

Removal of Asphalt Pavement, Partial-Depth - Item No.

Special Provision No. PVMTXXXX

Amendment to OPSS 510

510.03 DEFINITIONS

OPSS 510.03 is amended by the addition of the following definitions:

Automatic Machine Guidance means equipment mounted with instruments containing project specific digital data to remotely establish position and control equipment operation to accurately perform construction work to the specified line and grade.

DWG means a proprietary binary file format for storing design data and metadata in the native format for several computer aided design (CAD) computer software applications.

DXF means an acronym for Drawing Interchange Format and is a CAD file format commonly used for “AutoCAD” computer software applications.

XML means an acronym for Extensible Markup Language, a text-based file format that uses custom tags to define objects and the data within each object.

510.07 CONSTRUCTION

Clauses OPSS 510.07.06.04 and OPSS 510.07.06.04.01 are deleted in their entirety and replaced by the following:

510.07.06.04 Removal of Asphalt Pavement, Partial-Depth

510.07.06.04.01 General

The work shall include the use of road surface survey, digital modelling, and automatic machine guidance for high accuracy partial depth asphalt removal by milling. Milled material shall be managed as specified in the Contract Documents.

510.07.06.04.02 Operational Constraints

Prior to commencing removal operations, all debris, deleterious material, and existing windrows shall be removed from the roadway surface, including material beyond the theoretical roadway width to provide positive drainage.

The surface remaining after removal shall have a constant and continuous crossfall matching the specified surface course crossfall, with a smooth transition where crossfall transitions are required. The surface remaining after removal shall have an even texture and be free of significantly different grooves and ridges in all directions.

Removed asphalt pavement material shall not remain on the roadway after completion of the Day's operation. Placing of the material on grade other than a bituminous surface prior to hauling to a stockpile shall not be permitted.

After partial depth removal, the gap between the top of milled surface and the bottom of a 3 m straightedge placed anywhere in any direction on the top of the milled surface shall not exceed 6 mm.

Prior to opening the lane to traffic after partial-depth pavement removal, adjacent granular shoulder material shall be reshaped and compacted to ensure proper drainage of the milled surface and adjoining shoulders.

Partial-depth asphalt pavement removal operations and the resulting surfaces from partial-depth asphalt removal operations shall not be permitted between November 16th and June 1st, unless approved by the Contract Administrator.

510.07.06.04.05 Automated Machine Guidance

An automatic machine guidance (AMG) system shall be installed on the milling equipment used for the work of removal of partial depth asphalt pavement removal. The AMG system shall be capable of precise three-dimensional control of equipment movement using satellite and / or local referencing.

A minimum of 3 weeks prior to the start of the work, the required digital file format of the milled surface design shall be provided to the Contract Administrator. Available formats are DXF, DWG, and XML. At least a week prior to the start of the work, the Contract Administrator will provide the digital file in the required format. The digital file shall be converted as required to prepare a machine control file for upload to the AMG system.

The AMG system and digital machine control file shall automatically control the milling equipment such that the existing asphalt pavement is partially removed over its entire surface to match the vertical dimension of the DDM milled surface to within a ± 5 mm tolerance.

The Contract Administrator shall have total station measurements made by an Ontario Land Surveyor of the top of the milled surface to verify the ± 5 mm tolerance is met. The total station shall be used mainly for measuring longitudinal and transverse profiles, which can be fully or partially milled. The relative height differences between any two measured points on this measured profile shall correspond to the height differences of the same points calculated from the DDM and/or DRSM within a tolerance of ± 5 mm. The cross-fall calculated from the measured points on this measured profile shall correspond to the cross-fall calculated from the DDM within a tolerance of ± 0.15 %.

510.07.06.04.06 Temporary Ramping

As part of the work of partial-depth pavement removal, at the end of each completed portion and prior to opening to traffic, temporary transverse ramping shall be constructed at a slope not steeper than 120H:1V. The temporary transverse ramping shall be removed as part of continuing the removal of asphalt pavement, partial-depth operation from the ramping location or prior to placing pavement materials at the ramping location.

If, due to unforeseen circumstances, partial depth pavement removal cannot be completed to the same station for the full pavement width prior to shut down at the end of the day, then as part of the work of partial-depth pavement removal, temporary longitudinal ramping, when permitted, shall be constructed at a slope not steeper than 10H:1V prior to opening to traffic. The temporary longitudinal ramping shall be removed within 1 Day or as agreed to by the Contract Administrator in the event of weather or access restrictions.

Temporary longitudinal ramping shall not be permitted when either of the following conditions exist:

- a) the ramping height would be greater than 50 mm, or
- b) the pavement slope would cause water to accumulate at the edge of the ramping and extend onto an adjacent lane or shoulder that will be open to traffic.

All costs associated with temporary ramping, including ramping material, shall be deemed to be included in the item price for Removal of Asphalt Pavement, Partial Depth.

WARRANT: Always with this tender item on selected Automated Machine Guidance trial projects in consultation with the Geotechnical Section, Geomatics, and Contract Delivery. Use only on projects requiring variable milling to correct pavement surface deficiencies and pavement cross slope. Higher benefits are achieved for multi-lane pavements with turn lanes, tapers, etc and projects with staged pavement rehabilitation.

It is imperative to use only when a detailed milled surface design with a demonstrably smooth longitudinal profile has been completed using InRoads or OpenRoads, including the manual optimization of short interval cross sections (20-25 m), in order to:

- a) provide for a smooth longitudinal profile in all traffic lanes with changes in longitudinal gradient, exclusive of gradient changes due to vertical alignment curvature, not exceeding 400H:1V for freeways, 300H:1V for arterial highways, and 200H:1V for collector and local highways;
- b) meet crossfall and super-elevation (transverse profile) design requirements;
- c) minimize the need for asphalt padding or levelling course;
- d) match the elevation of fixed appurtenances including curbs, manholes, catchbasins, barrier walls, and intersecting roadways and entrances;
- e) maintain positive drainage of the roadway surface to outlets; and
- f) maintain the minimum remaining asphalt recommended by the Geotechnical Section after milling.

Not to be used in combination with NSSP **PVMTXXXX**.