

SECTION 28 51 23 -IP AUDIO COMMUNICATION SYSTEM

PART 1: GENERAL

1.01 DESCRIPTION OF WORK

- A. Audio communications systems included are:
 - 1. Intercom
 - 2. Zone paging
 - 3. Intercom with sound threshold monitoring as shown on the drawings
- B. This system consists of voice communication between operator stations to intercom stations and paging zones as indicated on drawings.
- C. Provide all software and hardware necessary to allow audio recording to the security management system of the video graphic user interface station communications to intercom stations, speakers, horns, paging zones and sound threshold monitoring speakers.

PART 2: PRODUCTS

2.01 DESCRIPTION OF PRODUCTS

- A. The IP audio communication system and associated equipment shall be manufactured by Audiotec, Quam, Stentofon or approved equal and located in floor mounted equipment racks adjacent to the door control panels.
- B. The equipment rack assemblies shall provide adequate panel mounting space to mount all equipment with a minimum 50% spare rack space. These same racks may be utilized to house network switching equipment and patch panels. Provide blank panels for unused spaces.
- C. The system shall be a fully VoIP Solution with VoIP intercom stations and VoIP control room master stations.

2.02 AUDIO APPLIANCE

- A. The Audiotec AIS-1001 audio appliance hardware shall incorporate the latest in technology, providing complete software, and programming source code which shall be utilized to allow users full access to configure the system as required by the contract documents. Virtualization of software on remote hardware is not acceptable.
- B. The audio appliance shall have a minimum capacity to support 1,024 field devices and up to 64 control room master stations per appliance. Approved manufacturers must provide with the proposals the same minimum capacity.
- C. The control network must be Modbus TCP/IP Ethernet.
- D. The system must be non-blocking communication between any VoIP master station and VoIP field device.
- E. The audio appliance shall include sound threshold monitoring with the ability to provide multiple settings for daily scheduling. Provide a minimum of 8 daily schedules.
- F. The system must be capable of configuration changes while the audio appliance is both on-line and off-line. In addition, the system must utilize a YAML configuration file for editing functionality.
- G. Configuration through modern web browsers.

2.03 VOIP SWITCH BANK AMPLIFIER

- A. The audio communication system shall also support 25-volt intercom stations and paging zones.
- B. As required provide ASB-3210 VoIP switch bank analog intercom and paging amplifier. This unit shall utilize no more than 1U rack space and be capable of supporting no less than 32 channels with 2 independent non-blocking talk paths.

2.04 VOIP CONTROL ROOM GRAPHICAL USER INTERFACE MASTER STATIONS

- A. Provide a Audiotec TMS-10x1 VoIP control room graphical user interface desktop master station as shown on the contract documents which includes a compact design, rugged 16 ga. steel face plate, rubber shock isolation mounting feet, stainless steel push-to-talk button, 3" square loudspeaker with 2.35 oz ceramic magnet with moisture resistant cone, replaceable 16" metal cardioid condenser gooseneck microphone, volume control push buttons, and RJ45 connection.
 - B. The control room graphical user interface desktop master station shall be non-proprietary, open source and open standard SIP and MQTT protocols using minimum Broadcom BCM2837 SoC with 1024 Mbytes of RAM and 8 Gbyte of eMMC flash.
 - C. The system shall include a high-performance audio codec with 24-bit audio and be industry standard Voice over Internet Protocol (VoIP).
 - D. The VoIP control room graphical user interface desktop master station must be powered by PoE (power over Ethernet), standard IEEE 802.3af class 0.
 - E. External privacy handset using the ASC-01 Audiotec soft client.
- ### 2.05 VOIP DESKTOP PHONE STATION

- A. Provide a Audiotec DMS-1001 VoIP desktop phone station. The VoIP desktop phone station shall be non-proprietary, open source and open standard SIP.
- B. The station shall be a small desktop unit with high-definition audio technology with a minimum of 7KHz audio and include a minimum of 3.5" TFT color LCD display.
- C. The station shall provide audio communications between desktop phone station to any VoIP intercoms station.
- D. The station shall have the ability to be configured for predefined hard keys, call transfer, mute, and one-touch redial.
- E. The station shall allow for master-to-master communications.
- F. The control room graphical user interface desktop master station must include automatic gain control with digital volume adjustments with up/down toggle button. Unit shall also support external Bluetooth privacy headset.

2.06 REMOTE INTERCOM STATIONS - INTERIOR

- A. Provide Audiotec ATI-IC-2 series intercom station.
- B. The intercom station shall mount to a 2-gang standard back box and a vandal resistant IP call-in station with integrated speaker/microphone. The intercom faceplate must be a minimum of 12-gauge stainless steel.
- C. The loudspeaker must be a 2.5" square frame loudspeaker with 2.35 oz ceramic magnet and include a phenolic impregnated, moisture resistant cone. The push-to-call, program selection, lighting control or other predetermined push buttons shall be a momentary contact, stainless steel, and vandal resistant.
- D. The station shall include electronics for programmable selection to include but not limited to call request, program selection, and lighting control. In addition, the station electronics shall include Class-D BTL speaker driver with an output of 2.5 watt into 4 olm or 1.6 watts into 8 olms.
- E. The station electronics shall be non-proprietary, open source and open standard SIP and MQTT protocols using a minimum Broadcom BCM2837 SoC with 1024 Mbytes of RAM and 8 Gbyte of eMMC flash.
- F. The station electronics shall include a high-performance audio codec with 24-bit audio and be industry standard Voice over Internet Protocol (VoIP).
- G. The VoIP station electronics must be PoE (power over Ethernet) standard IEEE 802.3af class 0 and include an RJ-45 Ethernet connector.
- H. Attachment screws shall be security types in compliance with Section 11196 – Detention Fasteners.
- I. Assembly shall be able to withstand damage caused from physical abuse, dust, vibration, and temperature extremes from 150° F. to 10° F.
- J. Unit shall have protective metal barrier designed to protect the loudspeaker from physical damage. Barrier shall be mounted to the rear of the faceplate in front of the loudspeaker.

