

**KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, EDITION 2015**

Delete SECTION 806 and replace with the following:

SECTION 806
DURABLE PAVEMENT MARKING

806.1 DESCRIPTION

Prepare the pavement and apply the pavement markings as shown in the Contract Documents.

When rumble strips are to be constructed on the project, construct the centerline rumble strips before installing centerline pavement marking.

<u>BID ITEMS</u>	<u>UNITS</u>
Pavement Marking (*) (***) (****) (*****) (+)	Linear Foot
Pavement Marking Symbol (*) (White) (****) (*****) (+)	Each
*Type of Pavement Marking: Cold Plastic, Patterned Cold Plastic, Epoxy, Thermoplastic, Preformed Thermoplastic, Thermoplastic-Spray, Intersection Grade, High Durability or Multi-Component	
** Color	
*** Width	
**** Type of Symbol	
***** Contrast	
+Wet Recoverable, Wet Continuous	

806.2 MATERIALS

a. **General.** Provide durable pavement marking materials that comply with **DIVISION 2200**.

b. **Wet Weather Pavement Markings.** Wet Weather Pavement Markings. There are two major classifications for wet weather pavement markings which help to improve the performance of pavement markings during wet weather conditions:

(1) **Wet Recoverable:** These are materials that enhance performance of pavement markings during wet weather conditions but still lose retroreflective properties when covered by water. As water dissipates, retroreflectivity values will increase. A high index glass bead or element with a refractive index of 1.9 or less is needed for wet recoverable pavement markings.

(2) **Wet Continuous:** These are materials that enhance the performance of pavement markings during wet weather conditions and retain a portion of their retroreflective properties when completely covered by water. Although retroreflectivity is retained while pavement markings are submerged, the reflectivity values are not as high as dry values. A high index glass bead or element with a refractive index of 2.1 or higher is used to attain wet continuous pavement markings.

Both Wet Recoverable and Wet Continuous beads will be referred to as wet weather beads below.

Prior to any roadway application the manufacturer shall submit a letter of certification stating that their glass beads have been tested and approved for wet weather pavement marking applications. The letter should state what classification the wet weather beads will be considered for use either for wet recoverable or wet continuous applications. The Engineer will use this letter as the basis of acceptance.

806.3 CONSTRUCTION REQUIREMENTS

a. **General.**

(1) **Equipment.** Use equipment designed for the preparation and application of the appropriate type of pavement marking material.

(2) Contractor's Personnel. All pavement marking striping operators and at least one other individual on the project shall hold an American Traffic Safety Services Association (ATSSA) pavement marking certification and be experienced in the application of the appropriate type of pavement marking material. Upon request, ATSSA certification cards shall be presented to the Engineer. If no certification cards are present, the Engineer shall not allow any removal or striping of pavement markings.

(3) Pavement Marking Contractors. Provide a letter of certification from the pavement marking manufacturer indicating the Contractor's qualifications to install their product.

(4) Test Strip. Before beginning pavement marking operations, at a location approved by the Engineer complete a 300-foot test section for epoxy, thermoplastic, sprayed thermoplastic and multi-component pavement markings that meet the requirements of this specification. The Engineer will inspect the test strip 24 hours after it has been placed. Do not begin pavement marking operations, until the Engineer approves the test strip.

(5) Surface Preparation. On existing pavements, remove the existing permanent, pavement markings (removed and paid for under **SECTION 808**) and according to the recommendations of the manufacturer of the new pavement markings.

Apply durable markings the same day existing permanent markings are removed at the following locations:

- yellow skip lines on undivided roads,
- white skip lines on multi-lane roads,
- white gore lines, and
- yellow ramp edge lines.

If additional temporary pavement markings are required due to Contractor's operations, the placement and removal will be subsidiary to the durable pavement marking bid items.

Remove temporary pavement markings the same day durable markings are applied. Removal of temporary pavement markings is subsidiary to the temporary pavement marking bid items.

Remove loose particles, dirt, tar, grease, residue of prior pavement markings and other deleterious material from the pavement surfaces.

