ITEM 683.1010 11 - CCTV DOME CAMERA ASSEMBLY

DESCRIPTION: This work shall consist of furnishing and installing Closed Circuit Television (CCTV) Dome Camera Assemblies 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.

To insure compatibility and interchangeability with equipment furnished under previous projects, the CCTV Dome Camera Assembly shall be the following:

<table>
<thead>
<tr>
<th>SD53CBW-PRE1</th>
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<tbody>
<tr>
<td>Manufactured by Pelco</td>
</tr>
<tr>
<td>3500 Pelco Way</td>
</tr>
<tr>
<td>Clovis CA 93612</td>
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</tbody>
</table>

or equal as approved by the Engineer.

General Requirements: The equipment shall deliver high quality full-motion video during day or night operation with the video transmitted over either T-1 lines or the fiber network being installed as part of this project as indicated in the contract documents. Each CCTV Dome Camera Assembly consists of a solid state color CCTV Camera, zoom lens, camera enclosure, pan/tilt drive, built in Receiver Driver Unit (RDU) and all cabling required to interface the CCTV Dome Camera Assembly with equipment in the field equipment cabinet. The camera shall be capable of switching to black and white from color when the light level drops below a programmable level.

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, structure or wall as specified in the contract documents. Adapter plates, where required, shall be provided 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 camera shall utilize digital signal processing (DSP) techniques and shall meet the following requirements:

a. Format: NTSC 1VPP @ 75 ohms, unbalanced composite.
b. Scanning: 2:1 interlace.
c. Imager: Interline transfer CCD.
d. Horizontal resolution (minimum): 460 TV lines.
e. Sensitivity: 3 lux at 1/60 second shutter speed color and 0.3 lux at 1/60 shutter speed black and white at 50 IRE and 1/60 second shutter speed.
f. Signal to Noise ratio (AGC off): 50 dB minimum.
g. White balance compensation: Automatic.
h. Back light compensation
i. Electronic shutter speeds: Auto and programmable 1/4 to 1/10,000 second with programmable setting for minimum shutter speed.

j. IR lens filter can be switched in and out automatically or manually. When filter is in, color video shall be produced. When filter is out, black and white video shall be produced. The light level that the filter shall be switched in or out shall be programmable.

k. Iris: Auto with manual override.

l. Focus: Auto with manual override.

m. Automatic gain control (AGC.)

n. Optical zoom: 3.8 - 82.8 mm (23X) for ¼” format. Other zoom ranges are subject to approval by the Engineer.

o. Aperture: f1.6.

p. Sunshield: Shroud type.

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. Capable of continuous, simultaneous pan and tilt movements and meeting the following requirements:

t. Movement: pan - 360° continuous rotation. tilt - 0° to 90°.

u. Speed: Variable from 0.1 to 20°/second and fixed as commanded by the camera controller.

v. Limit stops: To limit the range of horizontal and vertical movements limit stops shall be provided that are externally adjustable for pan and tilt.

w. Settable addresses. One-hundred (100) minimum. Each unit shall be assigned a unique address. A unit shall only respond when it is addressed.

x. Presets: Minimum of thirty-two (32) stored in non-volatile memory.

y. Dome shall be pressurized with dry nitrogen to prevent entry of dust and moisture. The enclosure shall contain a Schrader valve for recharging of the nitrogen gas.

z. 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°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.

aa. Data interface: RS-422 to the VCIU or Video Fiber Optic Transceiver with Bi-Directional Data furnished as part of other bid items.


c. Camera control: Pelco Protocol D.

d. Connectors: Video - BNC.
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**Electrical**

- Voltage: 24 VAC ±20%.
- Power (maximum): 70 VA with heater, fan and defroster turned on.

As part of this item a transformer shall be provided in the equipment cabinet to convert 120 VAC to 24 VAC. The transformer shall be rated at 100 VA minimum.

**Mechanical**

- Height (maximum): 300 mm (H) x 270 mm (Diameter).
- Weight (maximum): 7 kg.
- Mounting: Pendant.

**Environmental**

- Temperature (operating): -30° C to + 50° C ambient.
- Humidity: 0 to 95% noncondensing.
- Wind: Meet all performance requirements when subjected to a 145 kmph wind and able to withstand a 205 kmph wind.

**Power and Control Cable:** The power and control cable between the CCTV Camera Assembly and the field cabinet shall be in accordance with the CCTV equipment manufacturer’s recommendation. 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.

**Coaxial Cable:** Type RG59 Coaxial cable with a dual shield shall be used to connect the camera to either the VCIU or Video Fiber Optic Transceiver With Bi-Directional Data housed in the equipment cabinet.

**Field Controller:** Either software that runs on a notebook computer under the Windows NT operating system or a camera controller shall be provided to permit local programming and control of the camera and lens from the equipment cabinet. All programmable camera parameters shall be stored in either non-volatile memory or in a file on a notebook computer. Three copies of all software required for local operation and storage of programmable camera parameters shall be provided.

**CONSTRUCTION DETAILS:** The Contractor shall install and program the specified CCTV field equipment at locations shown in the contract documents and as ordered by the Engineer. The camera assembly 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 install the power transformer into the equipment cabinet and install and connect the control, power and coaxial cables between the camera assembly and the equipment cabinet in accordance with the manufacturer’s recommendation.

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.
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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.

Testing: The field video equipment shall not be installed until completion of the CCTV Staging Test. In addition to the testing requirements defined in the Special Notes the following testing shall be performed:

Operational Stand-Alone Test: At each field site the contractor shall demonstrate local control of all camera and pan-tilt unit functions. The video input into either the Video Fiber Optic Transmitter With Bi-directional Data or the VCIU shall be monitored to verify operability of each of the control functions. The Contractor shall provide a video monitor on which the video will be displayed. As part of this test the Contractor shall demonstrate operation of the local camera control software or controller. This test shall not be performed until all of the CCTV Field Equipment specified on the plans have been installed for the site under test.

CCTV Equipment Group Site Verification Test: A site verification test shall be performed for each of the field sites containing CCTV Equipment Groups after successful completion of the Operational Stand-Alone Test. For field locations at which the CCTV equipment interfaces with a Video Fiber Optic Transmitter with Bi-directional Data the test shall consist of the following two parts:

- Control and switching capability shall be demonstrated for each of the cameras from the hub to which the camera reports. The video shall also be monitored at this hub.
- Control and switching capability shall be demonstrated for each of the cameras from the JTMC. The video shall also be monitored at the JTMC.

For field locations installed as part of this contract at which the CCTV equipment interfaces with a VCIU, control and switching capability from central shall be demonstrated for each of the cameras with the video monitored at central. In addition, using BERTs, the capability of the two serial data channels to transmit bi-directional data along with video simultaneously shall be demonstrated.

METHOD OF MEASUREMENT: CCTV Dome Camera Assembly will be measured for payment as the number of assemblies satisfactorily installed.

BASIS OF PAYMENT: The unit price bid for each Integrated CCTV Dome Camera Assembly shall include the cost of furnishing all labor, materials, and equipment necessary to complete the work including testing.
Progress payment will be made as follows:

- Forty percent of the bid price for each CCTV Dome Camera Assembly will be paid when the Dome Camera Assembly is installed and having passed the Operational Stand-Alone Test.
- Twenty-five percent of the bid price for each Camera Assembly will be paid upon successful completion of the CCTV Equipment Group Site Verification Test.
- Twenty-five percent of the bid price for each item will be paid upon successful completion of the CCTV Subsystem Integration Test described in the Special Notes.
- Ten percent will be paid upon System Acceptance.