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THE PAVING OF STREET RAILWAY TRACK AREAS

ARTICLE DEALS WITH NECESSARY CHANGES IN PAVING TRACK ALLOWANCES CAUSED BY INCREASING WEIGHT OF CARS AND GENERAL TRAFFIC CONDITIONS.

By L. McLAREN HUNTER, C.E.,
City Engineer's Department, Ottawa.

THERE is probably no other public utility which has undergone a greater evolution in the last twenty years than the street railway. During the last few years of development the cars that were used averaged about five tons in weight; and the pavement in the track areas was designed accordingly.

In the past few years the development has been extremely rapid and the weight of the cars has jumped from ten tons to the double-trolley, 25-ton cars, which are to-day used in Ottawa.

The writer intends to give in this article details of the various kinds of pavements constructed in Ottawa on the street railway area, showing the evolution from the time the pavement was designed to stand the five-ton car.

Fig. 1 shows the type of pavement which was first constructed in Ottawa in the track allowance; this was about twenty years ago, and happily only two streets were laid in this manner. Before these streets were repaved the whole track area had deteriorated due to the vibration of the heavy street cars. The two sandstone blocks that were laid in the margin next to the rails had sunk about six inches and the asphalt between the blocks was so badly cracked that passing vehicles striking the rails or blocks with their wheels lifted sheets of the asphalt. Before the debenture period had expired the city had spent enough money on repairs to construct a new pavement.

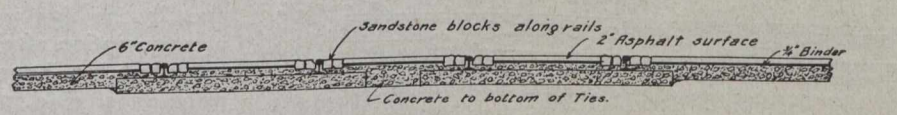

Fig. 1. Scale: ½"=1'

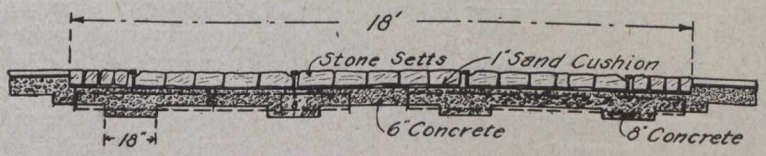

Fig. 2. Scale ½"=1'

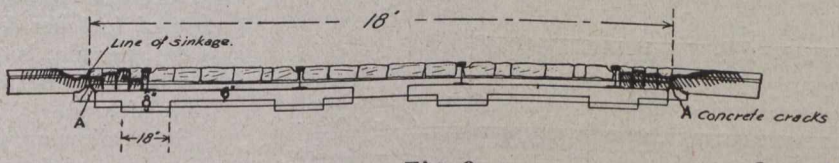

Fig. 3. Scale: ½"=1'

Fig. 2 shows the next style of pavement tried in the track area. It will be noticed an extra body of concrete was placed under the rail 18 inches in width by 8 inches in depth (from the web of the rail). This type was discarded in 1912 owing to several weaknesses which developed within two years of the pavements being constructed. The principal weakness developed in the two outside blocks next to the asphalt and also for about 12 inches on the asphalt next the blocks. Fig. 3 shows how the pavement deteriorated. It will be observed that the two margin blocks began to sink an appreciable distance below the rail—the asphalt following suit. This was due entirely to the foundation not being strong enough to support the heavy city and interurban cars. The vibration of these cars began to shake and crack the concrete at the end of the wood ties, as shown in Fig. 3, at the point marked "A." The vibration continued until the concrete crumbled away under the blocks, with the result as stated above. Fig. 4 shows a photograph of a dangerous sinkage on this style of pavement.

In 1914 the type of construction for the track allowance was radically changed from former types. Bank Street, one of the main business thoroughfares, was to be repaved and it was done as shown in Fig. 5. An 8-inch concrete slab was first laid 21 feet wide; on the top of this slab was laid a 1-inch cushion of asphalt macadam for the ties to rest upon (this cushion having greatly reduced the noise of the cars). The writer had the railway company bevel the ends of the ties, as shown on the section. This was tried as an experiment to do away with the sinking of the outside blocks—a bad feature of former pavements, as already explained. It will be seen that with the bevelled ties a much heavier body of concrete is between the outside blocks and the ties, thereby preventing any chance of cracking and crumbling of the concrete by the vibration of passing cars. Wood blocks were used to pave this track allowance.

The practice of laying the concrete slab first has since been done away with, as we had trouble with the ties in setting the rails to grade. These ties were supposed to be 6 inches in depth but in reality ran between 6 and 7 inches with the result that we had to place steel wedges under them when bringing the track to grade.

Fig. 6 shows the method of construction used in 1915 and 1916 on tracked streets where the traffic was fairly heavy. The concrete is shown as being one solid mass, the rails being suspended and the concrete poured,