TENNESSEE TRAFFIC OPERATIONS DIVISION

INTELLIGENT TRANSPORTATION SYSTEMS QUALIFIED PRODUCTS LIST

ITS/QPL 8

TABLE OF CONTENTS

FOREWORD

The Intelligent Transportation Systems Qualified Product list (ITS/QPL) provides a list of products that have been known to perform satisfactorily to the Tennessee Department of Transportation. The list can be used by Construction, Maintenance and IT personnel to identify devices to be used on the ITS SmartWay infrastructure in the State of Tennessee. Testing, integration, approval and acceptance requirements are not waived for any of the devices listed. The products listed are considered acceptable for use on the ITS SmartWay infrastructure after testing, validation, and/or verification using state or outside resources. All devices shall be used in accordance with manufacturer recommendation. The list is non-inclusive of all types of products to be used on the SmartWay system. However, the list is applicable for the types of products listed. The list is a live document and will be updated and modified as needed.

The Department reserves the right to reject any product which does not demonstrate satisfactory performance in any of the tests outlined in the Evaluation Procedures. The Department also reserves the right to remove any product from the ITS/QPL that does not perform satisfactorily under real life conditions.

This publication shall be used in conjunction with the Standard Specifications for Road and Bridge Construction, Maintenance Specifications, Special Provisions, Technical Special Provisions, Plans and all supplementary documents effective at the time of usage. Any future corrections, additions or revisions made in the contents of this publication will be forwarded to the holders of this publication so that the publication is maintained up to date.

Any questions concerning this publication or its use should be directed to the following address:

Tennessee Department of Transportation
Traffic Operations Division, Intelligent Transportation Systems Section
505 Deaderick St., Suite 1800,
Nashville, TN 37243

QPL 8 CCTV CAMERA SYSTEM (PTZ)

SPECIFICATIONS

8.1 Description

This Section specifies the minimum requirements for CCTV Camera Systems furnished and installed on Tennessee Department of Transportation (TDOT) Intelligent Transportation Systems (ITS) projects.

8.2 Materials

All materials furnished, assembled, fabricated or installed shall be new, corrosion resistant and in strict accordance with all of the details described in this SP.

The CCTV Camera System shall comply with the following minimum materials specifications:

8.2.1 *General Capabilities and Performance Requirements*

Overall CCTV Camera System capabilities and performance requirements include the following:

1. The CCTV Camera System components shall be compatible with each other and be of rugged design and suitable for reliable operation when mounted in the configuration as specified in this SP.

2. The CCTV Camera System shall be capable of attended and unattended, continuous 24 hours per day operation.

3. The CCTV Camera System shall respond to camera control signals from an operator of the system; and transmit video images to remote locations interfaced to the system for observation.

4. The camera shall be fully digital, IP addressable and compliant with the H.264 video encoding standard.

5. The camera shall operate over wide dynamic light conditions ranging from low light/dusk to full sunlight having day (color)/night (monochrome) switchover and iris control, with user-selectable manual and automatic control capabilities.

6. The CCTV Camera System shall be capable of being remotely controlled and programmed.

7. The camera shall be mounted together with the zoom lens and integrated into the pan and tilt device within the enclosure forming a totally integrated, easily removable assembly.

8. The camera shall include a high quality integrated camera/lens combination.

9. The camera shall be equipped with an auto-iris lens capability compatible with the zoom lens supplied.

10. Iris capability shall include a provision for manual override via software.

11. The camera shall be capable of auto-focus during zoom-in or zoom-out, with provisions for override via software.

12. Overexposure protection shall be provided - the camera shall not be degraded or damaged under normal reasonable operating conditions.

13. The capability for local control of pan, tilt and zoom functions shall be provided at the roadside cabinet using vendor-supplied software installed on a laptop computer.

14. The camera shall have image stabilization to reduce image jitter during viewing of the video.

15. The Vendor shall provide a minimum three (3) year warranty that covers manufacturing defects and workmanship. The warranty shall cover complete replacement at no charge for the equipment.

