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INTERCOMMUNICATIONS AND PROGRAM SYSTEMS

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. These specifications are based on IP PoE devices manufactured by Advanced Network Devices, Inc., 3820 Ventura Drive, Arlington Heights, IL 60004. Find product details at https://www.anetd.com/our-products/. Any other proposed manufacturers must be pre-approved.

B. Descriptions and details, acceptable manufacturers' names listed, and specific manufacturer and model number items indicated in the plans and specifications shall establish a standard of quality, function, and design. Manufacturers and model numbers listed "no exceptions" shall not be substituted without specific notice in an addendum. Otherwise, where a specific manufacturer's product is indicated, products of other manufacturers listed as acceptable may be submitted for approval based on the substitute product being, in the opinion of the Engineer, of equivalent or better quality than that of the product specified.

C. Proposed contractors wishing to propose any product substitution must do so in writing to the specifying authority at least ten (10) days prior to the proposal opening.

D. For manufacturers equipment or models other than that specified, the proposed contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment. Proposals must include detailed information showing all deviations from the system as specified

E. Substitute products for which the proposed contractor does not obtain prior approval will not be considered acceptable for this project. Final approval of alternate products shall be based on the decision of the Owner and Architect. Prior approval to make a proposal for this project does not automatically insure products will be an acceptable equivalent.

F. It is the responsibility of the Contractor to provide all features and functions as outlined in these specifications. The functions and features specified are vital to the operation of this facility; therefore, inclusion in the list of acceptable manufacturers does not release the contractor from strict compliance with the requirements of this specification.

G. The model numbers used shall constitute the quality and performance of the equipment to be furnished.

2.03 RELATED WORK - NETWORK CONNECTIVITY

A. Refer to Section 27 00 00 - Voice and Data Communications System for all Ethernet network drop connections. All Ethernet cabling and jacks used to connect to the building network shall be provided as indicated on the plans under Section 27 00 00. All system devices provided in this section, which require an Ethernet network connection shall be coordinated with this contractor.

B. All system devices provided in this section that require a network connection shall be

coordinated with district IT department to be assigned TCP/IP configuration settings including a static IP address, domain, gateway, and subnet mask.

C. The intercom system will require streaming devices/server in a single Class C subnet 255.255.255.0 attached to the server primary network port.

D. This contractor shall implement all device network configuration and device programming required to provide a complete and functional system under this specification, including any special connecting network jumpers, and all other types of cabling and interconnect wires and cables required.

2.04 INTERCOM AND PUBLIC ADDRESS OPERATION

A. Each room shall be equipped with an IP display and speaker unit with enclosed microphone (see paragraph 2.07 for details on equipment).

B. All speakers shall broadcast announcements and other audio messaging individually, as zoned, or all together.

C. Common zone analog paging speakers with an amplifier shall connect to the network using a ZONEC2 zone controller, which can also receive a microphone signal via a single pair wire.

D. The system shall use Power-over-Ethernet (PoE) network switches to deliver at least twelve (12.9) watts RMS to each AND speaker endpoint.

E. The system shall provide the capability of assigning speaker locations to any one or more of the software programmable zones for zone paging.

F. Provide for the distribution of emergency announcements and for the distribution of manually activated tones to all locations with speakers from any authorized web interface.

G. Through programming, it shall be possible to exclude selected speakers from the reception of paging announcements.

H. Provide capability of restricting the origination of emergency announcements, all page, zone page, and alarm signal origination to specific assigned stations.

I. Provide a Priority Paging Microphone for use by administrative personnel. The microphone shall be a desk type with a locking Push-to-Talk bar. When the Push-to-Talk bar is pressed, the system shall automatically initiate an all-page from the microphone.

J. The system shall also provide the capability of initiating tones manually from a web interface.

2.05 PROGRAM DISTRIBUTION OPERATION

A. The system shall provide for the distribution of audio programs.

B. The system shall provide facilities to distribute program material (i.e. music, radio broadcasts).

C. Selected AND speakers shall be configured to receive a broadcast at a specified

common multicast IP address. One AND speaker shall be configured to broadcast the audio on its line in to the specified common multicast IP address.

D. The staff member shall approach the "remote program and microphone interface" (music input jacks connected to the line-in of an AND speaker) and plug in a program source such as a radio, tape or CD player, or mp3 player.

