

MUNICIPAL DEPARTMENT

PAVEMENTS IN VANCOUVER, B. C.*

Although only 12 years old, Vancouver has nearly all of its central business streets paved with either bituminous rock or wood blocks, the first of which were laid in 1893. The work under the first contract was a bituminous rock pavement begun in May, 1893, and completed in October of that year, the total length of streets paved being 1.18 miles. All the work in connection with the laying of the double track was done under a separate contract between the contractor and the street railway company, under the direction of the city engineer. The old planking having been removed, the street was first graded to the required contour. All roots, rotten wood, vegetable mold or soft soil was removed and replaced by good dry sand and gravel or broken rock. The surface of the ground having been brought to the proper level, it was well wetted and rolled, and, where directed, well rammed until brought to an even and smooth surface, the contractor being required to take proper care of all gas, water and other pipes, and also all poles.

The concrete or the base was composed of four parts of broken stone, two of clean

* From a paper by Mr. A. K. Stuart, presented to the Canadian Society of Civil Engineers.

gravel and three of clean coarse sand to one of English Portland cement, the quality and brand being approved by the city engineer. From careful experiments this proportion was found to be exceptionally good. The depth of the concrete was 6 inches. All materials were required to be thoroughly dry, and then wetted sufficiently and rammed in place to the proper shape, where it was protected until properly set, and kept clean until the bituminous rock covering was placed on it. In places where it was found necessary or expedient to have the concrete a little deeper than 6 inches, the extra quantity was figured and allowed the contractor. The broken stone used was of such sizes as would pass through a 2 inch ring, and was supplied by the city. The work of grading, concreting and setting the curbstones was kept sufficiently in advance of the covering to allow the concrete to set properly.

The curbing used was of granite, and was 6 inches thick, 20 inches deep, and in lengths not less than 3 feet. The top surface was dressed evenly with a slight round on the outer edge, the joints throughout being kept as square and true as possible so as to make a close fit in order that they might be pointed and made water tight. The curbing at the street intersections was rounded to a 2-foot radius.

The stones for gutters were of granite, 8 inch courses, 8 inches deep and averaging 12 inches in length, the top surface being cut true to a reasonably smooth face, and the sides and ends, so that when laid there were not spaces of more than 1/2 inch between any two courses. The spaces

afterwards were floated with pure cement. It may be stated, however, that these stone gutters were only put in where the fall was slight.

The best quality of bituminous rock covering obtainable from San Luis Obispo, California, was used, containing not less than 15 per cent. of bitumen. This was broken up and then disintegrated by steaming in a tight kettle under a pressure of not less than 60 pounds, and after being taken out of the kettle was dried in a pan heated by steam and placed while hot on the road, then raked to an even surface and rolled with a heavy hot roller until thoroughly compacted. The rolling had to be done to the satisfaction of the city engineer, and, when completed, the surface was required to be smooth and even, and the bituminous rock not less than 2 inches in thickness or weigh less than 20 pounds per square foot. The work was required to be carefully and neatly finished around the gutters, and where not accessible to the roller was rammed with a hot iron. The whole work had to be guaranteed and kept in repair by the contractor for one year, the contractor furnishing a suitable bond to that effect.

The bituminous rock pavement, commenced in 1894 and finished in 1895, was 0.61 mile long, the work being carried out under a new contract, but by the same contractor, the main difference being in connection with the heavy girder rail laid. In this contract the contractor was required to give a two years' guarantee instead of only one, as in the preceding contract.

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