



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

August 31, 2010

SUBJECT: FAP Route 657 (IL 164)
Project NHCB-0657 (007)
Section (114RA)I
Henderson County
Contract No. 68828
Item No. 83, September 17, 2010 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised page ii of the Table of Contents to the Special Provisions.
2. Added pages 53 - 77 to the Special Provisions.

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

Scott E. Stitt, P.E.
Acting Engineer of Design and Environment

A handwritten signature in black ink, appearing to read "Ted B. Walschleger P.E." with a stylized flourish at the end.

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: Joseph E. Crowe, Region 3, District 4; Mike Renner; R. E. Anderson;
Estimates

TBW:DB:jc

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Revised 08/31/2010

LOCATION OF UNDERGROUND STATE MAINTAINED FACILITIES

The Contractor shall be responsible for locating all existing IDOT electrical facilities (including fire protection system water lines) prior to performing any work at his/her own expense if required. The Contractor shall also be liable for any damage to facilities resulting from inaccurate locating. The Contractor may obtain, on request, plans of existing electrical facilities from the Department.

The Contractor shall also be responsible for locating and providing protection for facilities during all phases of construction. If at any time, the facilities are damaged, the Contractor shall immediately notify the Department and make all necessary arrangements for repair to the satisfaction of the Engineer. This work shall be included in the contract bid price and no additional compensation will be allowed.

CONTRACT GUARANTEE

The Contractor shall guarantee all electrical equipment, apparatus, materials, and workmanship provided under the contract for a period of six (6) months after the date of final inspection according to Article 801.14.

All instruction sheets required to be furnished by the manufacturer for materials and supplies and for operations shall be delivered to the Engineer prior to the acceptance of the project, with the following warranties and guarantees:

1. The manufacturer's standard written warranty for each piece of electrical equipment or apparatus furnished under the contract.
2. The Contractor's written guarantee that, for a period of six (6) months after the date of final inspection of the project, all necessary repairs to or replacement of said warranted equipment, or apparatus shall be made by the Contractor at no cost to the Department.
3. The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of 6 months after final inspection of the project.

VIDEO SURVEILLANCE SYSTEM

The existing analog video surveillance cameras will be removed and replaced with a new video surveillance system consisting of IP enabled CCTV dome surveillance cameras. The proposed cameras will be installed on the existing light poles.

SYSTEM IMPLEMENTATION, EQUIPMENT INTEGRATION AND SUPPORT

The Contractor shall install the CCTV cameras at the locations indicated on the plans.

All furnished and installed components shall be subject to a 30 day burn-in period.

Added 08/31/2010

The system along with all of its components shall be fully and functionally operational before any acceptance testing will be initiated. After the system has been accepted by the Engineer, the system shall begin a thirty-day "burn-in" period immediately after the successful completion of the acceptance test. During the "burn-in" period, all components shall perform continuously, without any interruption of operation, for a period of thirty days. In the event that there are operational problems during the burn-in period, the burn-in period shall reset back to day one.

After the successful completion of the burn-in period, the system will have completed final acceptance.

The Department will program the proposed CCTV cameras and integrate the proposed components to create a fully functional video surveillance system with remote video viewing, camera control, video recording, and video archiving capabilities. The Department will integrate the proposed video surveillance system into the existing ITS system.

The Contractor shall be responsible for installing the proposed CCTV cameras on the existing light poles, installing power and network cabling in the existing video system conduits, and furnishing the proposed equipment in accordance with the plans, specifications, and manufacturers recommended practices.

This work will not be paid for separately, but shall be included in the contract bid price.

REMOVE EXISTING SURVEILLANCE CAMERA EQUIPMENT

This work shall be in accordance with Section 895 of the Standard Specifications except as modified herein.

The Contractor shall remove the following items:

Removal Items	
CCTV Dome Cameras and Mounting Brackets	2
Camera Cables (Coax and Power)	ALL

The above list should represent an accurate listing of removal items, however, it is the Contractor's responsibility to verify all quantities prior to bidding.

The Contractor shall deliver the cameras and cables to the IDOT Traffic Building, located at 1025 W. Detweiller, Peoria, Illinois. The point of contact is Paul Grant at (309) 671-4474.

The Contractor shall dispose of all other items off of the right-of-way and reflect the salvage value of this equipment in the unit bid price for this pay item.

Basis of Payment: The above work will be paid for at the contract unit price each for REMOVE EXISTING SURVEILLANCE CAMERA EQUIPMENT and shall be payment in full for removing and transporting the equipment described above, complete.

Added 08/31/2010

CLOSED-CIRCUIT TELEVISION DOME CAMERA

Description. This work shall consist of furnishing and installing an integrated Closed-Circuit Television (CCTV) Dome Camera Assembly, camera brackets, and all other items required for installation and operation. This assembly shall contain all components identified in the Materials Section and shall be configured as indicated on the plan sheets.

Materials.

The CCTV camera shall be an Axis Model Q6032-E Dome Camera Assembly for integration into the existing ITS system.

The Contractor shall provide all materials required to install the proposed camera on the existing combination mast arm assembly at the locations shown on the plan sheets.

The Contractor shall submit catalog cut sheets to the Department for all items (mounting brackets, hardware, etc.) that will be utilized for review prior to commencing work.

