



R G Architects, LLC

200 West Main Street
Middletown, DE 19709
302.376.8100
302.376.9851 fax
www.rgarchitects.net

RGA No. 20040
March 9, 2023

ADDENDUM NO. 2

STATE OF DELAWARE OMB/DFM
MJ3804000101B
**DOC – JTVCC – Vocational Skills Training
Building Renovations**
1181 Paddock Road, Smyrna, DE 19977

R G Architects
200 West Main Street
Middletown, DE 19709
Phone: 302-376-8100 (phone)
Fax: 302-376-9851 (fax)
Email: jim@rgarchitects.net

BIDS DUE:

Wednesday, March 15, 2023, at 2:00 p.m.
Bids will be opened and read aloud.

LOCATION:

**THOMAS COLLINS BUILDING
Division of Facilities Management Office
540 S. DuPont Highway, Suite 1 (Third Floor)
Dover, Delaware 19901**

NOTICE TO ALL BIDDERS

1.0 GENERAL NOTES:

- 1.1 Bidders are hereby notified that this Addendum shall be and hereby becomes part of their Contract Documents and shall be attached to the Project Manual for this project.
- 1.2 The following items are intended to revise and clarify the Drawings and Project Manual and shall be included by the Bidder in their proposal.
- 1.3 Bidders shall verify that their Sub-bidders are in full receipt of the information contained herein.

2.0 Revisions to the SPECIFICATIONS:

- 2.1 None at this time.

3.0 Revisions to the DRAWINGS:

- 3.1 None at this time.

ADDENDUM # 2

4.0 QUESTIONS:

Q1 – Can you provide the original installer of the existing security camera system?

Answer: The original installer of the existing security camera system is Assurance Media, LLC.

Q2 – Can a video surveillance/security camera spec be provided?

Answer: Please see the attached 28 23 01 Video Surveillance specification for information.

Q3 – B-1 & B-2 in the furniture schedule reads "by General Contractor". Will all the other furniture listed be provided and installed by others?

Answer: The GC's scope for equipment is to provide B-1, Steel Brick Laying Rack & B2, Mobile Footing Base. All other furniture shown on the furniture schedule will be provided by the Owner under a separate contract.

5.0 ATTACHMENT LIST:

4.1 None at this time.

End of Addendum No.2

SECTION 28 23 01

VIDEO SURVEILLANCE

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Cameras.
- B. Control equipment.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.
- B. Canadian ICES-003
- C. Consultative Committee for International Radio (CCIR)
- D. Conformity for Europe (CE)
- E. Electronic Industry Association (EIA)
- F. Federal Communications commission (FCC)
- G. Joint Photographic Experts Group (JPEG)
- H. National Television Systems Committee (NTSC)
- I. Phase Alternation by Line (PAL)
- J. Underwriters Laboratories Inc. (UL)

1.03 SYSTEM DESCRIPTION

- A. Description: Provide video communications between points of surveillance indicated on Drawings and central monitoring station.
- B. The intent of this document is to specify the minimum criteria for the design, supply, installation, and activation of the Pro-Watch Video Manager Enterprise Digital Video Network Recording System (Or Equal), hereinafter referred to as the System, which shall be a modular

and network enabled security management system. The System shall be capable of handling large organizations with multiple remote sites to include digital video management & recording that allows for easy expansion or modification of inputs and remote control stations. This video manager shall be capable of complete data level integration to the new Pro-Watch Access Control and Pro-Watch Video Management Systems to provide additional functionality and efficiency that shall also be capable of operating independently. The System shall offer the latest in digital technology, providing unparalleled stability, reliability, security, and ease of use, with advanced algorithms, fast capture rates at high resolution, and a unique flexible Graphical User Interface (GUI).

1.04 SUBMITTALS

- A. Shop Drawings: Indicate electrical characteristics and connection requirements, including system wiring diagram.
- B. Product Data: Provide showing electrical characteristics and connection requirements for each component.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- D. Project Record Documents: Record actual locations of cameras and routing of television cable.
- E. Operation Data: Instructions for starting and operating system.
- F. Maintenance Data: Routine trouble shooting procedures.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.
- C. Supplier Qualifications: Authorized distributor of specified manufacturer with minimum three years documented experience.
- D. Products: Furnish products listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and indicated.
- E. Upon completion of commissioning the contractor shall provide a check out report.

