ORIGINATION FORM
Proposed Revisions to the Specifications
(Please provide all information - incomplete forms will be returned)

Date: 7/10/20

Office: State Materials Office

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Specification Section: 994

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Article/Subarticle: 994-2.1, 994-3.5.4

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Associated Section(s) Revisions: 700

Will the proposed revision require changes to the following Publications:

Publication	Yes	No	Office Staff Contacted	Date
Standard Plans Index	○	●	Rick Jenkins/Joshua Turley	7/10/23
Traffic Engineering Manual	○	●	Mariano Amicarelli	7/10/23
FDOT Design Manual	○	●	DeWayne Carver	6/27/23
Construction Project Administration Manual	○	●	Patrick Overton	7/10/23
Basis of Estimate/Pay Items	○	●	Ryan Gray	7/10/23
Structures Design Guidelines	○	●	Ben Goldsberry	7/10/23
Approved Product List	○	●	Karen Byram	6/26/23
Materials Manual	○	●	Susan Musselman/Brad Pearson	7/10/23
Maintenance Specs	○	●	Deanna Hutchison	7/10/23

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction (DCE Memo)** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Have all references to internal and external publications in this Section been verified for accuracy? YES

Synopsis: Summarize the changes:

Clarified clear overlays requirements for all digitally printed signs.

Justification: Why does the existing language need to be changed?

The requirements for clear overlays for all colors in digitally printed signs were not clear to some manufacturers.

Do the changes affect either of the following types of specifications (Hover over type to go to site.):

Special Provisions ☐ **Developmental Specifications** ☐

List Specifications Affected: (ex. SP3270301, Dev330TL, Dev334TL etc.)

Contact the State Specifications Office for assistance completing this form.

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1. Are changes in line with promoting and making meaningful progress on improving safety, enhancing mobility, inspiring innovation, and fostering talent; explain how?

Requiring the clear overlays protects the digitally printed signs from UV degradations. The long term visibility of signs provide adequate information for safe driving.

2. What financial impact does the change have; project costs, pay item structure, or consultant fees?

No financial impact is anticipated.

3. What impacts does the change have on production or construction schedules?

No schedule impact anticipated.

4. How does this change improve efficiency or quality?

Proposed language improves efficiency since manufacturers, sign fabricators and technical experts reviewing applications on the APL will have clear understanding on the requirements.

5. Which FDOT offices does the change impact?

Traffic Operations, State Materials Office

6. What is the impact to districts with this change?

This clarification will prevent sign fabricators from omitting the use of clear overlay to protect against premature degradation due to UV exposure and improving durability of signs used on districts projects.

7. Does the change shift risk and to who?

No.

8. Provide summary and resolution of any outstanding comments from the districts or industry.

Comments and Responses are available on the Track the Status of Revisions hyperlink located on the Specifications landing page: https://www.fdot.gov/programmanagement/Specs.shtm

9. What is the communication plan?

Through the established specification revision process (e.g., Internal and Industry Review)

10. What is the schedule for implementation?

The Standard Specifications eBook and Workbook are effective July 1st every year.

RETROREFLECTIVE AND NONREFLECTIVE SHEETING AND SIGN PANEL FABRICATION.
(REV 7-10-23)

ARTICLE 994-2 is deleted and the following substituted:

994-2 Retroreflective and Nonreflective Sheeting Systems.

994-2.1 Materials: Retroreflective sheeting material shall be classified in accordance with and meet the requirements of ASTM D4956. Overlay materials include colored and colorless transparent overlays (to provide UV protection) and vinyl. Inks include transparent and opaque silkscreen inks as well as inkjet inks used in digital print systems.

994-2.2 Approved Product List (APL): All sheeting, process inks and overlay materials shall be listed as a system on the Department's Approved Product List (APL). Sign sheeting systems shall consist of base sheeting with ink and/or overlay materials. Products with an ASTM classification of Type XI or greater will not be accepted for qualification on the APL for fluorescent orange. Manufacturers seeking evaluation of their products need to submit product data sheets, performance test reports from an independent laboratory showing the sign sheeting system meets the requirements of this Section, and ~~a~~ APL application in accordance with Section 6. Information on the APL application shall include the individual materials comprising the sign sheeting system and identify colors, ASTM base sheeting classification, adhesive backing class, availability of transparent and/or opaque backing and availability of liner types.

994-2.3 Performance Requirements:

994-2.3.1 General: Sheeting, process inks and overlay materials shall be tested in accordance with, and meet all the performance requirements of ASTM D4956, including Supplemental Requirement S2, Reboundable Sheeting Requirements, except as amended in this Section.

For performance requirements that are color dependent, each color included in the APL application shall be tested and meet the requirements identified in ASTM D4956 or this Section as applicable. All sign sheeting systems consisting of inks and/or overlays will be tested as a system consisting of white base sheeting and each color of ink and/or overlay.

Panels for testing sheeting shall be prepared in accordance with 994-3 for testing. The in-service life for the sign sheeting system shall equal the life of the reflective base sheeting of the system.

994-2.3.2 Retroreflective Intensity: The retroreflectivity of sheeting and sheeting systems shall meet the minimum initial requirements as stated for all observation and entrance angles as identified in ASTM D4956. The 0.2 and 0.5 degree observation angles with an entrance angle of minus 4 degrees per ASTM D4956 shall be used for in-service requirements.

Rotational sensitivity shall be tested in accordance with AASHTO M268. Rotationally sensitive sheeting will be noted on the APL.

994-2.3.3 Clear Overlay Films: Clear overlay film shall be compatible with the sign sheeting system and not delaminate or discolor for the in-service life of the system.

994-2.3.4 Outdoor Weathering: Outdoor weathering exposure of sign sheeting systems shall be performed in accordance with ASTM D4956, and meet the requirements for each system, color, and classification. All testing shall be conducted at an exposure location

meeting the Tropical Summer Rain Climate Type (Miami, Florida or equivalent). Outdoor weathering is not required for Type VI fluorescent pink.

994-2.3.5 Packaging and Labeling: Packaging and labeling shall meet the requirements of ASTM D4956.

994-2.3.6 Samples: Field samples shall be obtained in accordance with the Department's Sampling, Testing and Reporting Guide Schedule and on a random basis at the discretion of the Engineer.

SUBARTICLE 994-3.5.4 is deleted and the following substituted:

994-3.5.4 Digital Printing Process: Digital print systems shall include a digital printer, with appropriate software and drivers, flexible white or colored prismatic retroreflective sheeting with colorless overlay in accordance with the recommendation of the sheeting manufacturer. The use of a certified digital sign fabricator will be required. Digital sign fabricators shall be certified by the reflective sheeting manufacturer or a third-party certifier approved by the reflective sheeting manufacturer. Inks or ribbons shall be of a type and quality formulated to produce colors that meet the chromaticity requirements given in ASTM D4956 for retroreflective sheeting material when printed and finished as recommended by the sheeting manufacturer.