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| Version | Date | Description of Revisions |
| 1 | March 31, 2020 | Approved final document (BM) |
| 2 | March 9, 2021 | Minor clarifications from legal (BM) |

NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GENERAL

## Summary

This Section outlines Hot Mix Asphalt pavement construction for roadway reconstruction, asphalt sidewalks, and other paved surface restoration.

## Related Sections

[Under "Related Sections", identify other Sections that are related to, and/or dependent on, the work results or information specified elsewhere. The list should be limited to Sections with specific information that the reader might expect to find in this Section, but is specified elsewhere. For example, if hardware for aluminum entrances is specified in the aluminum entrance Section, a cross-reference would be appropriate in the finish hardware Section. The purpose of this cross-referencing is for information only, to aid in finding those other requirements—not to define the scope of the Section.

Cross-referencing here may also be used to coordinate assemblies or systems whose components may span multiple Sections and which must meet certain performance requirements as an assembly or system.

Contractor is responsible for coordination of the Work.

This Section is to be completed/updated during the design development by the Consultant. If it is not applicable to the section for the specific project it may be deleted.]

[List Sections specifying related requirements.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: [Optional short phrase indicating relationship].

### Sections:

#### Section 01300 – Submittals

#### Section 01561 – Environmental Protection

#### Section 02315 – Trenching, Backfilling and Compacting

#### Section 02701 – Aggregates – General

#### Section 02720 – Untreated Granular Subbase, Base, Surface and Shoulder

## References

[Consultant Note: The Consultant shall confirm all revision dates are the latest version, and update this specification if required.]

### OPSS.PROV 308 [April 2012], Construction Specification for Tack Coating and Joint Painting

### OPSS.MUNI 310 [Nov 2017], Construction Specification for Hot Mix Asphalt.

### OPSS.MUNI 1101 [Nov 2016], Material Specification for Performance Graded Asphalt Cement.

### OPSS.MUNI 1103 [Nov 2019], Material Specification for Emulsified Asphalt.

### OPSS.MUNI 1151 [April 2018], Material Specification for Superpave and Stone Mastic Asphalt Mixtures.

### OPSS.MUNI 311 [Nov 2018], Construction Specification for Asphalt Sidewalk, Driveway, and Boulevard and for Sidewalk Resurfacing.

### OPSS.MUNI 510 [Nov 2018], Construction Specification for Removal.

### OPSS.MUNI 341 [April 2018], Construction Specification for Routing and Sealing Cracks in Hot Mix Asphalt Pavement.

## Measurement for Payment

Measurement for payment for items XX shall be in tonnes of hot mix asphalt satisfactorily placed.

Measurement for payment for item XX tack coat shall be by lump sum.

Measurement for payment for items XX [temporary] asphalt sidewalk, driveway or boulevard will be measured in square meters for payment at the depth as specified in the Contract Documents.

Measurement for payment for items XX asphalt removals shall be made in square meters of existing pavement for the depth as specified in the Contract Documents.

Measurement for payment for item XX Saw-Cutting Existing Pavement shall be by lump sum.

Measurement for payment for item XX routing, cleaning, and sealing cracks or joints in Hot Mix Asphalt (HMA) shall be in metres, measured with a measuring wheel in a line generally representative of the path of the joint.

Measurement and Payment for item XX Joint Sealant – Reinstatement Tape shall be at the unit price per linear metre of joint re-instatement tape supplied and installed.

## Basis of Payment

Item XX 50 mm Superpave 12.5 FC1 Surface Course, PGAC 64-28, Category ‘D’

Item XX [50] [100] mm Superpave 19.0 Binder Course, PGAC 64-28 Category ‘D’

Item XX Tack Coat

Item XX [Temporary] Asphalt SP 12.5 Sidewalk

Item XX Asphalt SP 12.5 Driveway

Item XX Asphalt Superpave 19.0 Binder Course Driveway

Item XX Asphalt SP 12.5 Boulevard

Item XX Removal of Asphalt Pavement

Item XX Removal of Asphalt Pavement, Partial-Depth

Item XX Saw-Cutting Existing Pavement

Item XX Routing, Cleaning, and Sealing Joints in Hot Mix Asphalt Pavement

Item XX Joint Sealant – Reinstatement Tape

The unit prices for Hot Mix Asphalt (HMA) shall include the supply of the Performance Graded Asphalt Cement (PGAC). The grade of the asphalt cement for the Superpave mixes shall be PGAC 64-28 unless specified otherwise in the Contract Documents.

