

## **AMENDMENT TO OPSS 313, APRIL 2021**

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Special Provision No. BITU0033

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### **Additional Sampling and Testing Requirements for Mix Performance Testing (MPT)**

#### **313.01 SCOPE**

Section 313.01 of OPSS 313 is amended by the addition of the following:

This Special Provision covers the requirements for additional sampling and testing of hot mix asphalt (HMA) and pavement field cores for mix performance testing (MPT) when specified to be tested, for information purposes only.

#### **313.02 REFERENCES**

Section 313.02 of OPSS 313 is amended by the addition of the following:

##### **Ontario Ministry of Transportation Publications:**

MTO Laboratory Testing Manual:

- LS-334 Test Method for Determining the Fracture Potential of Asphalt Mixtures Using the Flexibility Index Test (FIT) with Semicircular Bend (SCB) Geometry
- LS-335 Test Method for Hamburg Wheel-Track Testing of Compacted Asphalt Mixtures
- LS336 Test Method for Determining Fracture Energy of Asphalt Mixtures Using the Disk-Shaped Compact Tension (DCT) Geometry

MTO Forms:

- PH-CC-139 Bituminous Mix and Core Sample Identification
- PH-CC-868 ERS - Hot Mix Asphalt Payment Calculation

#### **313.03 DEFINITIONS**

Section 313.03 of OPSS 313 is amended by the addition of the following:

**Mix Performance Testing (MPT)** means performance tests carried out on post-production loose hot mix asphalt (HMA) and/or pavement field cores to assess the mixture's resistance to various modes of cracking potential (fatigue cracking and low temperature thermal cracking) and rutting resistance.

#### **313.07 CONSTRUCTION**

##### **313.07.09 Sampling**

Clause 313.07.09 of OPSS 313 is amended by the addition of the following clause:

##### **313.07.09.07 Mix Performance Testing**

Additional loose mix and pavement field core samples of surface course HMA shall be obtained from select sublots according to Table 2A for mix performance testing. The sublots are to be selected randomly from the sublots identified for mix properties by the Contract Administrator. These sublots should spread throughout the Contract.

The loose mix sample shall be taken from the paver and the pavement core shall be taken within 1 Day of paving from the same location where the loose mix sample was collected. The loose mix sample shall be taken concurrently with the mix properties ERS samples. The pavement cores shall be taken along the mid-lane at a minimum 1 m spacing and shall consist of the top two layers of asphalt.

All samples shall be taken from the mainline surface course and not from the shoulder or ramp. Requirements for filling the sample holes shall be according to the Compaction clause.

These samples shall be designated for QA testing for mix performance tests according to Table 4A. No additional loose mix and/or pavement core samples shall be taken from the placed mix. MTO form PH-CC-139, Bituminous Mix and Core Sample Identification, shall be filled out in full and submitted with all samples. In addition, the MTO form PH-CC-139, shall also identify corresponding mix properties lot/sublot number, and that the samples are for mix performance testing. Mix performance testing is required for information only.

In addition, GPS coordinates for all additional sampling shall be submitted to the Contract Administrator no later than 7 Days after completion of HMA paving.

The following information shall be submitted to the Engineering Materials Office (EMO) Bituminous Section, attention to [bituminous@ontario.ca](mailto:bituminous@ontario.ca) and regional Quality Assurance (QA) Office.

- a) Pavement treatment at the locations of sampling.
- b) Mix design for the sampled loose mix and pavement cores.
- c) GPS coordinates, station, lane number, offsets, lot/sublot for each loose mix and pavement core samples.
- d) Corresponding MTO form PH-CC-868, ERS-Hot Mix Asphalt Payment Calculation, for the HMA lot where MPT samples were taken.
- e) PGAC test results for the PGAC lot that corresponds to the HMA lot where MPT samples were taken.
- f) Four photos of the coring operation.

**TABLES:**

OPSS 313 is amended with the addition of the following Tables:

**TABLE 2A  
MPT Sample Size and Frequency**

| <b>HMA Type</b>                              | <b>Location in Contract</b>                  | <b>Sample Type</b>   | <b>Sample Quantity</b>                  | <b>Sample Frequency</b>  |
|--|--|----------------------|---|--|
| [* Designer Fill-in - See Notes to Designer] | [* Designer Fill-in - See Notes to Designer] | Loose Mix            | 80 kg (four boxes) per subplot          | Three sublots randomly selected by the Contract Administrator  |
| [*Same HMA Type as above]                    | [*Same Sample Location as above]             | Pavement Field Cores | 10 cores of 150 mm diameter per subplot | Cores samples shall be taken from the stations where loose mix samples were taken for all three sublots selected by the Contract Administrator as above. Core samples shall be taken from the mid-lane longitudinally in 1-meter increments. |

**Notes:**

1. Each material sample receptacle shall have a maximum mass of 30 kg. For ease of handling, splitting of material at the paving site is permitted such that a sample is contained in a maximum of four receptacles whose total mass does not exceed the maximum specified above. Once delivered to QA testing laboratories, combining of the material from the two receptacles is only mandatory if a single receptacle contains insufficient material to carry out each test required.

**TABLE 4A  
MPT Testing Requirements**

| <b>Test</b>  | <b>Testing Method</b> | <b>Attributes</b>         | <b>Units</b> | <b>Results (Note 1)</b>                               |
|--|-----------------------|---------------------------|--------------|---|
| Flexibility Index Test (FIT)<br>Using Semicircular Bend<br>Geometry (SCB)  | LS-334                | Flexibility Index<br>(FI) | -            | Testing carried out for<br>information purposes only. |
| Disk-Shaped Compact Tension<br>(DCT) Test  | LS-336                | Fracture Energy           | J/m2         | Testing carried out for<br>information purposes only. |
| Hamburg Wheel-Track (HWT)<br>Test  | LS-335                | Rut Depth                 | mm           | Testing carried out for<br>information purposes only. |
|  |                       | Number of Passes          | -            |   |
| <b>Note:</b><br>1. All test result information shall be reported as per REPORT section of respective MTO Laboratory Standards Methods. |                       |                           |              |   |

NOTES TO DESIGNER:

\* **Designer Fill-Ins for Table 2A**

- Insert the HMA type (e.g., Superpave 12.5, 12.5FC 1, 12.5FC 2; SMA 12.5, 9.5) as determined by the Regional Geotechnical Section in consultation with EMO Bituminous Section. Only one surface course mix type shall be selected for the entire Contract that is being used for mainlines paving and not for the shoulders or ramps.
- Insert the location of this HMA type in the Contract (e.g. whole Contract, mainlines, highway number etc.).
- This shall only be applicable for major highway's mainlines; no side roads, shoulders or ramps.

**WARRANT:** Always with NSSP for Regression (BITU0026), RAC (BITU0028), and WMA (BITU0029) in addition to where additional mix performance testing will be conducted, in consultation with the Regional Geotechnical Section, Regional Quality Assurance and EMO Bituminous Section.

Select contract with high volume Freeways and/or King's Highways that has a minimum hot mix asphalt quantity of 80,000 square meters or its tonnage equivalent for the surface course mix. This NSSP is not intended for smaller paving projects, such as structural/selective resurfacing jobs.

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