8.2.2 *Camera Unit*

The minimum Camera Unit requirements include:

1. Image Sensor Size: Not less than Diagonal 6mm (1/3” type)

2. Image Resolution: Not less than 1280 x 720

3. Day/Night Operation: Adjustable (Auto, Color and Mono Modes) via removable IR cut filter

4. Maximum Lens Aperture: Not less than f/1.6 (wide) to f/2.8 (tele)

5. Optical Zoom Range: Not less than 30X

6. Optical Zoom Speed: Two speeds

7. Horizontal Angle of View: Optical: Not less than 55.2° to 3.2°

8. Minimum Focus Distance: Not greater than 0.01m (wide); 1.0m (tele)

9. Auto Focus: Selectable Auto/Manual; Minimum Scene Illumination for Reliable Auto Focus shall be no more than 50% video output.

10. Manual Shutter: Selectable

11. Auto Iris; Selectable auto/manual; Iris shall automatically adjust to compensate for changes in scene illumination to maintain constant video level output within sensitivity specifications.

12. Sensitivity: Scene Illumination minimums ; F1.6 @ 50% Video

    a. 1.8 Lux (0.18 fc) @ 1/30 shutter, color mode

    b. 0.1 Lux (0.01 fc) @ 1/30 shutter, mono mode

8.2.3 *H.264/MJPEG Encoding Engine*

The IP Camera Positioning System (IPCPS) shall fully integrate within its enclosure an H.264/MJPEG encoding component with functions as specified below. The Vendor may submit a nonintegrated solution installed in the traffic control cabinet or separate CCTV cabinet if it provides the same capabilities and is hardened for extreme temperatures, under approval by the TDOT Traffic Operations Division.

1. Video Encoding: H.264 (Main Profile/Level 3.1) and MJPEG standards.

2. Video Streams: Two independently configurable streams; (1) H.264 and (1) MJPEG.

3. Video Stream Configuration Properties;

    a. Stream Settings

        i. Video Stream 1: H.264.

        ii. Video Stream 2: MJPEG.

    b. Video Resolution: Not less than 480p and 720p.

c. Streaming Mode: Capable of selectable CBR or VBR.

d. Frame Rates: 30, 15, 7, 4, 2, 1 fps

4. Data Rate: Adjustable in a range of not more than 256 Kbs up to 8Mbs for streaming video.

5. Connection Types: Uni-cast and multi-cast.

6. IPCPS Video Latency: <150ms

7. Supported Network Protocols: RTP, RTSP, UDP, TCP, IP, DHCP, DNS, HTTP, HTTPS, ARP, ICMP, IGMPv2 and SMNPv2c/v3 as a minimum.

8.2.4 *Positioning Drive*

1. Pan Movement; 360 degrees continuous rotation.

2. Pan Speed; Variable from 0.1 to 90 degrees/second or better.

3. Pan Repeatability; +/- 0.25 degree precision or better.

4. Pan Preset Speed; 180 degree movement < 2 Seconds.

5. Tilt Movement; Minimum of +90 to –90 degrees.

6. Tilt Speed; Variable from 0.1 to 45 degrees/second or better.

7. Tilt Repeatability; +/- 0.25 degree precision.

8. Tilt Preset Speed; 180 degree movement < 3 Seconds or better.

8.2.5 *Operational*

1. The CCTV camera shall utilize NTCIP v 1.08 communication protocol.

2. Presets; Minimum of 64, with each preset consisting of a pan, tilt, zoom and focus coordinate.

3. Preset Tours; Minimum 8 tours required, each tour shall consist of up to 32 pre-programmed presets, with individual dwell time property per preset per tour.

a. Tour presets shall be useable in any order.

b. Presets may be used multiple times in tour.

c. Tours shall stop upon receipt of any pan/tilt positioning command.

d. Tour data shall be stored in non-volatile memory and shall not be lost if a power failure occurs.

4. Sector Zones; Provide a minimum of up to 16 user defined sector zones with each zone having a unique 24 character ASCII title programmed for description purposes.

5. Camera Site ID: Provide up to 2 lines of up to 24 ASCII characters each on video for user site description ID. If both lines are programmed, line 1 of ID shall always appear above line 2 regardless of top or bottom selection.