(6) Bead Calibration. For all long line equipment, the Contractor is required to perform bead calibrations daily in the presence of the Engineer. Calibrations made by the Contractor will be compared to the manufacturer's bead calibration charts.

(7) Alignment. Lay out the pavement marking as detailed in the Contract Documents. If the Contract Documents do not provide details, submit to the Engineer for approval, a layout plan for the pavement markings that complies to the MUTCD. Locate longitudinal pavement marking stripes a minimum of 2 inches and a maximum of 8 inches from longitudinal joints. Provide adequate guide marks (approximately 2 inches by 12 inches at approximately 30 to 50-foot intervals) for the application of the pavement markings.

When applying pavement markings at locations with newly constructed rumble strips, use the same guide marks that were used for milling the rumble strips, or when approved by the Engineer, establish a new guide mark, if the guide mark used with the rumble strips is not visible enough to follow.

(8) Pavement Marking Width. Apply the pavement markings at the specified plan width or a maximum of $\frac{3}{4}$ -inch above the specified plan width. See **TABLE 806-3** for minimum pavement marking widths.

(9) Pavement Marking Application. Provide the Engineer with a copy of the manufacturer's application instructions. Apply the pavement markings according to the manufacturer's recommendations.

Follow the manufacturer's recommendations regarding pavement and ambient temperature at the time of application. The Engineer will verify the pavement and ambient temperatures before beginning work and when deemed necessary.

Apply pavement markings straight and close to the intended alignment without abrupt changes that result in an unacceptable appearance.

Meet the minimum retroreflectivity requirements in **TABLE 806-1**.

The Engineer will measure thermoplastic marking thickness according to **subsection 806.3f**.

The Engineer will measure epoxy and multi-component marking thickness using wet film mil thickness gauges, or when applicable, the computer monitoring system.

(10) Epoxy and Multi-component Applications Only. Use a computerized data logging system for monitoring the application and measurement of the thickness of multi-polymer stripes. Collection of data for all longitudinal non-handwork line striped shall be required for any project 1 mile or greater in length.

Report the following data as an average for each 528 feet. (Data will be recorded every 528 feet but evaluated over the 1-mile section)

- Ability to record GPS coordinates with +/- 3m accuracy
- Actual and averaged application speed to the nearest 0.1 mph

- Weight (lbs) and/or volume (gallons as measured through a piston displacement pump)
- mechanism) amount of material used by each color
- Weight (lbs) of glass beads/elements used
- Pavement surface temperature (°F)
- Air temperature (°F)
- Dew point (°F)
- Humidity (%)
- Material temperature for each color including catalyst
- Material application rates and film thickness over the section painted.

In addition to the above data, record the highway route number with the beginning and ending reference point rounded to the nearest hundredth of a mile, direction, project number, and county number.

Provide an electronic or printed record of the data above to the Engineer daily. The Engineer may determine that more frequent submission is necessary, particularly if equipment malfunctions occur. Produce either the printed or electronic records in their final form prior to the records being removed from the striping equipment (i.e. the Contractor presents this to the Engineer in the field). If only one record is produced at the striping equipment, the other may be produced in an office from the live data recorded. However, present the first record to the Engineer prior to any of the data entering an office environment. Ensure the electronic record is a comma or space delimited text file, adequate for insertion into a computerized spreadsheet software package, or a spreadsheet format acceptable to the Engineer.

Prior to the start of striping operations, travel at a distance of 1,000 feet to verify the consistency of physical and electronic measurements of distance traveled. Calibration shall be performed by the contractor at the start of any pavement marking project in the presence of the Engineer.

Take mil thickness checks every mile until material application becomes consistent with monitoring system. Once consistency is established the Engineer may reduce the frequency of mil thickness checks. The Engineer may increase the frequency of mil checks if mil thickness checks and monitoring system vary from each other greater than 5 mils within the first mile.

The Engineer will measure wet film mil thickness for all epoxy and/or multi-component applications. The Engineer may elect to use either the wet film mil thickness gauges or the computer monitoring system provided by the Contractor for all projects greater than 1 mile in length.