1. Checkout Report: The Contractor shall provide the Owner with a checkout report for each Network Video Recording System. The report shall include:
 - a. A complete list of every device
 - b. The date it was tested, and by whom
 - c. If retested, the date it was retested, and by whom
 - d. The final test report shall indicate that every device was tested successfully

1.06 WARRANTY

- A. General: The warranty period shall be a minimum of twenty four (24) months from the acceptance date of the system.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. General: Delivery, storage, and handling of the Network Video Recording System shall be in accordance with the manufacturer's recommendations.
- B. Ordering: The manufacturer's ordering instructions and lead-time requirements must be followed in order to avoid installation delays.
- C. Delivery: The Network Video Recording System shall be delivered in the manufacturer's original, unopened, and undamaged container with identification labels intact.
- D. Storage and Protection: The Network Video Recording System shall be stored and protected from exposure to harmful weather conditions and at the environmental conditions recommended by the manufacturer.

1.08 MAINTENANCE

- A. Preventative Maintenance Agreement during warranty: The Contractor shall provide preventative maintenance during the warranty period. Maintenance shall include, but not be limited to:
 1. Labor and materials, at no additional cost, to repair the Network Video Recording System.
 2. Labor and materials, at no extra cost, to provide test and adjustments to the Network Video Recording System.
 3. Regular inspections.
 4. Any and all software updates.

1.09 TRAINING

- A. Operator training shall be conducted for a maximum of 4 sessions, with a session length of 4 hours at the customer's site.

- B. Training shall include, but not be limited to the Digital Video Manager and Network Recording System configuration, operation, and diagnostics.

PART 2 - PRODUCTS

2.01 CAMERAS

A. Manufacturers:

1. Honeywell Video Systems: www.honeywellvideo.com.
2. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fixed Interior Camera - Honeywell HD4MDIP 720p network true day/night rugged fixed mini-dome camera:

1. Shall provide excellent color performance in low light, down to 0.6 lux. The camera shall incorporate advanced circuitry allowing for changeover to monochrome, providing monochrome performance in extremely low light down to 0.25 lux and DNR (digital noise reduction) set to "on". The automatic changeover mechanism shall incorporate a movable IR cut filter that is user selectable on or off by means of a menu selection.
2. Shall also include an electronic shutter, and automatic gain control (AGC) for operation in a wide range of lighting conditions. The AGC shall have a range of 10 dB to 40 dB, increasing the camera's sensitivity automatically when the ambient light level drops.
3. Shall also transmit images in MPEG-4 compression at 1280 X 720, 800 X 450, 640 X 360, 320 X 180: 30 frames per second (NTSC) and 25 frames per second (PAL). MJPEG compression at 640 X 360: 15 frames per second (NTSC) and 15 frames per second (PAL) and 320 X 180: 30 frames per second (NTSC) and 25 frames per second (PAL). The bit rate for the MPEG-4 stream can be set to constant or variable bit rate. The bit rate for the MJPEG stream can be set to constant or variable bit rate.
4. Shall also offer video access form a web browser and include a web based graphical user interface that provides complete control of the camera's settings. The HD4MDIP 720p network true day/night rugged fixed mini-dome camera shall come standard with camera sabotage or tampering detection and video motion detection. The three (3) forms of sabotage or tampering detection are camera blurring, camera blinding, and change of scene. There are five (5) user select VMD (video motion detection) settings.
5. Shall come standard with an Ethernet connector for network connectivity, a 2 pin power connector for a separate 24VAC power supply, a 8 pin alarm and audio connector; and a BNC connector that provides full time analog video output.
6. Shall permit 1 user in simultaneous unicast; 1 administrator with full control of the camera and 1 guest with a live view of the video from the camera.
7. Shall include support for the following protocols: IPv4, HTTP, TCP, RTSP, RTP, UDP, IGMP, RTCP, FTP, ICMP DHCP, Bonjour, ARP, Telnet and DNS.
8. Shall include a switching power supply that accepts 24 VAC and Power Over Ethernet (IEEE 802.3af). The power consumption shall be no more than 3.5 watts.
9. Shall have a signal to noise ratio of 50 dB with the AGC off.
10. Shall incorporate auto-tracking white balance to constantly monitor the light and adjust its color. The ATW setting shall be the default setting and have a color temperature range of 2800 to 7500K. The ATW-Wide setting shall have a color temperature range of 2800 to

