9940200 RETROREFLECTIVE AND NONREFELCTIVE SHEETING AND SIGN PANEL FABRICATION
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comments: (10-12-20, Internal)
Awilda,
I missed this earlier- where are the requirement to become a certified digital fabricator? Is this a FDOT requirement, or an industry certification?

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 fabricator will be required. Process messages before applying the sheeting to the base panel. 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.

Thanks,
Missy

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Response:
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Comments: (10-13-20, Internal)
994-2.1…" *Materials and processes must be warranted as a matched system for use."*

- What are the warranty requirements? Needs to be spelled out in the Spec.

"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. When digitally printed and finished as recommended by the sheeting manufacturer, areas imaged with matched ink systems shall have coefficient, reflection equal to or greater than the minimum coefficient of reflection value specified in ASTM D4956 for the corresponding color sheeting."*

- The phrase, *"When digitally printed and finished as recommended by the sheeting manufacturer, areas imaged with matched ink systems"* adds no value. You don't need to address the manufacturing method. Just provide the performance requirements.

***"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 fabricator will be required. Process messages before applying the sheeting to the base panel. 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."*

- This is means and methods. Why do we need to define the components of the system? Since this is a material spec, we should just be providing performance requirements.

Response:

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Comments: (10-19-20, Internal)
The document looks good except for one very important section, shown here in red.

SUBARTICLE 994-2.3.2 is deleted and the following substituted:

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. When digitally printed and finished as recommended by the sheeting manufacturer, areas imaged with matched ink systems shall have coefficient, reflection equal to or greater than the minimum coefficient of reflection value specified in ASTM D4956 for the corresponding color sheeting. 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.

This section states that digitally imaged sheeting shall have coefficient of retroreflection that is equal to or greater than the retroreflectivity minimums specified in ASTM D4956 for the corresponding colored sheeting made in the plant. That is, digitally imaged sheeting must meet 100% of the ASTM D4956 retro specs as the manufactured colored sheeting right off the factory lines.

One reasonable and data driven consideration is - Other sign manufacturing methods such as transparent colored overlay films and screen printed inks create signs which can meet 100% of the ASTM requirements initially but over time become less retroreflective as they are exposed to the elements. Digitally imaged signs may not meet 100% of the ASTM requirements for retroreflectivity initially, but weathering indicates that over time they become more retroreflective with exposure to the elements. This is in spite of the fact that digitally imaged signs have similar colorfastness to screen print imaged signs or transparent colored overlay films. So while digitally imaged signs may not be as reflective as other sign manufacturing methods initially, over the life of the sign, the average retroreflectivity of a digitally imaged sign is likely very similar to the average retroreflectivity of a sign produced by a different

manufacturing process. Additionally, because digitally imaged signs use a clear overlay film, the durability of the reflective sheeting itself is increased for signs manufactured using digital imaging.

Another consideration - ASTM D4956 requirements state that sheeting must retain 80% of the initial minimum retroreflectivity values after 36 months of outdoor weathering. Because signs produced with digital imaging tend to get more retroreflective with outdoor exposure, it is likely that digitally imaged signs originally meeting 70% of the ASTM D4956 tables will meet this 80% requirement after 36 months of outdoor exposure. If a sign is acceptable at 3 years meeting these stated requirements from ASTM D4956, then why is a digitally imaged sign not acceptable after 0 years of outdoor exposure meeting these same values?

In summary, this specification change limits printed traffic signs to be produced using 1 of 4 available printers and thereby limiting competition to one supplier. Therefore, FTBA recommends this section be amended to call for 70% of ASTM D4956 retro mins for digital imaging. These are the values ATSSA members agreed to when participating on the ATSSA digital traffic sign production and guidance committee.
Response:

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