Each course of asphalt shall be placed to the specified thickness. If the specified placement rate is exceeded, payment may be withheld for the excess material placed.

Payment at the Contract price for [Temporary] Asphalt Sidewalk, Driveway, and Boulevard shall be full compensation for all labour, equipment and material necessary to do the Work including the hot mix asphalt, the excavation and disposal of all material, curb cutting at intersection, transit stops, the supply, placing, watering and compacting of all foundation materials and the removal of this temporary asphalt sidewalk in order to complete the Work as specified in the Contract.

Payment for these items shall be made at the applicable unit price in the Bid Form and shall be full compensation for all labour, equipment and materials necessary to complete this work..

## General

[Consultant Note: Minimum thicknesses of asphalt and granular materials are outlined in the following table. Thickness is measured in a compacted state. If the thickness of existing asphalt and granular materials is greater than what is specified below, the thickness shall match the existing. The Consultant shall specify the type of asphalt based on the Road Category and corresponding depths below. The granular courses are specified in Section 02701 – Aggregates – General and Section 02720 - Untreated Granular Subbase, Base, Surface and Shoulder. The thickness of Asphalt and granular shall be shown on the Contract Drawings.]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Surface Course Asphalt** | **Base Course Asphalt** | **Granular ‘A’ Base** | **Granular ‘B’ Sub-base** |
| Residential Driveway | 50mm Superpave 12.5 FC1 Surface Course, PGAC 64-28, Category ‘D’ | Not Applicable | 300mm Granular ‘A’ | Not Applicable |
| Commercial and Industrial Driveway | 50mm Superpave 12.5 FC1 Surface Course, PGAC 64-28, Category ‘D’ | 100mm (2 lifts) Superpave 19.0 Binder Course PGAC 64-28 Category ‘D’ | 450mm Granular ‘A’ | Not Applicable |
| Local Municipal Roads1 | 50mm Superpave 12.5 FC1 Surface Course, PGAC 64-28, Category ‘D’ | 50mm Superpave 19.0 Binder Course PGAC 64-28 Category ‘D’ | 150mm Granular ‘A’ | 300mm Granular ‘B’, Type 1 |
| Regional Roads | 50mm Superpave 12.5 FC1 Surface Course, PGAC 64-28, Category ‘D’ | 100mm (2 lifts) Superpave 19.0 Binder Course PGAC 64-28 Category ‘D’ | 150mm Granular ‘A’ | 450mm Granular ‘B’, Type 1 |

[Consultant Note: Use local municipal standards, when they exceed these minimums.]

The Contractor shall submit all required asphalt mix designs to the Consultant for review and acceptance a minimum of 10 Business Days before asphalt paving is scheduled to be undertaken. If for any reason the asphalt material is changed during the performance of the Work, the new mix design must be submitted to the Consultant for review and acceptance before the new hot mix asphalt is incorporated into the Work. The Contractor shall provide ample notice to the Consultant 2 Business Days in advance of paving operations to schedule testing and sampling.

All Performance Graded Asphalt Cement (PGAC) used in the hot mix asphalt must be compliant with the requirements outlined in Table 1 of OPSS.MUNI 1101.

Superpave asphalt mixes shall be designed to provide a minimum PGAC content as follows:

|  |  |
| --- | --- |
| **Mix Type** | **Minimum PGAC Content** |
| SP12.5FC1 | 5.0% |
| SP19.0 | 4.8% |

If the granular base is exposed following grinding (for base repairs and roadways where there is only one lift of asphalt), the granular base shall be fine graded and compacted to the satisfaction of the Consultant before any asphalt is placed. All faces of the pavement in the excavated area shall be painted with a thin, uniform and continuous coating of tack coat.

