

The wood block paving laid in 1894 was only a short piece, 0.05 mile long, put down as an experiment in order to compare a sample shipment of Australian mahogany, black butt and spotted gum with the local fir and cedar. This was laid in the following order, on a street measuring 57 feet 7 inches between curbs. A strip, 3 feet 7 inches long, of British Columbian cedar not creosoted; a strip 65 feet long, of creosoted British Columbian cedar; a strip, 70 feet long, of creosoted British Columbian Douglas fir; a strip, 43 feet 4 inches long, of Australian spotted gum; a strip 43 feet long, of Australian black butt, and a strip, 38 feet 10 inches long, of Australian mahogany. The conditions as to grading, concreting and granite curb were the same as in the former pavement. Between the concrete and the blocks was a  $\frac{1}{2}$  inch cushion of sand. The work was commenced in November, 1894, and finished at the end of December, taking about a month to complete, the work being carried out under trying atmospheric conditions. The contractors were called to furnish good sound fir and cedar free from defects of any kind. The blocks were sawn 9 inches long, 3 inches wide, 5 inches deep, squarely and perfectly uniform in size and surfaced. The fir and cedar were well creosoted under pressure before being laid. The Australian woods were hauled and sawn by the contractor, and all the different kinds of wood were kept separate on the street. The blocks were laid with  $\frac{1}{4}$ -inch space between each row, the gradient of the street being over 5 per cent. They were laid in rows running across the street, the contractor doing all the cutting and trimming necessary to break joints. After the blocks had been laid sufficiently ahead, a mixture of coal tar pitch and asphalt were poured into the joints. The joints were then filled with fine gravel well pounded in with a special tool and saturated with the asphalt mixture until filled compactly to the top of the blocks, which then received a coating of liquid asphalt and tar put on hot, the whole being covered with finely broken granite, which was supplied by the city. An expansion joint of well-tempered clay was put in next each curb to allow for the expansion of the blocks. The contractor was required to give a written guarantee for one year, and to make all necessary repairs during that period. As a matter of fact, no repairs to speak of have been necessary, and the city engineer was so pleased with the results achieved from this pavement, especially the local fir and cedar, and more particularly the latter, both creosoted and uncreosoted, that, when the matter came up early in 1898 of the desirability of further extending the system of paved streets, he recommended the use of local cedar blocks as a test on a larger scale.

The chief points of difference between the wood block pavement, commenced in July, 1898, and completed at the close of the year, and the wood pavement of 1894, may be said to be that a good deal of the work entailed the fitting in of the blocks along the heavy 70-pound T rail, and also

that in this contract the specifications required the wood blocks to be laid with close joints instead of the  $\frac{1}{4}$  inch space as before, except where the gradient was sufficient to require  $\frac{1}{4}$  inch space being left. In this contract the contractors were required to give a two years' guarantee to keep the pavement in proper repair.

In comparing the pavements, the paper states that the repairs to the bituminous rock pavement, especially that of 1893, have been very extensive, more so than anticipated at the time it was put down. The greatest trouble has been along the 40-pound T rail. There can be no question that the humidity of the Vancouver climate, especially at certain seasons of the year, when there is a great deal of moisture and very little sun, is very detrimental to the wearing qualities of the bituminous rock pavement. The bituminous rock close to the light T rail has suffered very much from the vibration of the rail. On one street, however, where a 70 pound girder rail was used and the bituminous rock and concrete built up clean to the rail, no trouble of this kind has been experienced, and neither the pavement nor the portion alongside the girder rail have required any very material repairs. In frosty weather this pavement has proved very slippery for horses, but it has been found that a little sand sprinkled over it has remedied this defect, especially salt water sand, of which any quantity can be obtained here, the salt in the sand appearing almost immediately to thaw out the frost from the surface.

The wood block paving put down at the close of 1894 as an experiment has stood the traffic very well. This piece, however, has not been exposed to the very heavy

traffic, and in frosty weather has proved slippery, but a little sifted sand has been found very effectual in remedying this defect. The local fir and cedar has proved just as satisfactory as the Australian woods so far. It may be remarked, as to all these pavements, that, whenever it has been found necessary at any time to remove the covering for the purposes of repairs, the concrete exposed in each case has been found in a first class condition and to have set exceedingly hard and solid.

As to the form of rail, so far as traffic is concerned, the experience at Vancouver is that a heavy grooved girder rail is the best. So far as the street railway company is concerned, a T rail is best for their purposes. It would appear, in order to make the best and most lasting job, that the rails should be set in concrete with iron cross-ties to hold them in place, avoiding the use of wood altogether. Judging by experience, it would appear that, where a proper rigid track is put down, it is best to lay the bituminous rock or asphalt close up to the rail.

As to the wood block paving, there may be objections to it on sanitary grounds but, owing very largely to the great clamor here for the use of local materials, it was determined early in 1898, when extensions to the paved streets were contemplated, to give it a test on a somewhat considerable scale. The object of dipping the blocks in the mixture of coal tar and asphaltum was not so much with a view to preserving the wood as to prevent absorption and to make the pavement as far as possible impervious to moisture, it not being intended that the surface water should penetrate it. With this end in view, the blocks were laid close where the gradient would admit of it. These pavements were all laid under the direction of Colonel Thomas H. Tracy, city engineer.



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