

that they may promptly discharge all water from the gutter, and do not need cleaning often. They should be of sufficient cross section to admit the easy working of a long handled hoe, which may be used for the removal of whatever the water does not carry through.

Sidewalks are not necessary on roads of so little foot travelling as those of most of our rural districts, except in the vicinity of towns, and in these places, their construction is a much needed improvement. Under present management, when the muddy seasons of the year come round, it is impossible to travel on foot, except on the road sides. The sides are not prepared for travel, and, in many places, they are impassable. Besides the advantage for foot travel, a sidewalk is a safeguard from getting off the road on dark nights, a consideration by no means insignificant.

In order to construct a sidewalk, the roadway should be widened to the extent of five or six feet, graded to about the height of the centre of the road, and sloped gently outwards towards the side drain. The new grading should be well compacted as it is filled in, and then given some time to settle. A light coating of broken stone, topped off with two inches of screened gravel, should then be added and rolled with a light roller, or, if broken stone be too expensive, a coating of rough gravel three inches thick should be put on the clay and rolled. After this has become compact, the fine, sifted gravel, which has passed through a sieve with meshes half an inch in diameter, is then added and rolled.

If there is much clay in the gravel, it should be screened through a fine sand sieve, and what will go through, be rejected.

Pit gravel usually contains too much earthy matter for road-making and should be screened: first, to remove the large stones, through a sieve with meshes one and a half to one and three-quarters inches square, or, if less troublesome, these stones may be picked out, as the gravel is being loaded; secondly, to remove the clay and fine sand, through a sieve with one-half to one-quarter inch meshes. What is retained on the sieve at the second screening is the most suitable gravel for the top layer of road-covering. As the majority of township roads have already a thick coating of gravel, this gravel would be the most suitable for application to them. The second screening must not be pushed too far, as it will be well to have sufficient earthy matter remain to act as a matrix for the gravel when it is rolled.

When it is necessary to secure a sufficient depth of road-covering, or where the proper cross section requires a coating of gravel, the present road surface should be prepared for its reception by cutting off the edges, which are generally higher than the tracks, and removing any stone that would interfere with the proper shape of the road.

The gravel should then be applied, and adjusted to the proper form with rakes or shovels. The work of compacting the gravel is best done by the use of a roller, five to six feet long, and weighing one and a half to two tons. This is as heavy as can be used at first on loose gravel, but, as it consolidates, a heavier one may be used. It is convenient to have a roller that may be loaded, as the work proceeds, to any desired weight up to six tons, which will be sufficient for any gravel road.

A good form of roller is made of two hollow cylinders of cast iron, set abreast on a strong wrought iron axle, making, together, a length of five