Under no circumstances shall top course asphalt paving take place after November 30th unless prior written permission has been received from the Consultant. Where required, the Contractor shall be responsible for the cost to provide the asphalt late season heating levy for asphalt placed in the winter months after November 30th and before spring of the next year

**Trench Restoration**

Trench excavations within the travelled portion of lanes shall be restored with full depth base course asphalt SP19.0 in the required lifts to match the existing asphalt profile for a period of 2 months or as approved by the Region. After the 2 month period, the top 50mm of base course asphalt shall be milled and paved with 50mm of top course asphalt SP12.5 FC1. Lap joints of 0.5m for the final course of asphalt shall be installed around the periphery of the excavation. [Consultant Note: If full lane top course restoration is required, Consultant to adjust accordingly. A profile detail shall be provided for typical trench backfill and restoration for work within the travelled portion of lanes/gravel shoulders and boulevards and included in the contract drawings. Refer to York Region Standard Drawing 02.81]

**Payment Adjustment for Variations in Asphalt Cement in HMA – Bid AC**

**Bidding Requirements**

The asphalt cement content of mix designs for bidding purposes shall be those shown in Table 1 below (Asphalt Cement Content for Bid Purposes (%),or Bid AC).

The minimum asphalt cement content for the mix design must be equal to, or greater than, those shown in Table 1.

The maximum asphalt cement content to be considered for payment adjustment for each mix shall be those shown in Table 1.

**TABLE 1 - Superpave Asphalt Cement Content for Bid Purposes (%)**

**Bid AC, Minimum AC for Mix Design, and Maximum AC Content for Payment Adjustment**

|  |  |  |  |
| --- | --- | --- | --- |
| **Mix Type** | **Asphalt Cement Content for Bid Purposes (%)** | **Minimum Asphalt Cement Content for Mix Design (%)** | **Maximum Asphalt Cement Content for Payment Adjustment (%)** |
| SP 12.5 | 5.0 | 5.0 | 5.5 |
| SP 19.0 | 4.8 | 4.8 | 5.3 |

**Price Adjustments**

The Contractor shall submit a request for payment adjustment to the Region. The price used to calculate the payment adjustment shall be based on the actual AC incorporated into the HMA based on the QA results and the applicable AC Bid % specified in Table 1.

**Note**: Payment adjustments to be paid to the Contractor will apply up to the maximum AC content as specified in Table 1.

The payment adjustment calculated using this formula shall be full compensation for any and all PGAC grades specified.

Actual AC shall be defined as the average AC content obtained from samples taken during paving operations minus the AC content of the Reclaimed Asphalt Pavement (RAP) in the asphalt mix design.

The AC Price shall reflect the Ministry of Transportation’s (MTO) PGAC price index appearing monthly in the MTO’s Contract Bulletin.

**Actual AC Calculation - Example 1:**

Asphalt Specified = SP12.5 PGAC 64-28

Asphalt Qty = 10,000 tonnes

Average AC content obtained from QA samples = 5.3% of Asphalt Qty = 530 tonnes

Actual AC = Average AC from samples = 530 tonnes

Actual AC % = (530 tonnes / 10,000 tonnes) x 100 %

Actual AC % = 5.3% of PGAC

**Actual AC Calculation - Example 2:**

Asphalt Specified = SP19 PGAC 64-28

Asphalt Qty = 10,000 tonnes

Asphalt mix design RAP = 15% = 1,500 tonnes

AC Content of RAP = 4% of asphalt mix design RAP = 60 tonnes

Average AC content obtained from QA samples = 5.3% of Asphalt Qty = 530 tonnes

Actual AC = Average AC from samples – AC Content of RAP = 530 – 60 = 470 tonnes

Actual AC % = (470 tonnes / 10,000 tonnes) x 100 %

Actual AC % = 4.7% of PGAC

HMA Quantity shall be defined as the actual amount of hot mix asphalt placed and accepted into the Work in tonnes.

