



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**ROADWAY DESIGN DIVISION**  
SUITE 1300 JAMES K. POLK BUILDING  
505 DEADERICK STREET  
NASHVILLE, TENNESSEE 37243-3848  
(615) 741-2221

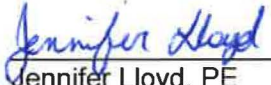
**JOHN C. SCHROER**  
COMMISSIONER

**BILL HASLAM**  
GOVERNOR

**INSTRUCTIONAL BULLETIN NO. 16-11**

**UPDATED SECTION 4-307.00 – COMPUTATIONS FOR BITUMINOUS PLANT MIX BASE  
(HOT MIX) AND SECTION 4-411.00 COMPUTATIONS FOR ASPHALTIC  
CONCRETE SURFACE (HOT MIX)**

**Effective immediately**, *Section 4-307.00 – Computations for Bituminous Plant Mix Base (Hot Mix) and Section 4-411.00 Computations for Asphaltic Concrete Surface (Hot Mix)* of the Roadway Design Guidelines has been updated. Tables have been added to reduce the number of computations. Also, new item numbers have been added for Base Mixes (Grading "A-S") and Bases Mixes (Grading "A-CRL"). The updated sections are attached to this instructional bulletin.

  
Jennifer Lloyd, PE  
Civil Engineering Director  
Roadway Design Division

KJL: ARH: VLN  
August 19, 2016

**4-307.00 COMPUTATIONS FOR BITUMINOUS PLANT MIX BASE (HOT MIX)**

The computed quantity for asphalt base mixtures is as follows:

$$\frac{\text{Compacted volume (C.Y.)} \times \text{Density (Lb./C.Y.)}}{2,000 \text{ Lb./ Ton}} = \text{Tons}$$

OR

$$\frac{\text{Area (S.Y.)} \times \text{Lb. per S.Y. per inch thickness}}{2,000 \text{ Lb./ Ton}} = \text{Tons}$$

Values for mixture density, Lb. per S.Y. per inch thickness, and item numbers are provided in Table 4-1.

<b>VALUES FOR COMPUTATION OF 307 ASPHALT BASE MIXTURE QUANTITIES</b>			
<b>ITEM NUMBER</b>	<b>DESCRIPTION</b>	<b>DENSITY (LB/CY)</b>	<b>LB per SY per in thickness</b>
307-01.01	PG 64-22 BASE MIXES (GRADING A)	4140	115
307-01.23	PG 64-22 BASE MIXES (GRADING ACRL)	3240	90
307-01.20	PG 64-22 BASE MIXES (GRADING A-S)	3240	90
307-01.06	PG 64-22 BASE MIXES (GRADING B)	4068	113
307-01.07	PG 64-22 BASE MIXES (GRADING B-M)	4068	113
307-01.08	PG 64-22 BASE MIXES (GRADING B-M2)	4068	113
307-01.09	PG 64-22 BASE MIXES (GRADING C)	3690	110
307-01.15	PG 64-22 BASE MIXES (GRADING CS)	4140	115
307-01.10	PG 64-22 BASE MIXES (GRADING C-W)	3690	110
307-02.01	PG 70-22 BASE MIXES (GRADING A)	4140	115
307-01.24	PG 70-22 BASE MIXES (GRADING ACRL)	3240	90
307-01.21	PG 70-22 BASE MIXES (GRADING A-S)	3240	90
307-02.06	PG 70-22 BASE MIXES (GRADING B)	4068	113
307-02.07	PG 70-22 BASE MIXES (GRADING B-M)	4068	113
307-02.08	PG 70-22 BASE MIXES (GRADING B-M2)	4068	113
307-03.01	PG 76-22 BASE MIXES (GRADING A)	4140	115
307-01.25	PG 76-22 BASE MIXES (GRADING ACRL)	3240	90
307-01.22	PG 76-22 BASE MIXES (GRADING A-S)	3240	90
307-03.06	PG 76-22 BASE MIXES (GRADING B)	4068	113
307-03.07	PG 76-22 BASE MIXES (GRADING B-M)	4068	113
307-03.08	PG 76-22 BASE MIXES (GRADING B-M2)	4068	113

307-03.09	PG 76-22 BASE MIXES (GRADING C)	3960	110
307-03.10	PG 76-22 BASE MIXES (GRADING CS)	4140	115
307-04.01	PG 82-22 BASE MIXES (GRADING A)	4140	115
307-04.08	PG 82-22 BASE MIXES (GRADING B-M2)	4068	113

TABLE 4-1 COMPUTATION OF 307 ASPHALT BASE MIXTURE QUANTITIES

**4-411.00 COMPUTATIONS FOR ASPHALTIC CONCRETE SURFACE (HOT MIX)**

The computed quantity for asphalt surface mixtures is as follows:

$$\frac{\text{Compacted volume (C.Y.)} \times \text{Density (Lb./C.Y.)}}{2,000 \text{ Lb./ Ton}} = \text{Tons}$$

OR

$$\frac{\text{Area (S.Y.)} \times \text{Lb per SY per inch thickness}}{2,000 \text{ Lb./ Ton}} = \text{Tons}$$

Values for mixture density, Lb. per S.Y. per inch thickness, and item numbers are provided in Table 4-2.

<b>VALUES FOR COMPUTATION OF 411 ASPHALT SURFACE MIXTURE QUANTITIES</b>			
<b>ITEM NUMBER</b>	<b>DESCRIPTION</b>	<b>DENSITY (LB/CY)</b>	<b>LB per SY per in thickness</b>
411-01.10	GRADING D SURFACE (PG 64-22 )	3816	106
411-02.10	GRADING D SURFACE (PG 70-22 )	3816	106
411-03.10	GRADING D SURFACE (PG 76-22 )	3816	106
411-04.10	GRADING D SURFACE (PG 82-22 )	3816	106
411-01.07	GRADING E SHOULDER (PG 64-22)	3708	103
411-02.11	GRADING E SURFACE (PG 70-22 )	3870	107.5
411-03.22	GRADING OGFC SURFACE (PG 70-22 )	3168	88
411-03.23	GRADING OGFC SURFACE (PG 76-22 )	3168	88
411-03.07	GRADING TL SURFACE (PG 64-22 )	3816	106
411-03.08	GRADING TL SURFACE (PG 70-22 )	3816	106
411-03.09	GRADING TL SURFACE (PG 76-22 )	3816	106
411-03.12	GRADING TLD SURFACE (PG 64-22 )	3816	106
411-03.13	GRADING TLD SURFACE (PG 70-22 )	3816	106

411-03.14	GRADING TLD SURFACE (PG 76-22 )	3816	106
-----------	---------------------------------	------	-----

TABLE 4-2 COMPUTATION OF 411 ASPHALT SURFACE MIXTURE QUANTITIES