

SECTION 28 46 30
DOOR CONTROL INTERCOM SYSTEM
5/14/2026

PART 1 – GENERAL

SCOPE

This section describes the requirements for a door control intercom system as an integral part of the security control processing equipment.

Provide a new door control intercom system. Removal of the old intercom equipment shall be responsibility of the contractor. The system shall include new intercom stations, masters and head-end system. Existing to remain intercom stations and wiring may be re-used. Provide any additional interface equipment to connect existing intercoms. The head-end equipment shall be new. Provide all equipment necessary for a complete and functional system.

The SEC as described in Section 28 46 00 shall provide all work and equipment described in this Section.

PART 2 - PRODUCTS

DESCRIPTION

Individual call buttons or call buttons mounted on remote intercom stations shall interface call icons of SES touch screens to speaker/microphones, ceiling speakers and push-to-talk switches. The system shall integrate to the PLC/touch screen system via Ethernet communication protocol.

The system shall utilize digital audio technology for door control intercom, cell intercom, and dayroom sound monitoring (two-way) and sound threshold monitoring.

DUAL OPERATED CONTROL STATIONS

The audio busses for master station shall be independent of each other including the interface to the video surveillance system camera call-up function. Each touch screen shall have the ability to take intercoms and have the cameras to their assigned monitors without affecting the operation of the other. Intercoms shall provide video call-up of both sides of a door associated with a intercom.

CENTRAL EXCHANGE INTERCOM SYSTEM

The SEC Contractor shall be certified by the manufacturer of the system selected by the SEC Contractor. A letter shall be submitted to the Engineer from the manufacturer that describes the certification level attained and a description of the certification levels available. The installer of this equipment (actual SS Contractor assemblers and programmers assigned to this project) shall have been certified within the last five (5) years.

Acceptable Manufacturers:

Harding Instruments DXL
Stentofon

The following specifications are based upon Harding Instruments to establish functionality and level of quality.

DIGITAL COMMUNICATION CONTROLLERS (DCC's)

Digital Communication Controllers and Digital Communication Expanders are to be interconnected to form an intercom exchange capable of independent local operation from each Security System touch screen location. System capacity is to be increased by connecting up to four Digital Communication Expanders to each DCC. Each DCC and DCE is capable of 32 intercom stations each.

Multiple DCC's are to be networked together via digital audio trunks and Ethernet data networks to form larger systems. Each DCC is to include as required:

Process Control Card (PCC)
Central Control Card (MCC)
Station Control Cards (SCC's)
Internal PCI card.
Front panel keypad/display for system setup and maintenance.

Process Control Cards are to contain:

System configuration and data, control exchange operations and switching, and provide exchange network ports.
USB network ports for exchange expansion.
Ethernet network ports for system expansion and external control by touch screen computers.

Fiber optic or copper digital audio trunk ports. Two serial ports.
An internal modem for transmitting and receiving data over a telephone line.

Central control Cards to include:

- Ports for any combination of two intercom or telephone set master stations.
- Two line level audio inputs with status and control.
- Two line level audio outputs with status and control.
- Convert incoming audio signals to digital format and outgoing signals to analog format.
- Intercom master station audio, press-to-talk and hook switch status transmitted over two single shielded pair cables with wiring supervision to detect open circuit and short circuit faults.
- Telephone set master station functions all transmitted over a single wiring pair.

Station Control Cards (SCC):

- Each provides sixteen half-duplex intercom station ports which can be employed in adjacent pairs for full duplex devices (handsets).
- Provide an interface for intercom stations. Units to convert incoming audio signals to digital format and outgoing signals to analog format.
- Each card interfaces with 16 half-duplex channels. Each channel includes a separate audio power amplifier for non-blocking call operation and sixteen (16) independent software controlled volume settings.
- Audio and switch functions on generic Intercom station control cards to be transmitted on separate wiring pairs.

DIGITAL COMMUNICATION EXPANDERS (DCE)

Digital Communication Expanders to provide master station and intercom features similar to the DCC's to facilitate exchange expansion. Each DCE to include a slave Process Control Card (PCC) without exchange control or network functions, a Central Control Card (MCC), two Station Control Cards (SCC's).

DIGITAL ADMINISTRATIVE PHONE INTERFACE

Provide interface as required to integrate door control intercom system with existing Owners administrative digital phone system.
Equip system with capability for Owner to make calls using their existing administrative phone system to individual inmate cells.
Equip system with capability for Owner to make facility-wide paging through the door control intercom system from their existing administrative phone system.

ADMINISTRATION SOFTWARE

Administrator Software to function on a standard PC to support system configuration, diagnostics, maintenance, and logging but not be required for system operation.

