

Part 1 - General

1.01 Description

- .1 This Section specifies requirements for constructing and restoring roadways and driveways. Refer to Contract Documents for exact profile and details.

1.02 Related Specification

- .1 Construction Specification Section 01450 - Quality Control
- .2 OPSS.MUNI 206 - Construction Specification for Grading
- .3 OPSS.MUNI 304 - Construction Specification for Single and Double Treatment
- .4 OPSS.MUNI 310 - Construction Specification for Hot Mix Asphalt
- .5 OPSS.MUNI 314 - Construction Specifications for Untreated Subbase, Base, Surface Shoulder, Selected Subgrade and Stockpiling.
- .6 OPSS 350 - Construction Specification for Concrete Pavement and Concrete Base
- .7 OPSS.MUNI 492 - Construction Specification for Site Restoration Following Installation of Pipelines, Utilities and Associated Structures
- .8 OPSS.MUNI 501 - Construction Specification for Compacting
- .9 OPSS.MUNI 1001 - Material Specification for Aggregates – General
- .10 OPSS.MUNI 1010 - Material Specification for Aggregates – Base, Subbase, Select Subbase and Backfill Material
- .11 OPSS.MUNI 1150 - Material Specifications for Hot Mix Asphalt
- .12 OPSS.MUNI 1350 - Material Specification for Concrete – Materials and Production

1.03 Definitions

- .1 Pavement Surface Course (on Grade):
 - .1 Final treatment of surface upon which traffic shall pass.

- .2 Pavement Base Course (Binder):
 - .1 Material upon which surface course is placed.
- .3 Granular Base Material:
 - .1 Material placed between granular subbase and binder pavement.
- .4 Granular Subbase Material:
 - .1 Material placed between subgrade and base course.
- .5 Subgrade:
 - .1 Earth or rock surface, whether in cut or fill, as prepared for base or subbase.

1.04 Scheduling of Work

- .1 Schedule temporary restoration of roadway to follow closely behind trench backfilling. Unless otherwise noted, permanent restoration may be delayed until all trenching has been completed.

1.05 Maintenance

- .1 Make and maintain roadway safe for passage of traffic after completion of backfilling until permanent restoration takes place.
- .2 Maintain restored roadway surfaces for period of guaranteed maintenance.

1.06 Basis of Payment

- .1 Payment for temporary and permanent restoration of existing roadway, shoulders and driveways to be included in unit price bid in Form of Tender for construction of pipeline unless noted otherwise in the Special Provisions.

Part 2 - Products

2.01 Materials

- .1 Granular Subbase Material:
 - .1 Granular B to OPSS.MUNI 1010, Type I as amended in this Section.

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- .2 Granular Base Course:
 - .1 Granular A to OPSS.MUNI 1010.
 - .2 Granular B to OPSS.MUNI 1010, Type I as amended in this Section.
 - .3 Pavement Courses:
 - .1 Hot-mix, hot-laid asphalt to OPSS.MUNI 1150 as amended in this Section.
 - .2 Asphalt cement to meet Performance Grade PGAC 58-28 in accordance with OPSS.MUNI 1101 for local streets and non-commercial driveways.
 - .3 Asphalt cement to meet Performance Grade PGAC 64-28 in accordance with OPSS.MUNI 1101 for Regional roads and commercial driveways.
 - .4 Mix design: to approval of Contract Administrator.
 - .4 Concrete:
 - .1 Concrete with minimum 28-day compressive strength of 30 MPa, to OPSS.MUNI 1350.
 - .5 Subsection 1001.05.01.02 of OPSS.MUNI 1001 is amended by the deletion of the following, unless otherwise stated:
 - “d. Iron blast furnace slag or nickel slag;
 - “f. Reclaimed concrete material.”
 - .6 Subsection 1001.05.01.03 of OPSS.MUNI 1001 is amended by the deletion of the following unless, otherwise stated:
 - “c. Iron blast furnace slag or nickel slag.
 - “e. Reclaimed concrete material.”
 - .7 Subsection 1010.05.02 of OPSS.MUNI 1010 is deleted and replaced with the following:

“Granular A, Granular M and Granular S aggregates shall consist of crushed rock composed of hard, uncoated, fractured fragments, produced from rock formations or boulders of uniform quality, or a mixture of crushed gravel, sand and fines composed of hard, durable, uncoated particles, produced from naturally formed deposits.