Yearly calibration and certification are required to be performed by the manufacturer of the data logging system to verify the accuracy of the Contractor's data logging unit. This calibration will be conducted by the manufacturer's technician, and a certification letter shall be furnished to both the Contractor and the Pavement Marking Specialist in the Bureau of Transportation Safety and Technology's Traffic Engineering Unit on a yearly basis prior to the commencement of the following striping season.

A copy of the manufacturer's certification letter should be kept on the project and be readily available if requested by the Engineer.

(11) Unsatisfactory Pavement Marking. Remove and replace unsatisfactory pavement marking according to the Contract Documents.

(a) General. Remove and replace pavement markings that:

- have drag marks, gashes, gouges, foreign covering, discolored areas or areas that have failed to solidify.
- have improper adhesion, length or thickness.
- have areas that present a ragged appearance, areas that do not present sharply defined edges, or areas with abrupt unintended changes in alignment.

(b) Alignment. Lines that deviate laterally from the intended alignment more than 2 inches in 200 feet may be rejected.

(c) Width. The Engineer will take a minimum of 10 width measurements per color line randomly spaced every 1 mile. Remove and replace the deficient widths of pavement markings (See TABLES 806-3 and 806-7) so the total length of deficiency in any 1-mile section is less than 300 feet.

(d) Retroreflectivity. See TABLE 806-1 for minimum retroreflectivity requirements for pavement marking.

TABLE 806-1: MINIMUM RETROREFLECTIVITY REQUIREMENTS

Type of Material	Color	millicandelas/sq m/lux* (minimum) (Initial)
Cold Plastic	White	250
	Yellow	175
Patterned Cold Plastic	White	500
	Yellow	300
Epoxy or Multi-Component	White	400
	Yellow	300
High Durability Tape	White	250
	Yellow	175
Thermoplastic, Preformed	White	350
Thermoplastic or Spray Thermoplastic	Yellow	250

NOTE: Provide an acceptable 100-foot retroreflectometer to use on the project which will remain the property of the Contractor. In the presence of the Engineer, measure the retroreflectivity between 12 hours and 14 days after the application of all pavement markings. Take a minimum of 5 randomly spaced readings per color line every 1 mile. The Engineer will average all of the readings for each color line within the 1-mile section to determine the retroreflectivity.

If the pavement markings have a retroreflectivity reading as measured for **TABLE 806-1** (in any 1-mile section) less than that shown in **TABLE 806-2**, remove and replace the entire 1-mile section.

TABLE 806-2: RETROREFLECTIVITY READINGS REQUIRING REMOVAL OF PAVEMENT MARKING

Type of Material	Color	Retroreflectivity reading (R) in a 1-mile section (millicandelas)
Cold Plastic	White	200
	Yellow	125
Patterned Cold Plastic	White	450
	Yellow	250
Epoxy or Multi-Component	White	350
	Yellow	250
High Durability Tape	White	200
	Yellow	125
Thermoplastic, Preformed Thermoplastic or Spray Thermoplastic	White	300
	Yellow	200

(12) Acceptance of Pavement Marking. The Engineer will not examine pavement marking for final acceptance until the pavement markings complete a 180-calendar day observation period. The Contractor is responsible for the pavement marking during this period. The 180-calendar day observation period begins the day following the completion and acceptance of retroreflectivity readings. Providing all other work on the contract is complete, the Engineer will not assess working day charges during the 180-calendar day observation period.

Immediately following the 180-day observation period, arrange with the Engineer to have a joint meeting to examine the pavement marking. The Engineer will provide written results of the final examination to the Contractor within 5 business days of the joint meeting.

Before the project is accepted, replace all failed pavement markings, at own expense. The pavement marking is failed, when more than 10% of the substrate is exposed in a 2,000-foot section of longitudinal pavement marking line. The transverse lines and symbols will be evaluated separately for the exposure of 10% substrate. Abrasion of pavement marking at private entrances or intersections may be excluded from examination.