6. Preset ID: Provide 1 line of up to 24 ASCII characters on video for Preset ID description. When a preset position is recalled the corresponding preset ID shall be displayed. The preset ID shall remain displayed until a pan, tilt, zoom, manual focus, auto focus select, or another preset command is received.

7. Scalable Zoom; Variable speed pan/tilt ranges based off of zoom position. This adds the capability of limiting the maximum pan/tilt speed, while maintaining variable speed capability, throughout the zoom range of the camera.

8. Updates: The IPCPS shall allow updates of firmware for new features via the Ethernet network communication channel. An internal IPCPS web server shall be provided for performing this task.

9. The IPCPS shall return to previous position and state of operation upon power loss and restoration.

8.2.6 *IP Management*

The IPCPS shall provide at minimum the following network configuration properties;

1. IP Configuration: DHCP or Static IP address entry.

2. Net mask address entry.

3. Gateway address entry.

8.2.7 *Power Input*

The IPCPS shall fully comply with and include independent laboratory test results confirming compliance with the following electrical operating conditions;

1. Power; <100 Watts Maximum.

2. Operating Voltage; 100-240 VAC

3. The nominal voltage shall be 120 VAC, Per NEMA-TS2 para 2.1.2.

8.2.8 *Mechanical*

1. Connectors weatherproof non-corrosion type.

2. Weight; Maximum 25lbs.

3. Construction; Light Colored Powder Coated aluminum; all internal and external parts corrosion protected, stainless steel fasteners.

4. Faceplate shall be optically correct glass.

5. Camera housing shall be equipped with a 1.5" NPT pipe thread to allow for connection to the Camera Lowering Device connection box.

8.2.9 *Environmental*

The IPCPS shall fully comply with and include independent laboratory test results confirming compliance with the environmental operating conditions in this section. Testing completed by Florida Department of Transportation for acceptance to their Qualified Products List (QPL) may be submitted for approval by TDOT Traffic Operations Division, in lieu of the following specifications:

1. Temperature; The operating ambient temperature range be from -34°C (-30°F) to +60°C (+140°F).

2. Vibration; Per Nema-TS2 paragraphs 2.1.9 and 2.2.3, 5-30Hz sweep @ 0.5g applied in each of 3 mutually perpendicular planes.

3. Shock; Per Nema-TS2 paragraphs 2.1.10 and 2.2.4, 10g applied in each of 3 mutually perpendicular planes.

4. Water Spray; Per IEC 60529+A1, 1999, Para 14.2.6, Solid water stream delivered thru 12.5mm nozzle @ 25 gallons/minute @ 9ft for 3 minutes.

5. External Icing; Per Nema-TS2 250-2003, paragraphs 5.6.

6. Corrosion Protection; Per NEMA 250-2003, paragraphs 5.10.

7. Humidity; The IPCPS shall withstand the effects of humidity up to 100%, in accordance with MIL-E-5400T, paragraphs 3.2.24.4.

8. Minimum Standards: IP66.

8.2.10 *Certifications*

1. CE (24VAC).

2. FCC Class A.

8.3 Installation and Integration Requirements

It is the Vendor's responsibility to furnish, program, install, and integrate the CCTV camera system in the field and at the TMC. The Vendor installed CCTV camera shall be integrated by the Vendor into the existing video display wall and the PTZ video control system at the TMC.

The Vendor shall submit a plan for display of the IP CCTV camera on the existing video wall equipment and submit it to the TMC IT for approval. The Vendor shall work with the video wall manufacturer to create a plan for the integration of the cameras into the video wall. The cost of coordination and integration efforts shall be the sole responsibility of the Vendor and no payment will be made directly or indirectly by TDOT.

All equipment shall be installed according to the manufacturer's recommendations and as follows:

1. Materials and associated accessories/adapters shall not be applied contrary to the manufacturer's recommendations and standard practices.

2. Furnish and install power, video, and data cables, and any and all ancillary equipment required to provide a complete and fully operational CCTV system site.

3. Verify all wiring meets NEC requirements where applicable.

4. Cameras shall be mounted in positions which allow 360 degree continuous rotation.

5. Furnish and install all appropriate field surge protection devices, and ensure proper ground per manufacturer recommendations.

