



Florida Department of Transportation

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GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

DENVER J. STUTLER, JR.
SECRETARY

July 13, 2005

Mr. Donald Davis
Program Operations Engineer
Federal Highway Administration
227 N. Bronough Street, Suite 2015
Tallahassee, Florida 32301

Re: Office of Design, Specifications
Section 713
Proposed Specification: 7130000 – Preformed Pavement Stripes and Markings.

Dear Mr. Davis:

We are submitting, for your approval, two copies of a proposed Supplemental Specification for Preformed Pavement Stripes and Markings.

These changes were made by Chester Henson of the State Roadway Design Office.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965DB or duane.brautigam@dot.state.fl.us.

If you have any questions relating to this specification change, please call Duane F. Brautigam, State Specifications Engineer at 414-4110.

Sincerely,

Signature on file

Duane F. Brautigam, P.E.
State Specifications Engineer

DFB/jho
Attachment

cc: General Counsel
Florida Transportation Builders' Assoc.
State Construction Engineer

PREFORMED PAVEMENT STRIPES AND MARKINGS.

(REV ~~4-29-05~~ **5-2-057-11-05**)

SECTION 713 (Pages 758-760) is deleted and the following substituted:

SECTION 713

~~PREFORMED PERMANENT TAPE PAVEMENT~~ STRIPES AND MARKINGS

713-1 Description.

Apply ~~permanent preformed reflectorized plastic tape traffic pavement symbols, legends, stripes and markings, in accordance with the Contract documents and remove traffic stripes and markings as required.~~ *Stripes and markings are divided into two classes, Standard and High Performance, they are differentiated by their retroreflectivity and durability.*

713-2 Materials.

Use only ~~preformed pavement~~ *permanent tape traffic* stripes and markings materials listed on the Qualified Products List (QPL), ~~and meeting~~ the requirements of 971-1 and 971-~~1810~~. The Engineer will take random samples of the materials in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

713-3 Equipment.

Use equipment that is mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.

Ensure the mechanical applicator is equipped with film cut-off device and a measuring device that automatically and accumulatively measures the length of each line placed with an accuracy tolerance of ± 2 percent. Tape may be placed by hand on short sections 500 feet [150 m] or less if ~~it is done in a neat accurate manner~~ the tolerances in dimensions and in alignment specified in 710-5 are met.

713-4 Removal of Existing Traffic Stripes Application.

713-4.1-~~General~~ Removal of Existing Traffic Stripes : *Remove existing traffic stripes and markings, such that scars or traces of removed markings will not conflict with new stripes and markings by a method approved by the Engineer. ~~Payment for marking removal will be in accordance with Section 102-5.9.~~*

Before applying traffic stripes and markings, remove any material by a method approved by the Engineer that would adversely affect the bond of the traffic stripes.

Apply a primer, sealer or surface preparation adhesive of the type recommended by the manufacturer. Ensure the tape stripes and markings adheres to the pavement surface.

Offset longitudinal lines at least 2 inches [50 mm] from construction joints on portland cement concrete pavement.

Apply traffic stripes or markings only to dry surfaces, and when the ambient air and surface temperature is at least 55°F [13 °C] and rising.

*Apply striping to the same tolerances in dimensions and in alignment specified in 710-5. When applying traffic stripes and marking over existing markings, **ensure that** not more 2 inches*

[50 mm}] on either end and not more than 1 inch [25 mm] on either side of the existing line shall be-is visible.

Apply ~~pavement~~traffic stripes and markings to the pavement by means approved by the Engineer. *The stripes and markings shall be installed immediately following the paving operation. The Engineer will e*Conduct field testing in accordance with FM 5-541 *and FM 5-579.* Remove and replace pavement stripes and markings not meeting the requirements of this Section at no additional cost to the Department.

~~Ensure that existing pavement markings are removed, such that scars or traces of removed markings will not conflict with new stripes and markings by a method approved by the Engineer.~~

~~Prior to applying pavement stripes and markings, remove any material that would adversely affect the bond of the pavement stripes and markings by a method approved by the Engineer.~~

~~Apply traffic stripes or markings only to dry surfaces, and when the ambient air and surface temperature is at least 55°F [13°C] and rising. Follow the manufacturer's recommendations for application temperature. The Engineer will measure temperatures in accordance with FM 5-541.~~

~~Offset longitudinal lines at least 2 inches [50 mm] from construction joints of portland cement concrete pavement.~~

~~Apply a primer sealer of the type recommended by the manufacturer of the pavement stripes and markings material on all portland cement concrete surfaces, prior to installation.~~

~~Apply traffic stripes or markings, having well defined edges, over existing pavement markings such that not more than 2 inches [50 mm] on either end and not more than 1 inch [25 mm] on either side is visible.~~

Apply all final pavement markings prior to opening the road to traffic.