E. Audio played from the program source shall be broadcast to the selected AND speakers per the configuration.

2.06 CLOCK AND BELL SCHEDULE SYSTEM FUNCTIONS / OPERATION

A. The server shall provide a bell/tone scheduler with the following minimum capabilities:

1. The system shall provide the capacity for storing 255 or more events.
2. The system shall provide a minimum of 4 bell schedules to allow flexibility due to seasonal changes or special events. One or more of the schedules may be active at any given time.
3. Classroom speakers may be assigned to any one or more zones. The system shall provide the ability to distribute class change signals to any or all of the zones. Time Zones shall be separate from paging zones. The system shall provide separate bell duration for each zone.
4. The system shall provide up to sixteen (16) programmable holidays with fully automatic holiday program execution. Bells can be silenced or special schedules can be implemented. Normal bells will resume after the holiday period.
5. The system shall provide Automatic Daylight Savings Time Change. The time will be updated automatically when the server detects daylight savings changes.
6. The system shall provide the ability to review, edit, and delete events and schedules. Editing may take place via a web browser on computer within the network with sufficient access privileges.
7. The system shall provide the ability to test all output zones.
8. The system shall provide a time base based on atomic time gathered from an NTP server or the third-party software server for assured accuracy.

2.07 PERIPHERAL EQUIPMENT

A. Intercom Call-in Switch

1. Advanced Network Devices AND-BTN-KIT-1 single call switch for IP speaker models with displays. The pushbutton shall be the momentary contact type. Intercom calls or pages are placed by momentarily depressing the pushbutton. Call switches shall be installed in all locations designated on the plans.
    a. The switches shall be mounted on a single-gang brushed stainless steel faceplate.
    b. Each switch shall each be connected to the GPIO input of one Advanced Network Devices display/speaker device via 2-conductor 22-gauge cable.

2. Advanced Network Devices BTN-KIT-MIC-ND for IP speaker models with no displays. The pushbutton shall be the momentary contact type. Intercom calls or pages are placed by momentarily depressing the pushbutton. Call switches shall be installed in all locations designated on the plans.
    a. The switches shall be mounted on a single-gang brushed stainless steel faceplate.
    b. Each switch shall each be connected to the module of one Advanced Network Devices speaker via RJ25 (6P6C) cable.

B. Speakers
1. Classrooms:
    a. The speaker and baffle assembly shall be an Advanced Network Devices IP display device with speaker (IPSWD-RWB) or IP speaker (IPSWS) or as approved, furnished and installed as indicated on the plans.
    b. The speaker shall be an 8" (20.32 cm) permanent magnet dual-cone type having a ceramic magnet. It shall have a frequency range of at least 60 Hz to 17,000 Hz, a 10-watt RMS program power-handling capability, and an axial sensitivity of at least 95 dB at I meter with a 1-watt input. The voice coil shall have 8-ohm impedance.
    c. The speaker shall accept power from any IEEE802.3af (PoE) or IEEE802.3at (PoE+) compliant network switch or injector.
    d. The LED display shall include a 56 x 16 multi-color LED display capable of displaying the current time and any messages sent from the server.
    e. The baffle shall be constructed of 18-gauge (IPSWD-RWB) or 22-gauge (IPSWS) cold rolled steel, and have a semi-gloss white baked epoxy finish.
2. Hallways:
    a. The display/speaker and baffle assembly shall be an Advanced Network Devices IP display device with speaker (IPCDS-RWB-U) or as approved, furnished and installed as indicated on the plans.
    b. The display/speaker shall accept power from any IEEE802.3af (PoE) or IEEE802.3at (PoE+) compliant network switch or injector.
    c. The LED display shall include a 56 x 16 multi-color LED display capable of displaying the current time and any messages sent from the server on both sides of the device.
    d. The display/speaker and baffle assembly shall include secure mounting that can mount either to the wall or to the ceiling.
    e. The baffle shall be constructed of 18-gauge (IPSWD-RWB) or 22-gauge (IPSWS) cold rolled steel, and have a stainless-steel finish.
3. Gymnasium and Large Commons etc:
    a. The speaker and baffle assembly shall be an Advanced Network Devices IP

display device with speaker (IPSIGNL-RWB) or IP speaker (IPSWS) or as approved, furnished and installed as indicated on the plans.

