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| --- | --- | --- |
|  | FDOT Traffic Engineering Research Laboratory (TERL) CCTV Camera Compliance Matrix | By signing this form, the applicant declares that he/she has read and understands the provisions of Sections 682 and 996 of the FDOT *Standard Specifications for Road and Bridge Construction* and all implemented modifications. The requirements listed on this matrix are derived from Sections 682 and 996 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** |
| The following compliance matrix criteria are for all CCTV cameras. |
| 1 | 996-1.1 | 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): CCTV002 (Step 1) |       |       | Init.:       |
| 2 | 996-2.1 | All parts are constructed of corrosion-resistant materials, such as plastic, 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 |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 1) |       |       | 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 |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 2) |       |       | Init.:       |
| 4 | 996-2.2.1 | Camera is 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 camera is compliant with the National Defense Authorization Act.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 3) |       |       | Init.:       |
| 5 |  | Camera is compatible with the current version of the Department’s SunGuide® software system. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV003 (Step 21), CCTV004 (Steps 1-10), CCTV005 (Steps 4, 5), CCTV006 (Step 2)  |       |       | Init.:       |
| 6 |  | Camera type is either pan-tilt-zoom (PTZ), or fixed. |  | *Applicant may provide comments in this field.* | Physical Inspection |
|  |  | TERL Test Cases (Steps): CCTV002 (Step 2) |       |       | Init.:       |
| 7 |  | Camera is an IP camera that provides the following features and capabilities: 1. Day (color) / night (monochrome) switchover.2. Manual and automatic focus.3. Automatic iris. |  | *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): CCTV001 (Step 4), CCTV006 (Steps 7, 10) |       |       | Init.:       |
| 8 |  | Camera provides the ability to produce clear, detailed, and usable video images of the areas, objects, and other subjects visible from a roadside field site; video is true, accurate, distortion free, and free from transfer smear, oversaturation, and any other image defect that negatively impacts image quality under all lighting and weather conditions in both color and monochrome modes. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV006 (Step 8) |       |       | Init.:       |
| 9 |  | Camera provides automatic gain control (AGC)  |  | *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): CCTV001 (Step 5) |       |       | Init.:       |
| 10 |  | Minimum signal to noise ratio is 50dB. |  | *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): CCTV001 (Step 6) |       |       | Init.:       |
| 11 |  | Automatic color balance references the white areas of the scene through the lens. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 7) |       |       | Init.:       |
| 12 |  | Automatic electronic shutter is user selectable from 1/60 to 1/10,000 of a second. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV006 (Step 9) |       |       | Init.:       |
| The following compliance matrix criteria are for PTZ cameras. |
| 13 |  | PTZ camera includes a minimum 10x digital zoom. |  | *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): CCTV001 (Step 8) |       |       | Init.:       |
| 14 |  | PTZ camera includes programmable azimuth and compass display with the ability to display pan and tilt position with a 1-degree resolution. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV005 (Step 1) |       |       | Init.:       |
| 15 |  | Camera provides tilting and masking features, including, but not limited to, programmable camera titles, programmable preset titles for each preset position, and programmable privacy zones. Programmable titles are a minimum of 18 characters per line. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV005 (Step 2) |       |       | Init.:       |
| 16 | 996-2.2.2 | PTZ cameras include a minimum of 18x motorized optical zoom with automatic iris.  |  | *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): CCTV001 (Step 9) |       |       | Init.:       |
| The following compliance matrix criteria are for fixed cameras. |
| 17 | 996-2.2.2 | Fixed cameras include a 3-9mm varifocal lens with automatic iris. |  | *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): CCTV001 (Step 10) |       |       | Init.:       |
| The following compliance matrix criteria are for all PTZ cameras. |
| 18 |  | The lens has a maximum aperture of at least f/1.6 and the depth of field provides a clear image of roadside areas under all lighting conditions. |  | *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): CCTV001 (Step 11), CCTV006 (Step 6) |       |       | Init.:       |
| 19 | 996-2.2.3 | Camera includes an integrated pan/tilt mechanism capable of providing 360 degree continuous pan with a minimum 90 degree tilt range (i.e., 0 to -90 degrees). |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV005 (Step 3) |       |       | Init.:       |
| 20 |  | Camera provides variable speed control for the pan/tilt function. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV005 (Step 4) |       |       | Init.:       |
