ORIGINATION FORM
Proposed Revisions to the Specifications

(Please provide all information - incomplete forms will be returned)

Date: 07/01/2020

Originator: Gevin McDaniel

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Office: Roadway Design Office

Specification Section: 991 (new)

Article/Subarticle: n/a

****Will the proposed revision require changes to:**

Publication	Yes	No	Office Staff Contacted and date contacted
Standard Plans Index	◯	◯	Derwood Sheppard 6/2020
Traffic Engineering Manual	◯	◯	Javier Ponce 6/2020
FDOT Design Manual	◯	◯	Self
Construction Project Administration Manual	◯	◯	Self
Basis of Estimate/Pay Items	◯	◯	Melissa Hollis 6/2020
Structures Design Guidelines	◯	◯	Self
Approved Product List	◯	◯	Karen Byram 6/2020
Materials Manual	◯	◯	Self

**This section must be completed prior to processing proposed revisions.

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction Bulletin** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Are all references to external publications current? **Yes** ◯ **No** ◯

If not, what references need to be updated? (Please include changes in the redline document.)

Why does the existing language need to be changed?

See attached.

Summary of the changes:

New Specification Section.

Are these changes applicable to all Department jobs? **Yes** ◯ **No** ◯

If not, what are the restrictions?

Contact the State Specifications Office for assistance in completing this form.

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Tubular Marker Implementation: The Department will be using the same product as the Managed Laned Markers for permanent channelizing devices on Arterials and Collectors. The colors for these Tubular Markers will be the same as the lane line that they supplement (white or yellow) per the MUTCD requirements. This also requires a transition plan for the color of Managed Lane Markers.

Are changes in line with promoting and moving the needle on the vital few and how?
This Specification change is in line with moving the needle on the vital few by providing a more visible and durable product as a channelizing device to improve the safety of bicyclists and pedestrians on arterials and collectors. Until now, this product has been used on Managed Lane to preclude lane changing. The durability, visibility and larger diameter of these products are desired. The increased durability will also benefit the department and improved safety by not having to be replaced as often. The reduction in MOT operations for replacement drastically improved safety on our roadways.
What financial impact does the change have? Pay items and consultant fees.
These products have a slightly higher initial cost over "high performance delineators"; however, the long-term savings in maintenance greatly outweighs the increased initial cost. As stated above, the fewer MOT operations improve safety, mobility, and further reduce costs. There is no change to consultant fees.
Which offices does the change impact?
This impacts the Program Management, Materials, Design, Traffic Operations, Safety, Construction, and Maintenance.
What impacts to the Districts are anticipated?
This will clarify and simplify design for the District Design, Traffic Operations, Safety, and Construction Offices. This will also simplify things for maintenance. Maintenance will have fewer products to keep in stock and fewer items/incidences to maintain.
Have District counterpart's comments been addressed?
This change is being communicated to all the District counterparts through the established procedures.
Does the change shift risk and to who?
This change does not shift risks.
What is the communication plan and schedule of events?
The following is the schedule for implementation:

November 2020:

- *Memorandum (not a bulletin) is released to highlight the changes, provide commentary, and show the drafts of the upcoming Specifications changes:*
  - *Drafts of Specifications 704, 991 and 993 will be included in the Memorandum (See February 2021 below)*
  - *Boilerplate MSP will be included in the Memorandum and will be available for use when a shorter height is needed*
- *2021 FDM is published: includes language clarifying the criteria for use of Tubular Markers and Delineators will be released*
- *FY 2021-22 Standard Plans is published: modified to showing proper call-outs for Tubular Markers and Delineators*
- *TEM Section 4.5 will reflect the use of Tubular Markers instead of "Express Lane Markers" and reference Section 704 of the Standard Specifications*
- *Managed Lanes (Manual?, Handbook?) will reflect the use of Tubular Markers instead of "Managed Lane Markers" and reference Section 704 of the Standard Specifications*
- *BOE will be updated to show new Pay Item structure for Tubular Markers*
- *Pay Items for "High Performance Delineators" and "High Visibility Median Separator Delineators" will be removed from the BOE*
- *APL will be updated to show new category for Tubular Markers*
- *APL Items for "High Performance Delineators" and "High Visibility Median Separator Delineators" will be removed*

