

SECTION 27 51 16

PUBLIC ADDRESS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes amplifier and control equipment, input equipment, and reproducer equipment.
- B. Related Sections:
 - 1. Division 27 - Grounding and Bonding for Communications Systems.
 - 2. Division 27 - Conduits and Backboxes for Communications Systems.
 - 3. Division 27 - Identification for Communications Systems.
 - 4. Division 27 - Audio-Video Services Cabling.

1.02 SYSTEM DESCRIPTION

- A. Public address system for voice [and music].
- B. Input components:
 - 1. Cassette tape player.
 - 2. Compact disc player.
 - 3. AM/FM tuner.
 - 4. Microphone.
- C. Features:
 - 1. Interface to telephone system.
 - 2. One-way paging [by zone].
 - 3. Emergency paging override.
 - 4. Distribution of background music.
 - 5. Selective speaker talkback.

1.03 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements. Indicate layout of equipment mounted in racks and cabinets, component interconnecting wiring, and wiring diagrams of field wiring to speakers and remote input devices.
- C. Product Data: Submit catalog data showing electrical characteristics and connection requirements for each component.
- D. Test Reports: Indicate procedures and results for specified field testing and inspection.
- E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- F. Manufacturer's Field Reports: Indicate activities on site, adverse findings, and recommendations.

1.04 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Closeout procedures.

- B. Project Record Documents: Record actual locations of speakers, control equipment, and outlets for input/output connectors.
- C. Operation and Maintenance Data: Submit instructions for adjusting, operating, and extending system, and repair procedures and spare parts documentation.

1.05 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years [documented] experience, and with service facilities within 100 miles of project.
- B. Supplier: Authorized distributor of specified manufacturer with minimum three years documented experience.
- C. Installer: Authorized installer of specified manufacturer with service facilities within 100 miles of Project.

1.06 PRE-INSTALLATION MEETINGS

- A. Division 01 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.07 MAINTENANCE SERVICE

- A. Division 01 - Execution and Closeout Requirements: Maintenance service.
- B. Furnish service and maintenance of public address and music equipment for one year from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 AMPLIFICATION AND CONTROL EQUIPMENT

- A. Manufacturers:
 - 1. Bogen Rauland
 - 2. Substitutions: Division 01 - Product Requirements.
- B. Product Description: Amplifier, pre-amplifier, and control units to accomplish specified inputs and features.
- C. Microphone Inputs: Two low impedance inputs with 600 microvolt sensitivity and noise level at least 55 dB below rated output.
- D. Auxiliary Inputs: One high impedance input with 0.4 volt sensitivity and noise level at least 70 dB below rated output
- E. System Frequency Response: 50 - 15,000 Hz, plus or minus 2 dB.
- F. System Distortion: Less than 1.5 percent, 100 to 100,000 Hz. at rated power
- G. System Output: 4 ohms 25 volts
- H. Volume Controls: One for each input and one master volume.
- I. Bass Control: plus 8 dB to minus 12 dB at 50 Hz
- J. Treble Control: plus 8 dB to minus 12 dB at 10,000 Hz

K. Program Selector: Furnish program, listen-talk, and mode selector switches.

L. System Cabinet: Rack mounted

2.02 AM/FM TUNER

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Tuner with 525 - 1605 kHz AM and 88 - 108 MHz FM tuning range.

C. AM Performance:

1. AM IF Rejection: Over 30 dB
2. AM Selectivity: 7 kHz at - 6 dB
3. AM Fidelity: 100 - 4500 Hz, plus or minus 3 dB
4. AM Antenna Input: 75 ohms, unbalanced.

D. FM Performance:

1. FM IF Rejection: Over 50 dB
2. FM Fidelity: 50 - 15,000 Hz, plus or minus 3 dB
3. FM Antenna Input: 300 ohms, balanced.

2.03 TAPE PLAYER

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Cassette player.

