

RESPONSE: 2 Comments Received From Industry Review

Bill Richards

File: 9900000 – Temporary Traffic Control Devices Materials
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Date: Thursday, June 09, 2005
Time: 09:10:36 AM

Comments:

In 990-5, you use the term "high quality". Is there low quality? I suggest you delete the term "High".

RESPONSE: The term will not be deleted at this time.

John Broxon

Please consider this letter as MPH Industries' response to the State's proposed changes to Specification 9900000 for Temporary Traffic Control Devices. It is very similar to our response to the proposed changes to the Radar Speed Display Unit section of this specification, however, we felt we needed to resubmit these changes since all of Section 990 is now open for review. I am replying by e-mail, which was one of the ways you suggested. If you would prefer a signed hard copy, please let me know.

The detail of our response, referred to in the specification review memo response, follows.

For background, MPH Industries was one of the original equipment suppliers whose products were approved by Florida DOT under this category. We invented the idea of the radar-based driver feedback sign back in 1979. We are one of the largest suppliers of speed display trailers, which have been sold to DOTs and law enforcement agencies nationwide. We have sold over 1000 trailers of the designs similar to the one specified in the current Radar Speed Display Unit specs.

Most of the proposed changes do not cause us any concern, as they are found on all high-end speed display equipment. These include the "Your Speed" sign or label (9.1.6), and day/night brightness adjustment (9.2.4). We also have no problem with the addition of the word "non-intrusive" to 9.6.

However, we have serious concerns about the other changes to 9.2. Most of these come from the proposed matrix-style design of the speed display digits.

First of all, very few manufacturers lay their display out in discrete "pixels". We also do not lay them out as full-matrix pixels, since we are only displaying the digits "1" through "9". A complete five by seven matrix has several pixels in it that are never used to create the digits 1 through 9. Using a pixel layout is not cost effective. Rather, we all use a seven-segment layout, just like is used in the general electronics market where the display is solely numeric.

Additionally, we speed display manufacturers avoid pixel-based layouts because they cause a sign to look bad very quickly if a pixel goes out. Since there are really only 23 or pixels in a 35 pixel matrix sign that are used for creating the number, the incorrect speed or an unintelligible speed is displayed if a pixel fails.

Almost all speed display manufacturers use seven-segment type displays, as we stated above. However, to prevent the displayed speed to be corrupted if a section of the display fails, we drive smaller "chains" of LEDs that we drive individually. These are often interlaced to minimize the effects of a failure. Different manufacturers use a different number or style of interlacing the LEDs.

We understand that most of the reasoning for the five by seven pixel matrix comes from the MUTCD. It is mentioned in Section 6F.55, under portable changeable message signs. It makes sense for these devices, since they are alphanumeric. The complete matrix is not necessary for numeric messages. Also, even though the five by seven matrix is stated in the MUTCD, it is phrased as **"at least a five wide and seven high pixel matrix"**. It states the minimum number of pixels tall and wide. *The specification in the proposed revision of the State's specification does not contain "at least", so signs with more pixels per digit would be eliminated from FDOT compliance that would be fully compliant with the MUTCD.*

Specifically looking at our products, MPH uses interlaced chains of 4 LEDs as the "pixels" that we drive. That way, if one should happen to fail in the long run, the complete speed still gets displayed, with the flaw only noticeable close up. In the 18" version of our speed display, we use a total of 388 individual LEDs per digit, with each vertical segment of the seven-segment displays being made up of 64 super-bright LEDs (16 4-LED strings), and each horizontal segment is made up of 44 super-bright LEDs (11 4-LED strings).

If you wanted to generalize the 18" sign, you might be able to say that each digit is made up of 97 "pixels", 64 total in the four vertical bars and 33 total in the three horizontal bars of the seven segment display. Our 25" sign uses even more LEDs, but still in a seven-segment layout. Both would comply with the minimum "five wide pixel by seven pixel tall" character concept of the MUTCD.

Our chief concern is that our sign could easily be judged unacceptable under the proposed specification, because we do not have a full-matrix pixel layout. This would nullify our two products on the QPL. However, our signs get the message across to the driver just as well as a pixel-based sign would, and we do so with a better display brightness in full-sun. The few signs on the market that use the proposed layout all have inferior readability compared to our speed displays.

