

AMENDMENT TO OPSS 1151, NOVEMBER 2016

Special Provision No. 111F06

August 2019

1151.02 REFERENCES

Section 1151.02 of OPSS 1151 is amended by the addition of the following under **Ontario Ministry of Transportation Publication**, MTO Laboratory Testing Manual:

LS-321 Method for Calculation of Asphalt Film Thickness

1151.03 DEFINITIONS

Section 1151.03 of OPSS 1151 is amended by deleting the definition of **RAP Content**.

Section 1151.03 of OPSS 1151 is further amended by the addition of the following definitions:

Binder Replacement means the asphalt cement from the RAP contributing to the total asphalt cement content in the mix, expressed as a percentage.

Roof Shingle Tabs (RST) means as defined in OPSS 313.

1151.04 DESIGN AND SUBMISSION REQUIREMENTS

1151.04.01 Design Requirements

1151.04.01.01 General

Clause 1151.04.01.01 of OPSS 1151 is deleted in its entirety and replaced with the following:

A laboratory that has current CCIL Type A certification, AMRL, or AMRL equivalent certification shall be used to conduct all mix designs and mix checks.

Superpave mixes shall be designed using the procedures specified in LS-309, with the exception of WMA mixes. WMA mixes shall be designed using the procedures specified in LS-318 at the anticipated WMA production temperature. In the mix design procedure, all references to RAP Content shall be deleted and replaced with % binder replacement.

Superpave materials, mix designs, and the JMF shall be according to the requirements specified in Tables 1, 2, 3 and 4 for the HMA mix type specified in the Contract Documents.

The use of RST is not permitted in the HMA.

SMA mixes shall be designed using the procedures specified in LS-311. SMA materials, mix designs, and the JMF shall be according to the requirements specified in Tables 1, 4, and 5 for the SMA mix type specified in the Contract Documents. Cellulose or mineral fibres shall be used as a stabilizing additive in dosage rates of 0.3% or 0.4%, respectively, by mass of the total mixture. Regardless of the type of fibre used, the manufacturer's recommendations for any product used shall be followed.

The composition of the HMA may be modified as permitted in Table 6.

The amount of RAP allowable by mass in a mix will be calculated by the Asphalt Binder Replacement method according to the following formula:

$$\% \text{ Binder Replacement} = [(\% \text{ asphalt cement content of RAP} \times \% \text{ RAP by mass of mix}) / (\% \text{ total asphalt cement content of mix})]$$

RAP as processed and ready for use in a HMA shall be tested using LS-282 or LS-292 to determine the average percentage asphalt cement and the average gradation for the extracted RAP aggregates.

Density testing of aggregates and RAP shall be conducted for the purpose of developing the mix design for each mix type in the Contract. Such testing shall be performed during production of each aggregate, RAP, or during stockpiling of the materials at the HMA plant.

In addition, if the composition of the mix is modified by including RAP, the high and low grade of PGAC required shall be lowered by 6 °C when:

$$\% \text{ Binder Replacement} > 20 \%$$

The JMF selected for use shall produce HMA that meets all the requirements specified in the Contract Documents.

For HMA in this Contract, the mix properties, the compaction effort, and the aggregate properties specified in the Contract Documents, shall conform to the requirements for the traffic category specified in Table A. The use of a mix designed with a traffic category different than specified in Table A is not permitted.

The asphalt cement (AC) added to the hot mix types shall be performance graded asphalt cement, PGAC as specified in Table A. For bidding purposes only, the percentage by mass of asphalt cement, AC_{BID} contained in the various HMA mix types shall be as specified in Table A.

**TABLE A
HMA Mix Design Criteria**

HMA Type	Location in Contract	Traffic Category	PGAC Grade	AC _{BID} % (Note 1)
*	*	*	*	*
Note 1: For SMA Mix Types a minimum AC Content is specified in Table 5 based on combined aggregate bulk relative density.				

[* Designer Fill-Ins for Table A, See Notes to Designer]

[** Designer Options, See Notes to Designer]

[*** Designer Options, See Notes to Designer]

1151.04.02 Submission Requirements

1151.04.02.01 Mix Design

Clause 1151.04.02.01 of OPSS 1151 is amended by the addition of the following:

The % Binder Replacement shall be calculated and submitted with the mix design.

For SMA mix, the technical data sheet for the supplied fibres shall be submitted with the mix design.

The asphalt film thickness (T_F) shall be calculated according to LS-321 and submitted on Form PH-CC-251 along with the mix design. The calculated asphalt film thickness shall be shown on the mix design summary sheet.

1151.05 MATERIALS

1151.05.02 Aggregates

1151.05.02.01 Reclaimed Asphalt Pavement and Roof Shingle Tabs

Clause 1151.05.02.01 of OPSS 1151 is deleted in its entirety and replaced with the following:

1151.05.02.01 Reclaimed Asphalt Pavement

The aggregate contained in the RAP, where permitted in a HMA, shall be according to the aggregate requirements of OPSS 1003 for the mix type specified in the Contract Documents.

RAP that is contaminated with deleterious material shall not be used and shall be removed from the work. RAP shall be stockpiled conforming to the stockpiling requirements for coarse aggregates according to OPSS 1001, except that when the material is stockpiled on a compacted granular pad, the top 75 mm of the pad shall be the coarse aggregate that is required for a new (virgin) mixture of the tendered hot mix item.

The use of RAP that is obtained from existing stockpiles that do not have a foundation conforming to the above paragraph shall be permitted provided that the bottom 0.3 m of the stockpile is not incorporated into the work.

Process control sampling and testing of the RAP shall be as specified in the Contract Documents.

1151.05.05 Fibres

Subsection 1151.05.05 of OPSS 1151 is deleted in its entirety and replaced with the following:

Fibres shall be either cellulose or mineral fibres, and appropriate for use in the SMA mix design, such as those detailed in QIS 122. The use of rock wool, asbestos, fiberglass, and fibres contained in RST, is prohibited.

Table 1 of OPSS 1151 is amended by deleting Note 1 in its entirety and replacing it with the following:

1. For mixes that have been specified in the Contract Documents as coarse graded, the allowable range of percentage by mass passing the 4.75 mm sieve shall be 45-55, and for the 2.36 mm sieve the allowable range will be 28-58.

Table 6 of OPSS 1151 is deleted in its entirety and replaced with the following:

TABLE 6
Maximum % Binder Replacement

Traffic Category (Note 1)	Binder Course 150 mm or More Below Pavement Surface	Binder Course Within 150 mm of Pavement Surface	Surface Course
A, B	40%	40%	****
C, D	40%	20%	****
E	40%	20%	****

Note 1: Traffic category as specified in the Contract Documents.

[**** Designer Fill-Ins for Table 6, See Notes to Designer]

Table 8 of OPSS 1151 is deleted in its entirety and replaced with the following:

TABLE 8
Sample Quantities for Mix Design Monitoring

Material	Quantity (Note 1)
Asphalt Cement	4 litres evenly split between 2 containers
Aggregate	75 to 100 kg of each type
RAP	75 to 100 kg required when RAP contained in the mix
Fines material passing 75 µm sieve	5 to 10 kg when the mix is to be produced with a plant that returns fines to the mix
Mineral Filler	5 to 10 kg sample for SMA mixes
Any other material samples including anti-stripping agents and fibres to be used in HMA	Quantity large enough to allow for a complete mix design

Note 1: Each material sample receptacle shall have a maximum mass of 30 kg.

Table 9 of OPSS 1151 is deleted in its entirety.