2.07 REMOTE INTERCOM STATIONS - EXTERIOR

- A. Provide Audiotec ATE-IC-2 series intercom station.
- B. The intercom station shall mount to a 2-gang standard back box and a vandal resistant IP call-in station with integrated speaker/microphone. The intercom faceplate must be a minimum of 12-gauge stainless steel.
- C. The loudspeaker must be a 2.5" square frame loudspeaker with 2.35 oz ceramic magnet and include a phenolic impregnated, moisture resistant cone. The push-to-call, program selection, lighting control or other predetermined push buttons shall be a momentary contact, stainless steel, and vandal resistant.
- D. The station shall include electronics for programmable selection to include but not limited to call request, program selection, and lighting control. In addition, the station electronics shall include Class-D BTL speaker driver with an output of 2.5 watt into 4 olm or 1.6 watts into 8 olms.
- E. The station electronics shall be non-proprietary, open source and open standard SIP and MQTT protocols using a minimum Broadcom BCM2837 SoC, 1024 Mbytes of RAM, and 8 Gbyte of eMMC flash.
- F. The station electronics shall include a high-performance audio code with 24-bit audio and be industry standard Voice over Internet Protocol (VoIP).
- G. The VoIP station electronics must be PoE (power over Ethernet) standard IEEE 802.3af class 0 and include an RJ-45 Ethernet connector.
- H. The VoIP station electronics must include conformal coating to provide protection in exterior applications.
- I. Attachment screws shall be security types in compliance with Section 11196 –

Detention Fasteners.

- J. Assembly shall be able to withstand damage caused from physical abuse, moisture, corrosion, dust, vibration, and temperature extremes from 150° F. to -40° F.
- K. Unit shall have protective metal barrier designed to protect the loudspeaker from physical damage. Barrier shall be mounted to the rear of the faceplate in front of the loudspeaker.

2.08 LOUDSPEAKERS

- A. Loudspeakers to be nominal 8" diameter dual cone type units. Loudspeakers to incorporate 6-ounce permanent magnet and include a 5-watt multi tap transformer for use on 25 volt and 70-volt constant voltage type distribution systems.
- B. Each loudspeaker to be provided with a security baffle plate and flush or surface mounted enclosure as required. Refer to finish ceiling plan for locations. Baffle and enclosure to be all metal construction and finished in polar white baked on enamel.

2.09 HORN LOUDSPEAKERS

- A. Horn loudspeakers to be weatherproof compression driver units with integral screwdriver adjustable multi-tap transformer for use on both 25 volt and 70-volt constant voltage distribution systems. Integral mounting plate suitable for mounting on a standard outlet box to include swivel type alignment bracket.
- B. Units to be rated to handle 15 watts input power. Nominal sensitivity 110 dB SPL at 3 feet with 1 watt input.

2.10 VISITATION HANDSETS

- A. Provide a visitation handset system that will allow private conversations between inmate and visitor stations and at pass through windows as shown on the contract documents.
- B. Where shown on the plans provide visitation and talk through handsets. Telephone style handsets shall be mounted on wall cradles and constructed of high impact plastic with heavy duty armored coil cord which when extended shall not exceed 30 inches in length. The handset shall not require a press to talk switch to establish communications.
- C. The system shall be wired to be completely free of cross talk.
- D. These stations shall be supplied with DC power supply and isolation chokes.

2.11 TALK THRU COMMUNICATOR

- A. Provide clear 2-way hands free voice communication between public waiting area and control office.
- B. Rugged tamper resistant materials.
- C. UL and CE compliant level VI switching power supply.
- D. Unit shall be Norcon TTU-3 or equal.

2.12 PEDESTAL

- A. Furnish and install heavy-duty pedestals for intercom stations, cameras, and card readers at all vehicle sallyports and gates as indicated on the drawings.

- B. Pedestal shall be a dual height consisting of two hoods with corresponding equipment and shall be anchored to a concrete base.
- C. Provide hood as shown to protect security devices.
- D. Pedestal shall be constructed of round pipe allowing the housing to spin without breaking if sufficient pressure is applied from the side.
- E. Protective pipe bollards shall be provided by others.

2.13 CALL BUTTONS

- A. Provide the Quam CIB2 with a single-gang, vandal resistant call-in switch with a momentary (normally open) push-to-call button in a brushed 12-gauge stainless steel finish.

PART 3: EXECUTION

3.01 INSTALLATION

- A. All intercom stations are intended to be mounted in detention security door frames or window frames.
- B. Coordinate opening, back box, and conduit routing requirements with Division 11190 detention security door frames.
- C. All exposed fasteners shall utilize security screws in compliance with the Detention Fasteners specification.

END OF SECTION