If the Contractor fails to complete the required replacement of pavement markings within 10 business days of the date of the notice of the unacceptable pavement markings, during which the application of pavement markings is not precluded by adverse weather or road surface conditions, the Engineer, after giving the Contractor written notice,

will reinstate the assessment of working day charges or Liquidated Damages. Working day charges or Liquidated Damages will continue until the work is accepted.

If more than 30% of pavement marking is required to be replaced, the replacement pavement markings will not be accepted until the completion of an additional 180 calendar day observation period.

The Engineer will, upon satisfactory inspection of the pavement marking, accept the work and terminate the Contractor's responsibilities.

b. Cold Plastic/Patterned Cold Plastic Pavement Marking. Grind an inset for the pavement marking into the surface of the pavement. Grind the inset 0.08 inches (+ 0.01-inch tolerance) deep, with the width and length of the inset a maximum of 2 inches greater than the dimensions of the pavement marking.

On new or existing PCCP, cut the marking tape at any joint in the pavement that is crossed by the tape.

Apply adhesive-sealer primer of a type recommended by the manufacturer. Primer is required on all tape applications regardless of temperature, date or season.

c. Epoxy Liquid Pavement Marking. When pavement markings are applied to PCCP (including concrete bridge decks) less than 1 year old, remove all curing compounds and laitance by shot, sand or waterblasting.

Use a slower curing epoxy material (40 minutes) for pavement markings applied to PCCP. For other surfaces, fast setting (10 minutes) epoxy material may be used with approval of the Engineer.

Apply the epoxy liquid material closely behind the surface cleaning procedures.

Before mixing the components of the pavement marking material, heat the individual components to the temperature ranges recommended by the manufacturer of the material. Do not exceed the maximum recommended temperature at any time.

Apply the epoxy liquid pavement marking material at a thickness of 20-25 mils on all pavement. Immediately apply all glass beads (double drop system or blended bead) to the epoxy liquid pavement marking at the glass bead gradation and bead drop rate recommended by the manufacturer to obtain the required level of retroreflectivity.

d. Multi-Component Liquid Pavement Marking. When pavement markings are applied to PCCP (including concrete bridge decks) less than 1 year old, remove all curing compounds and laitance by shot, sand or waterblasting. For intersection grade multi-component, grind the inset 15 mil (+10 mil tolerance) deep, with the width and length of the inset a maximum of 2 inches greater than the dimensions of the pavement marking on concrete surfaces.

Multi-component liquid pavement marking will only be allowed for use on concrete pavement on a pre-qualified basis.

Apply the multi-component liquid material closely behind the surface cleaning procedures.

Before mixing the components of the pavement marking material, heat the individual components to the temperature ranges recommended by the manufacturer of the material. Do not exceed the maximum recommended temperature at any time.

Apply the multi-component liquid pavement marking material at the thickness of 20-25 mils on all pavement. Immediately apply the glass beads (double drop system or blended drop) to the multi-component liquid pavement marking at the glass bead gradation and bead drop rate recommended by the manufacturer to obtain the required level of retroreflectivity.

e. Intersection Grade Pavement Marking.

(1) Multi-Component. Follow subsection 806.3d.

(2) High Durability Tape. Grind an inset for the pavement marking into the surface of the pavement. Grind the inset 80 mil (+10 mil tolerance) deep with the width and length of the inset a maximum of 2 inches greater than the dimensions of the pavement marking. Apply adhesive-sealer primer of a type recommended by the manufacturer. Primer is required on all tape applications regardless of temperature, date or season.

On new or existing PCCP, cut the marking tape on either side of any joint in the pavement that is crossed by the tape.

(3) Preformed Thermoplastic. Grind the inset 40 mil (+ 20 mil tolerance) deep with the width and length of the inset a maximum of 2 inches greater than the dimensions of the pavement marking on concrete surfaces.

Use a heating device recommended by the material manufacturer to fuse the preformed thermoplastic to the pavement. Apply adhesive-sealer primer of a type recommended by the manufacturer. Primer is required on all preformed applications on concrete regardless of temperature, date or season.