Recycled Asphalt Product (RAP) may be blended with a previously tested and accepted natural granular material such that the blended product contains no more than 20% by mass of RAP. Blending of the RAP with the granular material shall occur with the use of cold feed bins or a procedure approved by the Contract Administrator.

Granular A, Granular M and Granular S aggregates shall not contain any Recycled Concrete Material (RCM), slag, glass or ceramic materials.

Granular A, Granular M and Granular S aggregates shall be stockpiled according to the stockpiling requirements for coarse aggregates in Subsection 1001.07.05 of OPSS 1001.”

- .8 Subsection 1010.05.03.02 of OPSS.MUNI 1010 is revised as follows:

“RAP may be blended with a previously tested and accepted natural granular material such that the blended product contains no more than 20% by mass of RAP. Blending of the RAP with the granular material shall occur with the use of cold feed bins or a procedure approved by the Contract Administrator.

Granular B Type I (Modified) shall be stockpiled according to the stockpiling requirements for coarse aggregates in Subsection 1001.07.05 of OPSS.MUNI 1001.

RAP containing steel slag aggregates or slag or Portland cement concrete shall not be allowed.”

- .9 Table 2 of OPSS.MUNI 1010 is amended as follows for Granular B, Type I:

MTO Sieve Designation	Percent Passing by Mass
4.75 mm	20 - 90
1.18 mm	10 - 80
300 µm	2 - 55
150 µm	0 - 25

- .10 Subparagraph 1150.04.01.01.01 b) and c) of OPSS.MUNI 1150 are deleted and replaced with the following:
- b) Up to 20% by mass of RAP shall be permitted for HL 4 and HL 8 binder mixes.
 - c) Over 40% by mass of RAP is not permitted for any mix.”
- .11 Subsection 1150.08.01 of OPSS.MUNI 1150 is deleted and replaced with the following:

“The Contractor shall, upon request, allow the Contractor Administrator or his representative the right to enter upon the premises of any of the material manufacturers, suppliers, plants, laboratories, or equipment for purposes pertaining to the work, to carry out such inspection, sampling and testing as specified or as requested by the Contract Administrator or his representative. The Contractor shall, upon demand, provide the Region of Durham with copies of daily batch weights for any mixes that have been placed and any information that relates mix types to batching weights and/or confirms the percentage of each material used in each mix where applicable.

- .12 OPSS.MUNI 1150 Table 6 - Marshall Stability - Mix Design Criteria for all Paving Mixtures is amended as follows:

Minimum Marshall Stability:	N at 60 °C
HL 1 Surface Course	11,000
HL 2 Levelling Course	10,500
HL 3 Surface Course	10,500
HL 4 Binder/Surface course	10,500
HL 8 Binder Course	10,500
MDBC	10,500
HDBC	12,500

Part 3 - Execution

3.01 Preparation of Asphalt Roadway and Shoulder

- .1 Saw-cut existing asphalt full depth in neat, consistent, parallel lines in accordance with Region of Durham Standard Details. Ensure saw-cut edges are clean and vertical.
- .2 Where edge of trench is within 1.0 metre of the edge of pavement, asphalt shall be removed to said edge of pavement. This provision to apply to travelled roadways, shoulder asphalt and driveway asphalt.

3.02 Grading

- .1 Do grading to OPSS.MUNI 206.
- .2 Shape subgrade so that it drains as specified.
- .3 Compact subgrade to 95% Standard Proctor Density unless otherwise specified.

3.03 Subdrains

- .1 Restore all damaged subdrains in accordance with OPSS.MUNI 405 and OPSD 216.021.

