

## CONCRETE PAVEMENTS.

By Geo. S. Hanes, B.A., Sc., O.L.S.

Concrete pavements, as they are constructed in Windsor, Ont., are giving entire satisfaction.

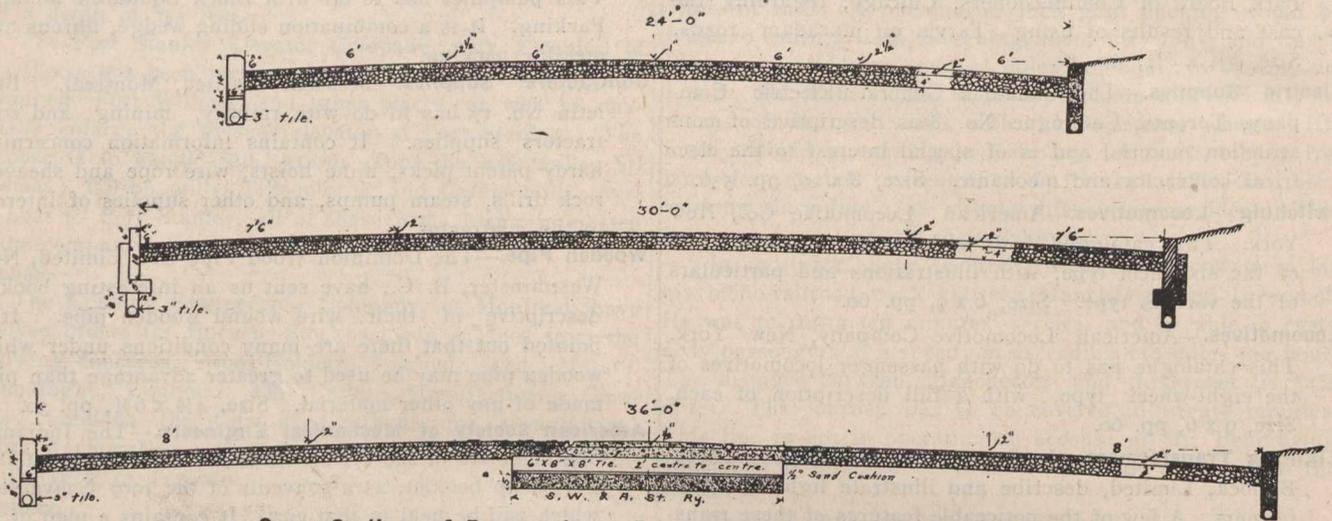
They only cost 9c. per square yard complete including excavation, and are perhaps the cheapest pavement in existence for the high results obtained.

The pavements are clean, hard, smooth, and have an appearance similar to sheet asphalt pavements. Heavy loads of four and five tons are hauled without any difficulty. Horses can travel at a high rate of speed without falling and without even slipping, making far less noise than is the case

Windsor is situated in Essex County; a large portion of said county consists of blue clay of a very sticky nature.

The experience with Macadam pavements in Windsor is of a very serious nature. A city block of Macadam pavement, which was in good condition, was destroyed last spring in one day by the blue clay adhering to the wheels and in turn lifting the limestone dust and then the crushed stone and depositing it in other places; thus leaving the roadway in an almost impassable condition. The good roads scheme has been before the County Council for consideration.

Instead of laying an eight or ten feet strip of Macadam, which in this district would cost from \$1 to \$1.05 per square yard of 12 inches thick, the writer is of the opinion that if a strip of concrete be constructed for the same price, namely,



Cross Sections of Pavements on Park, Chatham and Wyandotte Streets.

when brick or block pavements are used. The pavement is sanitary in every respect, and an occasional flushing keeps it in perfect condition. Park Street and part of Chatham Street have been open for some time, and from present appearances no other kind of pavement will be constructed for some time. Altogether about 32,500 square yards will be completed this year. Chatham Street is located in the central portion of the city and is thirty feet in width. Park Street is thirty feet wide in the central portion of the city, and Wyandotte Street is thirty-six feet wide. As far as the writer can find out, these are the first important concrete pavements on main highways to be constructed in Canada.

Windsor has about 78,000 square yards of Macadam pavements, which cost approximately \$1 per square yard, also about 84,000 square yards of asphalt block, which averaged in cost about \$2.50 per square yard, or \$210,000.

The mud and dust on the Macadam roads has been very objectionable, and the writer asked the council to try some concrete pavements. The council granted permission, and since they seem to be so satisfactory and reasonable in cost the people do not wish any other kind. The specifications vary on different streets. Chatham Street specifications are as follows: Concrete foundation composed of concrete 1: 3: 6 (crushed stone 1/4 to 3-inch). Wearing surface composed of concrete 1: 2: 4 (screened river gravel 1 to 1/4-inch being used).

Church Street specifications: Concrete foundation 1: 3: 6 (crushed stone). Wearing surface consisting of two layers, one layer being concrete 1: 2: 4, and a top layer of concrete 1: 2.

Wyandotte Street East specifications: Bottom or foundation layer consisting of concrete 1: 2: 4 (screened gravel), and a top layer of concrete 1: 2.

Certain pieces of concrete which have come under the writer's observation, such as concrete crossings in streets and alleys where there is heavy traffic, have stood eight or ten years of hard usage without any appreciable signs of wear, and look now as if they would last for an indefinite length of time. Concrete pavements, if properly constructed, will do the same.

\$1 per square yard, then the problem would be solved so far as the blue clay districts are concerned, and the work when once completed would be of a permanent nature and would not be in need of constant repair. If it would not be advisable to have the concrete exposed in the country districts, one or two inches of dirt could be left on the surface. The writer believes this scheme would be worthy of consideration if permanent results are considered.

In a recent conversation with an engineer who has had a railroad experience extending over many years, the recent numerous railway accidents, and their causes were discussed. The engineer referred to expressed the opinion that many of the accidents are due solely to the negligence of the railway employes. If this is the case the penalty for negligence cannot be made too severe, especially when passenger trains are involved, an accident to which almost invariably means the loss of life. It is not the younger men that are careless, but those who have been railroading for some years, and having become very familiar with the work in which they are engaged, they think little or nothing of disobeying orders. "Familiarity Breeds Contempt." The result of this disobedience is only too well-known. It is not the intention to charge all accidents to the incompetence or negligence of those in charge, but we believe that if more care was exercised by trainmen, the number of accidents would be considerably lessened.

A Montreal by-law, recently passed, provides for the appointing by every theatre manager of a competent, experienced person, to be approved of by the chief of the fire brigade, and in the uniform of the department, and who shall be on duty at each theatre from one-half hour before to one-half hour after the time it is opened to the public. He shall see that all fire apparatus required by this by-law are in their proper places, in proper condition and ready for use, that all exits are unlocked while the theatre is opened to the public, and that all is in efficient and working order. He shall also require a drill of the theatre employees for the use of all apparatus and appliances for the prevention of fire inside of the building at least twice every week and report thereon to the chief