Administrator Software to employ Windows features including views of system tree structure, tables of devices, screens for system settings and adjustments, and tables of operational data.

Configuration features to include:

- Creation of overall system architecture.
- Creation of multiple device templates.
- Copy and paste functions with auto-numbering and auto-assignment to create device schedules.
- Configuration error detection and alerts.
- Device naming and call routing functions.
- Device setting and performance functions.

Diagnostic and Maintenance features to include:

- Verification of system configuration and installation, system networks, device connections and system operation.
- Diagnostics via modem or Ethernet ports.

Logging features to include:

- Display of system activity with filtering options.
- Search by time and date, search by device and search by parameter.

TALKBACK EXPANDERS (TBEs)

Talkback Expanders to provide 8 amplified paging outputs that can drive 25 or 70 Vrms loudspeaker circuits.
Each TBE is to:
Provide five (5) watts output per channel.
Allow adjacent channels to be bridged to obtain higher power.

Provide talkback capability on all channels.
Include Audio Level Alarm capability on all channels.

PAGE ZONE EXPANDERS (PZEs)

Page Zone Expanders to provide three (3) page inputs (from an audio amplifier) with each input having 6 selectable relay controlled outputs.

Each PZE input to include:
One (1) relay controlled output for each input that can be used to key an audio amplifier.

INTERCOM STATION BOARDS

Intercom station boards are to be used to interface generic intercom stations and loudspeakers to system station audio boards for two-way door control intercom or audio monitoring.

Units are to include microphone preamplifier, line supervision electronics, multiplexing electronics, and loudspeaker transformer. Units are to include pigtail and switch options as required for each location.

AUDIO TRANSFORMER BOARDS

Provide audio transformer boards as required to accommodate existing 8-ohm intercom speakers.
Existing intercom stations do not include 25-volt local transformers. Equip audio head end system with matching 25-volt transformers for each existing intercom station.

TOUCH SCREEN INTERCOM MASTER STATIONS

Touch screen intercom master stations to consist of audio interface module and desktop loudspeaker/mic module.

Audio interface to consist of:

- Network and power supply interface, audio amplification and processing module, network, and operating status LED's.
- External microphone interface with phantom power capability.
- External loudspeaker interface.
- Telephone handset and press-to-talk switch interfaces.
- Headset jack.

Desktop loudspeaker/mic unit is to include compact, slim line bottom plate with stainless steel face, and rubber shock isolation mounting feet. Unit to include 12-inch, black, slim line electret gooseneck microphone, front mounted loudspeaker and front mounted rotary volume control.

VoIP DESKTOP INTERCOM MASTER STATIONS

VoIP desktop intercom master stations shall consist of a display, keypads, internal speaker & microphone, telephone handset with hook switch, headset jack, and large visual alarm indicator.

The display shall provide a 128x64 pixel graphical (backlit) LCD capable of displaying a "title" row, three "data" rows, and two "menu" selection rows of two fields each.

Four context sensitive "soft" keys shall be provided next to the "menu" selection rows (two on each side) to facilitate menu selections.

Four "navigation" keys shall be provided below the display to assist in navigating the menu system and to facilitate adjustment of various system settings.

A standard 12-key telephone as well as dedicated "Release", "Mic Mute", "Speaker", "Volume Up", and "Volume Down" keys shall be provided.

Fourteen programmable "feature" keys, each with an LED indicator shall be provided.

The VoIP master station shall provide an ADA compatible telephone handset with coiled cord, terminated on an RJ9 connector.

The VoIP master station shall be fabricated from ruggedized plastics and provide a scratch and impact resistant window for the display. A two position stand shall also be provided.

Overall dimensions (excluding the stand): 8.5" x 8" x 2".

The network connection shall be a 100/1000Mbps (RJ45 connector) Ethernet port with support for IEEE 802.3af inline power. A separate power connector shall also be provided in case an IEEE 802.3af compliant Ethernet switch is not available. The master station shall also provide support for the IEEE 802.1p/Q Quality of Service (QoS) standard.

REMOTE INTERCOM STATIONS – INTERIOR

Door frame mounted intercom stations shall be designed for mounting in standard 2-gang outlet box. Faceplates to be constructed of 11-gauge brushed stainless with internal steel offset grille to restrict inserting objects through speaker grille. Attachment screws shall be Torx security.

Each intercom station is to incorporate an integral loudspeaker/microphone, and circuitry for transmission of all station audio, power, and switch closures over a single shielded pair cable. Pushbuttons are to be single piece stainless steel construction and are backstopped to prevent excessive travel. Switch to have positive tactile action with 1 million-operation lifetime. Pushbuttons are to be software assignable for placement of call requests.