~~**713-4.2 Corrections for Deficiencies:** Remove and reapply a 1.0 mile [1.0 kilometer] LOT centered around any deficiency, as determined by the Engineer, at no additional cost to the Department.~~

~~**713-4.32 Thickness:** Apply traffic stripes or markings such that, after installation, the stripes or markings will have a thickness of 0.02 to 0.09 inch [0.508 to 2.286 mm] when measured above the pavement surface at the edge of the traffic stripe or marking. Apply traffic stripes or markings such that, after application of drop on glass spheres, the stripes or markings will have a thickness above the pavement surface as designated on the Qualified Products List for the particular product used.~~

713-4.3 Retroreflectivity:

713-4.3.1 General: Black portions of contrast tapes and black masking tapes must be non-reflective and have a reflectance of less than 5 mcd/lx m².

713-4.3.2 Standard Markings: Apply white and yellow traffic stripes and markings that will attain an initial retroreflectivity of not less than 300 mcd/lx·m² for white and contrast markings and not less than 250 mcd/lx·m² for yellow markings.

713-5.3 High Performance Markings: Apply white and yellow traffic stripes and markings that will attain an initial retroreflectivity of not less than 450 mcd/lx·m² for white and contrast markings and not less than 350 mcd/lx·m² for yellow markings.

713-5 Retroreflectivity.

~~Apply white and yellow pavement stripes and markings that will attain an initial retroreflectance of not less than 300 med/lx-m² and not less than 250 med/lx-m², respectively. Ensure that the intermittent and final retroreflectance of white and yellow pavement markings are not less than 150 med/lx-m². This does not apply to transverse lines, bike lane symbols and longitudinal lines adjacent to or in a proposed bike lane.~~

713-64.4 Color.

~~Use white pavement stripes and marking material that is pure white, free from any tint and showing no deviations from magnesium oxide color standard greater than the following:~~

Scale Definition	Magnesium Oxide Standard	Sample
RD	100	75% minimum
Reflectance		
a. Red-Green	0	-5 to +5
b. Yellow-Blue	0	-10 to +10

~~Use yellow pavement stripes and marking material which visually matches Federal Test Standard Number 595 color 33538, and meet the following criteria for chromaticity coordinates (x,y):~~

x	0.455	0.510	0.472	0.530
y	0.444	0.485	0.400	0.456

Use material meeting the requirements of 971-1.

713-7 Durability.

~~Durability is the measured percent of pavement marking material completely removed from the pavement. The pavement marking material line loss must not exceed 5.0% of surface area.~~

713-85 Contractor’s Responsibility for Notification.

Notify the Engineer prior to the placement of pavement stripes and marking material. Furnish the Engineer with the manufacturer’s name and LOT numbers of the material to be used. Ensure that the approved LOT numbers appear on the material packages. Submit a certified test report to the Engineer indicating that the materials meet all requirements specified.

713-96 Protection of Newly Applied Stripes.

~~Do not allow traffic~~ *Do not allow traffic onto or permit vehicles to cross* onto newly applied traffic stripes and markings until they are sufficiently ~~attached to permit vehicles to cross them without damage~~ *bonded*. Remove and replace any portion of the traffic stripes and markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

713-7 Observation Period.

Pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work.

The pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of reflectivity or vehicular damage. The Department reserves the right to check the color and retroreflectivity within 30 days prior to the end of the observation period.

Replace, at no additional expense to the Department, any pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

713-8 Corrections for Deficiencies.

Remove and reapply a 1.0 mile [1.0 kilometer] LOT centered around any deficiency, as determined by the Engineer, at no additional cost to the Department.

713-9 Method of Measurement.

The quantities to be paid for under this Section will be as follows:

(a) The net length, in feet [meters], of each of the various types of lines and stripes, authorized and acceptably applied.

(b) The total traversed distance in gross miles [kilometers] of 10-30 skip line. The actual applied line is 25% of the traverse distance for a 1:3 ratio. This equates to 1,320 feet [250 m] of marking per mile [kilometer] of single line.

(c) The area, in square feet [square meters], of Remove Existing Markings acceptably removed.

(d) The length, in net miles [net kilometers], of Solid Traffic Stripe, authorized and acceptably applied.

(e) The number of pavement messages, symbols and directional arrows, authorized and acceptably applied.

713-10 Basis of Payment.

~~*When preformed pavement stripes and markings are used as an alternate to extruded or sprayed thermoplastic traffic stripes and markings, the quantities will be paid for in accordance with Section 711. Such prices and payments will be full compensation for all work specified herein. Final Payment will be withheld until all deficiencies are corrected.*~~ *Prices and payments will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.*

Payment will be made under:

Item No. 713-101 Permanent Tape (Standard)

Item No. 2713-101 .Permanent Tape (Standard)

Item No. 713-102 Permanent Tape (High Performance)

Item No. 2713-102 Permanent Tape (High Performance)

PREFORMED PAVEMENT STRIPES AND MARKINGS.
(REV 7-11-05)

SECTION 713 (Pages 758-760) is deleted and the following substituted:

SECTION 713
PERMANENT TAPE STRIPES AND MARKINGS

713-1 Description.