6. Coordinate with TMC IT for IP addresses, and video encoding settings prior to turn-on/installation and site testing.

7. The CCTV system shall be compatible with, and integrated into the existing TMC video wall and CCTV control software. It shall be the Contractor's responsibility to coordinate with the TMC operations personnel for Vendor integration of the new CCTV cameras into the existing video wall and video control software systems. It is the Vendor's responsibility to integrate and test all video control and display of the cameras at the TMC.

8.4 Testing Period

The Vendor shall complete and submit the attached CCTV Camera Specification Compliance Form to the TDOT Traffic Operations Division. Following the Traffic Operations Division's written approval confirming the CCTV Camera System meets the minimum requirements outlined in QPL 8, a complete CCTV Camera System shall be installed on the TDOT SmartWay network for a minimum 5 day testing period.

1. The entire newly installed CCTV Camera System must operate successfully for a minimum five (5) day testing period or as TMC/IT see fit.

2. Any system failure during the testing period may require an additional amount of time to fully evaluate the CCTV camera.

3. Determination of a system failure shall be at the discretion of the TMC, TMC IT, or Traffic Operations Division.

4. The Vendor shall document all failures and subsequent diagnosis and repair. The repair documentation shall include as a minimum:

    i. Description of the problem.

    ii. Troubleshooting and diagnosis steps.

    iii. Repairs made.

    iv. List of all equipment and materials changed including serial number

5. Specifically exempted as system failures are failures caused by accident, acts of God, or other external forces that are beyond the control of the Vendor.

6. The overall testing period will be considered complete upon the successful completion of the minimum five(5) day testing period, completion of the attached Qualified Product List (QPL) Acceptance Test, and the written approval of the TDOT Traffic Operations Division, TMC IT, and TMC Manager.

ADDITIONAL DOCUMENTS

SPECIFICATIONS COMPLIANCE FORM

ACCEPTANCE TEST FORM/APPROVAL

CONTACT LIST

QUALIFIED PRODUCTS LIST

INTELLIGENT TRANSPORTATION SYSTEMS
QUALIFIED PRODUCTS LIST
ITS/QPL

QPL 8 CCTV Camera Systems Specifications Compliance Form

Updated 10/24/2018

THIS COLUMN FOR TDOT USE ONLY

TDOT Pay Item Number(s): 725-20.91

Manufacturer/Model:_____

CCTV

Vendor

Authorization:_____

Date:_____

Submittal / Resubmittal

(Underline one)

Received date:_____

Forward date:_____

Compliant: Yes_____No_____

Signed:_____

Date:_____

Section	Requirements	Contract Compliant		Cross-Reference to Attached Documentation	Status / Comments
		No	Yes		
8.1 Description	**This Section specifies the minimum requirements for CCTV Camera Systems furnished and installed on Tennessee Department of Transportation (TDOT) Intelligent Transportation Systems (ITS) projects.**				
8.2 Materials	**All materials furnished, assembled, fabricated or installed shall be new, corrosion resistant and in strict accordance with all of the details described in this SP.** **The CCTV Camera System shall comply with the following minimum materials specifications:**				
8.2.1	**General Capabilities and Performance Requirements** Overall CCTV Camera System capabilities and performance requirements include the following:				
8.2.1.1	The CCTV Camera System components shall be compatible with each other and be of rugged design and suitable for reliable operation when mounted in the configuration as specified in this SP.				
8.2.1.2	The CCTV Camera System shall be capable of attended and unattended, continuous 24 hours per day operation.				
8.2.1.3	The CCTV Camera System shall respond to camera control signals from an operator of the system; and transmit video images to remote locations interfaced to the system for observation.				
8.2.1.4	The camera shall be fully digital, IP addressable and compliant with the H.264 video encoding standard.				
8.2.1.5	The camera shall operate over wide dynamic light conditions ranging from low light/dusk to full sunlight having day (color)/night (monochrome) switchover and iris control, with user-selectable manual and automatic control capabilities.				
8.2.1.6	The CCTV Camera System shall be capable of being remotely controlled and programmed.				
8.2.1.7	The camera shall be mounted together with the zoom lens and integrated into the pan and tilt device within the dome enclosure forming a totally integrated, easily removable assembly.				
8.2.1.8	The camera shall include a high quality integrated camera/lens combination.				
8.2.1.9	The camera shall also be equipped with an auto-iris lens capability compatible with the zoom lens supplied.				
8.2.1.10	Iris capability shall include a provision for manual override via software.				
8.2.1.11	The camera shall be capable of auto-focus during zoom-in or zoom-out, with provisions for override via software.				
8.2.1.12	Overexposure protection shall be provided - the camera shall not be degraded or damaged under normal reasonable operating conditions.				
8.2.1.13	The capability for local control of pan, tilt, and zoom functions shall be provided at the roadside cabinet using vendor-supplied software installed on a laptop computer.				
8.2.1.14	The camera shall have image stabilization to reduce image jitter during viewing of the video.				
8.2.1.15	The Vendor shall provide a minimum three(3) year warranty that covers manufacturing defects and workmanship. The warranty shall cover complete replacement at no charge for the equipment.				