The camera shall meet or exceed the following specifications:

Camera

Video:	60 Hz (NTSC), 50 Hz (PAL)
Image Sensor	¼" ExView HAD Progressive Scan CCD
Lens:	3.4 – 119 mm, F1.4 – 4.2, autofocus, automatic day/night, horizontal angle of view: 1.7° - 55.8°
Minimum Illumination:	Color: 0.5 lux at 30 IRE, B/W: 0.008 lux at 30 IRE
Shutter Time (NTSC):	1/30 000 s – 0.5 s, PAL: 1/30 000 s – 1.5 s
Pan/Tilt/Zoom:	E-flip, 100 preset positions Pan: 360° endless, 0.05 – 450°/s Tilt: 220°, 0.05 – 450°/s Zoom: 35x optical zoom and 12x digital zoom, total 420x zoom Guard tour Control queue

Video

Video:	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Resolutions:	NTSC: 704x480 to 176x120, PAL: 704x576 to 176x144
Frame rate (H.264):	Up to 30/25 (NTSC/PAL) fps in all resolutions
Frame rate (M-JPEG):	Up to 30/25 (NTSC/PAL) fps in all resolutions

Added 08/31/2010

Video streaming: Multi-stream H.264 and Motion JPEG: 3 simultaneous, individually configured streams in max. resolution at 30/25 (NTSC/PAL) fps; more streams if identical or limited in frame rate/resolution; Controllable frame rate and bandwidth; VBR/CBR H.264

Image setting: Wide Dynamic Range (WDR), Electronic Image Stabilization (EIS), manual shutter time, compression, color, brightness, contrast, sharpness, rotation, aspect ratio correction, Text and image overlay, privacy mask, image freeze on PTZ

Network

Security: Password protection, IP address filtering, HTTPS* encryption, IEEE 802.1X* network access control, digest authentication, user access log

Protocols: IPv4/v6, HTTP, HTTPS*, QoS Layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS

System Integration

Application Programming: Open API for software integration, including VAPIX® from Axis Interface: Communications available at www.axis.com

Intelligent video: Video motion detection, auto-tracking

Alarm triggers: Intelligent video, PTZ position

Alarm events: File upload via FTP, HTTP and email, Notification via email, HTTP and TCP PTZ position, Local storage

Video buffer: 56 MB pre- and post-alarm

General

Casing: IP66-rated, metal casing (aluminum), acrylic (PMMA) clear dome cover pre-mounted to casing, sunshield (polycarbonate)

Processors and Memory: ARTPEC-3, 128 MB RAM, 128 MB Flash

Power Camera: High Power over Ethernet, max. 50 W, Midspan (included): AXIS T8124 High Power over Ethernet, Midspan 1-port 100-240 V AC, max. 60 W

Connectors: RJ-45 for 10BASE-T/100BASE-TX, IP66-rated RJ-45 connector kit included

Local storage: SD/SDHC memory card slot (Card is not included)

Operating Conditions:	Camera unit: -40 °C to 50 °C (-40 °F to 122 °F), Arctic Temperature Control enables camera start-up at temperatures as low as -40 °C (-40 °F)
Approvals:	EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3, EN61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, VCCI Class B, C-tick AS/NZS CISPR22, ICES-003 Class B, EN 60950-1, Midspan: EN 60950-1, GS, UL, cUL, CE
Weight:	3.5 kg (7.7 lb.)
Included Accessories:	AXIS T8124 High PoE Midspan 1-port, IP66-rated RJ-45 connector kit, clear and smoked dome cover, sunshield, Installation Guide, CD with User's Manual, recording software, installation and management tools, Windows decoder 1-user license

Environmental Enclosure/Housing

The environmental enclosure shall be designed to physically protect the integrated camera from the outdoor environment and moisture via a sealed enclosure. If the option exists in the standard product line of the manufacturer, the assembly shall be supplied with an integral sun shield. The enclosure shall be fully water and weather resistant with a NEMA 4 rating or better.

The camera dome shall be constructed of distortion free acrylic or equivalent material that must not degrade from environmental conditions. The environmental housing shall include a camera-mounting bracket. In addition, the environmental housing shall include a heater, blower, and power surge protector. An integral fitting compatible with a standard 1-1/2 in (38.1 mm) NPT pipe, suitable for outdoor pendant mounting shall also be provided.

The enclosure shall be equipped with a heater controlled by a thermostat. The heater shall turn on when the temperature within the enclosure falls below 40° F (4.4°C). The heater shall turn off when the temperature exceeds 60°F (15.6°C). The heater will minimize internal fogging of the dome faceplate when the assembly is operated in cold weather.

In addition, a fan shall be provided as part of the enclosure. The fan will provide airflow to ensure effective heating and to minimize condensation.

The enclosure shall be equipped with a hermetically sealed, weatherproof connector, located near the top for external interface with power, video, and control feeds.

CCTV Dome Camera Mounting Supports

The Contractor shall furnish and install an Axis Pole Mount Bracket T91A67 (Part Number 5017-671) for camera installation on traffic signal mast arms, light poles, and CCTV camera poles.

Mounting supports shall be configured as shown on the camera support detail plans and as approved by the Engineer. Mount shall be of aluminum construction with enamel or polyester powder coat finish. Braces, supports, and hardware shall be stainless steel. Wind load rating shall be designed for sustained gusts up to 90 mph (145 km/hr), with a 30% gust factor. Load rating shall be designed to support up to 75 lb (334 N).

Added 08/31/2010

For roof or structural post/light pole mounting, mount shall have the ability to swivel inward for servicing. The mounting flange shall use standard 1-1/2 inch (38.1 mm) NPT pipe thread.

Connecting Cables and Power Supply

The Contractor shall provide outdoor rated, CAT 5E cable. One cable shall be installed from the existing traffic signal cabinet to the proposed camera mounting location as shown on the plan sheets. The Contractor shall terminate the cable on the camera end using the IP66 rated connector that is included with the camera. The Contractor shall terminate the other end with a RJ-45 connector. This cable will be paid for separately under the pay item for CAT 5 ETHERNET CABLE.