February 2021:

- *July 2021 Standard Specifications is published:*
  - *New Sections 704 and 991*
  - *Standard Specification 993 will be modified to remove "High Performance Delineators" and "High Visibility Median Separator Delineators"*

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RON DESANTIS
GOVERNOR

KEVIN J. THIBAULT, P.E.
SECRETARY

M E M O R A N D U M

DATE: October 29, 2020

TO: Specification Review Distribution List

FROM: Daniel Strickland, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **9910000 CHANNELIZING DEVICE MATERIALS**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

The changes are proposed by Gevin McDaniel from the Roadway Design Office to add appropriate materials requirements for channelizing devices to the Standard Specification.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or online at http://fdotewp1.dot.state.fl.us/programmanagement/development/industryreview.aspx . Comments received after **November 30, 2020,** may not be considered. Your input is encouraged.

DS/dh

Attachment

CHANNELIZING DEVICE MATERIALS
(REV 10-519-20)

The following new Section is added after Section 990.

SECTION 991
CHANNELIZING DEVICE MATERIALS

991-1 Durable Tubular Markers

991-1.1 General.

This subarticle describes the material requirements for tubular markers installed in accordance with Section 704. All Durable Tubular Marker products shall be listed on the Department's Approved Products List (APL).

991-1.2 Dimensions.

The post shall have a minimum diameter of 3 inches. The base of the tubular marker shall have a maximum dimension in any direction of 8 inches. The height of the tubular marker above the pavement surface shall be 36 inches.

991-1.3 Color.

Tubular Marker color must be uniform and integral throughout entire height of the post. The base may be black in color.

991-1.3.1 White.

The yellowness index shall not exceed 12, tested in accordance with ASTM E313. The daytime 45 degrees, 0 degrees luminance factor, Cap Y, shall be a minimum of 70, tested in accordance with ASTM E1347 or ASTM E1164.

991-1.3.2 Yellow.

The daytime 45 degrees, 0 degrees luminance factor, Cap Y, shall be a minimum of 60, tested in accordance with ASTM E1347 or ASTM E1164.

991-1.4 Retroreflective Sheeting.

The color of the retroreflective sheeting shall match the color of the tubular marker. The retroreflective sheeting shall be abrasion resistant Type IV or Type V and meet the requirements of Section 994. The retroreflective sheeting shall meet supplementary requirements for reboundable sheeting as stated in section S.2 of ASTM D4956. The sheeting shall wrap around the entire circumference of the tube and have a minimum vertical dimension of 6 inches. The top of sheeting shall be 1-1/2 inches plus or minus 1/2 inch below the top of post.

991-1.5 Product Testing.

Manufacturers seeking evaluation of Durable Tubular Markers must include test reports from the National Transportation Product Evaluation Program (NTPEP) documenting the product meets the requirements of this Section. NTPEP impact testing must be performed in accordance with NTPEP Evaluation of Temporary Traffic Control Devices: Flexible Delineators for the category of High Speed Applications and for hot weather test temperature only.

Impact tests shall be performed only on tubular markers measuring 36 inches above the pavement surface.

Acceptable products are those listed on the IPL for Managed Lane Markers prior to July 2021 or those meeting the following requirements after receiving an average of 75 bumper impacts per sample and an average of 175 tire impacts per sample:

1. All posts shall self-restore to within 15- degrees list or lean from vertical.

2. All posts shall have a minimum of 50%- of its cross-section, at any point along the post height, free of tears or cracks.

991-1.6 Approved Product List Submission Requirements.

Manufacturers seeking evaluation of Durable Tubular Marker products for inclusion on the APL shall submit an application in accordance with Section 6 and include the following documentation.

