

The work was done entirely by the city's forces, as all work in Minneapolis is done by the day-labor system, and contracts are only let for material.

The pipe was furnished by the East Jersey Pipe Company.

Mr. J. A. Jensen, Assoc. M. Am. Soc. C. E., supervisor, was in direct charge.

ENGINEERS DISCUSS RAILWAY PROBLEM.

MEMBERS of the Saskatchewan Branch of the Canadian Society of Civil Engineers held a meeting Monday evening, May 21st, to discuss Canada's railway problem. L. A. Thornton, chairman of the Branch, who was the first speaker, said that the railway problem was, indeed, a big one, and, he might even say, a vital one for this country. The country could not jump at conclusions in a matter of such importance. Every aspect of it must be carefully studied to allow public opinion to express itself freely. The Canadian Society of Civil Engineers had always, and particularly since the beginning of the war, shown a keen interest in all the great questions of the day, and had given all possible assistance in the working out of the vital problems this country has had to face.

Mr. Thornton then referred to the great work accomplished by Mr. W. F. Tye, former chief engineer of the C.P.R., who had, in a paper that would be read to the meeting, explained what he thought was the best solution of the railway problem in Canada.

It must, however, not be forgotten, said Mr. Thornton, that after the war the people will have to bear many heavy burdens besides the financing of the railways, and even if the public were in favor of the government taking over the railways of the country, the people should be given every opportunity of studying the matter very closely so that they might know exactly where they were going.

O. W. Smith then read Mr. Tye's paper, remarking that Mr. Tye's work was one of which not only he himself, but all his colleagues and confreres, might very well be proud.

The "Regina Daily Post," in reporting the meeting, says:—

"H. S. Carpenter next read a paper on the same subject, prepared by Sir Thomas Tait, and which was published in full in *The Canadian Engineer*, of April 12th, 1917. He remarked that Sir Thomas Tait, contrary to the idea expressed by Mr. Tye, would have included the C.P.R. in the consolidation of the railways if such consolidation was to be the solution of the problem, as he considered it would be unfair to the C.P.R. to exclude it and force it to compete with a strongly consolidated railway organization.

"J. U. de Stein was then called upon to read a paper on the majority report of the Railway Enquiry Commission. E. J. W. Montgomery read the minority report of the commission.

"After Mr. Thornton had remarked that the many papers that had been read went to show the deep complexity of the question, and had pointed out that the matter should be given as much publicity as possible to allow the public to form a definite opinion on the whole matter, he declared the meeting open and invited everyone to express their views on the subject. After some of those present had differently commented on the suggestions contained in the various papers, the meeting concluded."

GRANITE BLOCK PAVEMENTS.*

By William H. Connell,

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IN order to obtain the best results in granite block construction, the first step naturally is to determine upon the specification for the block itself. The American Society of Municipal Improvements have adopted the following specifications for a standard block, as being cut by the majority of the quarries in the United States:—

The blocks shall not be less than $3\frac{1}{2}$ inches or more than $4\frac{1}{2}$ inches wide on top, not less than $4\frac{3}{4}$ inches or more than $5\frac{1}{4}$ inches in depth and not less than 8 inches or more than 12 inches long. The blocks shall not show a variation of more than $\frac{3}{8}$ inch on the head under a straight edge. They shall be so cut that they can be laid with joints not exceeding $\frac{1}{2}$ inch in width.

The Borough of Manhattan, New York City, has adopted the following specifications:—

The block shall be not less than 6 inches or more than 10 inches long; not less than $3\frac{1}{2}$ inches or more than $4\frac{1}{2}$ inches wide, and not less than $4\frac{3}{4}$ inches or more than $5\frac{1}{4}$ inches deep. The contractor shall select a definite width for the blocks to be used on each city block within the limits of this contract and notify the engineer of such selection. All blocks shall be of the selected width with an allowable variation of $\frac{1}{4}$ inch either way from this width, but within the limits for width of blocks specified above. The blocks shall be approximately rectangular on top and sides and uniform in thickness. They shall be so cut that the joints between individual blocks when laid shall average not more than $\frac{3}{8}$ inch. The head of the block shall have no depression greater than $\frac{1}{4}$ inch from a straight edge laid in any direction and parallel to the general surface of the block.

The city of Philadelphia has adopted a specification which is a mean between the specification adopted by the American Society of Municipal Improvements and the Borough of Manhattan.

Great care should be taken in the handling of the blocks to avoid chipping. Arrangement should be made to carefully unload the blocks from the boats or cars and immediately place them in the conveyances to haul them to the site of the work where the same care should be exercised in their unloading and handling. Rear-end dump vehicles should be used, as drop-bottom wagons unnecessarily damage the blocks. In all cases, the re-handling of blocks should be reduced to a minimum.

It probably appears to the ordinary layman as though there is no great necessity for requiring an inspector with any great ability in connection with laying granite block pavements and it is easily seen how one could hold such an opinion, as the blocks are cut at the quarry to conform to the specifications, and it is only necessary to lay the sand bed or cement mortar bed on a concrete foundation of the required thickness and pour the joints with either cement grout or a bituminous filler. This, of course, sounds very simple, but in order to obtain a first-class job it is absolutely necessary to be more than particular concerning a number of the essential details, without which a first-class pavement is out of the question.

The standard practice to-day specifies either a 1-inch sand cushion or 1-inch 1:4 cement-sand cushion laid dry. A number of the larger cities are rather inclining to the cement-sand cushion in preference to the ordinary sand

*Abstracted from paper read before the Fourth Canadian and International Good Roads Congress.