The High POE midspan camera power supply (included with camera) shall be installed in the proposed equipment cabinet. The Contractor shall furnish and install one 15A power strip with integral surge protection in the proposed equipment cabinet for camera power.

Power Strip

The cabinet power strip shall have a minimum of six outlets and integral surge suppression that meets or exceeds the following minimum specifications:

- Let Through Voltage: <85 Volts
- Operating Voltage: 120VAC, 50/60H
- UL Suppressed Voltage Rating: 330V
- Energy Rating: 320J
- Peak Current NM/CM: 13k Amps NM, 13k Amps CM
- EMI/RFI Noise Filtration: >25-60dB

The power strip shall be wired directly to the protected power terminals on the cabinet surge arrester. The Contractor shall provide all materials required for installation.

This work shall be included in the contract bid price for the CCTV camera pay item.

Construction Requirements.

General

The Contractor shall prepare a shop drawing detailing the complete CCTV Dome Camera Assembly and installation of all components to be supplied for approval of the Engineer. Particular emphasis shall be given to the cabling and the interconnection of all of the components.

The Contractor shall install the CCTV dome camera assembly at the locations indicated in the Plans.

Programming and Testing

The Department will program and test each camera prior to installation. The Department will connect the proposed CCTV camera to the existing ITS network Ethernet switch and integrate the camera into the existing ITS video subsystem.

Added 08/31/2010

Method of Measurement. The closed circuit television dome camera bid item will be measured for payment by the actual number of CCTV dome camera assemblies furnished, installed, tested, and accepted.

Basis of Payment. Payment will be made at the contract unit price for each CLOSED CIRCUIT TELEVISION DOME CAMERA including all equipment, material, testing, documentation, and labor detailed in the contract documents for this bid item.

CLOSED CIRCUIT TELEVISION DOME CAMERA (MATERIAL ONLY)

The Contractor shall furnish one complete CCTV camera assembly with housing, mounting bracket kit, and accessories (power supplies, etc) (MATERIAL ONLY) and deliver it to the Department.

The camera shall conform to the specifications listed under the pay item for CLOSED CIRCUIT TELEVISION DOME CAMERA.

Basis of Payment: This work will be paid for at the contract unit price per each for CLOSED CIRCUIT TELEVISION DOME CAMERA (MATERIAL ONLY) which price shall be payment in full for all labor, materials, and equipment required to provide the equipment specified above and deliver it to the Department.

SUPPORT EQUIPMENT AND MAINTENANCE

The Contractor shall furnish the following equipment (MATERIAL ONLY) and deliver it to the Department:

There are no support requirements for this pay item.

- Axis Camera Station Software with 4 Camera License (MATERIAL ONLY) – Qty. 1

The camera station software shall conform to the following specifications:

Camera

Models: Compatible with Axis network video products running firmware 4.30 or higher

Number of channels: Up to 50

Video

Video compression: H.264 (MPEG-4 Part 10/AVC), MPEG-4 Part 2, Motion JPEG

Resolutions: Supports connected Axis video product resolutions

Recording frame rate: 1500 fps or more on recommended hardware

Added 08/31/2010

Audio

Audio streaming: One-way audio
Audio compression: AAC, G.711, G.726

Recording server

Security: Multiple user access levels with password protection using local or Windows domain users (Active directory)

Installation and setup: Automatic camera discovery, Efficient camera management, Powerful event configuration wizard

Recording storage: Unlimited recording database, limited only by disk Space, Record directly to local and network disks
Duration can be limited per camera to conform to local legal requirements, Fail-over recording in cameras, Locking of prioritized recordings

Client: AXIS Camera Station Client (for Windows) included for local and remote viewing, playback and administration

Live view: Camera live view Flexible live view configuration of up to 50 cameras, Support for multiple monitors, Hot-spot, camera/view sequence, site maps, web page

PTZ support: Control of PTZ and dome cameras using mouse or Joystick, Area zoom, Digital PTZ, Programmable hot-keys

Playback

Search for recordings: Search for recordings based on camera, date and Time, Timeline visualization, smart search, Bookmarks

Playback: Controllable speed or frame by frame, Graphical timeline for quick overview of events

Synchronized playback: Playback of video and audio synchronized in time from up to 4 cameras simultaneously

Export: Manual and scheduled export, Single images in JPEG format or video sequences in ASF format, Digital signature on exported recordings

Triggers & Events

Event recording: Events triggered by video motion detection, Active Tampering Alarm, AXIS Cross Line Detection, external inputs, manual trigger or system triggers, Increased quality on event recordings

Added 08/31/2010

Scheduled recording:	Schedule per camera allows customization of weekday and weekend recordings
Motion detection:	Advanced camera-based motion detection for low Bandwidth utilization
Input/output control: Alarm notification:	Advanced control of cameras' digital inputs/outputs Visual indication, audible alert, traybar notification, switch to camera/view, go to PTZ preset, email, alarm procedure, acknowledgement of alarms,
Logs:	Alarm, event and audit logs

System

Minimum system requirements:	Windows 7 Professional, Vista Business, XP professional (server and/or client), Windows 2008 Server, 2003 Server (server only), Always use the latest service packs, Microsoft .NET runtime environment (included in installation package)
Minimum computer requirements:	Client: CPU: Intel P4 or higher, 2 GHz (Intel Core 2 Quad recommended for larger systems), RAM: 1 GB (4 GB recommended for larger systems), Graphics card with full DirectX 9.0 hardware acceleration and onboard video memory of 256 MB or more
Minimum computer requirements:	Server: CPU: Intel P4 or higher, 2 GHz (Intel Xeon recommended for larger systems), 1 GB RAM (4 GB recommended for larger systems)
Recommended network:	100 Megabit network (Gigabit network recommended for larger systems)
Recommended hard disk Configuration:	At 30 fps in VGA: up to 15 cameras/hard disk