Assembly shall be able to withstand damage caused from physical abuse, moisture, corrosion, dust, vibration and temperature extremes from 150-degree F. to -10 degree F.

Stations shall mount on a standard 2 gang, 3½” deep box.

REMOTE INTERCOM STATION – ELEVATOR LOBBY

Intercom station shall incorporate an integral loudspeaker/microphone, and circuitry for transmission of all station audio, power, switch closures, logic and indicator signals over a single shielded cable. The station shall mount in a standard two-gang electrical box. The station shall include supervision of the station health and connection indicator. Pushbuttons are to be single piece stainless steel construction and are backstopped to prevent excessive travel. Switch to have positive tactile action with 1 million-operation lifetime. Pushbuttons are to be software assignable for placement of call requests. Faceplate is to be constructed of 11-gauge brushed stainless with internal steel offset grille to restrict inserting objects through speaker grille. Attachment screws shall be Torx security.

NON-AUDIO CALL STATIONS

Wall mounted non-audio call stations shall be designed for mounting in standard 1-gang outlet box. Pushbuttons are to be single piece stainless steel construction and are backstopped to prevent excessive travel mounted to face plates constructed of 11-gauge brushed stainless steel. Pushbuttons are to be software assignable for placement of call requests. Screws shall be security type.

PAGING AMPLIFIERS

Provide paging amplifiers and zone switching as required to perform the functions described herein and indicated on the drawings.

Paging amplifiers to be the constant voltage output type with power output capacities to drive the loudspeakers connected at sufficient levels with no more than 90% amplifier loading.

LOUDSPEAKERS

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.

Each loudspeaker to be provided with a standard (*security*) baffle plate and flush (*surface*) mounted enclosure. Baffle and enclosure to be all metal construction and finished in polar white baked on enamel.

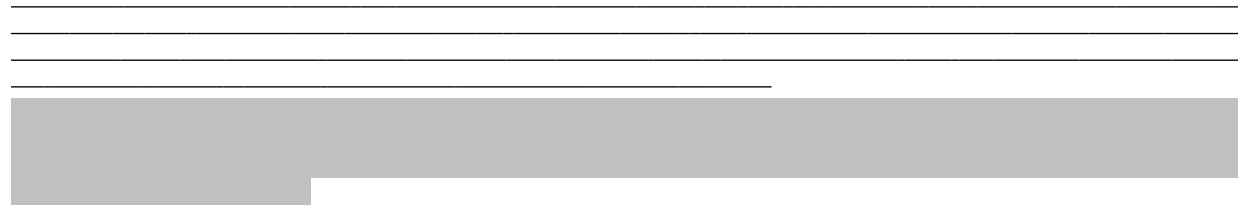
HORN LOUDSPEAKERS

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 is to include a swivel type alignment bracket.

Units are to be rated to handle 15 watts input power. Nominal sensitivity 110 dB SPL at 3 feet with 1 watt input.

VISITING BOOTH STATION

Visiting booth stations are used to provide standalone visitation intercom functions between a primary handset and one or two secondary handsets. The stations shall provide enable/disable, a monitoring output, and an audio input. These units shall include an armored handset cable with strain reliefs on each end with volume control. The primary station shall have the volume control option to connect to secondary stations with a volume switch. The primary and secondary shall be supplied with two on/off hook form C relay contacts. Visiting booth stations are externally powered by a 12 or 24 Vdc power supply. Provide power from nearest equipment room.



PART 3 - EXECUTION

WIRING

All wiring shall be installed in conduit in accordance with the requirements of Div. 26 – Electrical.

COORDINATION

Coordinate the installation of the elevator intercom with the elevator supplier. Provide a template for the intercom station and turn over to the elevator installer along with the intercom station. The intercom station shall be installed in the elevator cab by the elevator supplier. Cabling for the intercom is provided by the elevator installer.

INSTALLATION

Selected intercom stations will be mounted in detention security door frames others will mount in wall boxes. The various locations are indicated on the drawings as “F” for door frame mounted or “W” for wall mounted. Intercoms mounted in 2 gang boxes can mount vertically or horizontally to accommodate mounting in door frame.

Install vehicle loop detector in strict accordance with manufacturer’s instructions. Contractor shall note that this will require coordination with the concrete pour of the vehicle sally port slab.

Coordinate opening, backbox and conduit routing requirements with detention frames where required. Identify wiring at both ends with adhesive labels.

All exposed fasteners shall be Torx security screws.

ADJUSTMENTS

Demonstrate the volume levels of the door control intercom cell system and adjust to the Owners satisfaction.

Test each intercom for audibility. Intercoms shall be clear of any hum or hiss caused by ground shield conditions and stray currents.

END OF SECTION 28 46 30