The method of procedure is as follows: The street is first thoroughly swept by horse brooms and all the loose material that is practicable is cleaned from the surface of the street and removed. Oil, while hot, is then applied by a gravity sprinkler at the average rate of ⅛ gallon per square yard of road surface. Coarse rock screenings and stone dust are then distributed by hand over the surface of the oiled road in order more quickly to absorb the oil and prepare the road to receive traffic.

In calculating that figure of ⅛ of a gallon per square yard of road surface, we measured the road from curb to curb. The sprinkler does not sprinkle the whole width of the street, but the whole width is effectively oiled, in that a certain amount of the oil runs down the crown and effectively oils the portion next to the curb, so that I feel it is right and fair to consider that the whole road surface is oiled.

Ordinarily the street is not closed to traffic. Better results would be obtained here if the streets were closed from 24 to 36 hours after the oil application, in order to allow a certain amount of absorption and hardening of the oil to take place before traffic is allowed on the street. On busy city streets, however, this is hardly practicable.

When we are oiling up one street and down another, we would have a large section of the city completely ostracized from the rest of the town except by pedestrian traffic, and this would cause great inconvenience. We find it does not cause really serious difficulty to let the traffic go right over the street after it is oiled.

The amount of oil used depends altogether upon the character of the surface being treated and the extent of the coating desired. It varies from an eighth to a quarter of a gallon, and sometimes one-half gallon, per square yard.

I might say that last year in Hamilton a very accurate cost was kept in connection with street oiling as carried out in this city, the detailed statement of which was published in *The Canadian Engineer* for December 13th, 1917.

The average cost, without regard to overhead such as superintendence, engineering, repairs to plant, depreciation, insurance, etc., was $.01673 per square yard, or $1.673 per 100 square yards. This is equivalent to $235 per mile of 24-foot roadway, or a little less than 2¼c. per lineal foot of frontage.

I was surprised when we began to figure up our overhead in connection with our road oiling proposition. Our repairs to our little pump at the yard where we have our tanks, the cost of steaming, heating, the repairs to our tanks, the depreciation, insurance, etc., amounted to 31 per cent. of our total cost. I went into that very carefully. I was thunderstruck, but that is what keeping costs tells us.

Ordinarily, unless costs are very carefully analyzed, the figures are apt to be misleading rather than instructive. They vary, depending upon the price of labor, material and the methods adopted, so that real efficiency must be judged on a basis of these considerations. The following base prices were applicable to the above costs :—

Teams per hour	$ .75
Labor per hour	.35
Oil per gallon	.096
Screenings per ton	.85

The screenings were distributed by shovel from a wagon travelling slowly along the street.

CONCRETE ROADS*

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WHEN a community decides to construct a road, the officials must find out first the amount of money available to pay for the initial cost; second, the amount of money available to pay for maintenance charges. The next step is to decide on the type of road which will best serve their purpose. Concrete will certainly be amongst the different types they will be called upon to consider.

In making a choice they have to bear in mind the essentials of the ideal road, which should be durable, sanitary and noiseless; thoroughly adapted to motor traffic; not slippery; and with low initial cost as well as low maintenance charges. Low maintenance naturally means easy repairs.

Data regarding the age and durability of the various concrete pavements, together with the future maintenance cost per year, are not yet established on a very sound basis, though the figures at hand are reliable enough for the sake of comparison. That is not the case with water-bound macadam, bituminous macadam or similar types. A considerable mileage of these roads have been laid during quite a number of years and accurate data kept on same.

The sanitary and noiseless state of a road especially applies to city pavements.

Motor vehicle traffic has come with us to stay. Humanity will profit by it, possibly more than it did with steam and electric transportation. It is the writer's opinion that we ought to take the difficulty as it stands, and not put out any law or any restrictions that would hamper the growth of that kind of transportation. If our roads are not fit for the new work, let us build roads that will stand this kind of traffic as well as other kinds.

Slipperiness should be dealt with very closely in Canada on account of our fall and spring conditions.

The demand throughout Canada to-day is for a long mileage of low-cost roads, but there is quite a difference between this statement and the belief so strongly entrenched in our different provinces that every time we ought to choose the cheapest road. It is an established fact that maintenance cost is much lower on hard surface roads than on any other types. The gross annual cost per square yard, which includes interest on initial cost, plus amortization, plus annual repairs, on different pavements, are, according to E. W. Sterns, chief engineer of highways, Borough of Manhattan, New York, as follows :—

Concrete	7.8	cts.
Asphaltic concrete on 6-inch base	11.0	"
Sheet asphalt on 6-inch concrete base	11.25	"
Brick on 6-inch concrete base	14.00	"
Bituminous macadam	15.70	"
Asphalt block	16.90	"
Water-bound macadam	17.75	"
Wood blocks	20.40	"
Granite blocks	21.00	"

Concrete roads will fulfill nearly all the above requirements of the ideal road. Though there are no very old concrete pavements in existence done under the present practice, the present condition of those which have stood quite a few years of service would be enough to satisfy

*Address delivered May 9th, 1918, at Canadian Good Roads Congress.