This allows for delivery wagons to stand at the curb, leaving plenty of space for moving traffic, both slow and rapid, to pass through.

Crown

The crown given will depend upon the grade and type of pavement, and in a lesser degree on the personal preference of the engineer. Formerly, pavements were constructed with very high crown. This is not at all necessary with water-proof surfaces, whether bituminous or concrete. On the highly crowned pavements, three-quarters of the drop from the crown to gutter came between the quarter and the curb line, thus throwing extra strain on the wheel of vehicles. With bituminous materials built with a high crown, there is a tendency to creep to the curb, and because of this the first repairs usually are required along the gutter.

For permanent pavements, the writer has adopted a maximum crown of 4 ins. for a 24-ft. pavement, 4½ ins. for a 28-ft. and up to 5½ ins. for a 42-ft. pavement. When the pavement approaches an intersection with a rising grade across it, the curb and gutter are tilted, the centre remaining the same. The curb on the high side is raised and on the low side dropped, and the crown thrown over on the quarter on the higher side.

At pavement intersections it is good practice to raise the crown an inch or one and a quarter inches above the grade as shown on the profile. This adds to the appearance and assists in shedding the water at intersections.

Storm Sewers

Having decided on the grade and width of pavement, it is now possible to plan for the removal of storm water. If the pavement is a comparatively narrow strip in the middle of the highway, it may be possible to dispose of the water by open side ditches, but in towns and villages, the better practice is to construct the pavement with curb and gutter, and to provide for the removal of storm water by pipe drains provided with suitable catch basins and manholes.

The size of the sewer will depend upon the grade, distance to outlet and catchment area. It is good practice to design for the removal of 1½ ins. of rain per hour.

Where possible, it is best to locate the sewer outside of the curb of the pavement, more especially if the storm sewers and pavements are to be laid in the same year. Where this is not possible, and the sewer is laid under the pavement, great care should be taken in backfilling. As storm sewers do not need to be laid at a greater depth than 4 ft., this backfilling can be so made as not to endanger the pavement.

Selecting Type of Pavement

The selection of the most desirable type of pavement demands a knowledge of the characteristics and costs of available raw materials which go into pavement construction, together with a knowledge of the suitability of those types of pavements to the present and possible future traffic. In street paving, attention should always be given to aesthetic considerations, but among the various standard types of pavements that are now available, all, when properly constructed, have a pleasing effect.

A whole book might be written on the selection of a type of pavement, but just here reference will be made to a few of the principles that should govern selection.

Now that the Loads of Vehicles Act specifies the weight of traffic that may be carried, there is more definiteness than formerly in connection with the selection of foundation. A physical examination of the soil and sub-soil will have to be made to determine whether a concrete base 8 ins., 6 ins. or 5 ins. may be used, and experience only will guide one in forming an opinion.

It may be found more economical to use a consolidated broken stone base. It will usually be found that a rolled stone base should be 25% heavier than a concrete base. Conditions sometimes warrant reinforcing the concrete base. In fact, frequently, it has been considered more economical to add reinforcing than to add concrete when the soil and sub-soil are soft.

For a wearing surface one has a choice of concrete, bituminous-bound macadam, bituminous concrete, sheet asphalt, bitulithic, brick, block, etc., each having merit when traffic and local materials are considered.

Last season the writer laid several miles of bitulithic, using a gravel aggregate, because near the town where we were paving there was a large and inexpensive gravel deposit. In our 1920 work, we expect in at least two towns to build 50,000 sq. yds. without using a ton of stone, and in each case bituminous binders will be used.

Local materials are going to be more than ever in demand, because of the present high, and the probable future higher, freight rate.

Of course in selecting the type of pavement, one must have regard to the grade, as some of the more economical pavements are very smooth and slippery. The use of bituminous concrete or sheet asphalt up to a 4% grade is quite permissible. Bituminous macadam up to 7% will be found to give good traction, and water-bound macadam up to 12% can be negotiated without great difficulty.

Financing

The method of financing street paving in towns and villages varies all the way from the whole cost being borne by the municipality to the municipality paying but 2%.

Paving may be undertaken as a local improvement, either on petition, on the initiative or on the forced local improvement as provided in section 9 of the Local Improvement Act; or the council may submit a by-law to the people to raise funds for paying for all the pavement or part thereof.

A canvass recently made of 26 Ontario towns showed that in 66%, the abutting property pays all; in 8%, the abutting property pays 50%; in 24%, the abutting property pays more than 50% and less than 60%; in 2%, the municipality pays all. It might be pointed out that these percentages include the street intersections and flankages which the Act requires the municipality to pay.

The directors of the Dominion Steel Corporation met at Montreal last week and discussed the recommendations made by English engineers, involving an outlay of approximately $25,000,000 in the development of the corporation's plants and properties.

W. M. Irving was re-elected president of the Montreal branch of the Association of Canadian Building and Construction Industries at the annual meeting held last Monday afternoon. Other officers elected were as follows: First vice-president, K. D. Church; second vice-president, F. J. Parsons; third vice-president, Jas. K. McNutt; hon. secretary, John C. Watson; hon. treasurer, J. E. Walsh. Directors—W. C. Munn, J. P. Anglin, John Quinlan, C. M. Morssen, Douglas Bremner, T. Latourelle, J. J. Roberts, Fred B. Locker, A. W. Bermner, A. T. Alexander, Wm. McNally, J. M. G. Lockerby and John Grieve.

At a meeting of the Windsor, Ont., council held last Saturday evening, it was decided that a board of three consulting engineers should report on the proposed joint water works scheme for the Essex Border municipalities before the council would accept its share of the cost of the scheme as outlined by Morris Knowles, Ltd., consulting engineers to the Essex Border Utilities Commission. The Windsor council appointed E. M. Proctor, of E. A. James Co., Toronto, as its representative on the board of consulting engineers; the Essex Border Utilities Commission has appointed its chief engineer, Morris Knowles; and the city of Walkerville will appoint the third engineer. This board will investigate and report whether it is advisable to continue a separate water works for each of the seven municipalities interested, or whether they should all be merged in one system as advocated by the Essex Border Utilities Commission, or whether the city of Windsor should be asked to supply the entire district with water, which that city has offered to do. Meanwhile, Windsor has withdrawn its appeal to the Ontario Railway and Municipal Board.