

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
BITUMEN TESTING PRICE ADJUSTMENTS

DESCRIPTION

This Special Provision outlines the Contract Price Adjustment procedures for acceptance of PG Asphalt Binder Using the Multiple Stress Creep Recovery (MSCR) Test under AASHTO M 332.

MATERIAL ACCEPTANCE SPECIFICATION

A. Sampling.

Obtain one sample of asphalt binder for each 250 tons of binder material supplied to the project. Obtain the sample as prescribed in the NDDOT Field Sampling and Testing Manual, Procedure NDDOT 1. Each 250 tons of material will represent a subplot and 4 sublots will constitute a lot of material. Partial lots will consist of however many subplot samples were collected for that lot.

B. Original and Check Samples.

Each sample consists of two parts, an original and a check. The Engineer will perform tests using the original sample first.

If a test returns a value resulting in a pay factor of less than 1.00, the Engineer will perform that test on the check sample and the check sample results will be used to determine the pay factor for the material.

C. Testing Parameters.

The Engineer will randomly select one subplot for testing per lot.

If the check sample results in a pay factor of less than 1.00 the Engineer will perform the substandard tests on the remaining sublots within that lot.

D. Determination of Pay Factor.

The Engineer will apply the pay factors in the Basis of Payment section of this Special Provision to each individual subplot of material. If more than one test parameter in a subplot results in a pay factor of less than 1.00, the Engineer will apply the pay factor that results in the largest monetary deduction to that subplot.

BASIS OF PAYMENT

The pay factor determined by the Engineer will be applied to the "PG _____ Asphalt Cement" contract item. The pay factor will be multiplied by the unit cost of the item and the quantity of oil represented by the sample.

Table 1
Requirements on Original Binder

Specification	Test Result	Pay Factor (Percent)
Dynamic Shear AASHTO T 315 $G^*/\sin \delta$ Min. 1.00 kPa	≥ 1.00	1.00
	0.97 – 0.99	0.95
	0.94 – 0.96	0.90
	0.91 – 0.93	0.85
	< 0.91	0.70

Table 2
Requirements on Rolling Thin Film Oven (RTFO) Residue

Specification	Test Result	Pay Factor (Percent)	Specification	Test Result	Pay Factor (Percent)
Standard Traffic "S" AASHTO T 350 $J_{nr@3.2}$ Max. 4.5 kPa ⁻¹	≤ 4.5	1.00			
	4.6	0.95			
	4.7	0.90			
	4.8	0.85			
	> 4.8	0.70			
Heavy Traffic "H" AASHTO T 350 $J_{nr@3.2}$ Max. 2.0 kPa ⁻¹	≤ 2.0	1.00	Heavy Traffic "H" AASHTO R 92 Percent Recovery @ 3.2 kPa Min. 30%	> 30	1.00
	2.1	0.95		29	0.95
	2.2	0.90		28	0.90
	2.3	0.85		27	0.85
	> 2.3	0.70		< 27	0.70
Very Heavy Traffic "V" AASHTO T 350 $J_{nr@3.2}$ Max. 1.0 kPa ⁻¹	≤ 1.0	1.00	Very Heavy Traffic "V" AASHTO R 92 Percent Recovery @ 3.2 kPa Min. 55%	> 55	1.00
	1.1	0.95		54	0.95
	1.2	0.90		53	0.90
	1.3	0.85		52	0.85
	> 1.3	0.70		< 52	0.70
Extreme Traffic "E" AASHTO T 350 $J_{nr@3.2}$ Max. 0.5 kPa ⁻¹	≤ 0.5	1.00	Extreme Traffic "E" AASHTO R 92 Percent Recovery @ 3.2 kPa Min. 75%	> 75	1.00
	0.6	0.95		74	0.95
	0.7	0.90		73	0.90
	0.8	0.85		72	0.85
	> 0.8	0.70		< 72	0.70

Table 3
Requirements for Pressure Aging Vessel (PAV)
Residue

Specification	Test Result	Pay Factor (Percent)
Standard Traffic "S" AASHTO T 315 DSR, $G^*(\sin \delta)$ Max. 5000 kPa	≤ 5000	1.00
	5001 - 5200	0.95
	5201 - 5400	0.90
	5401 - 5600	0.85
	> 5600	0.70
Traffic "H", "V", "E" AASHTO T 315 DSR, $G^*(\sin \delta)$ Max. 6000 kPa	≤ 6000	1.00
	6001 - 6050	0.95
	6051 - 6100	0.90
	6101 - 6150	0.85
	> 6150	0.70
Creep Stiffness AASHTO T 313 Max. 300 mPa	≤ 300	1.00
	301 - 310	0.95
	311 - 320	0.90
	321 - 330	0.85
	> 330	0.70
m-value AASHTO T 313 Min. 0.300	≥ 0.300	1.00
	0.295 – 0.299	0.95
	0.290 – 0.294	0.90
	0.285 – 0.289	0.85
	< 0.285	0.70