**Portable Changeable Message Sign**

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Approved/Issued by: Jeff Morgan, Product Certification Manager

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| REV. | DATE | DESCRIPTION | AUTHORED BY | REV MORE STRINGENT? |
| --- | --- | --- | --- | --- |
| 1.0 | 11/02/2012 | Conversion from Excel to Word and adding evaluation criteria | David Bremer | NA |
| 2.0 | 01/17/2014 | Replaced FDOT logo with latest approved one and added CM ID # to header. Revised document approver title. | Armelle BurlesonKelli Moser | No |
| 3.0 | 07/22/2015 | Updating to latest FHWA. There is a current FHWA review, but the proposed changes do not affect arrow board. | David Bremer | No |
| 4.0 | 02/05/2016 | Updated to reflect latest FA approval date of 8-11-15. | Armelle Burleson | No |
| 5.0 | 09/11/2018 | Updated to reflect latest FA approval date of 8-20-18. | Rod Brooks | No |
| 6.0 | 03/24/2020 | Updated to reflect latest FA approval date of 10-31-19 | Will Geitz | No |

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| --- | --- | --- | --- |
|  | FDOT Traffic Engineering Research Laboratory (TERL) Portable Changeable Message Sign (CMS) Compliance Matrix | By signing this form, the applicant declares that he/she has read and understands the provisions of Section 990 of the FDOT *Standard Specifications for Road and Bridge Construction* and all implemented modifications. The requirements listed on this matrix are derived from Section 990 and are the basis for determining a product’s compliance and its acceptability for use on Florida’s roads. |  |

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| --- | --- | --- | --- |
| Date: | Click here to enter a date. | Applicant’s Name (print): |  |
| Manufacturer: |       |  |       |
| Item, Model No.: |       | Signature: |       |

