

# HD IP CAMERA SYSTEM MATERIAL SPECIFICATION

Ensure High Definition IP Camera System is compatible with existing architecture and conforms to the following specifications:

## A. General

### 1. General Specifications

#### a. Ensure that the camera:

- 1) Is a dome or positional type as specified in the contract.
- 2) Is compatible with encoder integral to IP camera.
- 3) Is High Definition (HD) with 1080P image quality
- 4) Has Electronic Image Stabilization
- 5) Has Compass Direction and scene presets

### 2. Standards

- a. NEMA Type 4X
- b. As a minimum, IP 66 Environmental Rating
- c. ONVIF Profile S
- d. UL Listed for outdoor use
- e. NEC

### 3. Power Supply

- a. Power: 24 VAC or PoE with 70W Power Injector
- b. Input voltage: 120 volt user selectable.
- c. UL listed and meeting NEMA 4X and IP66 standards.

### 4. Power and Communications Cables

- a. Ensure that the unit is provided with all power, control, and communications cables. Ensure they are suitable for burial underground in a duct and able to withstand wet environments.
- b. Ensure power cables provide power to Camera & network equipment, including ancillary equipment to provide proper functionality and for testing purposes. Ensure cables are of proper length as shown in the contract plans.

### 5. Head End Compatibility

- a. Ensure the provided equipment is compatible from the camera to the head end Genetec controller software and meets applicable NTCIP requirements.
- b. This requirement is solely determined by the Contractor' System Integrator based on the proposed system submitted for approval.
- c. Input voltage for the power supplies are to be 120 Volt, 60 Hz and output voltage
- d. Ensure that the units are UL listed and meet NEMA 1 standards.

### 6. Network

- a. Protocols-IPv4,IPv6,HTTP,HTTPS,FTP,SMNP,RTP,RTSP
- b. Security Access-Password Protected,2-Level Security
- c. Software Interface-Web Browser View and Setup
- d. Video has Intelligent Analytics

## B. Network Interface Box

### 1. Ensure that the network monitoring system includes the necessary kits, ports and cables designed to provide ground level, local interface to the field installed system. Ensure conformity to NEMA 4X, UL, and FCC Class B Ratings where they apply. Surface mounted RJ-45 connection box will be installed in cabinet before connection to equipment.

- a. The outdoor CCTV network port allows for the control and setup of camera when in the lowered position. Install Weather resistant RJ-45 coupler in camera housing
- b. The remote data port allows for new operating code and language files to be uploaded to camera system.
- c. The remote data port is able to receive commands from standard personal computers utilizing IP communications between the remote data port and camera system.

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- d. The enclosure and data port meets or exceeds the following design and performance specifications:
2. Data Port:
  - a. At least one RJ-45 for control, programming, and viewing
  - b. Video transmission from camera system to control equipment over Ethernet
  - c. Lock out control from head end when cable is plugged into RJ-45 jack
  - d. Weather resistant connector
  - e. Each network data port controls only one camera system
- C. Dome IP Camera System
  1. Ensure that the Dome Camera is an outdoor environmental CCTV camera dome system with a discreet, miniature camera dome system consisting of a dome drive with a variable speed/high speed pan and tilt drive unit with continuous 360° rotation, 30 x optical zoom lens with 12 x digital zoom and auto focus; and an enclosure consisting of a back box, lower dome, and a quick-install pole adapted mounting. Ensure that the unit meets NEMA Type 4X and IP66 environmental standards and is suitable for outdoor installation atop poles up to 100' high. Ensure that the unit operates at 24 VAC nominal with maximum 110 Watt power consumption.
  2. Ensure that the unit meets or exceeds the following design and performance specifications:
    - a. Dome Drive
      - (1) Pan Range: 360° continuous rotation, 45° per second
      - (2) Tilt Range: Unobstructed tilt of +2° to -92°
      - (3) Manual Control Speed: Pan speed of 0.1° to 80° per second
      - (4) PTZ Protocol: ONVIF Profile S compliant
      - (5) Automatic Preset Speed: Pan speed of 250° and a tilt speed of 100° per second
      - (6) Presets: Sixty-four preset positions with a 20-character label available for each position; programmable camera settings, including selectable auto focus modes, iris level, and backlight compensation, for each preset; command to copy camera settings from one preset to another; preset programming through control keyboard or through dome system on-screen menu
      - (7) Preset Accuracy: 0.1°
      - (8) Proportional Pan/Tilt Speed: Speed decreases in proportion to the increasing depth of zoom
      - (9) Automatic Power-Up: User-selectable to the mode of operation the dome will assume when power is cycled, including automatically returning to position or function occurring before power outage
      - (10) Zones: Eight zones with up to 20-character labeling for each, with ability to blank the video in the zone
      - (11) Motor Operating Mode: Micro step to 0.015° steps
      - (12) Motor: Continuous duty, variable speed, operating at 18 to 30 VAC, 24 VAC nominal
      - (13) Limit Stops: Programmable for manual panning, auto/random scanning, and frame scanning
      - (14) Alarm Inputs: N.O./N.C. dry contacts
      - (15) Alarm Outputs: One auxiliary Form C relay output and one open collector auxiliary output
      - (16) Alarm Output Programming: Auxiliary outputs can be alternately programmed to operate on alarm
      - (17) Alarm Action: Individually programmed for three priority levels, initiating a stored pattern or going to a pre-assigned preset position.
      - (18) Resume after Alarm: After completion of alarm, dome returns to previous programmed state or its previous position
      - (19) Window Blanking: Eight four-sided, user-defined shapes, with each side being of different lengths; window blanking setting to turn off at user-defined zoom ratio; window blanking set to opaque gray or translucent smear; blank all video above user- defined tilt angle; blank all video below user-defined tilt angle

