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|  | FDOT Traffic Engineering Research Laboratory (TERL)  Wrong Way Vehicle Detection System (WWVDS) Compliance Matrix | By signing this form, the applicant declares that he/she has read and understand the provisions of Sections 660 and 995 of the FDOT *Standard Specifications for Road and Bridge Construction* and all implemented modifications. The requirements listed on this matrix are derived from Sections 660 and 995, 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: |  |

|  |  | **\*\* Greyed out rows in table below are for TERL use only \*\*** |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID No** | **Section** | **Requirement** | **Item Comply? (Yes/No/NA)** | **Comments (Applicant must provide information as indicated)** | **TERL Evaluation Method** |
| 1 | 995-1.1 | All equipment is permanently marked with, manufacturer name or trademark, part number, and date of manufacture or serial number. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): WWVDS002 (Step 1) |  |  | Init.: |
| 2 | 995-2.1 | All parts are constructed of corrosion-resistant materials, such as UV stabilized or UV resistant plastics, stainless steel, anodized aluminum, brass, or gold-plated metal. |  | *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.* |
| TERL Test Cases (Steps): WWVDS001 (Step 1), WWVDS002 (Step 2) |  |  | Init.: |
| 3 |  | All fasteners exposed to the elements are Type 304 or 316 passivated stainless steel. |  | *Provide statement of conformance from hardware supplier that shows the product meets this requirement.* | Document Review and Physical Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 2), WWVDS002 (Step 3) |  |  | Init.: |
| 4 |  | If the assembly includes a cabinet, the cabinet meets the requirements of Section 676. |  | *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.* |
| TERL Test Cases (Steps): WWVDS001 (Step 3), WWVDS002 (Step 4) |  |  | Init.: |
| 5 |  | The WWVDS meets the environmental requirements of NEMA TS 2-2021. |  | *Provide a third party test report that demonstrates the device performs all required functions during and after being subjected to the environmental testing as described in NEMA TS2 2021 Sections 2.2.7, 2.2.8, and 2.2.9. The test report must be less than 5 years old and meet the requirements of FDOT Product Certification Handbook, section 7.2.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 4) |  |  | Init.: |
| 6 | 995-2.7.1 | The WWVDS is provided with software that allows local and remote configuration and monitoring. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 5), WWVDS005 (Step 1) |  |  | Init.: |
| 7 |  | The WWVDS has the capability to display detection zones and detection activations. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 6), WWVDS005 (Step 2) |  |  | Init.: |
| 8 |  | WWVDS controller supports either an on-board real-time clock/calendar with on-board battery backup or is configured to synchronize to a time server using the network time protocol (NTP) to maintain the current local date/time. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 7), WWVDS004 (Steps 1, 2, 5, 6) |  |  | Init.: |
| 9 |  | If using NTP, the synchronization frequency is user configurable and permits polling intervals from once per minute to once per week in one-minute increments. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 8), WWVDS004 (Step 3) |  |  | Init.: |
| 10 |  | If using NTP, the controller allows the user to define the NTP server by internet protocol (IP) address. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 9), WWVDS004 (Steps 2, 4) |  |  | Init.: |
| 11 |  | User can edit previously defined configuration parameters, including size, placement, and sensitivity of detection zones. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 10), WWVDS005 (Step 4) |  |  | Init.: |
| 12 |  | WWVDS programming is retained in nonvolatile memory. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 11), WWVDS003 (Steps 7,8), WWVDS005 (Step 3) |  |  | Init.: |
| 13 |  | The detection system configuration data can be saved to a computer and restored from a saved file. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 12), WWVDS005 (Step 6) |  |  | Init.: |
| 14 |  | All communication addresses are user programmable. |  | *Indicate location of requested information in submittal.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS003 (Steps 2, 3), WWVDS005 (Step 7) |  |  | Init.: |
| 15 |  | An open Application Programming Interface (API) or software development kit is available to the Department at no cost for integration with third party software and systems. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and  Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 13), WWVDS005 (Step 8) |  |  | Init.: |
| 16 | 995-2.7.2 | Major components of the WWVDS (such as the sensor and any separate hardware used for contact closures) include a minimum of one serial or Ethernet communications interface. |  | *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.* |
| TERL Test Cases (Steps): WWVDS001 (Step 14), WWVDS002 (Step 5) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS with Serial Interface. | | | | | |
| 17 |  | Serial interface and connector conform to TIA-232 standards. |  | *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.* |
| TERL Test Cases (Steps): WWVDS001 (Step 15) |  |  | Init.: |
| 18 |  | Serial ports support data rates up to 115200 bps; error detection utilizing parity bits (i.e., none, even, and odd); and stop bits (1 or 2). |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and  Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 16), WWVDS003 (Step 1) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS with Ethernet Interface. | | | | | |
| 19 |  | Wired Ethernet interfaces provides, at a minimum, a 10/100 Base TX connection. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS003 (Steps 4, 5, 6) |  |  | Init.: |
| 20 |  | All unshielded twisted pair/shielded twisted pair network cables and connectors comply with TIA‑568. |  | *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.* |
| TERL Test Cases (Steps): WWVDS001 (Step 17) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS with Wireless Communications. | | | | | |
| 21 |  | WWVDS wireless communications are secure, and FCC certified.  The FCC identification number is displayed on an external label and all WWVDS devices operate within their FCC frequency allocation. |  | *Provide FCC certificate that shows the product meets this requirement.* | Document Review and Physical Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 18), WWVDS002 (Step 7) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS with Cellular Communications. | | | | | |
| 22 |  | Cellular communications devices are compatible with the cellular carrier used by the agency responsible for system operation and maintenance. |  | *Provide product literature, specifications, user manual, or similar information that describes any cellular devices that are part of the system and indicates carrier(s) supported.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 19) |  |  | Init.: |
| The following compliance matrix criteria are for all WWVDS. | | | | | |
| 23 |  | The WWVDS is compatible with the Department’s SunGuide software. The SunGuide Software requirement are outlined in SR-995-2.7.2-01 Supplemental Wrong Way Vehicle Detection System SunGuide HTTP Protocol. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS005 (Step 9) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS installed on ramps. | | | | | |
| 24 |  | WWVDS sends an alert to the SunGuide® software when the wrong-way vehicle is detected. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS005 (Step 9) |  |  | Init.: |
| 25 |  | WWVDS sends a sequence of images for up to ten seconds to the SunGuide software that covers a configurable time before and after the wrong-way vehicle detection. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS005 (Step 9) |  |  | Init.: |
| 26 |  | WWVDS activates all highlighted signs associated with the WWVDS. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and  Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 20),  WWVDS005 (Step 5), WWVDS006 (Step 1), WWVDS007 (Step 2) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS installed on mainline lanes. | | | | | |
| 27 |  | WWVDS sends an alert to the SunGuide® software when the wrong-way vehicle is detected. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS005 (Step 9) |  |  | Init.: |
| The following compliance matrix criteria are for WWVDS with cameras. | | | | | |
| 28 |  | Cameras that are integrated and included in a WWVDS are compliant with the Code of Federal Regulations Section 200.216 Prohibition on certain telecommunications and video surveillance services or equipment. |  | *Provide a signed letter of conformance that the cameras are compliant with the Code of Federal Regulations Section 200.216.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 21) |  |  | Init.: |
| The following compliance matrix criteria are for all WWVDS. | | | | | |
| 29 | 995-2.7.3 | Equipment operates on solar power or with an input voltage ranging from 89 to 135 VAC. If the device requires operating voltages of less than 120 VAC supply the appropriate voltage converter. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and  Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 22), WWVDS007 (Step 2) |  |  | Init.: |
| 30 |  | Solar powered systems are designed to operate for a minimum of 5 activations per day and provide 10 days of operation without sunlight. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and  Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): WWVDS001 (Step 23), WWVDS007 (Steps 1,2) |  |  | Init.: |
| 31 | 995-2.12 | The wrong way vehicle detection system is capable of meeting a true positive detection accuracy of 100% using a sample size of 100 wrong way vehicle runs. Sample data will be collected over several time periods under a variety of conditions. System operation will be monitored for 72 hours. The wrong way vehicle detection system does not exceed one false positive per 24-hours during the monitoring period. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): WWVDS006 (Step 1) |  |  | Init.: |
| 32 | 660-5 | The detection system has a manufacturer’s warranty covering defects for a minimum of 1 year from the date of final acceptance by the Engineer in accordance with 5-11 and Section 608. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): WWVDS001 (Step 24) |  |  | Init.: |
| 33 |  | The warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the Department or the maintaining agency. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): WWVDS001 (Step 25) |  |  | Init.: |