The Contractor shall bid the hot mix asphalt item(s) using the content of PGAC specified.

An asphalt payment adjustment will only be considered for those items for which the unit of measurement specified in the Bid Form is “tonne (t)”.

The Region will use the Ministry of Transportation’s PGAC price index issued the month prior to tender closing to determine the adjustment(s), if any:

Payment adjustment\* = HMA Qty x (Actual AC – Bid AC) x AC Price

\*Negative value indicates payment to the Region.

# PRODUCTS

## **OPSS.MUNI 1101** shall be followed with the following amendments:

**1101.02 References** is amended by the deletion of the following:

**ASTM International**

D3665-12 Standard Practice for Random Sampling of Construction Materials

**1101.04.01.01 PGAC Test Documentation** is deleted and replaced by the following:

For each grade of PGAC specified in the Contract Documents, the Contractor shall supply the following to the Consultant a minimum of 14 Days prior to the first use of each Product, or concurrently with the submission of the asphalt mix design, whichever is earlier:

a) The PGAC supplier and the facility type and location that the Product will be supplied from.

b) Test results for the Product demonstrating compliance with the requirements of the Contract Documents.

c) Applicable mixing and compaction temperatures for the Product.

d) Documentation setting out the construction, storage and handling requirements, including the material safety data sheet, re-compaction temperature, mix discharge temperature, and recommended extraction procedure.

e) When the PGAC contains any Polyphosphoric acid (PPA) and a liquid anti-stripping additive is incorporated into the PGAC at the PGAC supplier’s depot:

i) information on how much anti-stripping additive was added to the PGAC, and;

ii) documentation from the PGAC supplier confirming that the PPA modified PGAC with the liquid anti-stripping additive added at the PGAC supplier’s depot will meet all asphalt cement material requirements specified in the Contract Documents and American Association of State Highway and Transportation Officials (AASHTO) M320 for the PGAC grade specified in the Contract.

f) A copy of all LS-227 documentation demonstrating that the Product complies with the requirements of the Contract Documents.

g) Low temperature limiting grade along with a copy of all of the LS-308 documentation demonstrating that the Product complies with the requirements of the Contract Documents.

h) Average of the critical crack tip opening displacement (δt) as determined according to LS-299 along with a copy of all of the LS-299 documentation demonstrating that the Product complies with the requirements of the Contract Documents.

For test documentation required under f), g), and h) above, the independent laboratory conducting the PGAC testing shall have participated in the most recent AASHTO Materials Reference Laboratory proficiency sample correlation program for PGAC and shall have obtained proficiency ratings in the program, satisfactory to the Region.

The Consultant shall review the test results submitted and provide written confirmation of conformance of the PGAC, or advise the Contractor of any non-conformance, within 10 Business Days from the date of delivery of the samples and test documentation. The mix shall not be placed until the Consultant provides written confirmation of conformance of the PGAC to the requirements of the Contract Documents, based on the submitted test results and possible QA testing. The Consultant’s confirmation of conformance of the submitted PGAC properties does not constitute any guarantee that the mix can be produced, constructed, or both, in accordance with the Contract requirements, and shall not relieve the Contractor of its responsibility for ensuring the specified quality of materials and workmanship.

## **OPSS.MUNI 1151** shall be followed with the following amendments:

**1151.02 References** is amended by deleting the reference to OPSS 1101 Performance Graded Asphalt Cement from the list of **Ontario Provisional Standard Specifications, Material** and replacing it with “OPSS.MUNI 1101 Material Specification for Performance Graded Asphalt Cement as modified by these Specifications”.