General

Languages:	English, French, German, Italian and Spanish
Licenses:	AXIS Camera Station base licenses for 4 or 10 cameras/channels to be used on one single dedicated PC/server, Additional licenses in +1, +5 or +20 up to 50 cameras/channels, One year support license included in initial base license
License registration:	Register automatically over the Internet or manually At www.axis.com within a five day grace period Added 08/31/2010

Included accessories: Installation Guide, CD with software and User's Manual

- Axis T8412 Installation Display (MATERIAL ONLY) – Qty. 1

The installation display tool shall conform to the following specifications:

Display

Color LCD Field: 3.5 inches

Resolutions: 320x240

Video

Image settings: Autosensing

Network: IP Setting Static IP address, DHCP

General

Casing: ABS plastic

Memory: 128 MB RAM (16 MB available for snapshots)

Power: 12 V DC

Battery: Canon BP-915 (7.4 V 2000 mAh), 80% capacity after 300 charge cycles, Charge time 3.5 hours, Operation time: 3 hours with PoE off, 2 hours with PoE on

Connectors: BNC Video in, RJ-45 10BASE-T/100BASE-TX PoE
IEEE 802.3af class, CAT-5, USB 2.0, PoE

Operating conditions: 0 – 50 °C (32 –122 °F), Humidity 20 - 80% RH (non-condensing)

Local Storage: SD/SDHC memory card slot (card not included)

Approvals: USA/FCC Class A, Europe/CE Class A

Dimensions (HxWxD): 170 x 99 x 38 mm (6.7" x 3.9" x 1.5")

Weight (with battery): 450 g (0.99 lb.)

Included accessories: Soft carrying case with sunshield, protective rubber sleeve, built-in stylus for touch screen, Terminal block for CAT-5, Cable, test, Ethernet cable, BNC cable, car charger 12 V DC, power supply, User's Guide

Added 08/31/2010

- Axis T8124 High POE-Midspan Accessory (MATERIAL ONLY) – Qty. 2

The power supply shall conform to the following specifications:

General

Device Type: Power injector – External

Power Device

Input Voltage: AC 100-240 V

Output connector(s): RJ-45

Power Provided: 60 Watt

Expansion / Connectivity

Interfaces: 1 x Network - RJ-45

Miscellaneous

Compliant Standards: CE, GS, UL

Basis of Payment: This work will be paid for at the contract unit price per lump sum for SUPPORT EQUIPMENT AND MAINTENANCE which price shall be payment in full for all labor, materials, and equipment required to provide the equipment specified above and deliver it to the Department.

ETHERNET SWITCH (MATERIAL ONLY)

The Contractor shall furnish an Ethernet switch complete with the accessories specified below (MATERIAL ONLY) and deliver it to the Department.

The switch shall meet or exceed the following minimum specifications:

Approved Models: Aaxeon Technologies Model LNX-500AG-T (5-Port 10/100/1000 Slim Industrial Ethernet Switch, Wide Operating Temperature) or approved equal.

Features:

- RJ-45 Port Supports Auto MDI/MDI-X Function
- Store-and-Forward Switching Architecture
- Back-Plane (Switching Fabric): 10Gbps
- Wide-Range Redundant Power Design
- Power Polarity Reserve Protect
- Overload Current Resettable Fuse Present
- Supports 4000 VDC Ethernet ESD Protection
- IP30 Rugged Aluminum Case Design
- DIN-Rail and Wall Mount Design

Standard:

- IEEE 802.3 10BaseT Ethernet
- IEEE 802.3u 100BaseTX Fast Ethernet
- IEEE 802.ab 1000BaseTX Fast Ethernet
- IEEE 802.3x Flow Control and Back-Pressure

Added 08/31/2010

- Protocol:
- CSMA/CD
- Switch Architecture:
- Back-Plane (Switching Fabric): 10 Gbps
 - Packet Throughput Ability (Full-Duplex): 14.88 Mpps@64 bytes
- Transfer Rate:
- 14,880pps for Ethernet Port
 - 148,800pps for Fast Ethernet Port
 - 1,488,000pps for Gigabit Ethernet Port
- MAC Address:
- 8K MAC Address Table
- Memory Buffer:
- 136 Kbits
- Jumbo Frame:
- 9 Kbytes
- LED:
- Unit: Power 1, Power 2, Fault
 - Port: Link/Activity, Speed
- Connector:
- 10/100/1000T 5 x RJ-45
- Network Cable:
- 10BaseT: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m)
 - 100BaseTX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
- Power Supply:
- DC 12 ~ 48V, Redundant Power with Polarity Reverse Protect Function and Removable Terminal Block
- Power Consumption:
- 5 Watts
- Reverse Polarity Protection:
- Present
- Overload Current Protection:
- Present
- Mechanical:
- Casing: IP30 Metal Case
 - Dimension (W x H x D): 30 x 140 x 95 mm (1.18 x 5.51 x 3.74 in.)
 - Installation: DIN-Rail/Wall Mountable
- Weight:
- Unit Weight: 1 lbs.
 - Shipping Weight: 1.5 lbs.
- Operation Temperature:
- Wide Operating Temperature: -40° C to 80° C (-40° F to 176° F)
- Operation Humidity:
- 5% to 95% (Non-condensing)

