

9910000 SPECIFICATION  
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Stefanie D. Maxwell, P.E.  
850-414-4140

Stefanie.Maxwell@dot.state.fl.us

Comments: (Internal 10-19-20)

(1-1) I recommend deleting the highlighted phrase “when used on light colored pavement” in the attached document. This phrase is in two locations: 991-1.3 and 991-2.3.

Response:

(1-1) (Specifications Office) Changes made.

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Stephen Nichols  
850-228-6792

stephen.nichols@stantec.com

Comments: (Industry 10-29-20)

(2-1) Section 991-2.1 requires approval for project specific pay item for "Standard Tubular Markers". Seems to resemble protocol of a Developmental Specification. Who approves project specific pay item, District or CO? What is the vehicle for approval; standard pay item request? Suggest this requirement be dropped.

Response:

(2-1) The CO Technical Experts will review the request. We do not expect that any requests will be approved due to the cost vs. durability of the Standard Tubular Markers vs. the Durable Tubular Markers. Please see Roadway Design Memorandum 20-03 for a detailed explanation of the purpose. No change made.

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Tim Lang  
210-978-3117

tlang@impactrecovery.com

Comments: (Industry 11-16-20)

(3-1) Section 991, effective for jobs let on or after January 1, 2022." In the specification draft it states that the current products that are on the IPL will not have to go through NTPEP testing, “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.” Since the specification is written this way, it can be argued that products on the current IPL will not go through NTPEP testing. From the email we received, however, all products that are currently on the IPL will have to go through NTPEP testing. Since there is a discrepancy between the two statements, it will be best for all that there would be more clarification in the specification to ensure that all products that will be associated with the Durable Tubular Marker specification are NTPEP tested. As described in this letter, there are two items that we would like to either see modified or clarified in the new specification.

(3-2) We believe the modification of the dimensions to provide a larger surface area for the retroreflective sheeting will improve nighttime visibility and safety for the citizens of Florida.

(3-3) For the NTPEP Testing, having clarification will assist manufacturers on which products will and will not be tested. In the end, we would like to see that all products are tested through

NTPEP and compared in a similar fashion.

Response:

(3-1) Specification language has been clarified to address grace period for products currently on the IPL for Managed Lane Markers.

(3-2) Dimensions on retroreflective sheeting has been modified to provide 30 square-inches.

(3-3) See response for Item (3-1)

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Robert Hughes

239-481-3539

[ROBERT@FLEXSTAKE.COM](mailto:ROBERT@FLEXSTAKE.COM)

Comments: (Industry 11-24-20)

991-1.5 Product Testing:

(4-1) Were the current acceptable IPL Managed Lane Marker products “3 inch posts” tested to an average of 75 bumper impacts per sample and an average of 175 tire impacts per sample? Was the temperature 81 degrees or higher? The IPL impact specifications for the 36 inch x 3 inch posts averaged 45 bumper impacts and 150 tire impacts per sample. Shouldn’t the impact testing specifications be consistent with the acceptable products currently on the IPL?

991-1.2 Dimensions:

(4-2) Why limit a base size? For approximately the past six years on the Express Lanes north of the Golden Glades Interchange a 9 inch round base has stayed affixed to the surface and is performing very well (on asphalt). With approximately 80% per year less replacements than the post south of Golden Glades Express Lanes, and most were replaced by pulling a pin. Bases stayed affixed for the most part.

(4-3) Flexstake recommends the following change: “Base needs to stay within the white stripes of the Express Lanes”. Flexstake has developed a 9” x 11” base that will stay down better than a smaller base and not pull up concrete.

Response:

(4-1) The products on the existing IPL will have a grace period to improve the performance, if needed, to meet the new requirements. The temperatures will need to be as specified in the NTPEP testing procedure. Hot weather testing is specified at 81 degrees F or higher. No change made.

(4-2) Base size is limited to provide for consistent placement in all applications, especially on applications for arterials and collectors where space is extremely limited. For bicycle and pedestrian applications, a larger base increases the potential for tripping hazards and impedes the ability of bicyclists to maneuver in and out of the buffer zones. No change made.

