

ROAD AND SEWERS

PROBLEM

The Regional Municipality of York was required to upgrade Gorham Street between Maple Street and Easthill Court in the east end of the Town of Newmarket to accommodate the projected increase in traffic volume. The 1993 AADT was 8,150 vehicles with 2% representing heavy trucks. As part of the reconstruction, storm sewers were installed to an invert of approximately 2.5 m below existing ground surface.

APPROACH

The field program involved the drilling of 11 boreholes with a sterling drill rig at locations both along the shoulder and through the existing road surface. The boreholes ranged in depth from 1.2 m to 3.3 m. Representative soil samples were obtained from the boreholes with select samples tested in a soils laboratory for natural moisture content, particle size distribution, Atterberg limits, standard Proctor and asphalt asbestos content. Field work was supervised by a geotechnical engineer.



CONDITIONS

The section of Gorham Street, which was investigated, was situated in a deep water glaciolacustrine deposit of predominantly silt and clay textured soils. There were several discontinuous layers of sandy silt to silty sand in the silt matrix. These soils are frost susceptible. Wet to saturated conditions were generally encountered at an average depth of 0.9 m below existing grade at the time of the investigation.

The existing pavement structure consisted of an average of 170 mm of asphalt over 110 mm of a sandy gravel base and 370 mm of a mainly sand subbase. There was considerable variation in the thickness. The granular materials did not comply with O.P.S. standards due to an excess of fines. The riding quality of the existing pavement was generally fair.

SOLUTION

It was determined that the existing pavement was suitable for incorporation into the new structure with a provision to remove the upper 50 mm of asphalt and to seal cracks. For wider cracks, a paving repair membrane was required. The pavement design for widening was as follows.

Asphalt - 140 mm Granular "A" - 150 mm Granular "B" - 450 mm

Sub-drains were necessary below the curb to control drainage in the road base along the entire length.