Added 08/31/2010

- Storage Temperature:
- -40° C to 85° C
- EMI:
- FCC Class A
 - CE EN6100-4-2/EN6100-4-3/EN6100-4-4/EN6100-4-5/EN6100-4-6
 - /EN6100-4-8/EN6100-4-11/EN6100-4-12/EN6100-6-2/EN6100-6-4
- Safety:
- UL, cUL, CE EN60950-1
- Stability Testing:
- Shock: IEC60068-2-27
 - Free Fall: IEC60068-2-32
 - Vibration: IEC60068-2-6
- Warranty:
- 5-Year Warranty
- Included Accessories:
- Mounting Brackets
 - Barrel Connector Cable
 - CD Manual/Software

The following items shall also be included with each switch:

- Power Supply – Qty. 1 (Aaxeon Model DR-45, 45 Watt, 12 Volt DC, Industrial Din-Rail Power Supply or Approved Equal)
- Ethernet Cables – Qty. 2 (Cat5E, 3 ft. length)

Basis of Payment: This work will be paid for at the contract unit price per each for ETHERNET SWITCH which price shall be payment in full for all labor, materials, and equipment required to provide the Ethernet switch and associated equipment and deliver it to the Department.

EQUIPMENT CABINET

Description. This work consists of furnishing and installing a pole mounted equipment cabinet and peripheral equipment at locations indicated in the Plans. These cabinets will be utilized to house critical electrical, optical, and communications equipment as defined in other contract pay items.

Materials. Materials shall be in accordance to the following specifications.

General. The equipment cabinet shall conform to the details shown on the plan sheet. Equipment cabinets shall be mounted and anchored on the poles and structures at locations indicated in the Plans. In addition, all mounting hardware and brackets required to install the equipment cabinet on the pole shall be stainless steel and provided by the Contractor. The mounting heights and pole diameters shall be as specified by the Engineer.

Added 08/31/2010

The cabinet shall be a NEMA 3R Single Door Enclosure, constructed from .125" thick aluminum, with nominal outside dimensions of 18" (H) x 12" (W) x 8" (D). The cabinet shall have a natural finish. The cabinet shall be large enough to accommodate one power over Ethernet power injectors (for CCTV cameras), one DIN rail mounted 5-port slim Ethernet switch, one DIN rail mounted power supply, and one six plug power strip.

The cabinet shall be furnished with a Corbin #2 slam lock, neoprene door gasket, door louvers, overhang vent slots, continuous stainless steel door hinge, interior backpanel, brackets and accessories for pole mounting, stainless steel hardware, ventilation fan with thermostat, and deluxe pleated filter. The key shall be removable in the lock position only. Two keys shall be supplied for each lock, and all equipment cabinet locks shall be keyed the same. The cabinet shall be equipped with a thermostatically controlled ventilation fan and filter.

All cables shall be labeled utilizing marking tags.

Power

The cabinet shall be equipped with a power panel that includes terminal blocks for incoming power, neutral, and ground cables, one 15A main circuit breaker, one 5A finger safe fuse holder with 5A quick acting fuse for the ventilation fan, neutral bus bar, ground bus bar, and one six outlet power strip with integral surge protection. The power panel shall include a plexi-glass safety shield that covers the power panel. The Contractor shall install a section of DIN Rail that can be used to mount the Ethernet switch and power supply in the cabinet.

Power Strip

The cabinet power strip shall have a minimum of six outlets and integral surge suppression that meets or exceeds the following minimum specifications:

- Let Through Voltage: <85 Volts
- Operating Voltage: 120VAC, 50/60H
- UL Suppressed Voltage Rating: 330V
- Energy Rating: 320J
- Peak Current NM/CM: 13k Amps NM, 13k Amps CM
- EMI/RFI Noise Filtration: >25-60dB

Electrical Service

The cabinet shall be powered off of the circuit breaker for the camera system located in the existing equipment cabinet in the pump building. The existing ground cable for the overhead lighting shall be utilized.

Construction Requirements.

The Contractor shall prepare and submit shop drawings that detail all of the components to be supplied, along with associated mounting hardware for the pole mounted equipment cabinet. The shop drawings must be approved by the Engineer prior installation of the completed cabinet in the field.

The Engineer reserves the right to inspect and/or factory test any completed cabinet assemblies prior to shipment of the material to the project site. Any deviations from these specifications that are identified during such testing shall be corrected prior to delivery of the assembly to the project site.

Added 08/31/2010

The AC power service to be run to the equipment cabinet shall be terminated. The cost of providing the AC power service connection is included in other bid items as designated in the Plans. In addition, the cabinet shall be connected to an adequate ground following the Standard Specifications.

The Contractor shall terminate any inbound and outbound fiber optic, telephone, or wireless antenna leads in the equipment cabinet as shown in the Plans. The Contractor shall terminate any twisted pair communication cable on the termination panel in the equipment cabinet as shown in the Plans. Lugs shall be installed at the end of each conductor suitable for connection to the barrier terminal blocks.

Basis of Payment: This work shall be paid for at the contract unit price each for EQUIPMENT CABINET, and shall include all equipment, material and labor required to provide and install the equipment cabinet detailed in the specifications and as shown on the Plans.

VIDEO SERVER

The Contractor shall furnish a video server (MATERIAL ONLY) complete with the accessories specified below and deliver it to the Department.

The video server shall meet or exceed the following minimum specifications:

Approved Models: Axis Communications Model Q7404 (4-Port H.264 video encoder) or approved equal.