Apply the pavement markings as recommended by the manufacturer.

f. All Thermoplastic Pavement Marking. The Engineer will verify the thickness of the thermoplastic pavement marking. Thickness will be checked by placing metal plates or other suitable material of known thickness in a 3-foot section along the path of application at 2 to 3 locations. After the application of the thermoplastic material, the samples will be cut free. The material thickness will be measured using either a micrometer or vernier calipers (with proper correction for the metal plate). The thickness recorded for the locations within the 3-foot section will be averaged. Initially, thickness determinations will be made every $\frac{1}{3}$ mile for each color and each stripe width. Once a pattern of compliance is established, the Engineer may reduce the frequency of thickness verification to once each 1-mile section. Failure of a section will require testing to return to the initial frequency until compliance may be re-established. The location of the 3-foot sample segment within the sample section will be selected at random.

The Contractor may provide other devices for gauging thickness to the Engineer for approval.

Apply thermoplastic pavement markings between April 15 and October 15. If the manufacturer's recommendations allow, the Engineer may waive the date restrictions. The Engineer will notify the Contractor in writing of any allowed variance.

(1) Thermoplastic Pavement Marking. The required thickness for longitudinal markings is a minimum of 90 mil at the edges, and a maximum of 125 mil at the center of the stripe. The required thickness for transverse markings and symbols is a minimum of 90 mil at the edges, and a maximum of 140 mil at the center.

For transverse markings on concrete, grind the inset 40 mil (+20 mil tolerance) deep, with the width and length of the inset a maximum of 2 inches greater than the dimensions of the pavement marking on concrete surfaces.

Apply the binder-sealer according to the manufacturer's recommendations. Primer is required on all transverse applications on concrete regardless of temperature, date or season. The Engineer will not approve the application of the thermoplastic material until the binder-sealer applied to the pavement is devoid of all solvent or water.

Apply prepared thermoplastic material in a molten state within a temperature range of 400 to 440°F. The Engineer will not approve the use of scorched material or prepared material that has been maintained at 440°F for a period exceeding 4 hours.

Apply glass beads (double drop system or blended bead) to the thermoplastic pavement marking at the glass bead gradation and bead drop rate recommended by the manufacturer to obtain the required level of retroreflectivity.

g. Leading/Trailing Configuration. Installation of leading/trailing pavement markings may be used for intermittent markings on concrete or asphalt surfaces. The trailing (black) pavement marking shall be placed concurrently to the white pavement marking line when applied to the roadway.

Apply black, opaque coal slag (20-40 mixture) to the trailing pavement marking line at a rate of 8-10 pounds per gallon of liquid pavement marking to achieve a skid resistance value of 50 BPN.

Apply leading/trailing pavement markings that follow the same space configuration as broken lines, dotted extension and lane drop markings in the Contract Documents.

h. Wet Weather Pavement Markings. The manufacturer shall submit a letter stating that the Contractor performing the application of wet weather pavement markings has been certified and trained by the manufacturer in the use of the manufacturer's wet reflective products/system.

At any time wet weather pavement markings are being installed, a manufacturer's representative shall be onsite to evaluate pavement marking applications.

Daily, before striping, calibrate the glass bead drop rates in the presence of the Engineer, for wet recoverable or wet continuous bead drops to achieve the required retroreflectivity in **TABLE 806-5**.

The approved grooving range for inlaying wet weather pavement markings shall be a minimum of 60 mils with a maximum of 100 mils.

Multi-Component Liquid Pavement Marking Application. Apply the multi-component marking material at a thickness of 20-25 mils on all pavements.

Dual Drop System. Install the wet weather beads as the first drop of a dual drop system. The second drop of the dual drop system shall consist of a blended bead mixture to achieve the required dry retroreflectivity value.

Follow the glass bead gradation and bead drop rate recommended by the manufacturer to obtain the required level of retroreflectivity to attain wet/dry retroreflectivity performance.

Triple Drop System. Install the wet weather beads as the first drop of a triple drop system. The second drop shall be large beads and the third drop consisting of small glass beads to achieve the required dry retroreflectivity value. Follow the glass bead gradation and bead drop rate recommended by the manufacturer to obtain the required level of retroreflectivity to attain wet/dry retroreflectivity performance.

Preformed Patterned Cold Plastic Pavement Marking Application. Follow subsection 806.2b.

Recess all wet weather pavement marking material to obtain continued wet weather performance after snow plowing operations.

i. Verification Testing of Wet Weather Pavement Marking. Verification testing of the wet weather pavement markings will be required. Hire an independent 3rd party contractor capable of performing the required wet testing. Testing shall follow the ASTM testing methods E1710, E2177, or E2832. Send the results from the wet weather testing directly to the KDOT Area office, the Pavement Marking Specialist in the Bureau of Transportation Safety and Technology's Traffic Engineering Unit, and also including the pavement marking contractor within five (5) business days of collecting the data for the entire project.

Perform ASTM E1710 (Dry Method) after 14 days but within 30 days after the application of all pavement markings. Take a minimum of 5 randomly spaced readings per color line every 1 mile. The Engineer will average all the readings for each color line within the 1-mile section to determine the retroreflectivity.

For wet recoverable pavement marking applications follow ASTM E2177 testing methods to verify wet recovery retroreflectivity after 14 days but within 30 days of marking applications on the road. Either the "Bucket Method" or "Spray Method" will be an approved method for testing wet recoverable pavement markings. Take a minimum of 2 randomly spaced readings per color line every mile. Engineer will average all the readings for each color line within the 1-mile section to determine the wet recoverable retroreflectivity value. If project is less than 1 mile in length only one reading is required per color line. A random point within the project can be chosen to check for wet recoverable reflectivity.

For wet continuous pavement marking applications follow ASTM E2832 testing methods to verify wet continuous retroreflectivity after 14 days but within 30 days of marking applications on the road. This test method is commonly referred to as the "Continuous Wet Method". Take a minimum of 2 randomly spaced readings per color line every mile. Engineer will average all the readings for each color line within the 1-mile section to determine the wet continuous retroreflectivity value. If project is less than 1 mile in length only one reading is required per color line. A random point within the project can be chosen to check for wet continuous reflectivity.

TABLE 806-5: MINIMUM AVERAGE RETROREFLECTIVITY REQUIREMENTS FOR WET WEATHER PAVEMENT MARKINGS

Type of Material	Color	Millicandela/sq m/ux (Minimum) (Initial)	
		White	Yellow
Multi-Component	Dry (ASTM E1710)	400	300
	Wet Recovery (ASTM E2177)	300	225
	Wet Continuous (ASTM E2832)	200	150
Preformed Pattern Cold Plastic	Dry (ASTM E1710)	500	300
	Wet Recovery (ASTM E2177)	250	200
	Wet Continuous (ASTM E2832)	250	200

TABLE 806-6: RETROREFLECTIVITY READINGS REQUIRING REMOVAL OF PAVEMENT MARKING (WET WEATHER)

Type of Material	Color	Millicandelas/sq m/ux (Minimum) (Initial)	
		White	Yellow
Multi-Component	Dry (ASTM E1710)	350	250
	Wet Recovery (ASTM E2177)	250	175
	Wet Continuous (ASTM E2832)	150	100
Preformed Pattern Cold Plastic	Dry (ASTM E1710)	450	250
	Wet Recovery (ASTM E2177)	200	150
	Wet Continuous (ASTM E2832)	200	150

806.4 MEASUREMENT AND PAYMENT

The Engineer will measure the various widths and colors or pavement markings by the linear foot. When the Contract Documents specify that the contrast pavement markings are installed in a leading/trailing configuration, the Engineer will measure the black pavement marking and white pavement marking separately by the linear foot.

The Engineer will measure each symbol.

The Engineer will pay for 90% of the completed quantity for each of the various widths and colors of pavement marking and symbols. Upon acceptance of the pavement markings following the 180-day observation period, the Engineer will pay for the remaining 10% of the completed quantity for each of the various widths and colors of pavement marking and symbols.

When necessary, removal of permanent pavement markings will be measured and paid for under **SECTION 808**. Removal of temporary pavement markings is subsidiary to the temporary pavement marking item.

Payment for "Pavement Marking" and "Pavement Marking Symbol" at the contract unit prices is full compensation for the specified work.

