



**STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION**

**ROADWAY DESIGN DIVISION**  
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**INSTRUCTIONAL BULLETIN NO. 20-05**

**REGARDING REVISED SECTION 4 – PAVEMENT MARKING**

**Effective October 9 Letting (July 29, 2020 turn-in)**, the Roadway Design Guidelines Sections 4-411.04, 4-716.15, and 9-135.02 have been revised. Standard Drawings T-M-16 and T-M-16A have been modified.

**4-411.04 RUMBLE STRIPES**

Rumble stripes are a traffic warning device, and when required, shall be constructed in accordance with Standard Drawing T-M-16. A scored rumble stripe is a scored rumble placed along the outside edge line of the travel lane. Striping is to be paid for under the appropriate pavement marking item number.

Refer to Section 4-716.15 for guidelines for the placement of rumble stripes. Rumble stripes should normally only be placed on rural routes with posted speeds of 45 mph or greater. The rumble stripe shall consist of a 60 foot scored rumble followed by a 15 gap to allow for bicycles to cross without having to traverse the rumble. Rumble stripes may be used on urban routes where accident history or other factors warrant the placement. When placed on urban routes, designers should give consideration to expected bicycle traffic and noise generated. Rumble stripes may be omitted from locations recommended by the TDOT Bicycle Coordinator.

Scored rumble stripes are to be paid for under Item No. 411-12.03, Scoring for Rumble Stripe (Non-Continuous) (8 inch Width), L.M. or Item No. 411-12.04, Scoring for Rumble Stripe (Non-Continuous (4 inch Width), L.M. The item will be measured and paid as the actual length of pavement scored along each shoulder.

**4-716.15 PERMANENT PAVEMENT MARKINGS (See 4-411.03 and 4-411.04)**

Designers should refer to Tables 4-3A and 4-3B for pavement marking guidelines for all interstate and state routes. In addition to pavement marking guidelines, Tables 4-3A and 4-3B provide guidance for the placement of rumble strips and rumble stripes. This guidance shall be used on all new, reconstruction, and resurfacing projects except in areas which require special treatment as determined on the Construction Field Review and approved by the Director of the Roadway Design Division.

Items numbers for pavement markings are available on the TDOT web site at:  
<https://www.tdot.tn.gov/APPLICATIONS/RoadwayItems>

Type	Thickness (mils)	Bead Package	Pavement Type				Comments
			Asphalt			Concrete	
			Conventional	OGFC	HFS		
Thermoplastic Spray	60	Type I	X		X	X	Spray Thermoplastic, Multipolymer
Thermoplastic Extruded	100	Type I & IV	X	X Note 1	X	X	Enhanced Flatline Thermoplastic, Multipolymer
Thermoplastic Ribbon	100	Type I & IV	X	X Note 1	X		Enhanced Flatline Thermoplastic with clean borders, Multipolymer
Profile Thermoplastic	125	Type IV	X	X	X	X	Audible feedback, Wet visibility Per SP 716IPA
Polyurea	20	Type I	X	X	X		Moisture resistance
Tape	85	NA	X			X	
<b>Specialty Pavement Markings</b>							
Extruded	100	Type I & IV	X Note 2		X Note 2	X Note 2	Enhanced Flatline Thermoplastic,
Pre-formed	90 - 125	N/A	X Note 2		X Note 2	X Note 2	
<b>Temporary Traffic Control</b>							
Paint	15	N/A	X	X	X	X	See section 4-716.10
<p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>For projects using an Open-Graded Friction Course (OGFC) for the surface layer, only Enhanced Flat Line Thermoplastic (Item No 716-12.02) may be used for the edge, center, skip and lane lines. Use the width of line specified in Table 4-3B. The designer shall footnote the Enhanced Flat Line Thermoplastic Quantity with the following note: “Contractor shall use the extruded or ribbon method for application.”</li> <li>Specialty Striping Items: stop lines, cross walks, arrows, words, shapes, channelization, and other specialty striping items other than lane and edge lines. The contractor may elect to use either thermoplastic or preformed thermoplastic for specialty striping items.</li> </ol>							

