

7010000, Audible and Vibratory Pavement Markings  
Comments from Industry Review

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Five comments:

1. Specs are supposed to be written as “action commands” to the contractor. This style is called “active voice-imperative mood”. This is explained in section 1-1 of the Spec Book. This spec sometimes uses the correct voice and sometimes does not. For example, “The individual profiles shall be located transversely across the full width of the traffic stripe at approximately 1.0 inch on center, with a bottom width between 0.090-0.310 inches” (found in Section 701-4.2) is written in the old passive voice and not as an active command. Yet one of the edits of this spec corrects the voice in another sentence (found in Section 701-4.2) “...remove and reapply the striping at no cost to the Department.” It appears the only reason for the change was to correct the voice. So my comment is to rewrite all sentences to active voice-imperative mood for intraspec consistency and consistency with other specs.
2. In Section 701-5, why is “LOT” all caps and what does it mean? It should be defined or if it is an acronym it should be spelled out (plain language).
3. Overall, I am frightened by the phrase “at no cost to the Department” or “at no additional cost to the Department”. Why do we feel the need to express this within the context of requiring the contractor to re-perform substandard work? When this phrase is used, it works ok for that spec, but what scares me are other specs that may not use the phrase. I don’t think we want to say this after every command the specs give to the contractor. Could a contractor claim since we did not say it (elsewhere) that the Department must pay for it? Bottom line is if used properly and carefully, this phrase works fine, but if misused/omitted anywhere (which would be very easy to do), it could work against the Department. I suggest we don’t use this phrase at all for simplicity.
4. In Section 701-7 why do we restrict ourselves from checking the color and retroreflectivity toward end of the observation period: “The Department reserves the right to check the color and retroreflectivity within 30 days prior to the end of the observation period.” I am interpreting this to mean we can check anytime except last 30 days. Why not last 30 days?
5. I dislike Section 701-8 hard-coding a set limit of rework: “Correct all deficiencies by removal and reapplication of a 1.0 mile LOT centered around the deficiency at no cost to the Department.” So if a car runs over a “wet” stripe while crossing the stripe, why not allow to fix 20 feet either side? An entire mile of removing and reapplying perfectly good striping seems like a waste of money for everyone and is bad for the roadway, the taxpayers, and the economy. You are still going to have two new-stripe-meets-old-stripe junctions either way.

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Gregory Jones, Esq.  
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**Comment:**

I agree with the comments in paragraph 3. Re-work and repair work is not paid by the Department so I agree we should not use the phrase “at no cost to the Department”. The contract specifies what we pay for, we should not specify what we don’t pay for.

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**Stefanie D. Maxwell**  
**FDOT State Construction Office**  
**605 Suwannee Street, MS 31**  
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**Comments**

- All references to “Audible and Vibratory” should be “Audible-Vibratory”.
- Remove reference to FM 5-579 in Article 701-4.1. (if FM is combined)
- Remove references to LOT in Articles 701-5 and 701-8.
- Why did you remove the last sentence of the first paragraph of Article 701-11?

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**Horace D Autry**

**Comment:**

This is a new specification. It appears incomplete at the end where it addresses Final Payment. Also, the proposed change eliminates the wording, “Final payment will be withheld until all deficiencies are corrected” (it is struck through). What will take the place of this action?

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**Alan L. Lafferty**  
**Gulf Industries, Inc.**  
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**Comments**

Mr. Powell; thank you for the opportunity to comment on the subject specification revision. This revision appears to be a result of **Roadway Design Bulletin 08-07** **Estimates Bulletin 08-05**. This bulletin states “crash data for lane departure crashes indicates the serious injury and fatality rate on Rural (Urban 1) and Urban 2 & # flush shoulder roadways is twice the rate of those on limited access facilities. Rumble strips are a proven cost-effective countermeasure to lane departure crashes brought on by driver drowsiness, distraction, and/or inattention.”

“Effective with the January 2009 letting, audible and vibratory pavement markings shall be installed on all rural construction projects excluding limited access facilities.”

Current requirements for section **971-5 Thermoplastic Materials for Traffic Stripes** requires white and yellow pavement markings meet an initial retroreflectance of not less than 450 mcd/lx·m<sup>2</sup> and not less than 350 mcd/lx·m<sup>2</sup>, respectively. Proposed requirements for section **971-10 Thermoplastic Material for Audible and Vibratory Traffic Stripes** would require white and yellow pavement markings meet an initial retroreflectance of not less than 300 mcd/lx·m<sup>2</sup> and not less than 250 mcd/lx·m<sup>2</sup>, respectively.