**Document History for:**

**Wrong Way Vehicle Detection System (WWVDS) Compliance Matrix**

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| Rev | Description | Authored and Checked | Reviewed | Approved | Approval Date | Rev More Stringent? |
| 1.0 | New CM | W. Geitz | M. DeWitt  C. Raimer | D. Vollmer | 10/31/2019 | N/A |
| 2.0 | Added cabinet requirements and updated power requirements. | W. Geitz | M. DeWitt  C. Raimer | D. Vollmer | 12/22/2020 | No |
| 3.0 | Added Supplemental Wrong Way Vehicle Detection System SunGuide HTTP Protocol and warranty information. | W. Geitz | M. DeWitt  C. Raimer | D. Vollmer | 02/07/2022 | No |
| 4.0 | Added test cases/steps. Updated based on latest specification requirements. FA 10-24-22. | P. Blaiklock | R. Meyer  W. Geitz  D. Vollmer | D. Vollmer | 01/24/2023 | Yes |
| 5.0 | Modified documentation to provide for CM ID 28. | D. Bremer | W. Geitz | D. Vollmer | 02/14/2023 | No |
| 6.0 | Updated to latest FA date of 10-6-23 for specs 660 and 995. | W. Geitz | R. Washington | D. Vollmer | 12/8/2023 | No |