

CONCRETE CONSTRUCTION IN ZERO WEATHER.

The Eastern Elevator, Buffalo, has a large number of cylindrical steel grain bins $15\frac{1}{2}$ feet in diameter and 80 feet high, which are supported on a horizontal platform or floor of Ransome steel-concrete construction. This platform is about 81 feet wide, 200 feet long, and is supported 10 feet above the surface of the ground on the tops of concrete piers 33 inches square and $12\frac{1}{2}$ feet apart on centers, both transversely and longitudinally. These piers have offset concrete footings on pile foundations and carry transverse and longitudinal concrete girders 30 inches wide and 36 inches deep to the top of the floor surface, which form rectangles connecting the tops of all the piers. Each of them is reinforced by eight 1-inch square twisted steel rods in bottom and eight $\frac{3}{4}$ -inch twisted steel rods in the top, which are continuous over the tops of the piers. The girders support $4\frac{1}{2} \times 36$ -inch floor beams $21\frac{1}{2}$ inches apart on centers, each of which has one $1\frac{1}{4}$ -inch bar in the bottom and one $\frac{3}{4}$ -inch bar in the top. They are parallel to both sets of girders and intersect each other at right angles, forming sets of panels $16\frac{1}{2}$ inches square in the clear. These panels have floor slabs from 4 to 6 inches thick, with special reinforcements where there are openings through them, and are reinforced throughout by $\frac{1}{2}$ -inch bars 6 inches apart. The concrete was made of 4 : 7 : 13 Portland cement, coarse, sharp lake sand and 1-inch broken stone, and was so strong that a 6-inch cube seven days old was tested up to the capacity of the machine, 150 tons per square foot, without breaking.

The concrete was nearly all mixed in December, 1900, and January, 1901, when the outdoor temperature varied from freezing to 10 degrees below zero, and the work was carried on regardless of the cold. The materials were mixed in batches of about 12 cubic feet each in a Ransome drum mixer making about 14 revolutions per minute. The product was handled by a steam derrick, which delivered it to a platform on which eight wheelbarrows were loaded at once to distribute it to different parts of the work. The capacity of the machine was limited by the ability to remove the concrete, and as many as 514 batches were mixed in a single day. The concrete was rammed in place in the usual way when the mercury was far below zero, and it froze on top almost as soon as placed.

As fast as the floor surface was finished it was covered with panels of light wooden sheathing and the work was carried on in the usual way. There were no walls enclosing the piers, and the space under the floor was enclosed by heavy canvas curtains reaching from the floor to the ground around the outside of the piers. Inside

this lower story about twenty salamanders, open coke braziers, were kept burning day and night as long as the work continued and maintained a constant temperature there of from 85 to 90 degrees. Attendants continually sprinkled water on the fires, making great quantities of steam, with which the air was kept saturated. The floor was not fully loaded for several months after completion, but has now been subjected to the proposed load of 5,000 pounds per square foot for several months without showing any signs of failure or weakness.

From observations on this work Mr. A. Wilfrid Ransome, the inspector in charge of construction, is convinced that good Portland cement concrete, well made and properly laid, is not at all injured by severe freezing if it is properly protected and allowed to set uninterruptedly without re-freezing after it commences to thaw.

REAL ESTATE TRANSFERS.

The following transfers of vacant property in Toronto are reported since last issue:

Withrow avenue, s. s., H. S. Mara to S. G. Spence, 1×130 , being part lot 5, plan 578, assessed at \$5; no improvements.

Pearson avenue, n. s., George Rundle to Susan A. W. Walker, 21×132 , being part lots 1 and 2, plan 585 assessed at \$210; no improvements.

Shaw street, e. s., Maria C. Haldan to James Gordon Jones, 25×127 , being north part lot 19, block H, plan 399, assessed at \$500; no improvements.

St. Clarens avenue, w. s., Farmers Loan & Saving Co. to Sarah Jane Haines, 40×140 , being part lots 14 and 15, plan 588, assessed at \$280; no improvements.

Tydnall avenue, w. s., Verno B. Wade-worth to W. R. McGill, 25×200 , being south part lot 41, plan 431, assessed at \$700; no improvements.

Dufferin street, w. s., Farmers Loan & Savings Co. to Oliver James Fucco, 37×200 , being part lot 26, plan 431, assessed at \$592; no improvements.

Dufferin street, w. s., Oliver James Fucco to Jane Adeline Graham, 35×200 , being part lot 26, plan 431, assessed at \$560; no improvements.

Delaware avenue, e. s., Rev. Robert Cade to Joseph T. V. May, 27×146 , being north part lot 10, block O, plan 329, assessed at \$270; no improvements.

Berkeley street, w. s., Corporation of the County of York to Consumers' Gas Company, 12×296 , south of Front street, assessed at \$600.

Berkeley street, w. s., Corporation of the County of York to Grand Trunk Railway Company of Canada, 28×296 , south of preceding parcel, assessed at \$1,400.

Bloor street west, s. s., Patrick Hand to Home Savings & Loan Co., Limited, 60×245 , being lot 9, plan 352, assessed at \$600; no improvements.

Bathurst street, w. s., Canada Permanent and Western Canada Mortgage Corporation to John C. Webb, 31×129 , being lots 5 and 6, plan 1,125, assessed at \$850; no improvements.

Morse street, w. s., J. W. G. Whitney to Hon. George W. Allan estate, 30×129 , being lot 72, plan 416, assessed at \$360. also Pape avenue, e. s., 117×100 , being lots 23 to 27 inclusive, plan 682, assessed at \$936; total assessment of parcel \$1,296; no improvements.

Roxborough street west, n. s., Confederation Life Association to F. P. Wright, 33×149 , being part lots 10 and 11, plan 166E, assessed at \$660; no improvements.

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