INCLUDE IN ALL PROJECTS WITH A PAVING COMPONENT

AMENDMENTS TO SPECIFICATION 5.7, SUPPLY OF ASPHALT, RE: MULTIPLE STRESS CREEP RECOVERY (MSCR) TESTING

i) The contents of Subsection 5.7.2.1, **General**, of Section 5.7.2, MATERIALS, are replaced in their entirety with the following:

> *The Contractor shall supply the types and grades of asphalt specified in the Contract. Asphalt suppliers' materials must be pre-qualified by the Department. Pre-qualified suppliers are listed in the Alberta Transportation Products List.*
>
> *All asphalt binders shall be prepared from petroleum oils. They shall be free from impurities. Solvents used in the manufacture of cut-back asphalts shall be derived from petroleum oils. Emulsifiers used to stabilize asphalt emulsions shall not be harmful to the performance of the asphalt in service.*
>
> *Re-refined Engine Oil Bottoms (REOB), also known as Vacuum Tower Asphalt Extenders (VTAE) shall not be added in any proportion to PGAC. The Department may perform a chemical composition analysis to determine if REOB has been used.*
>
> *The Contractor shall ensure that the asphalt supplied meets all requirements for the types and grades specified. The Contractor may be required to use more than one type or grade of asphalt for a particular purpose. Any change in asphalt type or grade must be approved by the Consultant. The Contractor shall notify the Consultant of any changes in asphalt material suppliers.*
>
> *Performance grade asphalt cements (PGAC) shall meet the requirements of AASHTO M320 Standard Specification for Performance Graded Asphalt Binder (Table 1) with modifications for certain grades as outlined within the specification.*
>
> *Suppliers of the following PG asphalts will be required to meet the following additional "quality stipulations" prior to receiving approval for listing on the Products list.*
>
> - *For the PG 58-28 designation the Department will not pre-qualify an asphalt product which grades to a low temperature warmer than -30°C when tested according to AASHTO T313 Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR).*
> - *For the PG 46-34 designation the Department will not pre-qualify an asphalt product which grades to a low temperature warmer than -37°C when tested according to AASHTO T313.*

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For asphalts designated as a PG 58-37, Table 1, Performance Graded Asphalt Binder Specification contained in AASHTO M320 shall be modified in accordance with the following criteria:

- *The test temperature for creep stiffness and direct tension shall be -27°C;*
- *Dynamic Shear criteria on the PAV residue shall be met at a temperature of 14.5°C or lower.*

For asphalts designated as a PG 64-37, Table 1, Performance Graded Asphalt Binder Specification contained in AASHTO M320 are modified in accordance with the following criteria:

- *The test temperature for creep stiffness and direct tension shall be -27°C.*
- *Dynamic Shear criteria on the PAV residue shall be met at a temperature of 17.5°C or lower.*

Elastic Recovery Requirements for Selected PGAC Grades

Selected grades of PGAC will be tested at a temperature of 58ºC to determine the average percent recovery at 3.2 kPa ($R_{3.2}$) according to the requirements of AASHTO T 350 Multiple Stress Creep Recovery (MSCR) Test of Asphalt Binder Using a Dynamic Shear Rheometer. The minimum $R_{3.2@58°C}$ value for selected grades shall be as outlined in Table 5.7.2.1

Table 5.7.2.1
ELASTIC RECOVERY REQUIREMENTS

PGAC Grade	***Minimum $R_{3.2@58°c}$***
58-34, 64-28	*25%*
58-37, 58-40, 64-34, 70-28	*40%*
64-37, 76-28	*55%*

Asphalt cements which have been enhanced to meet AASHTO M320 specifications through the use of polymer additives or other chemical means shall be referred to as modified asphalts.

Liquid anti-strip additives listed on the Alberta Transportation Products List may be added to the asphalt product at a rate not to exceed 1% by weight of liquid asphalt. The anti-strip additive shall be heat stable and shall have no injurious effect on the asphalt product. The anti-strip additive/asphalt combination shall meet the AASHTO M320 requirements with modifications as outlined within this specification. The type and percentage of anti-strip additive used shall be listed on the delivery weigh-bills by the asphalt supplier.

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The Department reserves the right to discontinue the use of any asphalt product that fails to perform to the expectation or satisfaction of the Consultant or Department, regardless of its compliance with the Specifications.

The Department no longer specifies Penetration-Viscosity grades for Asphalt Cement and those associated tables have been removed from this specification. Historical information can be found in the 2013 Standard Specifications for Highway Construction.

ii) The first paragraph of Subsection 5.7.3.3, **Quality Assurance**, of Section 5.7.3, SAMPLING AND TESTING, is replaced with the following:

The Contractor shall deliver all quality assurance samples to the Consultant on the day they were sampled. The Consultant will forward the samples to the Department's designated quality assurance laboratory for testing and will accept or reject asphalt material based on the test results. Quality assurance testing for PGAC will be in accordance with AASHTO R29 Grading or Verifying the Performance Grade of an Asphalt Binder, and determination of $R_{3.2@58°C}$ according to AASHTO T 350.

iii) The last paragraph of Subsection 5.7.4, ACCEPTANCE, is replaced with the following:

Asphalt materials which pass AASHTO M 320 specifications and minimum average percent recovery from Table 5.7.2.1, yet fail to meet the low temperature quality stipulations outlined in Subsection 5.7.2, Materials, will be accepted; however, products from approved suppliers with a history of frequent test results indicating non-compliance to these quality stipulations, as determined by the Department, will be removed from the Products list.

iv) The Specification Tables and Charts are revised as follows:

a) Tables ASPH-1, ASPH-2 and ASPH-3, are deleted.

b) The contents of Table ASPH-8b, **SPECIFICATIONS FOR POLYMER-MODIFIED CATIONIC RAPID-SETTING EMULSIFIED ASPHALT**, are replaced with the following:

ASPHALT TYPE AND GRADE	***CRS-2P***		***A.S.T.M. TEST METHOD***
REQUIREMENTS	***min.***	***max.***	
Viscosity at 50℃, SFs	*100*	*400*	*D244*
Residue by Distillation, % by mass[(1)]	*65*	*---*	*D6997*
Oil Portion of Distillate, % by volume of emulsion	*---*	*3.0*	*D6997*

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ASPHALT TYPE AND GRADE	***CRS-2P***		***A.S.T.M. TEST METHOD***
REQUIREMENTS	***min.***	***max.***	
Storage Stability Test, 24 h, % by mass[(2)]	---	*1.5*	*D6930*
Demulsibility, 35 ml of 0.5% by weight solution of sodium dioctyl sulphosuccinate, % by mass	*60*	---	*D6936*
Sieve Test, % retained on a 1 000 µm sieve, % by mass[(2)]	---	*0.1*	*D6933*
Particle Charge Test			*D244*
Test on Residue from Distillation			
Penetration at 25°C, 100 g, 5 s, dmm	*100*	*250*	*D5*
Elastic Recovery at 10°C by Ductilometer, %	*55*	---	*D6084 Test B*
Solubility in Trichloroethylene, % by mass[(3)]	*97.5*	---	*D2042*
Ash Content, % by mass of residue[(3)]	---	*1.0*	*TLT-229*