**Table 4-3A  
Permanent Pavement Markings Selection Guide Based on Pavement Type**

Roadway Functional Classification		Permanent Pavement Markings Snowplowable Raised Pavement Markers Rumble Strip and Rumble Stripe	Roadway Functional Classification											
			Freeways or Divided State Route					Undivided State Route Urban			Undivided State Route Rural			Local Roads and streets ADT ≥ 2000
	Edge Lines	X Note 3								X Note 2				
	HOV Lane Lines		X Note 4						X Note 1					
	Dotted Lines Note 5	X Note 3												
	Gore Marking		X Note 4						X Notes 1, 4					
	Lane Lines	X Note 3						X Note 1	X Note 1					
	Center line	X Note 3				X Note 1								
	Edge Lines	X Note 3				X Note 1								
	Lane Lines	X Note 3					X Note 1							
	Dotted Lines Note 6	X Note 3												
	Center Line	X Note 3				X Note 1								Note 2
	Edge Lines Shoulder ≥8'	X Note 3								X Note 2				
	Edge Lines Shoulder =2' < 8'	X Note 3									X Note 2			
	Edge Lines Shoulder < 2'	X Note 3										X Note 2		
	Lane Lines	X Note 3												
	All Lines Note 6													

**Table 4-3B  
Permanent Pavement Markings, Raised Pavement Markers,  
Rumble Strip and Rumble Stripe Guidelines Notes**

**Notes:**

1. Snowplowable Raised Pavement Markers (SRPMs) shall conform to this guidance:
  - a. SRPMs located along centerlines of 2 direction roadways (Yellow Stripe) shall be paid for under Item No. 716-01.21 "Snowplowable Raised Pavement Markers (Bi-Dir) (1-Color)" per each. Lenses shall be yellow.
  - b. SRPMs on lane lines between lanes of the same travel (Broken White Stripes) direction on undivided roadways shall be paid under Item No. 716-01.22, "Snowplowable Raised Pavement Markers (Mono-Dir) (1-Color)" per each. Lenses shall be clear or white.
  - c. SRPMs on lane lines between lanes of the same travel (Broken White Stripes) direction on divided roadways shall be paid for under Item No. 716-01.23, "Snowplowable Raised Pavement Markers (Bi-Dir) (2-Color)" per each. Lenses shall be clear or white on the upstream side (facing traffic), lenses shall be red facing downstream side (facing wrong-way traffic).
  - d. Refer to T-M-series standard drawings for details. Three lane and multilane roads with 2-way traffic will normally require both mono-directional and bi-directional snowplowable raised pavement markers. Two lane roads will normally require bi-directional snowplowable raised pavement markers.
  - e. Payment for the removal of Snowplowable Raised Pavement Markers shall be paid for under Item number 716-01.30 (Removal of Snowplowable Reflective Marker, per each). The cost shall not be included in the cost of installing the following items for Snowplowable Reflective Marker: 716-01.21, 716-01.22, and 716-01.23.
  - f. Installation of SRPMs may be optional at undivided rural state routes with speed < 45 mph if historical crash data supports lane departure concerns.
2. Rumble Strip/Stripe
  - a. All resurfacing projects shall follow the guidance in Table 4-3B for pavement marking and rumble installations. See 4-411.03 and 4-411.04 for additional guidance regarding rumble strip and rumble stripe placement. Application of rumble shall be included on all rural roadway resurfacing projects if there is no existing rumble on the shoulder. Pavement markings and rumble strips/stripes shall be applied to the roadway surface after it has been scraped clean of overgrown vegetation and swept of loose debris.
  - b. Rumble strips are not required on ramps.
  - c. If a bike lane is proposed on a shoulder, only non-continuous rumble shall be used. See Standard Drawings MM-PM-2, T-M-15A and T-M-16.
  - d. Centerline Rumble Stripes (See T-M-16A) may only be used if justified by crash history and if the road meets the following conditions:
    - i. Design Speed of 45 mph or greater
    - ii. ADT of 2000 or greater
    - iii. Lane width of 12 feet or greater
    - iv. Undivided Section
    - v. No passing or one way passing zone
  - e. For concrete shoulders, the rumble strip is to be placed in accordance with standard drawings RP-CS-1 or RP-CS-2. Item No. 501-03.10, Concrete Shoulder Rumble Strips, L.F. The length of scoring shall be measured as the actual length of pavement scored.
  - f. Freeways and divided highways, See STD DWG T-M-15  
Undivided state routes, See STD DWG T-M-15A  
Undivided state routes, See STD DWG T-M-16 and 16A
  - g. The Designer or the Field Engineer may choose to alternate rumble with profile thermoplastic pavement marking (per SP716IPA) when the following conditions exist:
    - i. On roadways with rigid pavement shoulders, when it is not practical or desirable to install ground-in rumble on the inside and outside edge line pavement markings.
    - ii. On shoulder pavement types, Micro surface and Thin lift.
    - iii. On bridge decks without an asphalt layer.

