STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
TRAFFIC OPERATIONS DIVISION
505 DEADERICK STREET, SUITE 1800
NASHVILLE, TN 37243

INTELLIGENT TRANSPORTATION SYSTEM (ITS) NEW PRODUCT FORM

(Product Submittal Form for Qualified Products List Evaluation)

QPL LIST # 8 - CCTV CAMERA SYSTEM (PTZ)

Trade Name			Patented ☐ Yes ☐ No ☐ Applied For		
Manufacturer			Representative		
Street Adress			Street Adress		
City	State	Zip	City	State	Zip
Phone			Phone		
E-mail			E-mail		
Will Samples Be Furnished For Evaluation ☐ Yes ☐ No			Can Demonstration Be Provided ☐ Yes ☐ No		
Estimated Cost Per Unit of Application _____ Per _____					
Has Another Office of TDOT Been Contacted *(If Yes, Explain)* ☐ No ☐ Yes, Explain: _____					

Product or Equipment Identification and Description

List All Highway Agencies Presently Using or Evaluating this Product ***(including personal contact and phone number)***

AGENCY	CONTACT	PHONE

The following applicable information and materials are available and accompany this form in order to substantiate, verify, or clarify its contents.

Specifications	☐ Attached	☐ Not Attached	☐ Not Applicable
Drawings, sketches, pictures	☐ Attached	☐ Not Attached	☐ Not Applicable
Warranty	☐ Attached	☐ Not Attached	☐ Not Applicable
Installation instructions	☐ Attached	☐ Not Attached	☐ Not Applicable
Material Safety Data Sheet (MSDS)	☐ Attached	☐ Not Attached	☐ Not Applicable
Product/material literature	☐ Attached	☐ Not Attached	☐ Not Applicable
Test data	☐ Attached	☐ Not Attached	☐ Not Applicable
Certifications	☐ Attached	☐ Not Attached	☐ Not Applicable

REV. 12/14/2018

By submitting this application, the submitter is certifying that all information provided is accurate and correct as of the date of submittal.

Typed or Printed Name of Vendor Representative	Title
Signature	Date

Upon review of the submitted Specifications Compliance Form and all supporting documents, The Tennessee Department of Transportation, Traffic Operations Division has determined _____ to meet the minimum requirements established in the Qualified Products List (QPL) 8 specifications. (*Field testing must be completed, if required, for full acceptance to the TDOT ITS QPL*)

Typed or Printed Name of TDOT ITS Representative	Title
Signature	Date

Upon successful completion of the field testing period, in accordance with the Qualified Products List (QPL) 8 specifications, and the submittal of the Acceptance Test Form, The Tennessee Department of Transportation, Traffic Operations Division has determined the device to meet the minimum requirements established in the Qualified Products List (QPL) 8 specifications.

Typed or Printed Name of TDOT ITS Representative	Title
Signature	Date

Department Use Only

Comments:

The Tennessee Department of Transportation will not consider any product for testing or evaluation until this form, completed in it's entirety and signed by an authorized official of the manufacturer, is received. An authorized official of the manufacturer refers to an actual employee of the manufacturer, not a supplier of distributor. Separate Evaluation Forms are required for each product submitted for testing. All products submitted for testing shall be furnished at no cost to the Tennessee Department of Transportation. The Department reserves the right to return all unused products to the manufacturer at no cost to the Department.

Products must meet all requirements outlined in the specific Evaluation Procedures to be added to the Department's Qualified Products List (QPL). The purpose of the QPL is to make available to Construction and Maintenance personnel a list of products which perform satisfactorily. Inclusion on the QPL must not be considered as prior approval, and in no way precludes Departmental testing and approval requirements. Products on the QPL are products which have been evaluated and found that they could be acceptable for use, provided all testing and/or certification requirements have been met and provided the products are used in accordance with the manufacturers recommendations. Since there is not a QPL covering every type of product, some products which are found to perform satisfactorily are not placed on a Qualified Products List. As the need arises, new QPL's may be developed for some of these products.

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 Qualified Products List that does not perform satisfactorily under real life conditions.

Please submit Product Evaluation Forms and all supporting documentation electronically in a .pdf format to the below email address.

TDOT.TrafficOps.ITS-Reviews@tn.gov

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.				

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		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.				

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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				