C. Tape Speed (Play): 1-7/8 inches for each second.

D. Crosstalk: 45 dB minimum

E. Response: 100 - 7000 Hz, plus or minus 3 dB

F. Signal/Noise Ratio: Less than 60 dB

G. Speed Accuracy: plus 3, minus 2 percent.

H. Wow and Flutter: Less than 0.35 percent rms.

I. Fast Forward Time: 135 seconds maximum, with 60 minute cassette.

J. Rewind Time: 90 seconds maximum, with 60 minute cassette.

2.04 COMPACT DISC DECK

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: 3-1/2 inch compact disc player.

2.05 MICROPHONE

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Desk type low impedance microphone with push-to-talk switch

C. Directional Response: Unidirectional

2.06 SPEAKERS

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: 8 inch coaxial speaker with integral crossover circuit

C. Power Rating: 20 watts.

D. Frequency Range: 45 to 18,000 Hz

E. Sound Pressure Level: 95 dB at 3 feet with 1 watt input.

F. Magnet: 10 ounces low frequency unit; 3 ounces high frequency unit. Material: Ceramic.

G. Dispersion: minus 3 dB at 90 degrees, minus 5 dB at 110 degrees

2.07 BAFFLES AND ENCLOSURES

A. Manufacturers:

1. Atlas Soundelier
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: 12 inch square, painted steel white finish with uniform perforations

C. Speaker Backbox: Insulated with sound-deadening material.

2.08 HORNS

A. Manufacturers:

1. Atlas Soundelier
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Wide dispersion indoor/outdoor horn with driver

C. Power Rating: 60 watts.

D. Low Frequency Cutoff: 250 Hz.

E. Sound Distribution: 20 x 50 degrees.

F. Sound Pressure Level: 120 dB at 4 feet with full range input.

G. Material: Cast aluminum.

H. Finish: Per County Standards

2.09 MATCHING TRANSFORMERS

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Matching transformer [tapped from 0.5 to 4 watts in 1 watt steps, with primary/secondary ratio to match amplifier to speaker impedances

2.10 VOLUME PADS

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Transformer type rated 10 watts

2.11 EQUIPMENT RACK

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Floor or Wall mounted equipment rack.

C. Equipment Mounting Width: 19 inch

D. Equipment Mounting Height: 2 inches minimum.

E. Finish: Gray enamel finish.

F. Include front and rear hinged and latched door.

G. Include six receptacle multi-outlet assembly inside rack.

2.12 ANTENNA

A. Manufacturers:

1. Bogen Rauland
2. Substitutions: Division 01 - Product Requirements.

B. Product Description: Folded dipole FM antenna.

C. Impedance: 300 ohm with matching transformer for 75 ohm coaxial cable.

D. Construction: Tubular metal elements.

E. Wind Resistance: Withstand 100 mph wind.

PART 3 EXECUTION

3.01 EXISTING WORK

- A. Disconnect and remove any abandoned public address systems that remain in the building.

3.02 INSTALLATION

- A. Mounting Heights: Coordinate locations, including mounting heights, of outlet boxes specified in Division 26 , as required per program and as follows:
 - 1. Wall-mounted Speaker: 7'-6" feet above finished floor.
 - 2. Volume Control: 48 inches above finished floor.
- B. Connect tap ratings to amplifier as specified. .
- C. Install equipment racks in location shown; arrange for adequate ventilation and access.
- D. Install engraved plastic nameplates in accordance with Division 26
- E. Ground and bond public address equipment in accordance with Division 26

3.03 FIELD QUALITY CONTROL

- A. Division 01 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Measure and record sound power levels at designated locations.

3.04 MANUFACTURER'S FIELD SERVICES

- A. Division 01 - Quality Requirements: Manufacturer's field services.
- B. Include services of technician employed by manufacturer to supervise installation, adjustments, final connections, system testing, and County training.
- C. Verify installation is complete and performs according to specified requirements.

3.05 ADJUSTING

- A. Division 01 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust transformer taps for appropriate sound level.
- C. Adjust devices and wall plates to be flush and level.

3.06 DEMONSTRATION AND TRAINING

- A. Furnish two hours of instruction each for two persons, to be conducted at project site with manufacturer's representative.

END OF SECTION