3.04 Placing Granular Materials

- .1 Place granular materials to OPSS.MUNI 314.
- .2 Begin spreading material on crown line or high side.
- .3 Place granular subbase materials on properly prepared subgrade to dimensions specified.
- .4 Remove and replace portion of layer where material has become segregated during spreading.

3.05 Rolling and Compacting

- .1 Compact granular materials according to Method A as described in OPSS.MUNI 501.
- .2 Roll materials from sides to centre, parallel with centreline of roadway.
- .3 Apply water as necessary during compaction.
- .4 Dry surface of layer by scarifying until moisture content is satisfactory.
- .5 Shape and roll alternately to obtain a smooth, even, and uniformly compacted surface to required contour.
- .6 Compact material with hand tampers weighing not less than 25 kilograms in areas not accessible to rolling equipment.

3.06 Asphalt Paving

- .1 Do asphalt paving to OPSS.MUNI 310 as amended below.
- .2 Subsection 310.07.03.01 of OPSS.MUNI 310 is deleted and replaced with the following:

“All abutting edges of existing pavement shall be prepared in accordance with Region of Durham Standard Details and coated with tack coat prior to placement of new asphalt. Tack coat shall be placed by the use of a mechanical (pump driven) spray wand that has the capabilities of being heated for cold weather operation applying the tack coat in a consistent uniform application. All longitudinal joints and transverse joints are to be sprayed prior to placement of the adjacent pass of asphalt to commence at the beginning and throughout the contract. Failure to have equipment to apply the tack coat in this manner will hold up commencement of the paving operations.

NOTE: Hand placement of the tack coat is not acceptable.”

- .3 Subsection 310.07.05.02.01 is deleted and replaced with the following:

“To ensure mix compliance, the Contractor shall conduct daily testing of all asphalt being produced for Quality Control (QC) purposes. The Contractor shall be responsible for the necessary process control testing during hot mix production, placement and compaction, and any necessary adjustments, to produce uniform, qualified hot mix asphalt.

The Contractor shall be responsible for obtaining all QC samples. The samples shall be taken in the field using sample plates and following current MTO sampling test procedures. The Region of Durham shall determine the location of each random sample and inform the Contractor prior to the sample being taken by the Contractor. The Contractor shall take one plate sample for QC purposes, one sample for Quality Assurance purposes and one sample for potential referee testing in an appropriate container.

The Contract Administrator may apply security seals to the samples prior to transportation. The Quality Assurance and potential referee samples shall be delivered to the Region's Materials Testing Laboratory at 825 Conlin Rd., Whitby within 4 hours of sampling time.

The frequency of testing for asphalt cement content, aggregate gradation and Marshall Stability compliance shall be based on Table 6 of OPSS.MUNI 310.

QC test results shall be forwarded to the Region of Durham within two working days from the time of sampling. Copies of the test results shall be faxed to the Region of Durham’s Materials Testing Lab at 905-655-4067 (Attention: Project Manager.), and the Contract Administrator. Bi-weekly summaries of all test data shall be emailed to the Region of Durham’s Materials Testing Lab and the Contract Administrator for the purpose of review at bi-weekly project meetings.”

- .4 Subsection 310.07.11.01 of OPSS.MUNI 310 is amended by the addition of the following:

“All cold longitudinal and transverse joints in the new Hot Mix Asphalt (HMA) pavement shall have all under-compacted material at an unconfined edge of the new asphalt mat removed (minimum 150 mm from the unconfined edge) and a straight, clean vertical face constructed by trimming the edge.

The Contractor shall construct durable longitudinal and transverse joints. Any joint cracking occurring within the Warranty Period shall be deemed to be a deficiency and all costs associated with remedial work shall be the responsibility of the Contractor.”

- .5 Subsection 310.07.11.02 of OPSS.MUNI 310 is amended by the addition of the following:

“The longitudinal joints in the surface course shall parallel the demarcation between the driving lanes, wherever feasible, at an offset of 100 mm to 150 mm from the centerline of the demarcation.”

