

(d) That this clause be the same as sub-section d of section 1.

3. For business streets we would recommend as follows:

(a) In view of constant repairs that must necessarily be made from time to time, to the present water mains along Main Street, the overhauling of the gas main and the construction of telephone conduits thereunder, as well as the construction of a prospective street railway, we recommend to the council for permanent pavements on said streets vitrified blocks with concrete foundation, the said recommendation not to take effect until the said existing mains, etc., are either substantially repaired or replaced, and the said street railway system inaugurated; in the meantime, the necessary repairing and maintenance of said streets be carried on, and when necessary and essential the blocks taken up and replaced by "Bay Shore Spruce Blocks" without asphalt coating or covering.

(b) That granolithic sidewalks be constructed along Main Street.

SPECIFICATIONS FOR CONCRETE FLOORS FOR HIGHWAY BRIDGES.

The increasing cost of lumber and the almost impossibility to secure good sound timber has had a tendency to increase the use of concrete and brick for bridge floors.

The following is the standard specifications of the Ontario Highways Department for concrete floors for bridges:—

Fero-Concrete.

1. Unless otherwise specified, the flooring shall be of concrete reinforced with steel. Wheel-guards shall be of steel channels or of concrete, and such as will prevent the hubs of the wheels striking any part of the bridge. At each end of all spans over fifty feet, steel expansion aprons shall be used with concrete floors.

Material and Labor.

2. All necessary material, labor, appliances and implements shall be furnished by the contractor, and shall be such as will secure a satisfactory quality of work.

Steel Reinforcement.

3. The metal with which the concrete floor is to be reinforced shall be expanded metal, wire netting, steel bars or other metal approved by the engineer, and is to be completely surrounded by concrete, and it shall be so placed within the concrete and shall be of such tensile strength as to fully provide for the specified loading.

Thickness of Concrete.

4. Sidewalks shall be 4 inches in minimum thickness and shall be made with a slope $\frac{1}{4}$ -inch to the foot towards the roadway. The minimum thickness of concrete in the roadway shall be 4 inches at the sides and 5 inches at the centre.

Down Pipes.

5. Down pipes, gratings and other openings or fixtures shall be placed in the walk or roadway wherever required, such openings to be measured continuously as part of the flooring.

Falsework.

6. Temporary framework or staging shall be erected to support the concrete flooring while in process of construction, this framework to be firm and substantial, of suitable lumber, and unless perfectly tight shall be covered with tar paper to prevent the concrete dripping through.

Portland Cement.

7. All cement employed in the work must be of a favorably known brand of Canadian Portland cement, and approved by the engineer. It shall be delivered in barrels or equally tight receptacles, and after delivery must be protected from the weather by storing in a tight building or by suitable covering. The packages shall not be laid directly on the ground, but shall be placed on boards raised a few inches from it.

Mixing Concrete.

8. The concrete shall be composed of gravel and Portland cement, mixed in the proportion of one part by measure

of cement to five of fine gravel, no stones of which exceed one and one-half inches in diameter. The concrete shall be mixed on a platform placed close to the work by first spreading evenly a layer of gravel. Upon this shall be spread a proportionate quantity of cement, and the two thoroughly intermixed in a dry state. To this sufficient clean water shall be slowly added, and the whole again thoroughly mixed and brought to the consistency of a stiff mortar.

Wearing Surface.

9. The sidewalk and roadway shall have a wearing surface one and one-half inches in depth of sand and cement, mixed in the proportion of 1 part by measure of cement to 2 parts of sand, the sand to be clean, sharp, of varying sized grain and free from loam, earth or other impurities. The sand and cement shall be first mixed in a dry state, then sufficient water shall be added to properly moisten, and the whole shall again be thoroughly intermixed. This top coating shall be applied to the concrete base before the latter has set, so that a perfect bond between the two will be secured. The surface will be floated and trowelled until smooth and even, and shall be finished with a toothed roller, or as directed by the engineer.

Placing Concrete.

10. While the work is in progress, it shall be so arranged that a steady supply of mixed concrete will pass from the mixing box to the point where it is to be placed. At any time when the work is interrupted before its completion, or at the end of the day, a wet covering shall be placed over the last layer of concrete, and before the work of depositing the concrete is resumed this surface shall be thoroughly flushed with water to remove any foreign material which may have gathered thereon, and coated with a thin Portland cement grout. No cement shall be laid in wet or freezing weather.

As an indication of the consumption of crushed stone for macadamizing purposes and road building, for flux for blast furnaces, ballasting of steam and interurban railways, etc., the Allis-Chalmers Company has recently supplied to the Michigan Alkali Company a rock crusher which has a maximum capacity of six hundred tons of stone per hour for ten hours run, or 6,000 tons per day. The weight of this crusher is 200 tons, and its capacity is dependent upon the facilities for delivering the raw material from the quarries to the machine, which is facilitated by the use of steam shovels. This crusher will reduce a rock of 3 ft. x 4 ft. x 6 ft. and weighing approximately three tons, to very small cubes. The company report orders in hand for several of these gigantic machines which are already completed or in process of manufacture for installation this spring.

Thornhill, Ont.,

18th Sept., 1908.

The Publishers, the "Canadian Engineer,"

62 Church Street, Toronto, Ont.

Dear Sirs,—Some time ago a copy of the "Canadian Engineer" was handed to me. This was the first time I had seen your publication, and as a result of looking over its pages of "Construction News" and "Tenders Called For" I was successful in obtaining a contract for work amounting to five thousand dollars. One page of reliable, well-selected news, such as the "Canadian Engineer" contains, is worth many pages of clipped items.

Yours faithfully,

Jesse Winger.