Section	Requirements	Contract Compliant		Cross-Reference to Attached Documentation	Status / Comments
		No	Yes		
8.2.2	**Camera Unit** The minimum Camera Unit requirements include:				
8.2.2.1	Image Sensor Size: Not less than Diagonal 6mm (1/3" type)				
8.2.2.2	Image Resolution: Not less than 1280 x 720				
8.2.2.3	Day/Night Operation: Adjustable (Auto, Color and Mono Modes) via removable IR cut filter				
8.2.2.4	Maximum Lens Aperture: Not less than f/1.6 (wide) to f/2.8 (tele)				
8.2.2.5	Optical Zoom Range: Not less than 30X.				
8.2.2.6	Optical Zoom Speed: Two speeds				
8.2.2.7	Horizontal Angle of View: Optical: Not less than 55.2° to 3.2				
8.2.2.8	Minimum Focus Distance: Not greater than 0.01m (w); 1.0m (t)				
8.2.2.9	Auto Focus: Selectable Auto/Manual; Minimum Scene Illumination for Reliable Auto Focus shall be no more than 50% video output.				
8.2.2.10	Manual Shutter: Selectable				
8.2.2.11	Auto Iris; Selectable auto/manual; Iris shall automatically adjust to compensate for changes in scene illumination to maintain constant video level output within sensitivity specifications.				
8.2.2.12	Sensitivity: Scene Illumination minimums ; F1.6 @ 50% Video				
8.2.2.12.a	1.8 Lux (0.18 fc) @ 1/30 shutter, color mode				
8.2.2.12.b	0.1 Lux (0.01 fc) @ 1/30 shutter, mono mode				
8.2.3	**H.264/MJPEG Encoding Engine** The IP Camera Positioning System (IPCPS) shall fully integrate within its enclosure an H.264/MJPEG encoding component with functions as specified below. The Vendor may submit a nonintegrated solution installed in the traffic control cabinet or separate CCTV cabinet if it provides the same capabilities and is hardened for extreme temperatures, under approval by the TDOT Traffic Operations Division.				
8.2.3.1	Video Encoding: H.264 (Main Profile/Level 3.1) and MJPEG standards				
8.2.3.2	Video Streams: Two independently configurable streams; (1) H.264 and (1) MJPEG				
8.2.3.3	**Video Stream Configuration Properties:**				
8.2.3.3.a	**Stream Settings**				
8.2.3.3.a.i	Video Stream 1: H.264.				
8.2.3.3.a.ii	Video Stream 2: MJPEG.				
8.2.3.3.b	Image Resolution: Not less than 480p and 720p				
8.2.3.3.c	Streaming Mode: Capable of selectable CBR or VBR.				
8.2.3.3.d	Frame Rates: 30, 15, 7, 4, 2, 1 fps				
8.2.3.4	Data Rate: Adjustable in a range of not more than 256Kb/s to 8Mb/s for streaming video.				
8.2.3.5	Connection Types: Uni-cast and multi-cast.				
8.2.3.6	IPCPS Video Latency: <150ms.				
8.2.3.7	Supported Network Protocols: RTP, RTSP, UDP, TCP, IP, DHCP, DNS, HTTP, HTTPS, ARP, ICMP, IGMPv2 and SMNPv2c/v3 as a minimum.				
8.2.4	**Positioning Drive**				
8.2.4.1	Pan Movement; 360 degrees continuous rotation.				
8.2.4.2	Pan Speed; Variable from 0.1 to 90 degrees/second or better.				
8.2.4.3	Pan Repeatability; +/- 0.25 degree precision or better.				
8.2.4.4	Pan Preset Speed; 180 degree movement < 2 Seconds.				
8.2.4.5	Tilt Movement; Minimum of +90 to –90 degrees.				
8.2.4.6	Tilt Speed; Variable from 0.1 to 45 degrees/second or better.				
8.2.4.7	Tilt Repeatability; +/- 0.25 degree precision.				
8.2.4.8	Tilt Preset Speed; 180 degree movement < 3 Seconds or better.				
8.2.5	**Operational**				
8.2.5.1	The camera shall utilize NTCIP v1.08 communication protocol.				
8.2.5.2	Presets; Minimum of 64, with each preset consisting of a pan, tilt, zoom and focus coordinate.				
8.2.5.3	Preset Tours; Minimum 8 tours required, each tour shall consist of up to 32 preprogrammed presets, with individual dwell time property per preset per tour.				
8.2.5.3.a	Tour presets shall be useable in any order.				
8.2.5.3.b	Presets may be used multiple times in tour.				

