

**S-146 (2360) SPECIFICATION SUPERPAVE HOT MIX ASPHALT (TYPE SP)**

**For 2004 Construction Season**

*For District 6 jobs use S-0.5(A). Always use SP2000-233 and SP2000-233.1 with this writeup.*

**REVISED 12/10/03**

SP2000-130

Mn/DOT 2350 and Mn/DOT 2360 are hereby deleted from the Mn/DOT Standard Specifications and replaced with the attached **Combined 2360/2350 (Gyratory/Marshall Design) Specification**.

S-146.1 Mix Designation Numbers for the bituminous mixtures on this Project are as follows:

*The Designer needs to fill in the numbers here. Examples of what is needed are:*

Type SP __ Wearing Course	SPWEB_40_
Type SP __ Non-Wearing Course	SPNWA_40_
Type SM ____ xx Course	SMWEB640H

S-146.2 Mix Designations for bituminous mixtures contain the following information:

- (1) The first two digits indicate the mix type.  
 SP = Gyratory Mixture Design  
 SM = Gyratory Mixture Design for Stone Matrix Asphalt (SMA)
- (2) The third and fourth digits indicate the course:  
 WE = Wearing and Shoulder Wearing Course  
 NW = Non-Wearing Course
- (3) The fifth digit (letter) indicates maximum aggregate size:  
 A = 12.5mm [**1/2 inch**], 9.5 mm [**3/8 inch**] nominal size  
 B = 19.0mm [**3/4 inch**], 12.5 mm [**1/2 inch**] nominal size  
 C = 25.0mm [**1 inch**], 19.0 mm [**3/4 inch**] nominal size  
 E = See provision for SMA design
- (4) The sixth digit indicates the Traffic Level (ESAL'S x 10<sup>6</sup>).  
 The requirements for gyratory mixtures in this specification are based on the 20-year design traffic level of the Project expressed in Equivalent Single Axle Loads (ESAL's). The five traffic levels are shown below in Table 2360.1-A.

**Table 2360.1-A**  
Traffic Levels

Traffic Level	20 Year Design ESAL's (1 x 10 <sup>6</sup> ESAL's)
2 <sup>1</sup>	< 1
3 <sup>2</sup>	1 to < 3
4	3 to < 10
5	10 to ≤ 30
6	SMA

1 -- (AADT < 2300)

2 -- (2300 < AADT < 6000)

- (5) The last two digits indicate the air void requirement.  
 40 = 4.0% for SP and SM Wear mixtures  
 30 = 3.0% for SP Non-Wear and Shoulder

- (6) The letter after the mix designation identifies the performance grade of asphalt cement.
- A = PG 52 - 34
  - B = PG 58 - 28
  - C = PG 58 - 34
  - D = PG 58 - 40
  - E = PG 64 - 28
  - F = PG 64 - 34
  - G = PG 64 - 40
  - H = PG 70 - 28
  - I = PG 70 - 34
  - L = PG 64 - 22

*The Designer needs to let Special Provisions know how pavement smoothness will be evaluated.*

S-146.3 Pavement smoothness requirements will be evaluated by Table 2360.7-C6A *or* 2360.7-C6B *or* 2360.7-C6C *or* will be waived for this Project.

## OR

S-146.4 Pavement smoothness requirements of 2360.7C will not apply on this Project. The requirements of 2360.7B (Straight edge specification) will apply.

*S-5(A) is to be used on District 6 jobs only.*

S-146.5 The attached **Combined 2360/2350 (Gyratory/Marshall Design) Specification** is hereby modified with the following:

(A) Modify **2360.2C4** as follows:

If crushed carbonate quarry rock (limestone or dolostone) is used the minus 75  $\mu\text{m}$  [**#200**] sized portion of the rock insoluble residue shall not exceed 10% by weight. The insoluble residue test procedure is on file in the Mn/DOT Materials Laboratory.