It seems that, as the State has been eliminating the message display specifications that were originally embedded in the RDSU specification, another one has been inserted. We would like to see it removed. MPH is not looking to get the State to specify its display exactly, but we are not wanting to have our RDSU, which the State has previously approved, eliminated by the revision.

We also object to the proposed maximum display width specification (last item in 9.2.2). Our 25" display is wider than this, because it is much taller and needs the additional width to have an acceptable aspect ratio. Even our 18" sign is a bit wider than this, because our segments have width (they are not just a single row of LEDs, which is hard to see at 1/2 mile). The wording of the specification would eliminate our products, even though their segment width is exactly what makes them so visible. Our width is also wider because we slant our digits slightly to make them more readable (just as small seven-segment displays on all electronic equipment are slightly slanted). Matrix -type displays do not do this, so they have no worry of compliance.

Going through 9.2 line by line

Line (1)

We believe "18 inch [450 mm]" should be left in the specification. However, to make it more universal and useful to the State, we would like to see it reworded "minimum 18 inch [450 mm] height..." We think the "red" display color should stay in the specification. Unless something has changed recently, the MUTCD is mute on the color of speed-specific displays. Red displays stand out better from all of the yellow message displays in the work zone and get the driver's attention. We have proven this time and again in the law enforcement industry.

Red displays are permitted by the MUTCD. Under Section 2A.07 regulating Changeable Message signs, the following is stated: *Changeable message signs (including portable changeable message signs) that display a regulatory or warning message may use a black background with a white, yellow, orange, red, or fluorescent yellow-green legend as appropriate, except where specifically restricted in this Manual for a particular sign.*"

It is the fact that the display color is not the same as most CMS units that makes the speed displays so effective. However, if the State wishes to change the requirement to "yellow", we can comply. We supply both colors of displays to customers, but we currently supply a 10 to 1 ratio of red displays as compared to amber displays.

We agree with striking out the reference to the two line message display. The State has decided that these do not work well in deterring speeders.

Line (2)

We agree that the sentences stricken by the proposal should be stricken. They refer to the message display only.

For the reasons stated above, we believe that the added sentence defining the digits as having 35 pixels in a seven by five matrix should not be added. It is not present on the majority of the Radar Speed Display Units that have already been approved by the State and are present on the Qualified Products List. This kind of digit is also not present on the majority of the speed display units that are sold in the marketplace today, nor are they present on the majority of the units that have been purchased by the DOT rental equipment companies in Florida.

If the State wishes to change the proposed wording to add the "at least" statement of the MUTCD, we would approve of it then, if the State will accept that the seven segments of the approved RDSUs are made up of individual pixels.

We also request the State to delete the proposed maximum width specification. It is not in line with the majority of the equipment on the market, and does not take into account the wider digits found on RDSUs that have larger speed displays than 18" tall (like our FDOT approved 25" RDSU).

If you have any questions regarding our response to the proposed specification changes, please do not hesitate to call me at (888) 689-9222 or send me a reply e-mail.

Have a good day,

John Broxon

Product Manager
MPH Industries, Inc.

RESPONSE: We have modified the spec as follows:

990-9.2 Message Display: The message Display shall meet the following physical requirements as a minimum:

(1) Provide a two digit speed display on a flat black background with bright yellow LEDs.

(2) Each digit shall contain either a seven-segment layout or matrix-style design. Each digit shall measure minimum 18 inches [457 mm] in height.

(3) Speed display shall be visible from a distance of at least 1/2 mile [805 m] and legible from a distance of at least 650 feet [198 m] under both day and night conditions.

(4) Display shall adjust for day and night operation automatically with a photocell.

Matthew G. Schindler
Cloverleaf Corp.

990-5.1: Add "rubber" as type of material. Suggest adding "No foil type materials shall be allowed" since section on non-removable tape (since old section 102-10.5 has been deleted)

990-5.2: Suggest changing skid resistance values for markings in bike lanes and crosswalks to 50 BPN.

RESPONSE: All suggestions have been included except the skid resistance, which was changed to 55 BPN.