| **ID No** | **Section** | **Requirement** | **Item Comply? (Yes/No)** | **Comments(Applicant must provide information as indicated)** | **TERL Evaluation Method** |
| --- | --- | --- | --- | --- | --- |
| 1 | 990-3.1 | Device meets the physical display and operational requirements of the MUTCD. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 2 |  | All assembly hardware less than 5/8 inch in diameter is type 304 or 316 passivated stainless steel. Stainless steel bolts, screws and studs meet ASTM F593 and nuts meet ASTM F594. |  | *Provide statement of conformance from hardware supplier that shows the product meets this requirement.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 3 |  | All assembly hardware greater than or equal to 5/8 inch in diameter is galvanized. Bolts, studs, and threaded rod meet ASTM A 307 and structural bolts meet ASTM A325. |  | *Provide statement of conformance from hardware supplier that shows the product meets this requirement.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 4 |  | The controllers and associated on-board circuitry meet the requirements of the Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise by Class A digital devices. |  | *Provide FCC certificate that shows the product meets this requirement.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 5 |  | All electronic assemblies shall operate as specified during and after being subjected to the environmental tests described in NEMA TS-4-2016 Section 2. |  | *Provide a third party test report that demonstrates compliance with this requirement. The test report must meet the requirements of FDOT PCH, section 7.2.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 6 |  | The controller and associated on-board circuitry are not affected by mobile radio, or any other radio transmissions. |  | *Indicate location of requested information in submittal.* | Compliance Matrix Review |
| 7 |  | An operator’s manual is furnished with each unit. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 8 |  | All portable devices are permanently marked with the APL number, manufacturer’s name or trademark, model/part number, and date of manufacture or serial number. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 9 | 990-3.1.1.1 | The unit provides automatic recharging of power supply batteries to normal operating levels with meters showing charge. |  |  *Applicant may provide comments in this field.* | Physical and Functional Inspection |
| 10 |  | Solar array recovery time for arrow boards and regulatory signs can be accomplished in a maximum of three hours. |  |  *Applicant may provide comments in this field.* | Functional Inspection |
| 11 |   | CMS is designed to provide 180 days of continuous operation with minimum onsite maintenance. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 12 | 990-3.1.1.2 | The photovoltaic unit is designed to provide 21 days of continuous operation without sunlight with a minimum of onsite maintenance. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andFunctional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 13 |   | The battery is equipped with a battery controller to prevent overcharging and over-discharging; an external battery level indicator is provided. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 14 |   | The battery, controller, and power panel are protected from the elements and vandalism. |  | *Applicant may provide comments in this field.* | Physical Review |
| 15 |   | An AC/DC battery charger unit is provided. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 16 | 990-3.1.2 | The display housing assembly is weather tight. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 17 |   | The display assembly is equipped with an automatic dimming operational mode capable of a minimum of 50 percent dimming and a separate manual dimmer switch. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andFunctional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 18 |   | The display panel background and frame for the display assembly is painted flat black and meets Federal Specification TT-E-489. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 19 |   | The display panel, when raised in the upright position, has a minimum height of 7 feet from the bottom of the panel to the ground, in accordance with the MUTCD. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 20 |   | The unit has an accessible mechanism to easily raise and lower the display assembly; a locking device is also provided to ensure the display panel will remain in the raised or lowered position. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 21 |  | The unit has a safety system to protect against the panel falling from the trailer to the roadway should the panel separate from the lift system. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 22 | 990-3.1.3 | Controller and control panel are housed in a weather, dust, and vandal resistant lockable cabinet. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 23 |   | The sign control software provides an on-site graphical representation that visibly depicts the message displayed on the sign face. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 24 |  | If remote communication is included, the sign controller is addressable through the Ethernet communications network using software that complies with the National Transportation Communications for ITS Protocol (NTCIP) 1101 base standard, including all amendments as published at the time of contract letting, the NTCIP Simple Transportation Management Framework, and conforms to Compliance Level 1.  |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andFunctional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 25 |  | If remote communication is included, the software implements all mandatory objects in the supplemental requirement SR-700-4-1,.1-01, FDOT Dynamic Message Sign NTCIP Requirements, as published on the FDOT State Traffic Engineering and Operations Office web site at the time of contract letting.  |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* |  |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 26 |  | If remote communication is included, the sign complies with the NTCIP 1102v01.15, 2101 v01.19, 2103v02.07, 2201v01.15, 2202 v01.05, and 2301v02.19 standards as well as NTCIP 1103v02.17, section 3, |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* |  |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 27 |  | Additional objects implemented by the software do not interfere with the standard operation of mandatory objects. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| 28 | 990-3.1.4 | The support chassis is self-contained and self-supporting without the use of additional equipment or tools. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 29 |  |  |  |  | Physical Inspection |
| 30 |  | The sign, power supply unit and all support systems are mounted on a wheeled trailer. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 31 |  | The trailer is equipped with class-A lights, using a plug adaptor. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 32 |  | The trailer is equipped with adjustable outrigger leveling pads, one on each of the four frame corners. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 33 |  | The trailer can be set up at the site with its own chassis and outriggers, without being hitched to a vehicle. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| 34 |  | The trailer is equipped with fenders over the tires made from heavy-duty material sufficient to allow a person to stand and operate or perform maintenance on the unit. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 35 |  | The trailer meets all equipment specifications set forth in Chapter 316 of the Florida Statutes, and by such rule, regulation or code that may be adopted by the Department of Highway Safety and Motor Vehicles. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review andPhysical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 36 | 990-3.3.1 | Message matrix panel is a maximum height of 7 feet by a maximum width of 10 feet. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 37 |  | The matrix is capable of displaying three lines of 8 characters using an 18 inch or 12 inch font that meets the height to width ratio and character spacing requirements in the MUTCD, Section 2L.04, paragraphs 05, 06, and 08. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 38 |  | The matrix displays characters that meet or exceed the numeral and letter sizes prescribed in the MUTCD and SHS (Standard Highway Signs) companion document. Fonts and graphics must mimic the characteristics of fonts and graphics defined in NEMA TS4, the MUTCD, and SHS.  |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 39 |  | For flip disk matrix signs, the disk elements are coated on the display side with a highly reflective florescent yellow Mylar material, and on the back with a flat black to blend in with the flat black background. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 40 |  | Similar components are interchangeable. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 41 | 990-3.3.2 | All text is displayed in upper case, except when lower case is project specific and allowed by the MUTCD. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 42 |  | The message matrix panel is visible from 1/2 mile and legible from a distance of 650 feet under both day and night conditions. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 43 |  | Under variable light level conditions, the sign automatically adjusts its light source to meet the 650 feet visibility requirement. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 44 |  | The message panel has adjustable display rates, so the entire message can be read at least twice at the posted speed. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 45 |  | The control panel has the capability to store a minimum 50 pre-programmed messages. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 46 |  | The controller in the control panel can store messages during non-powered conditions. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 47 |  | The controller allows the operator to generate additional messages on site via the keyboard. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 48 |  | For a CMS using flip disk technology, the controller has the capability to provide a stipulated default message upon loss of controller function. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 49 |  | All messages are flashed or sequenced; in the sequence mode, the controller has the capability to sequence three line messages during one cycle. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Physical Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |