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| --- | --- | --- | --- | --- |
|  | FDOT Traffic Engineering Research Laboratory (TERL) Portable Changeable Message Sign (PCMS) 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/NA)** | **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 A307 and structural bolts meet ASTM F3125 Grade 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. |  | *Provide a statement of conformance in this field.* | 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 |  | Portable devices and trailers are delineated on a permanent basis by affixing retroreflective sheeting in a continuous line on the face of the trailer as seen by oncoming road users. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 10 | 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 |
| 11 |  | Changeable message sign 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 |   | Solar array recovery time is accomplished in a maximum of three hours. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| 13 | 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.* |  |
| 14 |   | 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.* |  |
| 15 |   | The battery, controller, and power panel are protected from the elements and vandalism. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 16 |  | Automatic recharging of power supply batteries is provided with charge indicator meter. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 17 |   | An AC/DC battery charger unit is provided. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 18 | 990-3.1.2 | The display housing assembly is weather tight. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 19 |   | 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.* |  |
| 20 |   | 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.* |  |
| 21 |   | 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.* |  |
| 22 |   | 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.* |  |
| 23 |  | 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.* |  |
| 24 | 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.* |  |
| 25 |   | 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.* |  |
| 26 |  | 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.* |  |
| 27 |  | 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.* | Document Review andFunctional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 28 |  | 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.* | Document Review andFunctional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
| 29 |  | 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 |
| 30 | 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 |
| 31 |  | The sign, power supply unit and all support systems are mounted on a wheeled trailer. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 32 |  | 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.* |  |
| 33 |  | 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.* |  |
| 34 |  | 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.* | Physical Inspection |
| 35 |  | 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 |
| 36 |  | 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.* |  |
| 37 | 990-3.3.1 | Message matrix panel is a maximum height of 7 feet by a maximum width of 146 inches. |  | *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 is capable of displaying three lines of 8 characters using an 18 inch or 12-inch font.  |  | *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 |  | 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 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.* |  |
| 40 |  | Similar components are interchangeable. |  | *Applicant may provide comments in this field.* | Physical Inspection and Functional 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 one-half mile. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 43 |  | For 18” PCMS’s, the message matrix panel is legible from a distance of 650 feet under nighttime conditions and 800 feet for normal daylight conditions.  |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 44 |  | For a 12” PCMS, the message matrix panel is legible from 650 feet for both nighttime and normal daylight conditions.  |  | *Applicant may provide comments in this field.* | Physical Inspection |
| 45 |  | Under variable light level conditions, the sign automatically adjusts its light source to maintain legibility. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| 46 |  | 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.* |  |
| 47 |  | 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.* |  |
| 48 |  | 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.* |  |
| 49 |  | 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.* |  |
| 50 |  | 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.* |  |

**Document History for:**

**Portable Changeable Message Sign Compliance Matrix**

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| --- | --- | --- | --- | --- | --- | --- |
| Rev | Description | Authored and Checked | Reviewed | Approved | Approval Date | Rev More Stringent? |
| 1.0 | Conversion from Excel to Word and adding evaluation criteria. | D. Bremer | C. MorseD. Vollmer | J. Morgan | 05/09/2013 | N/A |
| 2.0 | Replaced FDOT logo with latest approved one and added CM ID # to header. Revised document approver title. | A. BurlesonK. Moser | J. Morgan | J. Morgan | 10/31/2014 | No |
| 3.0 | Updating to latest FHWA. There is a current FHWA review, but the proposed changes do not affect arrow board. | D. Bremer | C. MorseM. DeWitt | J. Morgan | 08/19/2015 | No |
| 4.0 | Updated to reflect latest FA approval date of 8-11-15. | A. Burleson | J. Morgan | J. Morgan | 02/05/2016 | No |
| 5.0 | Updated to reflect latest FA approval date of 8-20-18. | R. Brooks | F. Deasy | J. Morgan | 07/31/2019 | No |
| 6.0 | Updated to reflect latest FA approval date of 10-31-19. | W. Geitz | M. DeWittF. DeasyJ. Morgan | D. Vollmer | 12/28/2020 | No |
| 7.0 | Removed flip disk technology and updated to latest FA date of 2/22/2021. | W. Geitz | M. DeWitt | M. DeWitt | 06/03/2022 | No |