Apply permanent tape traffic stripes and markings, in accordance with the Contract documents. Stripes and markings are divided into two classes, Standard and High Performance, they are differentiated by their retroreflectivity and durability.

713-2 Materials.

Use only permanent tape traffic stripes and markings materials listed on the Qualified Products List (QPL), meeting the requirements of 971-1 and 971-10. The Engineer will take random samples of the materials in accordance with the Department's Sampling, Testing and Reporting Guide schedule.

713-3 Equipment.

Use equipment that is mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.

Ensure the mechanical applicator is equipped with film cut-off device and a measuring device that automatically and accumulatively measures the length of each line placed with an accuracy tolerance of ± 2 percent. Tape may be placed by hand on short sections 500 feet [150 m] or less if the tolerances in dimensions and in alignment specified in 710-5 are met.

713-4 Removal of Existing Traffic Stripes Application.

713-4.1 Removal of Existing Traffic Stripes : Remove existing traffic stripes and markings, such that scars or traces of removed markings will not conflict with new stripes and markings by a method approved by the Engineer

Before applying traffic stripes and markings, remove any material by a method approved by the Engineer that would adversely affect the bond of the traffic stripes.

Apply a primer, sealer or surface preparation adhesive of the type recommended by the manufacturer. Ensure the tape stripes and markings adheres to the pavement surface.

Offset longitudinal lines at least 2 inches [50 mm] from construction joints on portland cement concrete pavement.

Apply traffic stripes or markings only to dry surfaces, and when the ambient air and surface temperature is at least 55°F [13°C] and rising.

Apply striping to the same tolerances in dimensions and in alignment specified in 710-5. When applying traffic stripes and marking over existing markings, ensure that not more 2 inches [50 mm] on either end and not more that 1 inch [25 mm] on either side of the existing line is visible.

Apply traffic stripes and markings to the pavement by means approved by the Engineer. The stripes and markings shall be installed immediately following the paving operation. Conduct field testing in accordance with FM 5-541 and FM 5-579. Remove and

replace pavement stripes and markings not meeting the requirements of this Section at no additional cost to the Department.

Apply all final pavement markings prior to opening the road to traffic.

713-4.2 Thickness: Apply traffic stripes or markings such that, the stripes or markings will have a thickness above the pavement surface as designated on the Qualified Products List for the particular product used.

713-4.3 Retroreflectivity:

713-4.3.1 General: Black portions of contrast tapes and black masking tapes must be non-reflective and have a reflectance of less than 5 mcd/lx m².

713-4.3.2 Standard Markings: Apply white and yellow traffic stripes and markings that will attain an initial retroreflectivity of not less than 300 mcd/lx·m² for white and contrast markings and not less than 250 mcd/lx·m² for yellow markings.

713-5.3 High Performance Markings: Apply white and yellow traffic stripes and markings that will attain an initial retroreflectivity of not less than 450 mcd/lx·m² for white and contrast markings and not less than 350 mcd/lx·m² for yellow markings.

713-4.4 Color.

Use material meeting the requirements of 971-1.

713-5 Contractor's Responsibility for Notification.

Notify the Engineer prior to the placement of pavement stripes and marking material. Furnish the Engineer with the manufacturer's name and LOT numbers of the material to be used. Ensure that the approved LOT numbers appear on the material packages. Submit a certified test report to the Engineer indicating that the materials meet all requirements specified.

713-6 Protection of Newly Applied Stripes.

Do not allow traffic onto or permit vehicles to cross onto newly applied traffic stripes and markings until they are sufficiently bonded. Remove and replace any portion of the traffic stripes and markings damaged by passing traffic or from any other cause, at no additional cost to the Department.

713-7 Observation Period.

Pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work.

The pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of reflectivity or vehicular damage. The Department reserves the right to check the color and retroreflectivity within 30 days prior to the end of the observation period.

Replace, at no additional expense to the Department, any pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

713-8 Corrections for Deficiencies.

Remove and reapply a 1.0 mile [1.0 kilometer] LOT centered around any deficiency, as determined by the Engineer, at no additional cost to the Department.

713-9 Method of Measurement.

The quantities to be paid for under this Section will be as follows:

(a) The net length, in feet [meters], of each of the various types of lines and stripes, authorized and acceptably applied.

(b) The total traversed distance in gross miles [kilometers] of 10-30 skip line. The actual applied line is 25% of the traverse distance for a 1:3 ratio. This equates to 1,320 feet [250 m] of marking per mile [kilometer] of single line.

(c) The area, in square feet [square meters], of Remove Existing Markings acceptably removed.

(d) The length, in net miles [net kilometers], of Solid Traffic Stripe, authorized and acceptably applied.

(e) The number of pavement messages, symbols and directional arrows, authorized and acceptably applied.

713-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

Payment will be made under:

- Item No. 713-101 Permanent Tape (Standard)
- Item No. 2713-101 .Permanent Tape (Standard)
- Item No. 713-102 Permanent Tape (High Performance)
- Item No. 2713-102 Permanent Tape (High Performance)