**Table 4-3B, Continued**  
**Permanent Pavement Markings, Raised Pavement Markers,**  
**Rumble Strip and Rumble Stripe Guidelines Notes**

3. Specialty Pavement Marking Materials: Polyurea, Profile Thermoplastic, and Tape. Designer may choose to use one of the specialty pavement marking material as needed.
4. Use applicable standard drawings:
  - a. Freeways, See STD DWG T-M-5, T-M-6, T-M-7 and T-M-8
  - b. State Route, See STD DWG T-M-1, T-M-2, T-M-3
  - c. HOV Lanes, See STD DWG T-M-5
  - d. Gore Areas, See T-M-6, SRPM along edge line only.
5. The 2'-4' dotted line extensions shall be used along freeway exit and entrance ramps and for double left turn lanes through intersections. The 3' – 9' dotted lines shall be used along freeway exit ramps. See Standard Drawings T-M-4, 5, 6 and 8.
6. See 4-716.12 for additional information.

**Table 4-3B, Continued**  
**Permanent Pavement Markings, Raised Pavement Markers,**  
**Rumble Strip and Rumble Stripe Guidelines Notes**

**General Notes Update**

9-135.02 Notes 13, 14, 15 have been deleted.

**9-135.02 FINAL PAVEMENT MARKING**

***IF 4" SPRAY THERMOPLASTIC (40 mil) IS USED.***

~~(13) PERMANENT PAVEMENT LINE MARKINGS SHALL BE 4" SPRAY THERMOPLASTIC (40 mil) INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK. SHORT UNMARKED SECTIONS SHALL NOT BE ALLOWED. PAVEMENT MARKINGS WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 716-13.06, SPRAY THERMO PVMT MRKNG (40 mil) (4IN LINE), L.M. THE CONTRACTOR SHALL HAVE THE OPTION OF USING REFLECTORIZED PAINT INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK AND THEN INSTALLING THE PERMANENT MARKINGS AFTER THE PAVING OPERATION IS COMPLETED. THE TEMPORARY MARKINGS FOR THE FINAL SURFACE WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COSTS ARE TO BE INCLUDED IN THE PRICE BID FOR THE PERMANENT MARKINGS.~~

***IF 6" SPRAY THERMOPLASTIC (40 mil) IS USED.***

~~(14) PERMANENT PAVEMENT LINE MARKINGS SHALL BE 6" SPRAY THERMOPLASTIC (40 mil) INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK. SHORT UNMARKED SECTIONS SHALL NOT BE ALLOWED. PAVEMENT MARKINGS WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 716-13.07, SPRAY THERMO PVMT MRKNG (40 mil) (6IN LINE), L.M. THE CONTRACTOR SHALL HAVE THE OPTION OF USING REFLECTORIZED PAINT INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK AND THEN INSTALLING THE PERMANENT MARKINGS AFTER THE PAVING OPERATION IS COMPLETED. THE TEMPORARY MARKINGS FOR THE FINAL SURFACE WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COSTS ARE TO BE INCLUDED IN THE PRICE BID FOR THE PERMANENT MARKINGS.~~

***IF 8" SPRAY THERMOPLASTIC (40 mil) IS USED.***

~~(15) PERMANENT PAVEMENT LINE MARKINGS SHALL BE 8" SPRAY THERMOPLASTIC (40 mil) INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK. SHORT UNMARKED SECTIONS SHALL NOT BE ALLOWED. PAVEMENT MARKINGS WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 716-13.08, SPRAY THERMO PVMT MRKNG (40 mil)~~

~~(8 IN BARRIER LINE), L.F. THE CONTRACTOR SHALL HAVE THE OPTION OF USING REFLECTORIZED PAINT INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK AND THEN INSTALLING THE PERMANENT MARKINGS AFTER THE PAVING OPERATION IS COMPLETED. THE TEMPORARY MARKINGS FOR THE FINAL SURFACE WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COSTS ARE TO BE INCLUDED IN THE PRICE BID FOR THE PERMANENT MARKINGS.~~

**REVISED STANDARD DRAWINGS:**

10-107.01 PAVEMENT MARKING

DRAWING NUMBER	REVISION DATE	DESCRIPTION
T-M-16	02/03/2020	RUMBLE STRIPE INSTALLATION LAYOUT
T-M-16A	02/03/2020	RUMBLE STRIPE DETAILS FOR EDGE OF PAVEMENT AND CENTERLINE

This Instructional Bulletin voids IB 19-11.

Roadway Design Guidelines Chapter 9 has not been updated online to reflect these revisions.

Roadway Design Guidelines Chapter 10 has been updated to reflect these revisions.

[https://www.tn.gov/content/dam/tn/tdot/roadway-design/documents/design\\_guidelines/DG-C10.pdf](https://www.tn.gov/content/dam/tn/tdot/roadway-design/documents/design_guidelines/DG-C10.pdf)

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Civil Engineering Director

KJL:ARH:ADP:LHC  
March 5, 2020