Section	Requirements	Contract Compliant		Cross-Reference to Attached Documentation	Status / Comments
		No	Yes		
8.2.5.3.c	Tours shall stop upon receipt of any pan/tilt positioning command.				
8.2.5.3.d	Tour data shall be stored in non-volatile memory and shall not be lost if a power failure occurs.				
8.2.5.4	Sector Zones; Provide a minimum of up to 16 user defined sector zones with each zone having a unique 24 character ASCII title programmed for description purposes.				
8.2.5.5	Camera Site ID: Provide up to 2 lines of up to 24 ASCII characters each on video for user site description ID. If both lines are programmed, line 1 of ID shall always appear above line 2 regardless of top or bottom selection.				
8.2.5.6	Preset ID: Provide 1 line of up to 24 ASCII characters on video for Preset ID description. When a preset position is recalled the corresponding preset ID shall be displayed. The preset ID shall remain displayed until a pan, tilt, zoom, manual focus, auto focus select, or another preset command is received.				
8.2.5.7	Scalable Zoom; Variable speed pan/tilt ranges based off of zoom position. This adds the capability of limiting the maximum pan/tilt speed, while maintaining variable speed capability, throughout the zoom range of the camera.				
8.2.5.8	Updates: The IPCPS shall allow updates of firmware for new features via the Ethernet network communication channel. An internal IPCPS web server shall be provided for performing this task.				
8.2.5.9	The IPCPS system shall return to previous position and state of operation upon power loss and restoration.				
8.2.6	**IP Management** The IPCPS shall provide at minimum the following network configuration properties:				
8.2.6.1	IP Configuration: DHCP or Static IP address entry.				
8.2.6.2	Net mask address entry.				
8.2.6.3	Gateway address entry.				
8.2.7	**Power Input** The IPCPS shall fully comply with and include independent laboratory test results confirming compliance with the following electrical operating conditions:				
8.2.7.1	Power; <100 Watts Maximum				
	Operating Voltage; 100-240 VAC				
8.2.7.2	The nominal voltage shall be 120 VAC, Per NEMA-TS2 para 2.1.2.				
8.2.8	**Mechanical**				
8.2.8.1	Connectors weatherproof, non-corrosion type.				
8.2.8.2	Weight; Maximum 25lbs.				
8.2.8.3	Construction; Light Colored Powder Coated aluminum; all internal and external parts corrosion protected, stainless steel fasteners.				
8.2.8.4	Faceplate shall be optically correct glass.				
8.2.8.5	Camera housing shall be equipped with a 1.5" NPT pipe thread to allow for connection to the Camera Lowering Device connection box.				
8.2.9	**Environmental** The IPCPS shall fully comply with and include independent laboratory test results confirming compliance with the environmental operating conditions in this section. Testing completed by Florida Department of Transportation for acceptance to their Qualified Products List (QPL) may be submitted for approval by TDOT Traffic Operations Division, in lieu of the following specifications:				
8.2.9.1	Temperature; The operating ambient temperature range be from -34°C (-30°F) to +60°C (+140°F).				
8.2.9.2	Vibration; Per Nema-TS2 paragraphs 2.1.9, 2.2.3, 5-30Hz sweep @ 0.5g applied in each of 3 mutually perpendicular planes.				
8.2.9.3	Shock; Per Nema-TS2 paragraphs 2.1.10, 2.2.4, 10g applied in each of 3 mutually perpendicular planes.				
8.2.9.4	Water Spray; Per IEC 60529+A1, 1999, Para 14.2.6, Solid water stream delivered thru 12.5mm nozzle @ 25 gallons/minute @ 9ft for 3 minutes.				
8.2.9.5	External Icing; Per Nema-TS2 250-2003, paragraphs 5.6				
8.2.9.6	Corrosion Protection; Per NEMA 250-2003, paragraphs 5.10				
8.2.9.7	Humidity; The IPCPS shall withstand the effects of humidity up to 100%, in accordance with MIL-E-5400T, paragraphs 3.2.24.4.				

