

9900000 TEMPORARY TRAFFIC CONTROL DEVICE MATERIALS  
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comment: (5-14-14, Internal)

Why all the changes from “shall” to “must?” This seems unnecessary. I prefer leaving the specs as written and only changing what needs to be changed.

Response: From the Specs Office - Changes have been rescinded.

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Trey Tillander  
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Comment: (5-14-14, Internal)

1. 990-3.6.2(b): “.....offer some degree of protection against vandalism.” is subjective and not verifiable/testable. Do we need this requirement anyway? They should just park the truck in a secure area.

Response: Highlighted language has been deleted. I think we need a performance requirement for this, but I also agree that what we currently have is somewhat subjective. The currently approved sign has a hasp-type quarter-turn latch that gives the option to secure the housing if needed. We want that option to be available.

Changes made.

2. 990-3.6.3(d): Why not use same approach as DMS where we provide a performance requirement for the message requirement rather than dictate the dimensions – see 700-4.3.3?

Response: Agree. Language changed as highlighted below.

*c) All display modules shall be identical and interchangeable. ¶*  
→ → → *d) The message display area shall be a minimum of 24 inches high by 60 inches wide capable of displaying a minimum of two lines of eight characters each, using a 10 inch font meeting the height and width requirements in the following sections of the MUTCD: Section 2L.04 (paragraphs 05, 06, and 08) and Section 6F.60, paragraph 15. ¶*  
→ → → *e) The display shall provide variable letter, graphic and symbol sizes from*

Change made.

3. 990-3.6.5(c) is no longer necessary since you added 990-3.1(b)/(c).

Response: Agree. 990-3.6.5(c) will be deleted.

Change made.

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Stefanie Maxwell  
414-4314

Comment: (5-21-14, Internal)

1. Change all revisions of “must” back to “shall”.

Response: From the Specs Office - Changes have been rescinded.

2. Revise the Article title as highlighted below.

**990-3 Portable Devices (Arrow Boards, Changeable (Variable) Message Signs, Regulatory Signs, and Radar Speed Display Units and Truck Mounted Changeable Message Signs:**

Response: Agree. Changes made.

**3. 990-3.1 (e):** Delete the highlighted text below. The date of manufacture or serial number was not required to be affixed on these units prior to the spec change. Some of these devices are 20+ years old and contractors have used them and will want to continue to use them on future projects. These are temporary and portable systems that will not be incorporated into the contract.

~~→ → → d) An operator's manual must shall be furnished with each unit. ¶  
→ → → e) The manufacturer's name and, Department APL number and date of manufacture or serial number must shall be permanently affixed on each unit. ¶  
000.3.1.1 Electrical Systems ¶~~

Response: Disagree. However, requiring the APL number to be on the device was inadvertently left in the spec and will be removed.

For traceability during problem resolution activities, the date of manufacture or serial number must be located somewhere on the sign, to identify each unique sign. All approved truck mount DMS already have this info on the manufacturer ID label and I am sure this info is already located on the other portable devices listed in this spec.

Change made.

**3. 990-3.1.1.1 (c):** Delete the highlighted text below.

~~→ → → → (c) Arrow boards and changeable variable message signs shall be designed to provide 180 days of continuous operation with minimum onsite maintenance. ¶~~

Response: Agree. Change made.

**4. 990-3.1.3 (c & d):** Delete the highlighted text below.

~~→ → → (c) For changeable variable message signs and arrow boards ensure that the sign control software provides an on-site graphical representation that visibly depicts the message displayed on the sign face. ¶  
→ → → (d) For changeable (variable) message signs, if remote communication is~~

Response: Agree. Changes made.

**5. 990-3.1.4 (b):** Add/Delete the highlighted text below.

→ → → (b) Both trailer and truck-mounted units are allowed for arrow boards and changeable message signs. Trailer-mounted units are required for changeable message signs, regulatory signs and radar speed display units. ¶

Response: Agree. Changes made.

**6. 990-3.3:** Revise the Article title as highlighted below.

→ 990-3.3 Portable Changeable Variable Message Sign: ¶  
→ → 990-3.3.1 Message Matrix: ¶  
→ → → (a) Message matrix panel shall be a maximum height of 7 feet by a

Response: Agree. To be consistent, “portable” was also added to “radar speed display unit” heading.

Changes made.

**7. 990-3.6 (e):** Revise as highlighted below (also see #3 above).

→ → → e) The manufacturer's name and APL number, model or part number, and date of manufacture or serial number must shall be permanently affixed to the sign housing. ¶

Response: Please see response to No. 1 and 3.

**8. 990-3.6.2 (g):** If the panel is above the light bar, wouldn't the light bar interfere with the message on the panel?

→ → → g) The display panel support structure, when raised in the upright position, must shall be designed to allow for a minimum height of 7 feet from the bottom of the panel to the ground and must shall be a minimum of 1 inch above the height of any light bar mounted on the cab of a truck. ¶

Response: Don't necessarily agree, but changes will be made as shown below:

→ → → g) The display panel support structure, when raised in the upright position, shall be designed to allow for a minimum height of 7 feet from the bottom of the panel to the ground and shall be a minimum of 1 inch above the height of any light bar mounted on the cab of a truck. ¶

Change made.