b. The speaker shall be an 8" (20.32 cm) permanent magnet dual-cone type having a ceramic magnet. It shall have a frequency range of at least 60 Hz to 17,000 Hz, a 10-watt RMS program power-handling capability, and an axial sensitivity of at least 95 dB at I meter with a 1-watt input. The voice coil shall have 8-ohm impedance.

c. The speaker shall accept power from any IEEE802.3af (PoE) or IEEE802.3at (PoE+) compliant network switch or injector.

d. The LED display shall include a 56 x 16 multi-color LED display capable of displaying the current time and any messages sent from the server.

e. The baffle shall be constructed of 18-gauge (IPSIGNL-RWB) or 22-gauge (IPSWS) cold rolled steel, and have a stainless-steel finish (IPSIGNL-RWB) or semi-gloss white baked epoxy finish (IPSWS).

4. Enclosures

a. Flush Mount - Classroom, hallway and wherever possible

1) Where speakers are to be recessed in walls, enclosures shall be Advanced Network Devices IPS-FM1 (for IPSWD-RWB), or Advanced Network Devices IPS-FM2 (for IPSWS), or as approved. The enclosure shall be constructed of 22-gauge galvanized steel, zinc treated, and have a semi-gloss white baked epoxy finish. The IPS-FM2 enclosure shall have a dimension of 10.75” square and 3.75” deep. The IPS-FM1 enclosure shall be 11.5 x 14.5” and 3.75” deep.

b. Surface Mount - Gymnasium and other areas where speakers cannot be recessed.

1) Where speakers are to be surface mounted, enclosures shall be Advanced Network Devices IPS-SM1 (for IPSWD-RWB), or Advanced Network Devices IPS-FM1 (for IPSWS), or as approved. The enclosure shall be constructed of 22-gauge (IPS-SM1) or 16-gauge (IPS-FM1) galvanized steel, and have a semi-gloss white baked epoxy finish. The IPS-FM1 enclosure shall have a dimension of 11.75” square and 4” deep. The IPS-SM1 enclosure shall be 13.25 x 14.5” and 4.75” deep.

c. Contractor will need to coordinate with other divisions for locating speakers to avoid conflicts and for optimal sound coverage.

3. Ceiling Speakers

a. Ceiling mounted speakers shall be an Advanced Network Devices IPSCM or IPSCM-RMe or as approved. The IPSCM shall be a lay-in ceiling tile replacement speaker and enclosure with dimensions 2 x 2 ft square. The IPSCM-RMe shall be a pair of speakers with 10.5” round baffles constructed of 16-gauge steel, with a semi-gloss white baked epoxy finish. The IPSCM-RMe shall utilize one CAT5 cable to one speaker, with up to 25 feet of 22-

gauge 2-conductor speaker wire connecting the two speakers.

b. The speaker shall be an 8" (20.32 cm) permanent magnet dual-cone type having a ceramic magnet. It shall have a frequency range of at least 60 Hz to 17,000 Hz, a 10-watt RMS program power-handling capability, and an axial sensitivity of at least 95 dB at 1 meter with a 1-watt input. The voice coil shall have 8-ohm impedance.

c. The speaker shall accept power from any IEEE802.3af (PoE) or IEEE802.3at (PoE+) compliant network switch or injector.

4. Outdoor Speakers

a. Outdoor paging speakers shall be an Advanced Network Devices IPSWS-SM-O weather-resistant paging speaker. The baffle and enclosure shall be constructed of 16-gauge galvanized steel, with a semi-gloss white baked epoxy finish. The enclosure shall have a dimension of 11.75” square and 4” deep.

b. The paging speaker shall be a double re-entrant horn, compression type loudspeaker. It shall have a frequency range of at least 600 Hz to 14,000 Hz, at least 10W RMS program power-handling capability, and an axial sensitivity of at least 104 dB at 1 meter with a 1-watt input, and 8-ohm impedance.

c. The speaker shall accept power from any IEEE802.3af (PoE) or IEEE802.3at (PoE+) compliant network switch or injector.

D. Wire Types: All wiring to telephones and speakers is 8 conductor, 24-gauge un-shielded CAT5 Ethernet cable or better.

END OF SECTION 27 51 23