ITEM 683.03090010 - CCTV IP NETWORK DOME CAMERA

DESCRIPTION

This work shall consist of furnishing and installing Closed Circuit Television (CCTV) IP Network Dome Cameras at the field locations shown in the contract documents and in accordance with the contract documents.

MATERIALS

All materials furnished, assembled, fabricated, or installed shall be new, corrosion resistant and in strict accordance with the details shown in the contract documents. The CCTV IP Network Dome Camera shall be fully NTCIP compliant and compatible with, and have the capability of being controlled by the INFORM central CCTV control system, or by a computer loaded with NTCIP point to multipoint NTCIP control software, in the INFORM Control Center in Hauppauge.

General Requirements

The equipment shall deliver high quality digital full-motion video during day or night operation with the video transmitted over the INFORM fiber optic and Ethernet networks, existing or installed as part of this project as indicated in the contract documents. Each CCTV IP Network Dome Camera consists of a solid state color CCTV Camera, zoom lens, environmentally protected dome enclosure, pan/tilt and zoom lens drives, built in receiver/driver unit and all cabling required to interface the CCTV IP Network Dome Camera with the equipment in the field equipment cabinet. When the light level drops below a programmable level, the camera shall be capable of switching to black and white from color or remaining in color mode.

Mounting hardware and all interconnecting cabling between the camera assembly and the field cabinet shall also be provided as part of this item. The camera assembly shall be designed for mounting on a CCTV pole, traffic signal span pole, or street light pole using 6 foot luminaire arm or as specified in the contract documents. Where specified the 6 foot luminaire arm shall be furnished and installed as part of this item. All mounting brackets, adapter plates, and fastening hardware shall be furnished and installed as part of this item. Connections between the equipment shall be through weather proof connectors to provide easy replacement. Servicing of the camera assembly shall be available in the continental United States or Canada.

Specific Requirements

The CCTV IP Network Dome Camera shall meet the following requirements:

a. Video Encoding
   H.264 and Motion JPEG, 30 frames per second (fps).

b. Scanning:
   Progressive

c. Imager:
   Solid state ¼” or larger

d. Resolution
   1920 X 1080 (2 M pixels)

e. Aspect Ratio
   16:9
f. Sensitivity: 1 lux at 1/60 second shutter speed color and 0.1 lux at 1/60 shutter speed black and white at 50 IRE and 1/60 second shutter speed, utilizing day/night switch over technology automatically or manually.

g. Signal to Noise ratio (AGC off): 50 dB minimum.


i. Back light compensation: Selectable

j. Wide Dynamic Range: 86 dB

k. Electronic shutter speeds: Auto and programmable 1/4 to 1/10,000 second

l. Iris: Auto with manual override.

m. Focus: Auto with manual override.

n. Automatic gain control (AGC.)

o. Pan/Tilt/Zoom: Pan: 360 degrees, continuous, speed 0.1 to 80 degrees per second, programmable. Tilt: 90 degrees, speed 0.1 to 40 degrees per second, programmable. Zoom: 20X optical zoom and 12X digital zoom.

p. Aperture: f1.6

q. Lower dome: The lower dome shall provide a viewing area such that unrestricted camera views are obtained for all camera and lens positions.

r. Material: With exception of the lower dome, the enclosure shall be painted anodized aluminum. The lower dome shall be optically clear, uv treated polycarbonate a minimum of 2.3 mm thick. The hardware shall be stainless steel.

s. Presets: Minimum of thirty-two (32) programmable and with 0.1 degree repeatability.

t. Dome Construction: Ingress Protection IP66 and NEMA 4X Standards, with Shroud type sunshield.

u. Environmental Provisions: Built in thermostatically controlled heater/defroster/defogger. The defroster/defogger shall prevent icing and fogging of the viewing window. The heater shall be sized and thermostat set to permit operation of the camera over the specified environmental conditions. A minimum of 5 degrees C hysteresis shall be provided in the thermostat to prevent continuous cycling of the heater, defroster or defogger. Either snubbers or Metal Oxide Varistors (MOV) of appropriate ratings shall be installed across the switch outputs of all thermostats. The MOVs shall be connected to ground.

v. Data/video interface: RJ45 10/100 Base T

w. Addressability: IP address programmable, point to multipoint protocol.

x. Interoperability: ONVIF (Open Network Video Interface Forum) conformance.
ITEM 683.03090010 - CCTV IP NETWORK DOME CAMERA

y. Overlay Text: Up to 16 ASCII characters to show camera ID.
z. Camera control/Monitor: Compliant with NTCIP 1205 Section 3 to include all relevant MIB (Management Information Base) objects necessary to meet the requirements described above and compatible with the INFORM central control software.

Electrical

The camera shall operate on 24 VAC, or be powered through an Ethernet connector compliant with PoE Plus, or IEEE 802.3at Standard.

A 24 VAC power supply or power injector shall be provided and installed in the cabinet to power the camera. The power supplies shall be sized to operate the heater, fan and other utilities simultaneously with the camera. The power supplies shall operate at 120 VAC.

Mechanical

Housing Size (maximum): 16 inches (H) x 11 inches (Diameter).
Weight (maximum): 14 lb.
Mounting: Pendant.

Environmental

Temperature (operating): -40 degrees F to +122 degrees F ambient.
Humidity: 0 to 95% noncondensing.
Wind: Meet all performance requirements when subjected to a 90 mph wind and able to withstand a 125 mph gust.

Power and Control Cables

The Ethernet cable and the power cable between the CCTV IP Network Dome Camera and the field cabinet shall be provided. Shop drawings showing the configuration of the harness along with the manufacturer’s recommendation shall be submitted to the Engineer for approval prior to fabrication.