11000K. To allow the image to be viewed properly on a standard monitor, the camera's default gamma value must be 0.45. A service/monitor cable is included for easy on-site adjustments of the Vari-focal Auto Iris lens. The indoor rugged fixed mini-dome system shall provide multiple methods of installation including: surface mounting onto ceiling or wall, as well as to a standard 4S deep electrical box. An adapter plate is also provided for additional support when mounting to ceiling tiles, drywall or 4S deep electrical box.

11. Contractor shall provide any and all necessary mounting hardware to allow for manufacturer approved mounting. This shall include, but not be limited to, the HD4-WK and the HD4-PK.

C. Fixed Exterior Camera - Honeywell HCD554IP series body style network true day night camera:

1. Shall provide excellent color performance in low light, down to 0.6 lux. The camera shall incorporate advanced circuitry allowing for changeover to monochrome, providing monochrome performance in extremely low light down to 0.4 lux. The automatic changeover mechanism shall incorporate a movable IR cut filter that is user selectable on or off by means of a menu selection.
2. Shall also include an electronic shutter, and automatic gain control (AGC) for operation in a wide range of lighting conditions. The AGC shall have a range of 10 dB to 30 dB, increasing the camera's sensitivity automatically when the ambient light level drops.
3. Shall also transmit images in MPEG-4 compression at 4CIF, 2CIF, CIF, 704x480 (NTSC) and 704x576 (PAL) resolutions and 30 frames per second (NTSC) and 25 frames per second (PAL). The bite rate for the MPEG-4 stream can be set to constant or variable bit rate.
4. Shall also offer video access form a web browser and include a web based graphical user interface that provides complete control of the camera's settings.
5. Shall come standard with camera sabotage or tampering detection. The three (3) forms of detection are camera blurring, camera blinding and change of scene. The network true day night camera shall come standard with an Ethernet connector for network connectivity, a 3 pin power connector for a separate 12VDC/24VAC power supply, a 4 pin alarm connector for connecting one input alarm and one output alarm; and a BNC connector that provides full time analog video output. The network day night camera shall support bidirectional audio communication between the camera and a recording console. The network camera provides two (2) 3.5mm mono phone jacks, one for line-in and one for line-out. The network true day night camera shall permit 5 users in simultaneous unicast; 1 administrator with full control of the camera and 4 guests with a live view of the video from the camera.
6. Shall provide multiple user access levels with password protection. The network day night camera shall support bidirectional audio communication between the camera and a recording console. The network camera provides two (2) 3.5mm mono phone jacks, one for line-in and one for line-out. The network true day night camera shall permit 5 users in simultaneous unicast; 1 administrator with full control of the camera and 4 guests with a live view of the video from the camera.
7. Shall provide multiple user access levels with password protection. The network true day night camera shall include support for the following protocols: IPv4, HTTP, TCP, RTSP, RTP, UDP, IGMP, RTCP, FTP, ICMP DHCP, Bonjour, ARP, DNS.

8. Shall include a switching power supply that accepts 12VDC, 24VAC and Power Over Ethernet (IEEE 802.3af). The power consumption shall be no more than 8.0 watts. The camera shall have a signal to noise ratio of 50 dB with the AGC off.
9. Shall incorporate auto-tracking white balance to constantly monitor the light and adjust its color. The automatic white balance ranges shall be selectable using the On Screen Menu. The ATW setting shall be the default setting and have a color temperature range of 2800 to 7500 K. The ATW-Wide setting shall have a color temperature range of 2800 to 11000 K. To allow the image to be viewed properly on a standard monitor, the camera's default gamma value must be 0.45.
10. Contractor shall provide any and all necessary mounting hardware to allow for manufacturer approved mounting. Contractor MUST provide (1) HLD5V50DNL 5-50mm Lens and (1) HHC12WM2 wall mount with Heater and Blower (or equivalent).

