



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

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INSTRUCTIONAL BULLETIN NO. 16-16

UPDATED SECTIONS:

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

4-403.00 COMPUTATIONS OF TACK COAT

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

Effective immediately,

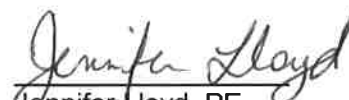
Section 4-307.00 – Computations for Bituminous Plant Mix Base (Hot Mix) of the Roadway Design Guidelines has been updated. As described previously in IB 16-11, Table has been added to reduce the number of computations and new item numbers have been added for Base Mixes (Grading "A-S") and Bases Mixes (Grading "A-CRL). In addition to revisions described in IB 16-11, a correction was made to the density quantities for items 307-01.09 and 307-01.10.

Section 4-403.00 – Computations for Tack Coat of the Roadway Design Guidelines has been updated. Guidance on the quantity calculations and the use of trackless tack has been updated.

Section 4-411.00 – Computations for Asphaltic Concrete Surface (Hot Mix) of the Roadway Design Guidelines has been updated. As described previously in IB 16-11, table has been added to reduce the number of computations.

This IB voids IB 16-11 and IB 16-13.

The updated sections are attached to this instructional bulletin.


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KJL: ARH: RBB:VLN

December 5, 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.

VALUES FOR COMPUTATION OF 307 ASPHALT BASE MIXTURE QUANTITIES			
ITEM NUMBER	DESCRIPTION	DENSITY (LB/CY)	LB per SY per in thickness
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)	3960	110
307-01.15	PG 64-22 BASE MIXES (GRADING CS)	4140	115
307-01.10	PG 64-22 BASE MIXES (GRADING C-W)	3960	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
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TABLE 4-1 COMPUTATION OF 307 ASPHALT BASE MIXTURE QUANTITIES

4-403.00 COMPUTATIONS FOR TACK COAT

Item No. 403-01 Bituminous Material for Tack Coat (TC)

$$\frac{\text{Surface Area (S.Y.)} \times \text{*Rate (Gal./Sq. Yd.)}}{231 \text{ Gal./ Ton}} = \text{Tons}$$

*Rate = 0.05 – 0.10 Gal/Sq. Yd. (General Use)

*Rate = 0.08 – 0.12 Gal/Sq. Yd. (Milling – Cold Plane)

NOTE: Designers shall assume the mid-point of the rate ranges when calculating quantities.

Item No. 403-02 Asphalt Cement for Tack Coat (TC)

$$\frac{\text{Surface Area (S.Y.)} \times 0.05 \text{ (Gal./Sq. Yd.)}}{231 \text{ Gal./ Ton}} = \text{Tons}$$

Item No. 403-02.01 Trackless Tack Coat

Calculations and rates are similar to Item No. 403-01. Use Trackless Tack Coat only if deemed necessary on the resurfacing checklist or at field review due to a large number of cross traffic or other reason as determined by the Operations Engineer.

NOTE: Tack coat shall not be applied on top of either Grading AS or Treated Permeable Base mixtures.

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.

VALUES FOR COMPUTATION OF 411 ASPHALT SURFACE MIXTURE QUANTITIES			
ITEM NUMBER	DESCRIPTION	DENSITY (LB/CY)	LB per SY per in thickness
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