Section	Requirements	Contract Compliant		Cross-Reference to Attached Documentation	Status / Comments
		No	Yes		
8.2.9.8	Minimum Standards; IP66.				
8.2.10	**Certification**				
8.2.10.1	CE (24VAC)				
8.2.10.2	FCC Class A				

INTELLIGENT TRANSPORTATION SYSTEMS
QUALIFIED PRODUCTS LIST
ITS/QPL

QPL 8 CCTV CAMERA SYTEM (PTZ)
ACCEPTANCE TEST FORM

TEST DATE _____ MANUFACTURER_____

MODEL_____

		PASS	ISSUE
PAN	PANS LEFT		
	PANS LEFT SLOW		
	PANS RIGHT		
	PANS RIGHT SLOW		
TILT	TILTS UP		
	TILTS DOWN		
ZOOM	ZOOM IN AND OUT. CONFIRM IRIS AND FOCUS WHILE SO DOING.		
IRIS	CONFIRM THAT AUTO IRIS OPERATES BY VIEWING VARIOUS SCENE ILLUMINATIONS		
FOCUS	CONFIRM THAT SCENE REMAINS IN FOCUS AS ZOOM IS USED		
PRESETS	CAMERA RESPONDS TO EACH OF 3 PRESETS		

QPL 8 CCTV CAMERA SYSTEM (PTZ) ACCEPTANCE TEST APPROVAL

Purpose:

The purpose of the test is to demonstrate that the CCTV Camera can intergrate with TDOT TMC software.

Procedure:

The vendor shall test a CCTV camera system and related infrastructure simultaneously from the TMC in a manner equivalent to the normal day-to-day operation of the system. The test will exercise the CCTV camera from the TMC using TMC Operations software.

1. Use the TMC Videowall software to locate all CCTV cameras on the network. Confirm the operation of the CCTV camera and log the results on the attached form. Number any Issues and explain at the bottom of the results form.

When all tests on this procedure have been successfully completed the System will be deemed ACCEPTED and added to the TDOT ITS Qualified Products List. (Note that failure of any existing field device will not be cause of failure as long as communications to the device can be demonstrated in the field.)

_____	_____
Vendor Representative	Traffic Operations Division Representative
_____	_____
TMC Representative	TMC IT Representative

INTELLIGENT TRANSPORTATION SYSTEMS

QUALIFIED PRODUCTS LIST

ITS/QPL

QPL 8 CCTV CAMERA SYSTEMS (PTZ) - CONTACT LIST

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INTELLIGENT TRANSPORTATION SYSTEMS

ITS/QPL

QPL 8 CCTV CAMERA SYTEM (PTZ)

QUALIFIED PRODUCTS LIST

All tests on QPL 8 CCTV CAMERA SYTEM (PTZ) procedure have been successfully completed on the following list of products. The below listed CCTV CAMERA SYTEM (PTZ) are deemed ACCEPTED to the Qualified Product List.

- Cohu Rise 4220HD Dome
- Axix Q6075-E PTZ
- GovComm GC-IMPO-FIZ6DE