Blending of sources and/or beds with an insoluble residue up to 15% is allowed to meet the 10% insoluble residue requirement. Individual beds thinner than 150 mm [**6 inches**] up to 5% of the total face height, are exempt from the 15% maximum insoluble residue requirement. However, the aggregate producer shall practice good quality control at all times and exclude poor quality stone to the extent practical, regardless of the bed thickness and/or pocket size and location.

No carbonate quarry rock from the Platteville Geological Formation is allowed.

(B) Modify **2360.4F (2a)1** to read:

1. Percent passing on sieves listed in Table 2360.2-E and the following sieves: 1.18 mm (**#16**), 0.600 mm (**#30**), 0.300 mm (**#50**), and 0.150 mm (**#100**). The test results for these additional sieves may be included on the daily Test Summary Sheet or on a separate Summary Sheet. If the test results for the additional sieves are recorded on a separate Summary Sheet, the test results must be identified such that there is a direct and easy correlation with the test results of the sieves listed in Table 2360.2-E and the other mixture property tests for that sample.

S-146.6 **BASIS OF PAYMENT**

Payment for the accepted quantities of asphalt mixture used in each course at the Contract prices per unit of material shall be compensation in full for all costs of constructing the asphalt surfacing as specified, including the costs of furnishing and incorporating any asphalt binder, mineral filler, hydrated lime, or anti-stripping additives that may be permitted or required.

If the production lab density at the design gyrations at the recommended or established asphalt

content is in excess of 2565 kg/m<sup>3</sup> [**160 pounds per cubic foot**], payment for mixture will be calculated at the following percent of the Contracted unit price.

$$\% \text{ Payment} = \{100 - \{[100 \times (\text{production density at design gyrations} - 2565)] / 2565\}\}$$

$$\% \text{ Payment} = \{100 - \{[100 \times (\text{production density at design gyrations} - 160)] / 160\}\} \text{ ENGLISH}$$

In the absence of Contract items covering shoulder surfacing and other special construction, the accepted quantities of material used for these purposes will be included for payment with the wearing course materials.

The Contractor is responsible to complete yield checks and monitor thickness determinations so that the constructed dimensions correspond with the required Plan dimensions throughout the entire length of the Project. The tolerances for lift thickness shown in 2360.7A and B, Thickness and Surface Smoothness Requirement is for occasional variations and not for continuous over-running or under-running, unless ordered or Authorized by the Engineer.

S-146.7 Payment for the item of asphalt mixture production at the Contract unit price of mixture produced shall be compensation in full for all costs of producing the mixture and loading it on board the Department's trucks at the mixing plant. The provisions of Mn/DOT 1903 are modified to the extent that the Department will not make a price adjustment in the event of increased or decreased quantities of asphalt mixture items. Payment for plant mixed asphalt surface will be made on the basis of the following schedule:

**Item No. Item Unit**

2360.501	Type SP (1) Wearing Course Mixture ((3),(4)).....	metric ton [ <b>ton</b> ]
2360.502	Type SP (1) Non Wearing Course Mixture ((3),(4)).....	metric ton [ <b>ton</b> ]
2360.503	Type SP (1) (2) Course Mixture ((3),(4)) (5) mm [ <b>inch</b> ] thick .....	square meter [ <b>square yard</b> ]
2360.504	Type SP (1) (2) Course Mixture ((3),(4)).....	[ <b>square yard inch</b> ]
2360.505	Type SP (1) Bituminous Mixture for Specified Purpose.....	metric ton [ <b>ton</b> ]
2360.506	Type SP (1) Bituminous Mixture Production .....	metric ton [ <b>ton</b> ]

- (1) Aggregate Size Designation, 9.5, 12.5 or 19 as appropriate.
- (2) "Wearing" or "Non Wearing" as appropriate.
- (3) Traffic Level as per Table 2360-1-A.
- (4) AC binder grade designation.
- (5) Specified lift thickness.