**Reflectivity (sight) should not be of less importance than audibility (noise).**

**Question:** Why is the retroreflectivity for an audible and vibratory traffic stripe less than a thermoplastic or other durable traffic stripe?

The same comment and question applies to section 7010000.

Audible wet weather pavement marking systems have been documented by FDOT to provide an initial retroreflectance of not less than 450 mcd/lx·m<sup>2</sup> and not less than 350 mcd/lx·m<sup>2</sup>, respectively dry and an initial wet retroreflectance of not less than 150 mcd/lx·m<sup>2</sup>. This may well reduce the injury fatality rate on rural and urban roadways since limited access facilities have rumble strips incorporated with higher performance pavement marking systems.

**Comment:** Utilize data obtained from the FDOT “Rain Stripe Test” conducted by third parties, and incorporate in a standard specification for audible wet weather systems where Districts conclude audible and vibratory pavement markings alone are not adequate.

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Paul Vinik  
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Comments:

This spec states that the department reserves the right to test these markings within 3 days or receipt of certification. Then, we go on and say that there is a 180 day observation period. Is this not a QPL product and should have already been observed? Also, why do we have a 180 day observation period when this product is suppose to be a 3 year product.

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Marshall H. Dougherty, Jr.  
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Comments:

The length (LOT) of correction for any deficiency appears to be too extreme. A small length of non-compliant thickness should not require a one-mile reapplication. A shorter distance, based on the actual deficiency, could certainly assure proper correction while not creating adversarial conditions at the outset.

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Christopher Wood  
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Comment:

Section 701-7. Most common signs of failure should be listed under this section.

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Mark Bjorklund  
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Comments:

In numerous places throughout the document: “**protrusion**” instead of “**transverse bar**” would be more generic and describes products currently being evaluated accurately.

Section 701-3 “**Use equipment which has a screed-extrusion die is capable of producing....**” would allow for broader application equipment use without changing product performance requirements.

Section 701-4.3 “~~...on shoulder markings shall have a height of 0.6 to 0.7 inches, and a height of 0.45 to 0.55 inches on centerline markings, including the baseline.~~” This is more representative of the products currently being evaluated, and would allow for more reasonable dry times, while producing acceptable audible/vibratory results.

“~~...shall have an approximate- minimum length of 2.5 inches.~~” This would be more specific.

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Matthew Schindler  
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Comment:

I believe that the decision to use profiled baseline (audible inverted profile markings) should be left to the designers, not the contractors. I am aware that many districts see the additional benefits of wet weather reflectivity of the audible inverted profile markings over the flat baseline audible markings. Hence why many districts have only been letting projects using the inverted profile method, rather than flat baseline audible markings. If the main purpose of these audible markings is to provide an audible and sensory cue to the driver that he is leaving the travel lane, it makes no sense to me why the visual cue of “seeing the line” should be taken away from the driver when it rains (as is the case with the flat baseline audible line which appears as a confusing “skip” line during wet night conditions).

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Jennifer Marcato  
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Comments

After reviewing, we would like to offer the following for the Florida Department of Transportation to review before finalizing the specification. 701-4.2 Thickness Although the language is very unclear, we are concerned that the option of what type of base line to be used is being left up to the contractor, rather than being decided by the designer. At a recent meeting of the ATSSA/FDOT Pavement Marking Committee, Chester Henson declared that it is, in fact, left

up to the contractor's discretion. While both types of line will offer both audibility and vibration to the motorists, the profiled base line will provide superior visibility in all weather conditions. Surely the decision as to whether to use the flat base line or the profiled base line between transverse audible bars should be left to the districts and their designers to decide. It appears to be unprecedented to delegate a lifesaving decision to contractors rather than designers. The simplest way to do this would be to reword the first sentence of the second paragraph to read something like: "When required in the plans, a profiled baseline meeting the following dimensions should be applied." As a side note, we noticed that only a drawing of a flat base line is included in the 2008 Interim Design Standards. For the convenience of the designer, a drawing of an inverted rib profile base line should be added. 701-4.3 Dimensions of Transverse Audible Bars Rather than using two separate height requirements, one of which will be extremely difficult to achieve and maintain, we suggest the Department consider having all audible bars at a height of 0.4 to 0.5 inches above the road surface. We appreciate your consideration, and would be happy to discuss any of these issues further.

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