D. Exterior PTZ - Honeywell High-Speed Digital/IP PTZ Dome ACUIX HDXGNWDCW:

1. Shall transmit images in MPEG-4 compression at 4CIF, 2CIF, CIF, 704x480 (NTSC) and 704x576 (PAL) resolutions and 30 frames per second (NTSC) and 25 frames per second (PAL).
2. The bit rate for the MPEG-4 stream can be set to constant or variable bit rate. Shall transmit a secondary Motion JPEG (M-JPEG) video stream simultaneously with the MPEG-4 stream. The resolution and frame rate for both streams is user adjustable.
3. Shall come standard with camera sabotage or tampering detection.
4. The three (3) forms of detection are camera blurring, camera blinding and change of scene. The PTZ includes a web based GUI that provides complete control of the Digital/IP PTZ Dome's settings.
5. Shall permit five (5) users in simultaneous unicast, and provide multiple user access levels with password protection.
6. Shall offer video access from a web browser. The web browser shall offer live viewing for up to five (5) users with full control of all camera settings available to the administrator.
7. Shall supports the following Protocols: IPv4, HTTP, TCP, RT S P, RT P, UDP, IGMP, RT C P, FTP, ICMP DHCP, Bonjour, ARP, DNS.
8. Shall utilize a 1/4" Progressive Scan CCD with a minimum horizontal resolution of 540 TVL (NTSC) or 530 TVL (PAL).
9. Must provide sharp, detailed images down to 0.5 lux color and .05 lux monochrome. When switching to monochrome mode, the camera must automatically remove the IR cut filter when necessary, which will increase the infrared sensitivity. When enough ambient light is available to produce an acceptable color image, the camera must automatically enable the IR cut filter.
10. Must also utilize WDR technology, allowing for detail to be captured accurately even in high contrast scenes.
11. Must utilize Electronic Image Stabilization with a stabilization ratio of at least 12 dB.
12. Shall provide for continuous auto focus, when the scene requires extra-fine control, the dome must allow the operator to override the auto focus settings. Auto iris with manual override must also be standard.
13. Shall provide internal synchronization of the video signal, or line-lock with an adjustable vertical sync-phase by means of an on-screen menu. The dome must automatically adjust pan and tilt speed in proportion to the zoom position for greater control. The same amount of picture shall appear to move across the monitor regardless of the zoom factor. Manual

pan speeds must range from 0.1° to 480° per second, and manual tilt speeds must range from 0.1° to 240° per second. The operator shall have the ability to program the maximum manual speeds to be no more than 120°, 240°, or 480° per second for pan, and 60°, 120°, or 240° per second for tilt. The speed to preset shall be no less than 480° per second, with a maximum preset recall time of less than ½-second. In addition, a digital zoom label shall be available on the same line as the camera ID to display the current digital zoom magnification. The operator must have the ability to turn both IDs on or off. The operator must also have the option of displaying crosshairs on the video for precise positioning. The operator shall also have the ability to enable the dome for a -5° tilt limit degree tilt limit, allowing the unit to view slightly above the horizon.