| 21 |  | Preset position return accuracy is ±0.36 degrees, or less than 0.10 percent or better. |  | *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): CCTV001 (Step 12), CCTV005 (Step 5) |       |       | Init.:       |
| 22 |  | Camera supports a minimum of 32 presets, a minimum of one tour with a minimum of 32 presets, and a minimum of eight programmable blackout 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): CCTV001 (Step 13), CCTV005 (Step 6) |       |       | Init.:       |
| The following compliance matrix criteria is for all CCTV cameras. |
| 23 | 996-2.2.4 | Camera is capable of remote firmware upgrades via the communication interface. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV006 (Step 11) |       |       | Init.:       |
| 24 |  | Camera supports either National Transportation Communications for ITS Protocol (NTCIP) 1205v01.08or the Open Network Video Interface Forum (ONVIF) Core, Streaming, and Media Service specifications.The camera can implement all NTCIP or ONVIF objects, operations, and commands required by Supplemental CCTV Camera NTCIP and ONVIF requirements, as published on the Department’s State Traffic Engineering and Operations Office website at the following URL: <http://www.fdot.gov/traffic/Traf_Sys/Product-Specifications.shtm>  |  | *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): CCTV001 (Step 14), CCTV004 (Step 11), CCTV006 (Step 2) |       |       | Init.:       |
| 25 | 996-2.2.4.1 | The camera’s Local Area Network (LAN) connection supports the requirements detailed in the IEEE 802.3 Standard for 10/100 Ethernet connections. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV003 (Step 6) |       |       | Init.:       |
| 26 |  | The camera has a minimum of one 10/100 Base-TX connection Ethernet port. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review, Physical Inspection and Functional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 15), CCTV002 (Step 3) |       |       | Init.:       |
| 27 |  | Unshielded twisted pair/shielded twisted pair network cables shall be compliant with the EIA/TIA-568-B. |  | *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): CCTV001 (Step 16) |       |       | Init.:       |
| 28 |  | At a minimum, network communication conforms to transmission control protocol (TCP), user datagram protocol (UDP), internet protocol version 4 (IPv4), real-time streaming protocol (RTSP), and Internet Group Multicast Protocol Version 2 (IGMPv2). |  | *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): CCTV001 (Step 17), CCTV003 (Step 20) |       |       | Init.:       |
| 29 |  | If camera supports NTCIP, the camera can be controlled using either TCP/IP or UDP/IP. |  | *Currently SunGuide only supports TCP/IP.* | Functional Inspection |
|  |  |  |  | *Applicant may provide comments in this field.* |  |
|  |  | TERL Test Cases (Steps): CCTV003 (Step 21) |       |       | Init.:       |
| 30 | 996-2.2.4.2 | The camera utilizes the Moving Picture Experts Group’s MPEG4 part 10 (H.264) video compression technology in accordance with the ISO and IEC requirements detailed in the ISO/IEC 14496-10:2009 Standard. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review Functional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 18), CCTV004 (Step 12) |       |       | Init.:       |
| 31 |  | Camera establishes unicast and multicast sessions using RTSP. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review Functional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 19), CCTV003 (Step 19) |       |       | Init.:       |
| 32 |  | Encoded video can be transmitted utilizing programmable bit rates. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV006 (Step 3)  |       |       | Init.:       |
| 33 |  | The camera supports, at a minimum, a fixed bit rate mode. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review Functional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 20), CCTV006 (Step 4) |       |       | Init.:       |
| 34 |  | Cameras must be able to provide 2 simultaneous multicast streams using different configurations (e.g., multicast address, resolution, frame rate, bitrate, etc.). |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review Functional Inspection |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 21) |       |       | Init.:       |
| 35 |  | Camera provides H.264 format video streams and supports resolutions that include minimum vertical resolutions of 240 and 480 lines. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV006 (Step 5) |       |       | Init.:       |
| 36 |  | Camera is capable of delivering color and monochrome video at 30 fps regardless of resolution. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV006 (Step 12) |       |       | Init.:       |
| 37 | 996-2.2.4.3 | Camera supports local and remote configuration and management via serial login, telnet login, or a web-based interface. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV003 (Step 13) |       |       | Init.:       |
| 38 |  | Configuration and management functions include access to all user-programmable features, including but not limited to network configuration, video settings, device monitoring, and security functions. |  | *Applicant may provide comments in this field.* | Functional Inspection |
|  |  | TERL Test Cases (Steps): CCTV003 (Steps 3-6, 15, 22-23) |       |       | Init.:       |