**1151.02 References** is amended by the addition of the following to the list of **MTO Laboratory Testing Manuals** under the **Ontario Ministry of Transportation Publications**:

LS – 227 Determination of Ash Content

LS – 299 Determining Asphalt Cement’s Resistance to Ductile Failure Using Double Edge Notched Tension Test (DENT)

LS – 308 Determination of Performance Grade of Physically Aged Asphalt Cement Using Extended Bending Beam Rheometer (BBR) Method

**1151.02 References** is further amended by the addition of the following to the list of **American Association of State Highway and Transportation Officials (AASHTO) Standards:**

M 332-14 Standard Specification for Performance-Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test

**1151.05.01 Asphalt Cement** is amended by deleting the reference to OPSS 1101 in the first sentence and replacing it with “OPSS.MUNI 1101 as modified by these Specifications”.

# EXECUTION

## **OPSS.MUNI 310** shall be followed with the following amendments:

**310.02 References** is amended by deleting the reference to OPSS 1101 Performance Graded Asphalt Cement from the list of **Ontario Provincial Standard Specifications, Material** and replacing it with “OPSS.MUNI 1101 Material Specification for Performance Graded Asphalt Cement as modified by these Specifications”.

**310.02 References** is amended by the addition of the following to the list of **MTO Laboratory Testing Manuals** under the **Ontario Ministry of Transportation Publications**:

LS-227 Determination of Ash Content

LS-299 Determining Asphalt Cement’s Resistance to Ductile Failure Using Double Edge Notched Tension Test (DENT)

LS-308 Determination of Performance Grade of Physically Aged Asphalt Cement Using Extended Bending Beam Rheometer (BBR) Method

**310.02 References** is further amended by the addition of the following to the list of **American Association of State Highway and Transportation Officials (AASHTO) Standards:**

M 332-14 Standard Specification for Performance-Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test

**310.05.01 Hot Mix Asphalt** is deleted and replaced by the following:

The materials used in the production of HMA shall be in accordance with OPSS.MUNI 1151 for Superpave mixes.

The RAP content allowed in the various hot-mix asphalt mix types is as follows:

|  |  |
| --- | --- |
| **Mix Type** | **Maximum RAP Percentage Allowed** |
| All Surface Course Mixes | 0% |
| SP 19.0 and SP 25.0 | 15% |

The use of recycled shingle tabs in any mix is not permitted.

The use of slag as an aggregate in any mix is not permitted.

The requirements of Appendices 1003-D and 1003-E of OPSS.MUNI 1003 shall apply to this Specification.

**310.07.01 Quality Control** is amended by the addition of the following:

Testing of materials and of compaction requirements for compliance with technical requirements of the Specifications shall be the duty of a testing laboratory provided by Contractor. The laboratory performing testing shall have CCIL (Canadian Council of Independent Laboratories) Type B Certification.

Testing of asphalt shall be in accordance with OPSS.MUNI 310 and include tests to meet compliance with 310.08.02, 310.08.03 and 310.08.04.

Sampling and testing frequency of hot mix asphalt shall meet or exceed the requirements of Table 6 of OPSS.MUNI 310. The Contractor shall deliver to their testing laboratory for Quality Control testing, samples of hot mix asphalt with a minimum mass of 10 kg. The Contractor shall obtain Quality Control and referee samples using a Quartermaster sample splitter, or equivalent.

The use of testing service shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the Contract Documents. To facilitate testing service, the Contractor shall:

* 1. Secure and deliver to the testing laboratory representative samples of the materials proposed for use and are required to be tested.
  2. Furnish such casual labour as is necessary to obtain and handle samples at the Site or at other sources of material.
  3. Advise the testing laboratory and Consultant sufficiently in advance of operations to allow for completion of quality tests and for the assignment of personnel.

All quality control test results, samples and reports shall be made available to the Consultant within 5 Days after receipt of the results.

The Contractor is responsible for the interpretation of test results and determination of actions to be taken to ensure conformance with the Contract Documents.

**310.07.04 Transportation of Hot Mix Asphalt**

Schedule delivery of material for placing in daylight hours, unless otherwise approved by the Consultant. Deliver material to paver at a uniform rate and in an amount within capacity of paving and compacting equipment.

Deliver loads continuously and immediately spread and compact.