14. Shall be able to display the pan azimuth and the tilt elevation/declination, in degrees, on the video. The High-Speed Digital/IP PTZ Dome shall feature on-screen menus for programming dome parameters.
15. Shall support a minimum of one hundred forty (140) in Diamond Protocol and one hundred thirty-three (133) in VCL protocol/Maxpro mode programmable preset positions, with a preset accuracy of less than one-tenth of a degree ($<1/10^\circ$).
16. Shall include a “Still Shot™”, feature to “freeze” the video between presets. When an operator calls a preset position, the video and preset title must remain until the dome arrives at the next preset and its video and title is displayed. An asterisk (*) must appear on the same line as the camera ID to indicate when the video is frozen. The operator must have the ability to turn this feature on or off.
17. Shall include sixteen (16) PTZ mimic tours. The operator shall perform a series of pan, tilt, zoom, and focus movements that the dome must “learn”, when the pattern is recalled, the dome automatically repeats the movements.
18. Must support up to sixteen (16) programmable preset tours, each with sixty-four (64) preprogrammed positions. Each position can include a preset position, the speed, in degrees, in which the dome will go to the preset position, and the dwell time, or how much time the dome waits before going to the next preset position. The tour can be programmed to run only once, or to run continuously until halted by the operator. All programming of preset tours shall be done utilizing simple on-screen menus. In order to quickly identify specific areas or scenes an operator is viewing, the PTZ camera shall contain a minimum of sixteen (16) sector IDs, with a 24-character on-screen label associated with each sector. The sector label must be displayed whenever the dome is within the programmed sector. If the dome is viewing overlapping sectors, the on-screen label shall sequence between the two titles at one and one-half (1½) second intervals.
19. Shall include programmable privacy zones. To prevent unauthorized users from programming or deleting privacy zones, the privacy zones shall be password protected with user-defined passwords of up to fourteen (14) alphanumeric characters. The PTZ camera shall incorporate flash memory to protect the programming for the privacy zones if power is lost. The flash memory shall retain the programming for a minimum of twenty (20) years.
20. Must support auto-homing to activate a video guard tour, PTZ pattern, or a preset position after a specified period of inactivity, programmable from one (1) to ninety-nine (99) minutes.
21. Shall include a “flashback” feature, allowing the operator to recall the last position observed, whether in manual, video guard tour, or PTZ tour mode.
22. Shall also incorporate a “freeze” function, allowing the operator to “freeze” and “unfreeze” the video signal with a single keyboard command.

23. Shall include four (4) on-board alarm inputs for normally open or normally closed dry contacts. The dome shall have the ability to go to a preset position, start a video guard tour, or start a PTZ pattern when an alarm occurs.
24. Shall also upload camera control settings to a replacement camera if needed. The uploading and downloading process shall use the 2-wire, RS485 data lines already connected to the PTZ camera. All uploading and downloading of these settings shall take place without losing use of the camera or causing disruption of normal business operation. Storage of the settings in an electronic file at the head-end system offers the ultimate in protection of the settings because any power anomalies that could cause damage to the camera could also damage the housing or backbox.
25. Shall contain a built-in intelligent receiver for RS485 Unshielded Twisted Pair (UTP) operation. RS485 UTP operation must allow for up to thirty-two (32) domes to be daisy-chained at a maximum of 4000 feet (1200 meters) using the appropriate cable. VCL protocol for up-the-coax (UTC) operation using coaxial cable shall be standard, with a recommended maximum distance of 1000 feet (300 meters).
26. Shall offer active transmission of video over unshielded category five (CAT 5) type cable to a compatible unshielded twisted pair receiver.
27. The PTZ tracking system shall provide the ability to adjust the Unshielded Twisted Pair (UTP) on-board active UTP transmitter circuitry to compensate for normal video signal loss associated with extended cable runs. These adjustments shall be made via the on-screen menu without the need to make manual adjustments to the camera itself. This active compensation circuitry shall provide coaxial cable quality video over UTP cable lengths of at least 1200 feet (368 meters). The manufacturer of the dome shall offer compatible twisted pair video receivers. The manufacturer of the dome shall offer compatible digital video recorders and digital video management software and hardware.
28. The PTZ Dome shall be available in indoor configurations designed for installation in soft and hard ceilings, and pendant configurations. The bottom domes must be available in vaporized gold, smoke and clear finishes. Trim rings must be available in black, white or gold finishes.
 - a. The PTZ Dome shall be available in a housing specifically designed for installation in an outdoor environment, with an integral resistive type thermostat-controlled 24VAC heater and blower to maintain a sufficient operating temperature. Built-in power isolation and lightning surge protection must also be standard. The bottom domes shall be designed to blend in with building aesthetics and shall be available in vaporized gold, smoke and clear finishes. Available mounting options shall include pendant, wall, roof, and parapet, as well as pole and corner adapters.
29. The PTZ Dome shall be available in a vandal-resistant ruggedized housing specifically designed for installation in indoor or outdoor environments where a tamper-resistant, vandal-resistant or extremely rugged camera is required. This vandal-resistant ruggedized camera shall come standard with an integral resistive type thermostat-controlled 24VAC heater and blower to maintain a sufficient operating temperature. The housing shall be IP66, NEMA 4X and UL50 rated. Built-in power isolation and lightning surge protection must also be standard. The bottom domes shall be designed to blend in with building aesthetics and shall be constructed of vacuum-formed, optically-graded acrylic available in smoke and clear finishes. The camera shall have an integral bracket that permits both wall and ceiling mounting with no other brackets needed. This integral bracket shall work with pole and corner adapters offered in the ACUIX line.