Table 991-1

Documentation	**Requirement**
Product Photo	Displays the significant features of the product.
Technical Data Sheet, marker and adhesive	Uniquely identifies the product and includes product specifications, storage instructions, and recommended installation materials and equipment as applicable.
Safety Data Sheet, Adhesive	SDS meeting OSHA requirements for product and manufacturer recommended installation materials as applicable.
National Testing Product Evaluation Program (NTPEP) product testing report	See Section -991-1.5
Installation Instructions	Include mounting surface preparations, and touch-up and repair procedures. Separate installation instructions are required for different substrates.
Product Sample	Upon request from the Department, submit a sample of the tubular marker mounting material or hardware. If the product is a system comprised of multiple parts, a sample of each part must be submitted.

991-2 Standard Tubular Markers:

991-2.1 General.

This subarticle describes the material requirements for tubular markers installed in accordance with Section- 704. All Standard Tubular Marker products shall be listed on the Department's Approved Products List (APL). Standard Tubular Markers must be approved for project-specific use with an issued project-specific pay item.

991-2.2 Dimensions.

The post shall have a minimum diameter of 2- inches. The minimum height of the tubular marker above the pavement surface shall be 36- inches.

991-2.3 Color.

Tubular Marker color must be uniform and integral throughout entire height of the post. The base may be black in color.

991-2.3.1 White.

The yellowness index shall not exceed- 12, tested in accordance with ASTM- E313. The daytime 45 degrees, 0 degrees luminance factor, Cap- Y, shall be a minimum of- 70, tested in accordance with ASTM- E1347 or ASTM- E1164.

991-2.3.2 Yellow.

The daytime 45 degrees, 0 degrees luminance factor, Cap- Y, shall be a minimum of- 60, tested in accordance with ASTM- E1347 or ASTM- E1164.

991-2.4 Retroreflective Sheeting.

The color of the retroreflective sheeting shall match the color of the tubular marker. The retroreflective sheeting shall be abrasion resistant Type- IV or Type- V and meet the requirements of Section- 994. The retroreflective sheeting shall meet supplementary requirements for reboundable sheeting as stated in section S.2- of ASTM- D4956. The sheeting shall wrap around the entire circumference of the tube and have a minimum vertical dimension of 6 inches. The top of sheeting shall be 1-1/2- inches plus or minus 1/2 inch below the top of post.

991-2.5 Product Testing.

Manufacturers seeking evaluation of Standard Tubular Markers must include test reports from the National Transportation Product Evaluation Program (NTPEP) documenting the product meets the requirements of this Section. NTPEP impact testing must be performed in accordance with NTPEP Evaluation of Temporary Traffic Control Devices: Flexible Delineators for the category of High Speed Applications and for hot weather test temperature only.

Impact tests shall be performed only on tubular markers measuring 36- inches above the pavement surface.

Acceptable products are those meeting the following requirements after receiving an average of 50- bumper impacts per sample and an average of 50- tire impacts per sample:

1. Six out of eight posts shall self-restore to within 15- degrees list or lean from vertical.

2. All posts shall have a minimum of 50%- of its cross-section, at any point along the post height, free of tears or cracks.

991-2.6 Approved Product List Submission Requirements.

Manufacturers seeking evaluation of Standard Tubular Marker products for inclusion on the APL shall submit an application in accordance with Section 6 and include the following documentation.

Table 991-2	
Documentation	**Requirement**
Product Photo	Displays the significant features of the product.
Technical Data Sheet, marker and adhesive	Uniquely identifies the product and includes product specifications, storage instructions, and recommended installation materials and equipment as applicable.
Safety Data Sheet, Adhesive	SDS meeting OSHA requirements for product and manufacturer recommended installation materials as applicable.
National Testing Product Evaluation Program (NTPEP) product testing report	See Section 991-2.5
Installation Instructions	Include mounting surface preparations, and touch-up and repair procedures. Separate installation instructions are required for different substrates.
Product Sample	Upon request from the Department, submit a sample of the tubular marker mounting material or hardware. If the product is a system comprised of multiple parts, a sample of each part must be submitted.