**8. 990-3.6.6 (d):** MUTCD only allows for two phases of three lines. See 2L.05 paragraph 4 and 6F.60 paragraph 17.

→ → → ~~d) All messages must shall be capable of being flashed or sequenced. In the sequence mode, the controller must shall have the capability to sequence three two complete messages during one cycle. A displayed message must shall not exceed three lines. Both message dwell time and message flash rate must shall be individually programmable. ¶~~

Response: Agree. Changes will be made as follows:

→ → → ~~d) All messages shall be capable of being flashed or sequenced. In the sequence mode, the controller message shall have the capability to sequence three complete messages during one cycle consist of no more than two phases, A displayed message with each phase must not exceed consisting of no more than three lines of text. Both message dwell time and message flash rate shall be individually programmable. ¶~~

Changes made.

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Brian Blair  
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Comment: (6-13-14)

1. Add a period at the end of the 2<sup>nd</sup> sentence in 990-3.6.2 Display Panel and Housing, Item h).

Response: Done.

2. Hyphenate '10 inch font' (e.g., '10-inch font') in 990-3.6.3 Message Matrix, Item d).

Response: Text is formatted correctly. No change made.

3. Hyphenate '10 inch character displayed' ('10-inch character displayed') in 990-3.6.6 Operation and Performance, Item b).

Response: Please see response to No.2.

4. Hyphenate '400 foot visibility requirement' (400-foot visibility requirement') in 990-3.6.6 Operation and Performance, Item b).

Response: Please see response to No.2.

5. Hyphenate '12 inch vehicular signal indications' ('12-inch vehicular signal indications') in 990-7.1 General, Item a).

Response: Please see response to No.2.

6. Hyphenate '1 inch centers' ('1-inch centers) in 990-8 Work Zone Signs.

Response: Please see response to No.2.

7. Hyphenate '16 inch intervals' ('16-inch intervals') in 990-10.1.1 Stop/Slow Lens Automated Flagger Assistance Devices.

Response: Please see response to No.2.

8. Hyphenate '16 inch intervals' ('16-inch intervals') in 990-10.1.2 Red/Yellow Lens Automated Flagger Assistance Devices.

Response: Please see response to No.2.

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Stefanie Maxwell  
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Comment: (6-18-14)

990-3.1(e): Require the APL number to be affixed. The APL number is the identifier by construction that the product can be used on the project. Although the manufacture date or serial number is affixed when purchased, some of these devices are 20+ years old and the tags may have fallen off. Since this is a temporary device as opposed to a permanent device that would be incorporated into the project, I see no value to ensure that the serial number or manufacture date is affixed. The APL number is sufficient.

Response:

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Christian Cummings

Comment: (7-7-14)

Is it the Department's intention to apply this proposed spec change to equipment previously purchased by industry that at the time of purchase was approved by the Department? If so, the proposed spec change to 990-3.1 could potentially make many good working Arrow Boards, Changeable Message Signs, Regulatory Signs, and Radar Speed Display Units that are currently being used successfully on projects no longer meet spec. The Department should consider the financial impact this could have on industry and the resulting cost to the Department if the industry's perfectly good equipment is rendered useless and is required to be expensively retrofitted or replaced entirely in order to meet spec. In addition, this could result in equipment shortages and potential work stoppages on projects requiring this equipment. Furthermore, the proposed spec change to 990-3.1 (a) and (e) adds no value to the Department as applied to temporary equipment owned by the industry. This equipment is owned and maintained by the industry and is used on a temporary basis on projects. Specifying the type of hardware used to assemble the equipment and requiring the manufacturer's name and date of manufacture or serial number to be affixed to the unit (over time these plates have the tendency to fall off the unit or become illegible) adds no value to the Department as long as the device is required to work and function properly and has been approved (as evidenced by an APL number). If the Department's intent of the proposed spec change is to address the equipment purchased and owned by the Department, the Department should consider addressing these requirements in the RFP's for the

purchase of this equipment or allow the exception for temporary devices owned by the industry in the proposed spec.

Response:

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Comment: (7-7-14)

1. 990-3.1 (a): Change as highlighted:

→ → *a) Ensure that all assembly hardware less than 5/8 inch in diameter, including nuts, bolts, external screws and locking washers are Type 304 or 316 passivated stainless steel. Stainless steel bolts, screws and studs shall meet ASTM F593. Nuts shall meet ASTM F594. For all assembly hardware greater than or equal to 5/8 inch in diameter shall be galvanized may be used instead of stainless. Bolts, studs, and threaded rod shall meet ASTM A307. Structural bolts shall meet ASTM A325.*

Response:

2. 990-3.6.2 (a): Change as highlighted:

→ → **990-3.6.2 Display Panel and Housing:**  
→ → → *a) The housing maximum size shall not exceed a width of 75.96 inches, a height of 48 inches, or a depth of 12 inches.*

Response:

3. 990-3.6.2 (e): Change as highlighted:

→ → → *e) The face of the display shall be easily opened from the front. Faces that open up shall be locked to stay open far enough to allow for servicing of all message panel components.*

Response:

4. 990-3.6.6 (c): Change as highlighted:

→ → → *c) The sign shall have the capability to store a minimum of 40 common messages and graphics of which a minimum of 30 shall be with the ability to create user-programmable messages.*

Response:

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