Luminaire Arm

The 6’ luminaire arm shall be a standard aluminum luminaire arm and meet the AASHTO Standards. The arm shall be provided with an elbow / adapter to vertically mount the dome utilizing the dome’s 1.5” NPT threading. The arm shall be supplied with stainless steel bolts, washers and lock washers to securely fasten to the pole. Neoprene fittings shall be used to protect the wires from abrasion and dissimilar metals from corrosion.

Field Test Unit
ITEM 683.03090010 - CCTV IP NETWORK DOME CAMERA

Either software that runs on a notebook computer under the Windows operating system or a camera controller shall be provided to permit local configuration and control of the camera and lens from the equipment cabinet. Three (3) copies of all software with licenses required for local camera operations and configurations shall be provided.

CONSTRUCTION DETAILS

Unless indicated otherwise in the contract documents, the CCTV IP Network Dome Camera shall be mounted to a new 6’ luminaire arm and attached to a pole as shown in the Contract Documents and Specifications. The Contractor shall submit installation/mounting details and/or shop drawings to the Engineer, indicating how the camera shall be connected to the power supply, interconnect cables, communications equipment and the mounting support at the site locations.

The Contractor shall install and program the specified CCTV IP Network Dome Camera at locations shown in the contract documents and as ordered by the Engineer. The camera shall be installed such that the line of sight of the camera is in the center line of the desired field of view when the camera is in the mid point of the desired motion between the limit stops. The Engineer will provide the field of view for each camera, the limit settings of its vertical and horizontal movements and the programmable parameters prior to installation. The Contractor shall furnish and install the mounting hardware, connectors and weather heads required for the installation of the camera assembly. The Contractor shall electrically bond the camera assembly and the pole mounted adapter to the pole when mounted to a pole and to the nearest ground rod when mounted on a structure. The camera assembly shall be connected to the pole mounting adapter through a No. 6 AWG braided conductor.

Documentation

Six (6) advance copies of equipment manuals furnished by the manufacturer shall be submitted to the Engineer for review at least ten (10) days prior to the scheduled start of the first Operational Stand-Alone Test. The Engineer will verify the manufacturer’s equipment manual as part of the test and integration process. The equipment manual incorporating the Engineer’s corrections and comments shall be integrated by the Contractor into the operations and maintenance manual as described in the contract documents. The manuals shall, as a minimum, include the following:

1. Complete and accurate schematic diagrams.
2. Complete installation and operation procedures.
3. Complete performance specifications (functional, electrical, mechanical and environmental) of the unit.
4. Complete list of replaceable parts including names of vendors for parts not identified by universal part numbers such as JEDEC, RETMA or EIA.
5. Complete maintenance and troubleshooting procedures.
6. Setup and configuration data for each camera location including the camera address, day/night threshold setting, horizontal and vertical limit settings and shutter speed.
ITEM 683.03090010 - CCTV IP NETWORK DOME CAMERA

Testing

NTCIP Compliance Tests

NTCIP compliance tests shall be conducted on a CCTV IP Network Dome Camera with independent test exerciser or test software on all mandatory objects. Test procedure and proposed test equipment shall be submitted to the Engineer for approval before the start of the tests. Test results shall be submitted to the Engineer for approval before installation of the cameras.

Stand-Alone Tests

The Contractor shall conduct an approved stand-alone test of the equipment after installation at each field site shown on the plans. The test shall, as a minimum, exercise all stand-alone (non-network) functions of all equipment installed per the plans and as directed by the Engineer. Approved data forms shall be completed and turned over to the Engineer as the basis for review and rejection or acceptance.

The camera shall be left in the operation mode for thirty (30) days after the above tests are successfully completed. The stand-alone tests conclude at the end of this thirty day period if the camera operates continuously without failures.

If the equipment fails the stand-alone tests, it shall be corrected or another substitute in its place and the tests repeated. If the unit under test has been modified as a result of a stand-alone test failure, a report describing the nature of the failure and the corrective action taken, shall be submitted to the Engineer. If a failure pattern, as defined by the Engineer, develops, then the Contractor shall make the same modifications to all equipment without additional cost to the State or the extension of the contract period.

Final Acceptance Tests

Following the satisfactory completion of the stand-alone tests, the equipment shall be connected and integrated to the system network and the final acceptance tests shall be conducted.

The final acceptance tests shall, as a minimum, exercise all functions of the CCTV IP Network Dome Cameras as an integrated system. The tests shall demonstrate all remotely controlled features as specified from the Control Center.

In the event of a failure of any Contractor supplied equipment, the tests shall be stopped, problem corrected and restarted. In the event of a failure of equipment installed by others, such as communications equipment or central control equipment, the tests shall be suspended until the problems have been resolved, and then the tests shall be resumed from the point of suspension.

Experience
ITEM 683.03090010 - CCTV IP NETWORK DOME CAMERA

The CCTV IP Network Dome Camera proposed for meeting the requirements described in the preceding sections shall be manufactured by a firm established in the production and installation of such equipment. The manufacturer shall meet the following requirements at a minimum:

1. Five (5) years’ experience in the successful manufacture and installation of PTZ dome cameras.
2. One (1) installed PTZ dome camera in continuous satisfactory operation for at least one (1) year in the outdoor environment. The contractor shall submit, as proof, photographs of the camera and names, addresses and telephone numbers of the operating personnel who can be contacted regarding the camera operations.

METHOD OF MEASUREMENT:

The CCTV IP Network Dome Camera will be measured for payment as the number of units satisfactorily installed.

BASIS OF PAYMENT:

The unit cost bid to furnish and install a CCTV IP Network Dome Camera shall include the cost of furnishing all labor, materials, tools, integration, testing, documentation and miscellaneous equipment necessary to satisfactorily complete the work in accordance with the contract documents.