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- (20) Patterns: Four user-defined programmable patterns including pan, tilt, zoom, and preset functions; pattern programming through control keyboard or through dome system onscreen menu
  - (21) Pattern Length: Four patterns of user-defined length, based on dome memory
  - (22) Auto Sensing: Automatically sense and respond to protocol utilized for controlling unit; including NTCIP compliant control protocols and translators
  - (23) Menu System: Built-in for setup of programmable functions in English
  - (24) Auto Flip: Rotates dome 180° at bottom of tilt travel
  - (25) Password Protection: Programmable settings with optional password protection
  - (26) Clear: Clear individual, grouped, or all programmed settings
  - (27) Diagnostics: On-screen diagnostic system information
  - (28) Freeze Frame: Freeze current scene of video during preset movement
  - (29) Display Setup: User-definable locations of all labels and displays; user selectable time duration of each display
  - (30) Azimuth/Elevation/Zoom: On-screen display of pan and tilt locations and zoom ratio
  - (31) Compass Display: On-screen display of compass heading; user- definable compass setup
  - (32) Video Output Level: User-selectable: normal or high to compensate for long video wire runs
  - (33) Dome Drive Compatibility: All dome drives are compatible with all back box configurations
  - (34) RJ-45 Jack: Plug-in jack on dome drive for control and setup of unit and for uploading new operating code and language file updates. Compatible with personal computers.
  - (35) Network Interface Compatibility: Ability to control and setup unit and to upload new operating code and language file updates through optional network interface port that is located in area of cabinet with easy access. Compatible with personal computers.
  - (36) UTP Compatibility: Ability to plug into back box an optional board that converts video output to passive, unshielded twisted pair transmission
  - (37) Fiber Optic Compatibility: Ability to plug into back box an optional third-party board that converts video output and control input to fiber optic transmission
  - (38) Third-Party Control Systems: Ability to plug in optional board that converts control signals from selected third-party controllers
  - (39) Power Consumption: Maximum 110 W
  - (40) Operating Temperature: -29° F to 122° F and capable of De-icing and operating at an ambient temperature of -13° F. within two hours of power on.
- b. Back Box and Lower Dome
- (1) Heavy Duty Pendant Environmental capable of mounting to standard lowering device.
  - (2) Connection to Dome Drive: Quick, positive mechanical and electrical disconnect without the use of any tools
  - (3) Trap Door: Easy-access trap door that allows complete access to the installation wiring and, when closed, provides complete separation of the wiring from the dome drive mechanics
  - (4) Terminal strips: Removable with screw-type terminals for use with a wide range of wire gauge sizes
  - (5) Auxiliary Connections: One Form-C relay output at <40 V, 2 A maximum, and a second open collector output at 32 VDC maximum at 30 mA
  - (6) Alarm inputs: Four
  - (7) Installation: Quick-mount wall, corner, pole, parapet, or ceiling adapter
  - (8) Cable Entry: Through a 1.5-inch NPT fitting
  - (9) Environmental Features: Factory-installed heaters, blowers, and sun shroud
  - (10) Operating Temperatures: Continuous operating range of -29.2° to 122°F