- | | |
|--------------------|--|
| Video Compression: | <ul style="list-style-type: none">• H.264 (MPEG-4 Part 10/AVC)• Motion JPEG |
| Resolutions: | <ul style="list-style-type: none">• NTSC: 720x480 to 176x120• PAL: 720x576 to 176x144 |
| Frame rate: | <ul style="list-style-type: none">• H.264 Frame rate: 30/25 (NTSC/PAL) fps in all resolutions• Motion JPEG Frame rate: 30/25 (NTSC/PAL) fps in all resolutions |
| Video streaming: | <ul style="list-style-type: none">• Multiple, individually configurable streams per channel in H.264 and/or Motion JPEG: 3 simultaneous streams in max. resolution• at 30/25 fps from each channel; more streams if identical or limited in frame rate/resolution• Controllable frame rate and bandwidth• VBR/CBR H.264 |

Added 08/31/2010

- Image settings:
- Compression, color, brightness, contrast
 - Rotation: 90°, 180°, 270°
 - Aspect ratio correction
 - Mirroring of images
 - Text and image overlay
 - Privacy mask
 - Enhanced deinterlace filter
- Audio streaming:
- Two way, half-duplex on Channel 1
- Audio compression:
- AAC-LC 8 kHz 32 kbit/s, 16 kHz 64 kbit/s
 - G.711 PCM 8 kHz 64 kbit/s
 - G.726 ADPCM 8 kHz 32 or 24 kbit/s
- Audio input/output:
- External microphone input or line input
 - Line level output
- Security:
- Password protection, IP address filtering, HTTPS* encryption,
 - IEEE 802.1X* network access control, digest authentication,
 - user access log
- Supported protocols:
- IPv4/v6, HTTP, HTTPS*, IEEE 802.1X*, QoS layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS
- Application Programming Interface:
- Open API for software integration, including VAPIX® from Axis Communications available at www.axis.com
- Intelligent video:
- Video motion detection, active tampering alarm, audio detection
- Alarm triggers:
- Intelligent video, external inputs, video loss
- Alarm events:
- File upload via FTP, HTTP and email
 - Notification via email, HTTP and TCP
 - External output activation
 - PTZ presets
- Video buffer:
- 64 MB pre- and post-alarm per channel

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- Pan/Tilt/Zoom:
- Wide range of analog PTZ cameras supported (drivers available for download at www.axis.com)
 - 100 presets, guard tour, PTZ control queue
 - Supports Windows compatible joysticks
- Casing:
- Metal casing. Standalone or wall mount
- Processor and memory:
- 4x ARTPEC-3, 4x 128 MB RAM, 4x 128 MB Flash
- Power:
- 8-20 V DC, max. 16.1 W
- Connectors:
- 4 analog composite video BNC inputs, NTSC/PAL auto-sensing
 - RJ-45 10BASE-T/100BASE-TX/1000BASE-T
 - DC terminal block: power in 8-20 V DC, max. 16.1 W
 - 4 I/O terminal blocks with 2 configurable inputs/outputs per channel
 - 3.5 mm mic/line in, 3.5 mm line out
 - 4 RS-485/RS-422 serial ports
- Operating conditions
- 0-45 °C (32-113 °F)
 - Humidity 20-80% RH (non-condensing)
- Approvals:
- EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-1, EN 61000-6-2, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22, EN 60950-1
 - Power supply PS-P: EN 60950-1, UL, CSA
- Weight:
- 796 g (1.75 lb.)
- Included accessories:
- Power supply, mounting and connector kits, Installation Guide, CD with installation and management tools, software and User's Manual
 - 4 Windows decoder user licenses

Basis of Payment: This work will be paid for at the contract unit price per each for VIDEO SERVER which price shall be payment in full for all labor, materials, and equipment required to provide the video server described above and deliver it to the Department.

COMPUTER WORKSTATION

The Contractor shall furnish a computer workstation (MATERIAL ONLY) and deliver it to the Department.

Added 08/31/2010

The workstation shall be a HP Compaq 8000 Elite Ultra-slim Desktop PC or approved equal that meets or exceeds the following minimum specifications:

- Form Factor: Ultra-slim desktop (9.9"W x 10"D x 2.6"H) with Chassis Tower Stand and Rear Port Cover
- Operating System: Windows XP Professional (with latest service pack)
- Hard disk: 250 GB 2.5" Serial ATA, 3 Gb/s, (7200 rpm), NCQ, SMART IV or better.
- Motherboard: 1333 MHz FSB clock speed with minimum of 1 dedicated mini PCI –E slots. All slots shall support bus mastering.
 - A single Intel Core 2 Duo E8400 SIPP Processor (3.00 GHz, with 6 MB L2 cache and 1333 MHz FSB shall be provided.
 - Integrated Intel Q45 Express Chipset
 - Serial ATA II/300 controller (four channel)
 - The following ports shall be provided:
 - One 9-pin serial connector; 16550-compatible
 - PS/2 keyboard connector
 - PS/2 mouse connector
 - RJ-45 10/100/1000 NIC connector
 - Ten USB 2.0 ports
 - 1/8-inch Audio line-in miniature audio jack
 - 1/8-inch Audio line-out miniature audio jack
 - 1.8-inch Audio microphone-in miniature audio jack
 - 1/8-inch Audio headphone-out miniature audio jack
 - One Display Port (with VGA and DVI-D adapters)
 - One VGA Port
 - SD Media Reader
 - One mini PCI Express x 1
 - Drive bays: One slim line external drive bay, one 2.5 inch internal drive bay
- Memory: Minimum of 4 GB (2x2GB DIMM) of PC3-1333 MHz, non-ECC) SDRAM memory (expandable to 8 GB min).
- Optical Drive: Slim 8X SATA SuperMulti LightScribe DVD Writer (with Software and 20 LightScribe Blank DVD Media)
- Graphics: Integrated Intel Graphics Media Accelerator 4500
- Monitor: One 17" LCD Monitor shall be included (HP LA1751G)
- Pointing Device: One 3-button USB, optical scroll mouse shall be supplied.