(4-3) The recommended language does not consider the needs of applications other than managed lanes. Most state roads use asphalt pavements where the damage is more likely. No change made.

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Craig Schulz  
253-886-7171  
craig.schulz@pexco.com

Comments: (Industry 11-29-20)

9910000 Channelizing Device Materials DURABLE TUBULAR MARKERS 991-1.4  
Retroreflective Sheeting:

(5-1) A single 6" wrap at the top of the post is removing 40% of the nighttime visibility from the posts, currently at 10". I would recommend you keep the current size of 30 sq. in. omnidirectional, better visibility.

991-1.5 Product Testing

(5-2) Why limit to NTPEP alone, you are limiting reports and availability to once a year. If TTI runs the test for NTPEP why would you not allow a TTI report?

(5-3) Posts are called out at 36" Length for testing – what length do they need to finish at? Post should measure 36" at a minimum upon completion.

(5-4) There is no call out for Asphalt vs Concrete testing or doing both, there is a notable drop off in performance from Concrete to Asphalt in testing reports, with less than 8% of the roadways being concrete, the asphalt testing is extremely important. I can share a chart documenting this drop from the testing that has been done.

(5-5) Also, requirement of 8 posts to be tested per surface, 4 bumper & 4 wheel over impacted posts will give a more accurate average result per impact type.

(5-6) Would highly recommend addition of product tested as a system / sold as a system. Not all epoxies work the same, bolts are not interchangeable, etc... slight changes in anchoring change performance.

(5-7) 15 degree list or lean is way too much, list (side to side) should be limited to 5 degrees or less, at 36 inch length a 5 degree list has the top of the delineator nearly 1" outside of the max 8" base size, beginning to encroach on the traffic lane, 10 degrees it is roughly 4" outside and at 15 degrees it is 7". The tighter the allowable list the better, this variance is 180 so those numbers above are doubled with a 8" base in the middle. 15 degrees would allow a of 7" outside base left + 8" base center + 7" outside of base right = 22" of movement at the top of the post. Will gladly share the drawings that show this. 15 degrees Lean (front to back) – seems excessive – 10 degrees would be a better requirement.

STANDARD TUBULAR MARKERS 991-2.5 Product Testing

(5-8) Why High Speed (70MPH) testing for these standard Tubular Markers – they will not be used in those locations those will be the Durable Tubular Marker, the testing should be changed to NTPEP Metropolitan (55 MPH). The products on the APL have been tested at 55 MPH all future competitive products should be tested the same way. List/Lean on a 50 impact – recommend max of 10 degrees of list (side to side) 15 degrees is fine for lean.

Response:

(5-1) Dimensions on retroreflective sheeting has been modified to provide 30 square-inches.

(5-2) We are supporting this national program to provide consistency nationwide. FDOT has contributed significantly to the NTPEP procedures. A manufacture may submit the report from TTI earlier and a conditional approval may be granted with a deadline for the NTPEP report to be received. No change made.

(5-3) Products should be 36” in height as installed. The height after testing depends of list/lean. This is consistent with the NTPEP Procedure. No change made.

(5-4) Language modified to clarify that each substrate should be tested. The following was modified: “...NTPEP impact testing must be performed on each substrate (concrete and open-graded friction course asphalt) in accordance with NTPEP Evaluation of...”. TTI could test on asphalt surfaces.

(5-5) This type of test was designed by TTI. This is outside the scope of this change. This will be considered for the future and may result in changes to the NTPEP procedure. No change made.

(5-6) This is taken care of in the requirements of the APL listing. See Tables 991-1 and 991-2. Section 704 requires “Install tubular markers in accordance with the manufacturer’s installation instructions posted on the APL.”. No change made.

(5-7) This is outside the scope of this change. We do not anticipate making changes to the list/lean requirements based on field performance at this time. No change made.

(5-8) The Standard Tubular Markers aren’t anticipated to be used on the state system. They have been given a grace period to improve the products. The durability of the Durable Tubular Markers are needed in all applications. See Roadway Design Memorandum 20-03 for more information.