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- (11) Memory: Built-in memory storage of camera and location- specific dome settings such as presets and patterns. If new drive is installed in back box, all settings to download automatically into new dome drive
  - (12) Color: Gray, baked-on enamel powder coat with dome optically clear, impact and scratch resistant coating.
  - (13) Construction: Anti-impact, vandal resistant, dual wall aluminum enclosure with a min, 0.090-inch thick, clear polycarbonate lower dome and aluminum trim ring
  - (14) Disconnect: Quick to dome drive
  - (15) Dimensions: Pendant 10.6-13.74-inch overall length (including dome) by 8.6-11.05-inch diameter
  - (16) Weight: 14.0 lbs. max c.
- c. IP Camera Specifications
- (1) Technical Specifications
    - a. Digital Format 1080p, 1080i, 720p
    - b. Scanning System Progressive
    - c. Image Sensor 1/1.8, 1/2.8 inch CMOS
    - d. Camera Format Day/Night (IR Cut Filter)
    - e. Resolution 1,920 x 1,080
    - f. Aperature f/1.4 ->f4.6
    - g. Zoom Lens 30 X optical, 12X Digital
    - h. Zoom Speed Optical Range Minimum 2 settings:
    - i. Focus Automatic with override
    - j. Maximum Sensitivity Standard (f1.4, 1/30, 30 IRE)
    - k. White Balance Automatic with manual
    - l. Shutter Speed Automatic/override
    - m. Iris Control Automatic with manual override
    - n. Gain control Automatic/Off
    - o. Video Signal to Noise Ratio >50 dB
    - p. Dynamic Range >90db
    - q. Electronic Stabilization Integrated/Selectable
    - r. Image Enhancement Integrated/Selectable
    - s. Video Motion Detection Integrated
  - (2) IP Stream
    - a. Video Codec At least 2 of the following codecs  
H.264 Base Profile, H.265, MPEG-4
    - b. Video Streaming At least three simultaneous streams
    - c. Frame Rate At least up to 30 (depending on coding, resolution and stream configuration)
    - d. Resolutions
      - i. 1080P, 780P,D-1,VGA,CIF, 2CIF, 4CIF, ¼ CIF in addition with user selectable bit rates (constant or variable)
    - e. Supported Protocols IPv4/v6, TCP/IP, UDP/IP (unicast, Multicast IGMP), QoS, HTTPS, LDAP, UPnP, DNS, DHCP, DDNS, RTP, RTSP, NTP, SSH, SSL, and 802.1x (EAP)
    - f. Users
      - i. Unicast Up to 20 simultaneous users depending upon resolution settings (2 guaranteed streams).
      - ii. Multicast Unlimited users H.264, H.265 or MPEG-4
    - g. Security Access Availability of Multi level security features for accessing the network, the camera and the data channel with two levels password protection.
    - h. Software interface Web browser view.
    - i. Functions and features

## HD IP CAMERA SYSTEM MATERIAL SPECIFICATION

- i. Network Based Control and Configuration
  1. Network based full camera Control and Configuration capabilities over the network. Management functions such as controlling Camera's Pan/Tilt and zoom operation, Presets, tours and alarm setting virtually from anywhere and remotely.
  2. Quality of Service configuration for fast network response to PTZ data and images, managing delay, jitters, bandwidth and packet loss parameters for predictable results.
- ii. Flexibility of accessing Video
  1. Access of the video must be by using secure web browsing, or manufacturer software or by using third party software.
  2. Additionally, IP camera must be compatible to operate with Genetec NJDOT Video Management Software's CCTV Controller, PTZ Control, NJDOT Video Management software systems.
  3. If required capable of local storage via SDXC, SD or micro SD card
- iii. Certifications and Approvals
  1. Electro Magnetic Compatibility (EMC): Complies with FCC part 15, ICES-003, and CE regulations.
  2. Product safety: Complies with UL, CE, CSA, EN, and IEC Standards.
    - a. Environmental: IP66 for Pendant

### D. Positional IP Camera

1. Camera with PTZ Unit
  - a. Ensure that the Positional Camera conforms to the aforementioned requirements in Section C.2.c. with an integrated environmental PTZ control unit with receiver/driver. The Positional Camera is to be mounted on the pole top plate.
  - b. Ensure that the unit meets NEMA 4X and IP 66 environmental standards and that the unit includes, meets, or exceeds the following design and performance specifications:
2. Mounting: Internal cabling and easy attachments for quick mounting.
3. Camera/lens package: Pre-installed and manufactured tested camera/lens
4. Heater/defroster: Suitable for outside environment with heater/defroster package.
5. Pan/tilt drive unit: High speed, utilizing high speed stepper motors, capable of pre-set pan speeds of up to 100° per second and tilt speeds of 30° per second in wind speeds of up to 50 mph, and pre-set speeds of 50° per second in wind speeds up to 90 mph.
6. Pan speeds: Variable standard up to 40° per second while sustaining wind speeds of up to 90 mph.
7. Tilt speeds: 20° per second while sustaining wind speeds of up to 90 mph.
8. Weight: Up to 25 lbs.
9. Pre-wired: Power input, camera, lens, heater, and window defroster functions.
10. Operating voltage: 24VAC from a 120VAC 60Hz source.
11. Power consumption: Maximum of 160W
12. Operating temperature: -29°F to 122°F and capable of de-icing and operating at an ambient temperature of -13°F within two hours of power on.
13. Pan rotation: 360° continuous and a tilt range of +40° to -90° from horizontal.
14. Pre-sets: 64 positions with a preset accuracy of 1/2° utilizing electronic limit stops.
15. PTZ Protocol: Mandatory NTCIP 1205 Camera Control, ONVIF Profile S Compliant
16. Construction/Finish: extruded and sheet aluminum; stainless steel hardware; powder-coated grey aluminum finish
17. Viewing window: 0.23" min. thick, optically clear impact and scratch resistant coating
18. Sun Shield Included