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- Keyboard: One standard USB Windows keyboard and one mini USB Keyboard with integrated touch pad shall be supplied.
- Network Interface: Integrated Intel 82567LM Gigabit
- Warranty Three-year NBD on-site parts and labor including 24/7 telephone technical support
- Recovery Media Driver, Application Software, and Operating System Installation and/or recovery media (CD or DVD) shall be included

Basis of Payment: This work will be paid for at the contract unit price per each for COMPUTER WORKSTATION which price shall be payment in full for all labor, materials, and equipment required to provide the computer workstation and accessories described above and deliver it to the Department.

DIGITAL VIDEO DECODER

The Contractor shall furnish a digital video decoder (MATERIAL ONLY) complete with the accessories specified below and deliver it to the Department.

The video server shall meet or exceed the following minimum specifications:

Approved Models: Axis Communications Model P7701 (H.264 video decoder) or approved equal.

- Video Compression:
- H.264 (MPEG-4 Part 10/AVC)
 - MPEG-4 Part 2
 - Motion JPEG
- Resolutions:
- H.264 and MPEG-4 Part 2: All resolutions up to D1
 - (720x480 NTSC, 720x576 PAL)
 - Motion JPEG: All resolutions up to 720p (1280x720)
- Frame rate:
- 30/25 (NTSC/PAL) fps in all resolutions and all compression standards
- Video streaming:
- One stream
- Video Output:
- NTSC 720x480, PAL 720x576
 - VGA (60/75 Hz) 640x480
 - S-VGA (60/75 Hz) 800x600
 - HDTV 720p 1280x720
- Serial Commands:
- Forwarding of serial commands

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- Audio streaming:
 - One way
- Audio compression:
 - AAC-LC 8 kHz 32 kbit/s, 16 kHz 64 kbit/s
 - G.711 PCM 8 kHz 64 kbit/s
 - G.726 ADPCM 8 kHz 32 or 24 kbit/s
- Audio input/output:
 - Line level output
- Security:
 - Password protection, IP address filtering, HTTPS* encryption,
 - IEEE 802.1X* network access control, digest authentication,
 - user access log
- Supported protocols:
 - IPv4/v6, HTTP, HTTPS*, FTP, SMTP, Bonjour, UPnP,
 - SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SSL/TLS*
- Application Programming Interface:
 - Open API for software integration, including VAPIX® from Axis Communications available at www.axis.com
- Alarm triggers:
 - VAPIX alarm API
- Alarm events:
 - Notification via email
- Video buffer:
 - 64 MB pre- and post-alarm per channel
- Casing:
 - Metal casing. Standalone or wall mount
- Processor and memory:
 - TI DM6443, 128 MB RAM, 128 MB Flash
- Power:
 - 8-20 V DC, max. 8.3 W
 - Power over Ethernet IEEE 802.3af Class 3
- Connectors:
 - RCA composite video output
 - DVI-I (digital and analog) output
 - RJ-45 10BASE-T/100BASE-TX PoE
 - DC terminal block: power in 8-20 V DC, max. 8.3 W,
 - I/O terminal block : 2 preconfigured inputs/outputs and 3.3 V
 - power output
 - RS-485/ RS-422 terminal block
 - 3.5 mm audio line output, mono
- Operating conditions
 - 318 g (0.70 lb.)

Added 08/31/2010

- Approvals:
- EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024
 - FCC Part 15 Subpart B Class B, ICES-003, VCCI Class B, AS/NZS CISPR 22, EN 60950-1, KCC
- Weight:
- 318 g (0.70 lb.)
- Included accessories:
- Power supply, mounting and connector kits, Installation Guide,
 - CD with installation and management tools, software and User's Manual

Basis of Payment: This work will be paid for at the contract unit price per each for DIGITAL VIDEO DECODER which price shall be payment in full for all labor, materials, and equipment required to provide the video decoder described above and deliver it to the Department.

REMOTE POWER MANAGEMENT UNIT

The Contractor shall furnish a remote power management unit (MATERIAL ONLY) and deliver it to the Department.

The intelligent remote power management unit shall be a Para Systems (Minuteman), model RPM1601 or approved equal that meets the following specifications:

Features:

- "Smart" telephone interface allows failsafe rebooting from any telephone (cell or land line, no modem needed)
- Network administrators can configure and control RPM units through standard Web browsers using a single network IP address
- RPM technology accommodates most network and security protocols
- "Daisy-chain" as many as 15 additional RPM client nodes to each RPM master unit
- Unit allows control of individual outlets (eight 5-15 Receptacles)
- Built-in surge, spike protection, and EMI/RFI filtering

Specifications:

- Smart Telephone Call-in Function:
- Yes
- Net Control / Support
- HTTP Server & SNMP Agent TCP/IP, MIBS
- Dimensions H X W X D:
- 1.75 X 17 X 6.5 Inches
- Net Weight / Ship Weight:
- 9 lbs / 10 lbs