2.02 CPU/NETWORK VIDEO RECORDER

A. HES4SCSP - Honeywell Enterprise NVR (or equal)

1. 2 RU Rack mountable
2. Core 2 Quad 2.33 MHZ
3. 4MB L2
4. 8GB RAM
5. 2x500 GB OS HD
6. 480 W Power Supply
7. DVD-RW
8. 2x GIG Ethernet ports
9. SCSI
10. Windows IP OS

B. HEIPSWL (Honeywell or equal)

1. Server Software License with 1 TB Ring buffer license

C. Storage array: HE540RA8 (Honeywell or equal)

1. Hard Disk RAID Array - RAID5
2. All network video recorders (NVR'S) shall be based on the Honeywell Enterprise platform. All recorders shall be configured to store video at the cameras highest resolution possible for 7.5 frames per second with minimum retention period of 30 days. Each recorder shall have a minimum of 20% spare capacity for future growth while keeping 30 day retention period without adding additional hard drives. Cameras will record 24 hours a day, 7 days a week.

2.03 WORKSTATION AND OTHER SOFTWARE REQUIREMENTS (PROVIDE QUANTITY AS DEFINED)

A. HNMSWCL (Provide 2) (Honeywell or equal)

1. Client License for Pro-Watch Video Manager (or Equal).

B. HNMCLCAL (Provide 2) (Honeywell or equal)

1. Pro-Watch Video Manager Client workstation SQL 2010 access license to use with IP Engine Adapter (or Equal).

C. SSAHNMW1 (Provide 2) (Honeywell or equal)

1. Software Service Agreement for (1) client license

D. HNM64 (Provide 1) (Honeywell or equal)

1. Pro-Watch Video Manager channel adapter, 64 additional cameras (or Equal).
- E. HNMENT128 (Provide 1) (Honeywell or equal)
1. Pro-Watch Video Manager Enterprise Adapter, 128 channels (or Equal).
- F. PRO-WATCH VIDEO MANAGER WORKSTATION (PROVIDE A MINIMUM OF 2)
1. Core i7 - 3820 Processor (10M cache, 3.6 GHz)
 2. 8 GB RAM
 3. 8 USB Ports
 4. Mouse and Keyboard
 5. 500 GB Hard Drive
 6. 24" Widescreen SVGA Monitor with 1900x1080 Resolution (monitors per workstation shown on drawings)
 7. Communication Ports
 8. 10/100/1000 GB Network Card
 9. Switching Equipment: Sequential switcher with 4 positions and motion detectors for automatic alarm call up.

2.04 ELECTRICAL POWER REQUIREMENTS

- A. The Digital Network Video Recording System components must have the following electrical specifications:
1. Power Requirement..... 100-240 VAC (50Hz/60Hz)

2.05 ENVIRONMENTAL CONDITIONS

- A. The Digital Network Video Recording System shall be designed to meet the following environmental conditions:
1. Operating Temperature.....40°-104°F (5° - 40° C) non condensing
 2. Emissions.....CFR 47 Part 15 Subpart B EN55022,
EN610000-3-2, EN610000-3-3V-3, CISPR 22
 3. Immunity.....EN55024
 4. Safety.....UL60950,NWGQ(7), IEC60950, IEC
60825-1:2001

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Submission of a proposal confirms that the contract documents and site conditions are accepted without qualification unless exceptions are specifically noted.

- B. The site shall be visited on a regular basis to appraise ongoing progress of other trades and contractors, make allowances for all ongoing work, and coordinate the requirements of this contract in a timely manner.
- C. The Digital Network Video Recording System must be inspected before installation, and shall be free of any cosmetic defects or damage.

3.02 PREPARATION

- A. Prior to installation, the Digital Network Video Recording System shall be configured and tested in accordance with the manufacturer's instructions.

