cutting by some dealers, and although values have advanced in Belgian about 10 per cent., making the cost of first break \$1.25, several houses are making quotations as low as \$1.15. As some buildings are nearing completion there is an increased demand for shelf hardware and paints and oils. Building paper is quiet.

LUMBER.

CAR OR CARGO LOTS.

Toronto. Montreal.

Table with columns for item description and prices for Toronto and Montreal. Includes items like clear picks, three uppers, pickings, spruce culls, and various siding materials.

YARD QUOTATIONS.

Table listing yard quotations for mill cull boards, shipping cull boards, hemlock scantling, and various sizes of planks and joists.

B. M.

Table listing building materials under 'B. M.' category, including flooring, sawn lath, red oak, white oak, basswood, cherry, white ash, black ash, dressing stocks, and American inspection items.

Toronto. Montreal.

BRICK—M

Table listing brick prices for various types such as Common Walling, Good Facing, Sewer, Pressed Brick, and different colors and sizes.

SAND.

Table listing sand prices per load of 1 1/2 cubic yards.

STONE.

Table listing stone prices for Common Rubble, Large flat Rubble, Foundation Blocks, Kent Freestone Quarries, River John, N. S., brown Freestone, Ballochmyle, New York Blue Stone, Granite, Moat Freestone, Thomson's Gatelawbridge, Credit Valley Rubble, Credit Valley Brown Coursing, Credit Valley Brown Dimension, Credit Valley Grey Coursing, Credit Valley Grey Dimension, Clark's N. B. Brown Stone, Brown Free Stone, Madoc Rubble, Madoc dimension floating, Cape Bauld, and Freestone.

OHIO FREESTONE, FROM THE GRAFTON STONE CO.'S QUARRIES.

Table listing Ohio Freestone prices for various types like Buff Promiscuous, Blue Promiscuous, and Sawed Ashlar.

SLATE.

Table listing slate prices for roofing and terra cotta tile.

PAINTS. (In oil, @ lb.)

Table listing paint prices for White lead, Red lead, Venetian, Vermillion, Indian, Yellow ochre, Yellow chrome, Green chrome, Paris, Black lamp, Blue ultramarine, Oil, lincod, raw, boiled, refined, Putty, Whiting, Paris white, Litharge, Sienna, Umber, and Turpentine.

CEMENT, LIME, etc.

Table listing cement and lime prices for Portland Cements and German per barrel.

Toronto. Montreal.

Portland Cements.—

Table listing Portland Cement prices for Newcastle, Belgian, English, Canadian, Roman, Parian, and Superfine.

Hydraulic Cements.—

Table listing Hydraulic Cement prices for Thorold, Queenston, Napanee, Hull, and Ontario.

Table listing hardware prices for cut nails and steel.

CUT NAILS, FENCE AND CUT SPIKES.

Table listing cut nails and spikes prices for various sizes and types.

FINE BLUED NAILS.

Table listing fine blued nails prices.

CASING AND BOX, FLOORING, SHOOK AND TOBACCO BOX NAILS.

Table listing casing and box nails prices for various sizes.

FINISHING NAILS.

Table listing finishing nails prices.

SLATING NAILS.

Table listing slating nails prices.

COMMON BARREL NAILS.

Table listing common barrel nails prices.

CLINCH NAILS.

Table listing clinch nails prices.

SHARP AND FLAT PRESSED NAILS.

Table listing sharp and flat pressed nails prices.

STEEL WIRE NAILS.

Table listing steel wire nails prices.

Iron Pipe:

Table listing iron pipe prices for various diameters.

Lead Pipe:

Table listing lead pipe prices.

Galvanized Iron:

Table listing galvanized iron prices for Adam's-Mar's Best and Queen's Head.

Structural Iron:

Table listing structural iron prices for steel beams, channels, angles, tees, plates, and sheared steel bridge plate.