- .6 Subsection 310.07.13 of OPSS.MUNI 310 is deleted and replace with the following:

“Each course after final compaction shall be smooth and true to the established crown and grade and the surface of each course shall be free from deviations exceeding 3 mm as measured in any direction with a 3 m straight edge. Poor rideability (roughness) resulting from pavement surface irregularity shall be cause for immediate work stoppage and shall require Contractor assessment of the cause for such deviation in profile and correction at the Contractor's expense.

Localized areas exhibiting surface variance exceeding the above specified tolerance shall be removed and replaced with the same hot mix asphalt to achieve a smooth longitudinal and lateral profile with adjacent acceptable surfaces.

Where surface irregularities exceeding these limits are evident over longer lengths the Contractor shall be required to cold plane and replace the full width and length of unacceptable pavement.

Alternatively, subject to approval by the Contract Administrator, the Contractor may overlay the unacceptable pavement (if applicable) for a continuous length covering all irregularities to provide the required profile.”

- .7 Subsection 310.07.14 of OPSS.MUNI 310 is deleted and replaced with the following:

“Each course after final compaction shall be of uniform texture and shall be free of segregation (as defined in the current MTO Field Guide for the Acceptance of Hot Mix and Bridge Deck Waterproofing), fat spots, oil spills or any other defects. Subject to approval by the Contract Administrator, areas of medium segregation may be left in place for binder courses, but shall be considered defective areas for surface courses. Areas of medium segregation in a binder course which develop severe pavement ravelling and/or pavement cracking prior to being overlaid by the surface course shall be deemed defective. Areas of severe segregation shall be considered defective areas for both binder and surface courses.

Defective areas shall be removed and replaced by the Contractor with acceptable hot mix of the same type and compacted to the satisfaction of the Contract Administrator.

When segregation is observed by the Contractor Administrator, the Contractor shall be immediately notified verbally, followed-up by written notification. The Contractor shall take immediate corrective action. If the segregation continues, the Region may then issue a Stop Work Order until the problem is corrected.”

- .8 Subsections 310.08.06.01 and 310.08.06.02 are deleted and replaced with the following:

“It shall be the responsibility of the Contractor to provide daily compaction tests for quality control purposes, using a nuclear densometer, at a frequency of one test for each 50 m of lane or for every 150 m² of area. Daily compaction results shall be provided verbally to the on-site Inspector, followed by fax or email of a hard copy report to the Contract Administrator within 24 hours.

Compaction testing of the placed HMA shall meet the requirements of Table 9.

Percent compaction shall be determined by comparing the density obtained using the nuclear densometer with the Maximum Relative Density (MRD) of the respective plate sample.

The Contractor shall fax copies of daily compaction results to the Region of Durham’s Materials Testing Lab at 905-655-4067 (Attention: Project Manager.). Daily compaction results shall be immediately reported to the on-site Inspector.”

- .9 Do not lay asphalt without approval of Contract Administrator.

3.07 Concrete Paving

- .1 Do concrete paving to OPSS 350.
- .2 Place concrete pavement to lines and grades to match original but not less than 150 mm in thickness.
- .3 Match existing joint patterns.

3.08 Gravel Surfaces

- .1 Restore gravel surfaces as shown on the Contract Drawings or specified in the Special Provisions.
- .2 Place granular materials in uniform layers not exceeding 150 mm.
- .3 Grade each layer to smooth surface finish.
- .4 Compact each layer to 100% Standard Proctor Density.

3.09 Surface Treated Areas

- .1 Restore surface treated areas to conform to original condition or as directed by Contract Administrator.

- .2 Do surface treatment to OPSS.MUNI 304.

3.10 Pavement Marking

- .1 All pavement marking to be checked by Region of Durham forces unless otherwise noted.

3.11 Testing

- .1 Do testing to Section 01450.

END OF SECTION