Pay adjustments for width and retroreflectivity deficiencies (see **TABLES 806-3 and 4**) will be entered on the Contractor's Payment Vouchers (intermediate and final) under the bid item Contract Deduct.

TABLE 806-3: DURABLE PAVEMENT MARKING WIDTH DEFICIENCY DEDUCTION-REMOVAL (Epoxy, Thermoplastic, Spray Thermoplastic and Multi-Component)

Specified Width (inches)	Actual Width (inches)	Distance (D) the width is deficient in any 1-mile section (feet)	Deduction-Removal
4	3 3/4 to 4	D ≤ 50	No deduction.
4	3 3/4 to 4	50 < D < 300	20% deduction of the contract line item for the entire 1-mile section.
4	3 3/4 to 4	D > 300	Remove and replace
6	5 3/4 to 6	D ≤ 50	No deduction.
6	5 3/4 to 6	50 < D < 300	20% deduction of the contract line item for the entire 1-mile section.
6	5 3/4 to 6	D > 300	Remove and replace

TABLE 806-4: DURABLE PAVEMENT MARKING RETROREFLECTIVITY DEDUCTION*

Type of Material	Color	Retroreflectivity reading (R) in a 1-mile section (millicandelas)	Deduction of the contract line item for the entire 1-mile section
Cold Plastic	White	225 ≤ R < 250	15%
		200 ≤ R < 225	25%
	Yellow	150 ≤ R < 175	15%
		125 ≤ R < 150	25%
Patterned Cold Plastic	White	475 ≤ R < 500	15%
		450 ≤ R < 475	25%
	Yellow	275 ≤ R < 300	15%
		250 ≤ R < 275	25%
Epoxy or Multi-Component	White	375 ≤ R < 400	15%
		325 ≤ R < 375	25%
	Yellow	275 ≤ R < 300	15%
		225 ≤ R < 275	25%
High Durability Tape	White	225 ≤ R < 250	15%
		200 ≤ R < 225	25%
	Yellow	150 ≤ R < 175	15%
		125 ≤ R < 150	25%
Thermoplastic, Preformed Thermoplastic or Spray Thermoplastic	White	325 ≤ R < 350	15%
		300 ≤ R < 325	25%
	Yellow	225 ≤ R < 250	15%
		200 ≤ R < 225	25%

*Retroreflectivity readings used for calculating the deduction will be taken from reading required in TABLE 806.1.

TABLE 806-7: DURABLE PAVEMENT MARKING WIDTH DEFICIENCY DEDUCTION-REMOVAL (Multi-Component) (Wet Weather)

Specified Width (inches)	Actual Width (inches)	Distance (D) the width is deficient in any 1-mile section (feet)	Deduction
4	3 3/4 to 4	D ≤ 50	No deduction.
4	3 3/4 to 4	50 < D < 300	20% deduction of the contract line item for the entire 1-mile section.
4	3 3/4 to 4	D > 300	Remove and replace.
6	5 3/4 to 6	D ≤ 50	No deduction.
6	5 3/4 to 6	50 < D < 300	20% deduction of the contract line item for the entire 1-mile section.
6	5 3/4 to 6	D > 300	Remove and replace.

**TABLE 806-8: DURABLE PAVEMENT MARKING RETROREFLECTIVITY DEDUCTION
(Wet Weather)**

Type of Material	Color	Retroreflectivity reading (R) in a 1-mile section (millicandela)	Deduction of the contract line item for the entire 1-mile section
Multi-Component	White	$375 \leq R < 400$	15%
		$350 \leq R < 375$	25%
	Yellow	$275 \leq R < 300$	15%
		$250 \leq R < 275$	25%
Patterned Cold Plastic	White	$475 \leq R < 500$	15%
		$450 \leq R < 475$	25%
	Yellow	$275 \leq R < 300$	15%
		$250 \leq R < 275$	25%

*Retroreflectivity readings used for calculating the deduction will be taken from reading required in **TABLE 806-5**.

03-20-19 TST (JM)
Jun-19 Letting