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- Input Connection: • NEMA 5-15P (IEC 320 P)
- Output Receptacle Qty / Type: • 8 each NEMA 5-15R (IEC 320 R)
- LAN Connection / Driver console Connection / Driver: • RJ45 / Ethernet
• DB9 / PPP + Dial-In / USB / USB Driver
- 2nd RPM Connection (Daisy Link Connection): • RJ11
• RS232 Connect Up To 15 Additional Switches
- Ring On / Reset / Off: • Yes
- Nominal / Input Voltage Range: • 115 VAC Nominal / Range 85 - 145 VAC (230 VAC Nominal / range 170 - 290 VAC)
- Input Frequency: • 43-66 Full Range
- Maximum Output: • 15 Amps 30 Amps
- Input Protection: • 15 Amp Circuit Breaker
- Spike / Surge Protection: • IEC 801-2, 801-3,801-4,801-5
- Safety / EMI Compliance: • UL, CSA FCC Class B (VDE FCC CLASS B)
- Testing Standards: • IEEE / ANSI C62.45
- Operating Temperature: • 0 To 40 degrees C
- Storage Temperature: • -15 To 50 degrees C
- Relative Humidity: • 0-95 % Non-Condensing
- Altitude: • 3,000 m (10,000 ft.) Without Derating

Basis of Payment: This work will be paid for at the contract unit price per each for REMOTE POWER MANAGEMENT UNIT which price shall be payment in full for all labor, materials, and equipment required to provide remote power management unit described above and deliver it to the Department.

CAT 5 ETHERNET CABLE

This work shall be in accordance with Sections 873, 1076, and 1088 of the Standard Specifications except as modified herein.

This work shall consist of furnishing and installing an outdoor rated CAT5E cable in existing conduits, handholes, and poles.

Added 08/31/2010

The cable shall be rated for outdoor use and conform to the following specifications:

- Outdoor CMX Rated Jacket (climate/oil resistant jacket)
- UV Resistant Outer Jacket Material (PVC-UV, UV Stabilized)
- Outer Jacket Ripcord
- Designed For Outdoor Above-Ground or Conduit Duct applications
- Cat5E rated to 350MHz (great for 10/100 or even 1000mbps Gigabit Ethernet)
- Meets TIA/EIA 568b.2 Standard
- UTP, Unshielded Twist Pair
- 4 Pairs, 8 Conductors
- 24AWG, Solid Core Copper
- UL 444 ANSI TIA/EIA-568.2 ISO/IEC 11801
- RoHS Compliant
- PE Grease (Gel Filled)

The Contractor shall terminate the cable assembly in an environmentally controlled area and test the cable and connectors prior to installing the cable in the field.

The Department will inspect and test each cable assembly.

The Contractor shall submit catalog cut sheets to the Department for review prior to commencing work.

Basis of Payment: This work will be paid for at the contract unit price per foot for CAT 5 ETHERNET CABLE, which shall be payment in full for all labor, equipment, and materials required to provide and install the cable described above, complete.

UNINTERRUPTABLE POWER SUPPLY

The Contractor shall furnish an uninterruptible power supply (MATERIAL ONLY) and deliver it to the Department.

The uninterruptible power supply shall be an APC Smart-UPS On-Line RT 1500VA 120V tower with USB & Serial Management Ports or approved equal and shall meet or exceed the following specifications:

Output:

- | | |
|----------------------------|-----------------------------|
| Output Power Capacity: | • 1050 Watts / 1500 VA |
| Max Configurable Power: | • 1050 Watts / 1500 VA |
| Nominal Output Voltage: | • 120V |
| Efficiency at Full Load: | • 89% |
| Output Voltage Distortion: | • Less than 3% at full load |

Added 08/31/2010

- Output Frequency (sync to mains):
- 50/60 Hz +/- 3 Hz user adjustable +/- 0.1
- Crest Factor:
- up to 3 : 1
- Waveform Type:
- Sine wave
- Output Connections:
- (6) NEMA 5-15R

Input:

- Nominal Input Voltage:
- 120V
- Input Frequency:
- 50/60 Hz +/- 3 Hz (auto sensing)
- Input Connections:
- NEMA 5-15P
- Input voltage range for main operations:
- 90 - 150V

Batteries and Runtime:

- Battery Type:
- Maintenance-free sealed Lead-Acid battery with suspended electrolyte, leakproof
- Typical recharge time:
- 3 hour(s)
- Typical Backup Time at Half Load:
- 20.1 minutes (570 Watts)
- Typical Backup Time at Full Load:
- 8.6 minutes (1050 Watts)
- Communications and Management:
- Interface Port(s):
- DB-9 RS-232, USB, Smart Slot
- Control panel:
- LED status display with load and battery bar-graphs and On Line, On Battery, Replace Battery, and Overload Indicators
- Audible Alarm:
- Alarm when on battery, distinctive low battery alarm, configurable delays
- Surge Protection and Filtering:
- Surge energy rating:
- 540 Joules

Added 08/31/2010

Filtering:

- Full time multi-pole noise filtering, 0.3% IEEE surge let-through, zero clamping response time, meets UL 1449

Physical:

Maximum Height:

- 17.00 inches (432 mm)

Maximum Width:

- 3.35 inches (85 mm)

Maximum depth:

- 22.00 inches (559 mm)

Net Weight:

- 60.50 lbs. (27.50 kg)

Environmental:

Operating Environment:

- 32 - 104 °F (0 - 40 °C)

Operating Relative Humidity:

- 0 - 95%

Audible noise at 1 meter from surface of unit:

- 45 dBA

Online Thermal Dissipation:

- 537.00 BTU/hr

Conformance:

Regulatory Approvals:

- CSA,FCC Part 15 Class A,UL 1778

Warranty:

- Two years repair/replacement

Basis of Payment: This work will be paid for at the contract unit price per each for UNINTERRUPTABLE POWER SUPPLY which price shall be payment in full for all labor, materials, and equipment required to provide the uninterruptible power supply described above and deliver it to the Department.

Added 08/31/2010