Before unloading asphalt at the Site, provide Consultant a delivery ticket (with each batch of asphalt) on which is printed, stamped or written the following information:

1. Name and location of batch plant.
2. Date and serial number of ticket.
3. Name of Contractor.
4. Specific designation of job (name and location).
5. Approved job mix formula.
6. Amount of asphalt in tonnes.
7. Truck number, cumulative total, and/or load number.
8. Time truck was loaded.

Provide space for the following information, which shall be registered by producer's representative on at least two copies of the delivery ticket, after discharge has been completed:

1. Time that load arrived on the Site.
2. Time load was discharged.

**310.07.05.01.01 General** is amended by deleting all references to OPSS 1101 and replacing them with “OPSS.MUNI 1101 as modified by these Specifications”.

**310.07.05.01.02 Frequency and Location** is deleted and replaced by the following:

A minimum of one sample shall be randomly chosen for each asphalt cement type used on the Contract. Additional samples shall be provided by the Contractor when requested by the Region.

**310.07.05.02.01 General** is amended by deleting the first sentence and replacing it with the following:

The Consultant will be conducting QA testing, using the requirements of OPSS.MUNI 310, OPSS.MUNI 1101 and OPSS.MUNI 1151 as guidelines. The Contractor shall obtain QC, QA and referee HMA samples using a Quartermaster sample splitter.

**310.07.06.02 Operational Constraints** is amended by the addition of the following:

The placement of the surface course asphalt will not be permitted until all trimming and placement of topsoil, sod and seed is completed.

The temperature of the mixture, as it is discharged from the mixer, shall be controlled within a temperature range of 135°C to 150°C.

**310.07.11.01 General** is amended by deleting the second paragraph and replacing it with the following:

Longitudinal and transverse butt or stepped joints between the new HMA pavement and the previously paved pavement shall be constructed by trimming the previously paved pavement edge to a straight, clean, vertical surface of at least 50 mm.

**310.07.11.03 Transverse Joints** is amended by the addition of the following:

All transverse construction joints and mat terminations shall be temporarily ramped to minimize the bump. Transverse joints between new and existing pavement shall be prepared no more than 24 hours in advance of paving tie-ins unless the joint is adequately ramped to the satisfaction of the Region. Existing paved entrances shall be connected to new construction using an appropriate full depth butt or ground step joint to ensure a smooth transition to the satisfaction of the Region.

**310.08.01 General** is amended by deleting all references to OPSS 1101 and replacing them with “OPSS.MUNI 1101 as modified by these Specifications”.

**310.08.01 General** is amended by the addition of the following: The Consultant will be conducting QA testing, in accordance with the requirements of OPSS.MUNI 310 and OPSS.MUNI 1151. The Consultant will also be checking Superpave HMA Volumetric Properties for acceptance against the Contractor’s mix design and the requirements of OPSS.MUNI 1151 as follows:

Voids in Mineral Aggregate (2) shall be +/- 1.0% from the submitted mix design and not more than 0.5% below the design minimum.

For the purpose of hot mix sampling and testing, one lot will be deemed to be the total of each Day’s production.

**310 Table 10 Minimum Pavement Compaction Based on Maximum Relative Density** is deleted and replaced by the following Table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Mix** | **Acceptable %** | **Borderline %** | **Rejectable %** |
| Superpave 12.5 FC1 | 92.0 to 96.5 | 96.6 to 97.5 | <92.0  or  >97.5 |
| Superpave 19.0 | 91.0 to 96.5 | 96.6 to 97.5 | <91.0  or  >97.5 |

The Contractor shall furnish rollers, tampers, and other compaction equipment to provide the specified compaction in restricted areas with the approval of the Consultant.

At pavement installations adjacent to curbs, maintenance holes, valve boxes, and other structures not accessible to rollers, the Contractor shall compact thoroughly by means of hot tampers.

## Tack Coat

**OPSS.PROV 308** shall be followed with the following amendments

**308.07 CONSTRUCTION**

**308.07.01 Application of Tack Coat** is amended by the addition of the following:

Tack coat shall be applied to all previously paved surfaces regardless of whether or not they have been open to traffic.

