

regulated according to the temperature of the atmosphere and the working of the mixture and the character of the materials employed. On reaching the street it shall at once be dumped on a spot outside of the space on which it is to be spread. It shall then be deposited roughly in place by means of hot shovels, after which it shall be uniformly spread by means of hot iron rakes in such a manner that, after having received its final compression by rolling, the finished pavement shall conform to the established grade and have a thickness of not less than in. Before the surface mixture is placed all contact surfaces of curbs, man-holes, etc., must be well painted with hot asphalt cement. After raking, the surface mixture shall at once be compressed by rolling or tamping, after which a small amount of cement shall be swept over it, and it shall then be thoroughly compressed by a steam roller weighing not less than 200 lbs. to the inch width of tread, and the rolling being continued until a compression is obtained which is satisfactory to the Engineer. Such portions of the completed pavement as are defective in finish, compression or composition, or that do not comply in all respects with the requirements of these specifications, shall be taken up, removed and replaced with suitable material, properly laid in accordance with these specifications, at the expense of the contractor. Whenever so ordered by the Engineer a space of 12 in. next the curb shall be coated with hot asphalt cement, which shall be ironed into the pavement with hot smoothing irons.

No wearing surface shall be laid when, in the opinion of the Engineer, the weather conditions are unsuitable, or unless the binder on which it is to be placed is dry. The finished pavement must be well protected from all traffic by suitable barricades until it is in a proper condition for use.

Requirements—C-10.—The finished pavement shall contain not less than 12 per cent. of bitumen soluble in cold carbon disulphide, depending upon the mesh composition and the character of the sand used and the traffic to which it is to be subjected, but in all cases sufficient asphalt cement must be used to properly coat all the particles of the mineral aggregate. It must also contain not less than 10 per cent. of mineral matter passing a 200-mesh sieve, and not less than a combined total of 25 per cent. passing the 200-, 100- and 80-mesh sieves. On streets of light traffic, when the Engineer has approved the use of a coarser sand or mixture than that specified for general use, the surface mixture must contain not less than 5 per cent. of mineral matter passing a 200-mesh sieve, and not less than a combined total of 18 per cent. passing the 200-, 100- and 80-mesh sieves. The maximum amount of 200-, 100- and 80-mesh material in the pavement will be regulated according to the kind of sand and asphalt used and the traffic upon the street on which the pavement is to be laid, subject to the maximum requirements elsewhere herein specified under sand and filler.

The above limits as to mesh compositions and per cent. of bitumen are intended to provide for such permissible variations as may be rendered necessary by the raw materials used and the character of the work to be done. The composition of the wearing surface may be varied within the limits above specified at the discretion of the Engineer, depending upon the kind of sand, filler and asphalt used and traffic conditions upon the street or streets to be paved.

Condition at Expiration of Guarantee—C-11.—In addition to the proper maintenance of the pavement during the period of guarantee the contractor shall, at his own expense, just before the expiration of the guarantee period, make such repairs as may be necessary to produce a pavement which shall:—

(a) Have a contour free from depreciation of any kind exceeding $\frac{1}{2}$ in. in depth, as measured between any two points

4 ft. apart on a line conforming substantially to the original contour of the street.

(b) Be free from cracks, showing disintegration of the surface mixture.

(c) Contain no disintegrated surface mixture.

(d) Not have been reduced in thickness more than $\frac{3}{8}$ in.

(e) Have a foundation free from such cracks or defects as will cause disintegration or settling of the pavement or impair its usefulness as a roadway.

GOOD ROADS EXHIBITION.

The first Good Roads Exhibition to be held in Canada will be in the Dairy Building, Toronto Exhibition Grounds, from the 24th inst., to March 1st.

The dates were set to be concurrent with the Toronto Motor Show and with the annual meeting of the Ontario Good Roads Association, which will be from the 26th to the 28th inst. The Exhibition will be under the management of Messrs. Hartley Robinson and E. M. Wilcox. The manager's office is 62 Temperance Street, Toronto.

Single fare on all railways for the entire week has been secured, and a good attendance is anticipated, both at the Motor Show and the Good Roads Show. There will be a number of interesting exhibits by the Patterson Manufacturing Company, Rocmac Road Construction Company, Ontario Bridge Company, Wettlaufer Brothers, The Canadian Engineer, Canada Cement Company, the University of Toronto, Sawyer-Massey Company, etc.

Delegates will be present at the meeting of the Ontario Good Roads Association from most of the cities, towns, villages and counties throughout the province, and highway officials from various parts of Canada and the United States will be present to address the meetings. Some of the speakers will be Sir Lomer Gouin, the Premier of Quebec, who has aroused that province this year to the importance of good roads; Colonel Sawyer, chairman of the Massachusetts Highway Board; Honorable A. R. Reaume, Minister of Public Works for the Province of Ontario; W. A. McLean, provincial engineer of highways for Ontario. County road organizations, construction of roads, maintenance, federal aid, provincial aid, and other subjects will be discussed.

The members of the association will undoubtedly find the Good Roads Show, which will be very handy to their meetings, both interesting and attractive. Both the practical and theoretical sides of road building will thus be presented, as sections of roads with practical demonstration will be seen at the show.

The Ontario Good Roads Association is a very important body of public-spirited men who have accomplished, among other things, the abolition of statute labor in many townships in Ontario; the adoption of the Highway Improvement Act in twenty counties, in which 3,771 miles of highway have been assumed for improvement; the expenditure of \$3,393,507 in the improvement of county roads, one-third of which was paid by the province; and the appropriation by the province in 1912 of an additional \$1,000,000 for the purposes of the Highway Improvement Act.

CONVENTION OF CANADIAN ELECTRICAL ASSOCIATION.

The Executive Committee of the Canadian Electrical Association of Toronto have decided to hold the next annual meeting of the association at Fort William on June 23, 24, 25. About 600 delegates and members from every part of the Dominion will be asked to attend.