| 39 | 996-2.2.5 | Camera system operates at the cabinet using a nominal input voltage of 120 VAC. If required, an appropriate voltage converter is furnished with the device. |  | *Environmental test reports must demonstrate that voltage converters required for 120V*AC *operation were subjected to NEMA TS2 environmental testing as part of the functional system.* | Document Review and Physical Inspection  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 22), CCTV002 (Step 4), CCTV006 (Step 1) |       |       | Init.:       |
| 40 | 996-2.2.6 | Total weight of PTZ CCTV camera is less than 35 lbs.. |  | *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): CCTV001 (Step 23) |       |       | Init.:       |
| 41 |  | If the camera includes an acrylic lower dome, it is constructed of distortion free clear plastic. |  | *Applicant may provide comments in this field.* | Physical Inspection |
|  |  | TERL Test Cases (Steps): CCTV002 (Step 5) |       |       | Init.:       |
| 42 |  | Pressurized cameras include a housing capable of pressurization at 5 psi using dry nitrogen, have a low-pressure alarm feature, and a NEMA 4X/IP-67 rating. |  | *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): CCTV001 (Step 24) |       |       | Init.:       |
| 43 |  | Non-pressurized cameras have a NEMA 4/IP-66 rating. |  | *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): CCTV001 (Step 25) |       |       | Init.:       |
| 44 | 996-2.2.7 | CCTV cameras can perform all required functions during and after being subjected to the environmental testing procedures described in NEMA TS 2 Sections 2.2.7, 2.2.8, and 2.2.9. |  | *Provide the following:* * *A first or third party test report that demonstrates compliance with this requirement.* *If a voltage converter is required for the device to operate with a 120VAC input voltage, then the voltage converter must be tested with the device, e.g., in the temperature chamber.*
* *A completed Testing Laboratory and Report Checklist.*
* *A completed NEMA TS2 2.2.7-2.2.9 Checklist.*
 | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 26) |       |       | Init.:       |
| 45 |  | Camera, mounting hardware, and any other camera-related material exposed to the environment is designed for 150 mph wind speeds and meet the requirements of the FDOT Structures Manual. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 27) |       |       | Init.:       |
| 46 | 682-1.3 | Camera can be installed in accordance with Standard Plans, Index No.659-020. |  | *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): CCTV001 (Step 28), CCTV002 (Step 6) |       |       | Init.:       |
| 47 | 682-3 | CCTV camera has a manufacturer’s warranty covering defects for a minimum of one year from the date of final acceptance.  |  | *Provide product warranty documentation that shows the product meets this requirement.* | Document Review |
|  |  |  |  | *Indicate location of requested information in submittal.* |  |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 29) |       |       | Init.:       |
| 48 |  | CCTV camera manufacturer will furnish replacements for any part or equipment found to be defective during the warranty period at no cost to the Department or the maintaining agency within 10 calendar days of notification. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
|  |  | TERL Test Cases (Steps): CCTV001 (Step 30) |       |       | Init.:       |

**Document History for:**

**CCTV Camera Compliance Matrix**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Rev | Description | Authored and Checked | Reviewed | Approved | Approval Date | Rev More Stringent? |
| 1.0 | Conversion of CM to Word  | D. VollmerK. Hinson | J. Morgan | J. Morgan | 10/22/2012 | No |
| 2.0 | Changed document control panel to include column for “Rev more stringent?” and added Rev # to header of matrix corresponding to latest approved document. Modified disclaimer to indicate compliance matrix is governing document and referencing PCH section 7.2 in place of A601-3. Changed to match latest specification (FA 2-15-13). | R. MeyerA. Burleson | J. Morgan | J. Morgan | 02/28/2013 | No |
| 3.0 | Minor edits based on FA 2-15-13 changes which did not get included in Rev 2.0. | D. Vollmer | J. Morgan | J. Morgan | 06/03/2013 | No |
| 4.0 | Minor edits based on FA 2-15-13 changes which did not get included in Rev 2.0 | D. Vollmer | R. Meyer | J. Morgan | 08/13/2013 | No |
| 5.0 | Replaced FDOT logo with latest approved one and added CM ID # to header. | D. Bremer | J. Morgan | J. Morgan | 03/13/2014 | No |
| 6.0 | Updated to reflect changes for FA 7-10-2018 update. | R. Brooks | M. Tomatani | J. Morgan | 12/12/2018 | No |
| 7.0 | Update ID# 41 adding RTSP using multicast. Update ID# 39 NEMA TS-2 to NEMA TS-2 2016. | W. Geitz | M. DeWittC. Raimer | D. Vollmer | 6/25/2021 | No |
| 8.0 | Updated Design Standards index no. 18110 to Standard Plans index no. 659-020. Updated section 682 to 996 to reflect FDOT Standard Specs July 2020. Update to conform to John S. McCain National Defense Authorization Act. | W. Geitz | M. DeWittC. Raimer | D. Vollmer | 12/9/2021 | Yes |
| 9.0 | Added test cases and steps. Added warranty. Updated NDAA language and Iris requirements based on FA date of 10-24-22 for 996. | D. BremerV. Johnson | R. Meyer | D. Vollmer | 02/01/2023 | No |
| 10.0 | Updated to latest FA dates of 9-13-23 and 12-1-23 for specs 682 and 996, respectively. | W. Geitz | V. Johnson | D. Vollmer | 01/19/2024 | No |
| 11.0 | Updated to latest FA date of 10-16-24 for spec 996. | W. Geitz | D. Bremer | M. DeWitt | 06/11/2025 | No |