Where the asphalt surface course is placed in two lifts, the surface of the first lift shall be thoroughly cleaned of dirt by sweeping with a power broom, hand brooming and scraping where necessary. The asphalt surface shall be free of standing water. A tack coat shall then be applied prior to installation of the second course. Tack coat shall be applied by means of an approved pressure distributor.

The Contractor shall consider the use of alternative products for night time operations and cold temperatures. The use of any alternative product by the Contractor requires prior acceptance by the Consultant.

## Asphalt Sidewalk, Driveway & Boulevard

**OPSS.MUNI 311** shall be followed with the following amendments:

**311.05 MATERIALS**

**311.05.01 Hot Mix Asphalt** is amended by replacing with the following:

The hot mix asphalt for this work shall be according to OPSS MUNI 1151 for SP12.5 and SP19.0

**311.07 CONSTRUCTION**

**311.07.01 General** is amended by the addition of the following:

Asphalt paving shall be carried out in accordance with OPSS MUNI 310. Granular placement shall conform to Section 02701 – Aggregates – General and Section 02720 - Untreated Granular Subbase, Base, Surface and Shoulder.

The [temporary] asphalt sidewalk shall be connected to the drop curb at the intersections, be accessible by wheelchairs and be constructed as follows:

* + Granular base under sidewalk and transit pads shall be a minimum of 150 mm – Granular ‘A’ material or as otherwise specified on the Contract Drawings.
  + Sidewalk widths shall be a minimum of 1.5 meters or as directed by the Consultant.
  + Pedestrian transit pads widths shall be a minimum of 2.0 meters or as directed by the Consultant.
  + Sidewalk and transit pad asphalt thickness shall be a minimum of 50 mm SP12.5 FC1 or as otherwise specified on the Contract Drawings.

If the asphalt sidewalk is a replacement of an existing sidewalk, it must be ready for use before the existing sidewalk is removed.

Driveways and boulevards shall be paved on granular ‘A’ as specified on the Contract Drawings. Existing paved entrances shall be connected to the new construction where necessary using the Hot-Mix asphalt SP 12.5 and SP 19.0 per OPSS MUNI 1151.

Thickness of granular and the Hot Mix asphalt shall be as specified on the Contract Drawings. The Contractor shall ensure a smooth transition from the new construction to the existing entrance.

* 1. Traffic

Keep vehicular traffic off newly paved areas until the pavement surface temperature has cooled below 38 °C.

No stationary loads shall be permitted on either the asphalt binder or surface courses of pavement until 24 hours after paving.

Ensure traffic controls are approved and Paid Duty Police is arranged where traffic movements through signalized intersections are impacted, in accordance with Section 01550 - Traffic Control.

Ensure ramping, warning signs, and marking of raised surfaces are in proper order prior to re-opening for traffic.

## Removals

The Contractor shall perform grinding, milling and asphalt removals in accordance with **OPSS.MUNI 510**.

When the day’s work for asphalt pavement removal is completed, normal traffic flow in each direction shall be resumed. In order to restore normal traffic flow, any grade differences between adjacent pavements (existing and milled) in transverse directions shall be ramped with hot mix asphalt. Ramps in the transverse direction shall be sloped at 20:1. The Contractor shall ensure that there are no grade differences between adjacent pavements (existing and milled) in longitudinal directions. The Contractor is advised that in order to open all sidestreets to all lanes of traffic at the end of each Day, temporary ramping will be required around maintenance holes, catch basins, and valve chambers within the roadway after the milling operation has been performed. All temporary ramps around the manholes, catch basins, and valve chambers shall be completely removed prior to placement of the new base or surface course asphalt. As an alternative to this ramping, at the Contractor’s discretion, all maintenance holes, catch basins, etc., may be lowered to match the grade of the freshly milled surface, then adjusted to the new final grade before the new surface asphalt is placed. No additional payment will be made for these adjustments and the cost of this Work shall be included in the unit prices for [Item XX Removal of Asphalt Pavement].