3.03 INSTALLATION

- A. The Digital Network Video Recording System must be installed, programmed, and tested in accordance with the manufacturer's instructions.
 - 1. In order to ensure a complete, functional Digital Network Video Recording System, for bidding purposes, where information is not available from the Owner upon request, the worst-case condition shall be assumed.
 - 2. Interfaces shall be coordinated with the Owner's representative, where appropriate.
 - 3. All necessary back boxes, racks, connectors, supports, conduit, cable, and wire must be furnished and installed to provide a complete and reliable Digital Network Video Recording System installation. Exact location of all boxes conduit, and wiring runs shall be presented to the Owner for approval in advance of any installation.
 - 4. All conduit, cable, and wire shall be installed parallel and square with building lines, including raised floors areas. Conduit fill shall not exceed forty percent (40%). All wires shall be gathered and tied up to create an orderly installation.

3.04 SYSTEM PERFORMANCE

- A. The Digital Network Video Recording System shall consist of two major (2) major components:
 - 1. Digital Video Servers - These will receive, store, and serve back recorded or live digital video
 - 2. RAID arrays - These will store all video data associated with the Network Video Recording System.
- B. The Digital Video Servers shall include, as a minimum, the following features/functions/specifications:
 - 1. The Digital Video Server shall be optimized and designed for Microsoft Windows 7, offering unparalleled stability, security, and ease of use, and shall allow the user to fully create and edit all network settings available.
 - 2. The Digital Video Server shall be capable of penta-plex user operations simultaneously. This includes live viewing, recording, playback, archiving of video data to an external

storage device, and handling the exchange of data between the Digital Video Server and a remote workstation.

3. The Digital Video Server shall be compatible with Local Area Networks (LAN) such as Ethernet, Token Ring, cable modems, DSL, FDDI, IP over ATM, Wireless, and ATM-emulated LAN's.
4. The Digital Video Server shall be pre-configured with an IP address and subnet mask to allow for installation in many IP settings without the need to reconfigure TCP/IP settings.
5. The number of Digital Video Servers shall be scalable within a network to allow for handling of any size installation.
6. The Digital Server shall be able to detect the loss of any components that constitute the Digital Network Video Recorder and trigger an alarm.
7. Each Digital Video Server shall be capable of receiving and recording a minimum 24 channels of 720p or 1280 x 720 resolution video streams with simultaneous real time viewing of all 24 live or recorded channels.
8. The Digital Video Server shall be capable of concurrently recording 30 frames per second on all inputs, regardless of resolution setting including 702p. This includes the odd and even fields for each image.
9. The Digital Video Server shall also allow the user to customize the MPEG 2 compression settings using the following parameters:
 - a. GOP mode: I, IP, IBP, IBBP
 - b. GOP Size: 1-25
 - c. Rate of Motion: Still, Standard or Motion
 - d. Compression bitrate: 0.5 Mbps to 15 Mbps
 - e. Frame rate reduction: a factor of 1 to 25 for PAL and a factor of 1 to 30 for NTSC
 - f. The Digital Video Server shall use Alpha software technology and be administered through a Graphical User Interface (GUI). This GUI will also be replicated for use in remote client locations.
 - g. The Digital Video Server's main video viewing screen shall be capable of showing 1, 4, 9, or 16 split salvos of live or recorded video. These are standard presets, but can be customized to the user preferences.
 - h. The Digital Video Server shall allow the user to adjust the resolution, quality, sensitivity, and the bitrate at which each camera will record. These adjustments shall be configurable per video input.
 - i. The digital video server shall be capable of adjusting the contrast, brightness, and saturation settings for each camera independently or interdependently through software.
 - j. The Digital Video Server shall provide the option of playing back only the even or only the odd fields of each image to reduce the effect of interlacing in high motion video.
 - k. The Digital Video Server shall be capable of saving user selected video clips as a Safe Data Container (SDC) that is watermarked and tamper resistant. These SDC can then be backed up to DVD via a DVD-RM.
 - l. The Digital Video Server shall record a minimum of 32 channels of stereo audio. These audio channels can be independent from the video channels that are handled by the Digital Video Server.
 - m. The Digital Video Server shall be connected to SCSI RAID 5 storage. Each Digital video server shall be capable of supporting 6 RAID Arrays (3 per SCSI channel).

