Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAULT, P.E.
SECRETARY

February 9, 2021

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: **994**
Proposed Specification: **9940200 Retroreflective and Nonreflective Sheeting and Sign Panel Fabrication.**

Dear Mr. Nguyen:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Awilda Merced-Fernandez from the State Materials Office to include digital printing technology as an option to fabricate signs. To reinstate the use of Fluorescent Yellow-Green and Fluorescent Yellow Type XI sheeting. To eliminate non applicable requirements and other minor editorial changes.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Daniel Strickland, P.E.
State Specifications Engineer

DS/ra
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

RETROREFLECTIVE AND NONREFLECTIVE SHEETING AND SIGN PANEL FABRICATION
(REV 12-4-20)

SUBARTICLE 994-2.1 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 and vinyl. Inks include transparent and opaque silkscreen inks as well as inkjet inks used in digital print systems.

SUBARTICLE 994-2.2 is deleted and the following substituted:

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., ~~fluorescent yellow and fluorescent yellow-green.~~ 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. ~~Submit an infrared identification curve (2.5 to 15 µm) for each color of ink.~~

SUBARTICLE 994-2.3.3 is deleted and the following substituted:

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. ~~Submit spectrophotometer analysis indicating the luminous transmittance across the wavelength range from 325 nm to 700 nm in accordance with ASTM D1003 Procedure B. Film shall filter less than 1.0% luminous transmittance for 325 nm to 350 nm.~~

SUBARTICLE 994-2.3.4 is deleted and the following substituted:

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 ~~of ASTM D4956~~ 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.

SUBARTICLE 994-3.5.2 is deleted and the following substituted:

994-3.5.2 Application of Sheeting: Apply retroreflective sheeting to the base panels with mechanical equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer. For sheeting that has been identified as rotationally sensitive, apply white sheeting for cut-out legends, symbols, borders and route marker attachments within the parent sign face at the optimum rotation angle according to the identification markings. Apply all background sheeting at a uniform rotational angle. The retroreflective sheeting for each sign will be from the same roll or lot number. Apply consecutively alternate successive width sections of either sheeting or panels to ensure that corresponding edges of sheeting lie adjacent on the finished sign. If the sign cannot be constructed from retroreflective sheeting from the same roll or lot number, the fabricator may color match from a different lot; the color between the rolls cannot exceed three ΔE's using test method ASTM D 2244. The Engineer shall not accept nonconformance that may result in non-uniform shading and an undesirable contrast between adjacent widths of applied sheeting or non-optimum retroreflectivity in the finished sign and installation.

Sheeting is to be trimmed at 45-degree angle from the edge of each panel. Finish signs by sealing sheeting splices and sign edges according to sign manufacturer recommendations.

ARTICLE 994-3 is expanded by the following:

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 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.

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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.

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