**Maintenance Holes**

Following all asphalt removal work, and prior to opening the road to traffic, the Contractor shall install temporary maintenance hole safety ramps at all maintenance holes, until the surface course of asphalt is placed.

**Equipment**

The asphalt removal work shall be performed using a pavement-cutting machine of a type that has performed successfully on other work comparable to that proposed to be done under this Contract. If water is to be used from fire hydrants on the Site, the Contractor shall obtain, at its own expense, the appropriate permits from the Local Municipality. The Contractor shall not draw any water from areas which are considered to be environmentally sensitive.

**Cutting Equipment**

The cutting-machine to be used to perform work under this Contract shall be designed and built for this type of work, be self-propelled and shall have, in combination, the means for cutting the old surface and blading the cuttings into one windrow.

The machine shall be able to cut flush to all curbs and gutters, manholes and catch basins.

## Routing and Sealing Joints

### **OPSS.MUNI 341** shall be followed with the following amendments**:**

The Contractor shall perform routing and sealing of joints in accordance with OPSS.MUNI 341 at all joints between new pavement and existing pavement or in the locations deemed appropriate by the Consultant.

**Joint Sealant – Reinstatement Tape**

Prior to placing the surface course of Hot Mix Asphalt, the Contractor shall install a cold applied polymer modified bituminous strip in order to provide a smooth, lip free joint.

The tape shall be 2 mm x 50 mm "Denso North America, Inc." brand reinstatement tape (described below) or an approved equivalent. The Contractor shall install the tape according to the supplier's instructions which may include the use of special primers and/or special equipment.

The supplier's instructions can be downloaded at: <http://www.densona.com/pdfs/DensoRoadProducts/Denso-Re-Instatement-Tape.pdf>

In conjunction with the suppliers' placement instructions the Contractor shall rake off any large aggregates present on the edge of the repair area prior to the final rolling application. Large aggregates that are raked off shall be removed, and disposed of, and shall not be placed back on the new asphalt patch. The reinstatement tape shall overlap sufficiently in order to achieve a water tight joint. All edges of placed asphalt, including around all valve chambers, maintenance holes, catch basins, valve boxes, along the concrete curb and gutter, and at the transverse cold joints at the paving limits shall receive this treatment.

**341.05 MATERIALS**

**341.05.01 Crack Sealant** is amended by the addition of the following:

The crack sealant compound shall be as specified in ASTM D-6690 Type IV Modified and shall have a resilience of 30% to 60%.

**341.05.02** **Limestone Screenings** is added to the Specification:

Limestone screenings to be used as a dusting sealant shall have 100 percent passing through the 1.18 sieve and not greater than 25 percent passing through the 0.075 sieve.

**341.05.03 Crack Sealant Barrier Material** is added to the Specification:

The crack sealant barrier material to be used for this Contract shall be Glenzoil 20 Plus or Equivalent with prior written authorization from the Region.

**341.06 EQUIPMENT**

**341.06.02** **Heating Kettle** is amended by the addition of the following:

The heating kettle shall meet the requirements of the Technical Standards and Safety Authority.

**341.06.04 Air Compressor** is added to the Specification

The air compressor used to supply the hot-compressed air lance shall be equipped with oil and moisture filters and shall provide a minimum pressure of 700 kPa at a minimum air volume of 4.25 cubic metres per minute (150 cfm).

**341.07 CONSTRUCTION**

**341.07.03** **Cleaning of Routed and Unrouted Cracks** is amended by the addition of the following**:**

The Contractor shall take all necessary precautions to prevent the hot lance from charring or burning the asphalt surface of the joints.

**341.07.05 Sealant Dusting** is deleted and replaced by the following:

Where traffic is to be maintained during joint sealing, the surface of the sealant compound shall be dusted with limestone screenings in accordance with the requirements of subsection 341.05.02, in order to eliminate any tackiness, prior to allowing any traffic to travel over the joint sealed area.

**END OF SECTION**