- n. The Digital Video Server must be housed in a high-performance, steel case. The Digital Video Server shall be two (2) rack units (2U) high, and be designed to fit into a 19 inches wide EIA rack. The 2U server will be 21 inches.
 - o. The 2U Digital Video Server shall not have the option of using internal RAID for video data storage.
10. The Digital Video Server shall have a minimum of the following hardware components: (see section 2.01)
 11. The Digital Video Server shall have the minimum standard PC rear panel connections such as PS/2 mouse, PS/2 keyboard, USB ports, SVGA monitor output, parallel printer port, and dual RJ-45 connectors.
 12. The Digital Video Server must include an alarm log to record and display information pertaining to alarm events, an event log to record and display information pertaining to user logins, digital server reboots, and other related information.
 13. The Digital Video Server shall include a user management application that allows the user to create, edit, and delete user accounts. This application should be able to be accessed remotely and work across multiple units. Each account can be assigned different privileges that limit the usage of the Digital Video Server System. Privileges shall include, but not be limited to the following:
 - a. Search
 - b. Setup
 - c. Backup
 - d. Shutdown
- C. The Digital Video Server shall have a function to import maps of a facility and to associate a camera with its physical location. These maps shall support multiple layers for ease of administration.
1. The Digital Video Server shall also be capable of supporting descriptive names for each camera.
 2. The Digital Video Server shall have a function to customize the GUI by user to accommodate multiple users video viewing preferences.
 3. Each video channel that is being recorded by the Digital Video Server can be overlaid with text and a time stamp that is customizable by the user.
 4. The Digital Video Server shall allow the user to set conditional recording requirements such as upon trigger by an alarm or by motion detection.
 5. The Digital Video Server shall be capable of analyzing video for motion without the need for an external motion sensor.
 6. The Digital Video Server shall have pre and post event recording. The buffer for the pre-recording shall be set by the user.
 7. The Digital Video Server shall allow the user to define a recording schedule for each video channel to reduce unwanted video and save on memory requirements.
 8. The Digital Video Server's GUI shall include on-screen playback controls for the recorded video. An on-screen hour/minute slide control bar that is controller with a mouse is required to navigate recorded video.
 9. The Digital Video Server shall allow the operator to perform an index search of recorded video based upon an event such as motion detection, sensor activation, and instant record events.
 10. The Digital Video Server shall allow for exporting of JPEG screen captures of the previously recorded video.

11. The Digital Video Server shall allow the user to print a recorded image to a local or network printer.
12. The Digital Video Server GUI shall be accessible from a remote location on the network. All the functions that are accessible locally will be accessible from the remote location.
13. The Digital Video Server shall include a compatible workstation for remote monitoring and viewing of an entire Network Video Recording System installation.
14. The Digital Video Server workstation will interact with each individual Digital Video Server via a client/server model over the network.

3.05 FIELD QUALITY CONTROL

- A. The Contractor shall demonstrate the functionality of the Digital Network Video Recording System upon completion of installation, documenting the result of all tests and providing these results to the Owner. The Digital Network Video Recording System shall be tested in accordance with the following:
 1. The Contractor shall conduct a complete inspection and test of all installed Digital Network Video Recording System equipment. This includes testing and verifying operation with connected equipment.
 2. The Contractor shall provide staff to test all devices and all operational features of the system for witness by the Owner's representative and the Authority having jurisdiction. All testing must be witnessed by the Owner's representative prior to acceptance.
 3. The testing and certification shall take place as follows:
 - a. The Digital Network Video Recording System shall be tested in conjunction with the manufacturer's representative.
 - b. All deficiencies noted in the above test shall be corrected.
 - c. Test results shall be submitted to the consultant or Owner's representative.
 - d. The test and correction of any deficiencies shall be witnessed by the owner's representative and noted.
 - e. The Owner's representative shall accept the system.
 - f. The system shall be witnessed by the Authority having jurisdiction. Any deficiencies noted during the testing must be corrected.
 - g. A letter of certification shall be provided to indicate that the tests have been performed, and all equipment is operational.

3.06 ADJUSTING

- A. Adjust lens irises to meet lighting conditions.

3.07 MAINTENANCE

- A. Provide a separate maintenance contract for specified maintenance service.
- B. Provide service and maintenance of system for one year from Date of Substantial Completion.

END OF SECTION