

SECTION 275123 - INTERCOMMUNICATIONS AND PROGRAM SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Multi-tenant entry security system, digital audio only type with postal lock feature.
 - 1. Master Building Entry station.
 - 2. Apartment speaker-microphone stations.
 - 3. Intercommunication amplifier.
 - 4. Conductors and cables.
 - 5. Raceways.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For intercommunications and program systems. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: For power, signal, and control wiring.
 - a. Identify terminals to facilitate installation, operation, and maintenance.
 - b. Single-line diagram showing interconnection of components.
 - c. Cabling diagram showing cable routing.

1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- C. Comply with NYC Electrical Code and NFPA 70.
- D. Comply with UL50.

1.6 FUNCTIONAL DESCRIPTION OF SYSTEMS

A. Master Building Entry Station:

- 1. Communicating selectively with apartment speaker-microphone stations by actuating selector switches.
- 2. Communicating with individual stations in privacy.

B. The Intercom System shall be provided with an amplification control and power circuits needed to operate the entire system. The amplifier shall provide door release operation selected by terminal connection and selected by delayed door timing.

C. Intercom System shall be constantly in stand-by mode and cannot be operated from apartment. When visitor comes to the building and presses code on the entry panel, system automatically activates apartment station at that apartment only. After tenant hears electronic signal, they must activate apartment station by pressing pushbutton "Talk/Listen". If satisfied with the person's identity, the tenant may press the button marked "Door".

D. Apartment (Tenant) Speaker-Microphone Station:

- 1. No remote monitoring from other stations. Microphone shall only operate when "TALK" button is pressed. Circuit design to prevent another station from listening and to permit incoming calls.
- 2. Communicating hands free.
- 3. Calling master station by actuating call switch.
- 4. Returning a busy signal to indicate that station is already in use.
- 5. Being free of noise and distortion during operation and when in standby mode.
- 6. The apartment station unit shall be; three-wire, three solid pushbuttons ("Talk/Listen", "Door" for building entry door operation, "Privacy" to turn off sound from remote station.).
- 7. When call is from building entry station, call tone will ring at tenant station for approximately 10 seconds.
- 8. On tenant station, press talk button within set time to respond and talk via "TALK" button.
- 9. Press and hold talk button for 1 second before speaking, beep will be emitted and communicate by press-to-talk communication and release it to listen.
- 10. Communication will be ended automatically after approximately 1 minute.
- 11. Tenant Station Door Release:
 - a. Press "DOOR" release button while in communication.
 - b. Door release function will activate on entrance station that is in communication.

- c. Depending on electric door release system that is used, door release may be active only while door release button is pressed.
 - d. Door release timer can be set to activate from 0.5 to 20 seconds or momentary.
- E. Speakers: Free of noise and distortion during operation and when in standby mode.

1.7 GENERAL REQUIREMENTS FOR EQUIPMENT AND MATERIALS

- A. Coordinate features and select components to form an integrated system. Match components and interconnections for optimum performance of specified functions.
- B. Equipment: Modular type using solid-state components, fully rated for continuous duty unless otherwise indicated. Select equipment for normal operation on input power usually supplied at 110 to 130 V, 60 Hz.
- C. Weather-Resistant Equipment: Listed and labeled by an NRTL for duty outdoors or in damp locations.

1.8 MASTER BUILDING ENTRY STATION PANEL

- A. Speaker Microphone: Transmits and receives calls.
- B. Unit shall contain a pushbutton metal digital keypad with code number according to tenant's directory.
- C. The entry panel shall incorporate a postal door release system. This system shall allow entry to a postal representative with a special master lock/key mechanism mounted in the entry panel. The lock/key mechanism shall be specified to the postal zone in which the building is located.
- D. Equipment Cabinet: Comply with TIA/EIA-310-D. Lockable, ventilated metal cabinet houses terminal strips, power supplies, amplifiers, system volume control, and auxiliary equipment.

1.9 APARTMENT SPEAKER-MICROPHONE STATION PANELS

- A. Mounting: Flush unless otherwise indicated, and suitable for mounting conditions indicated.
- B. Faceplate: Stainless steel or anodized aluminum with tamperproof mounting screws.
- C. Back Box: Two-gang galvanized steel with 2-1/2-inch (64-mm) minimum depth.
- D. Speaker: 2.5 inches (76 mm), 2.3 oz. (65 g) minimum; permanent magnet.
- E. Tone Annunciation: Recurring momentary tone indicates incoming calls.
- F. Talk and Listen Switches/buttons: Mount on faceplate. Permits conversation with master entry station.

- G. Door Release Switch/button: Activates building entry door lock release mechanism.
- H. Privacy Switch: Mount on faceplate. When in on position, switch prevents transmission of sound from remote station to system; when in off position, without further switch manipulation, response can be made to incoming calls.

1.10 INTERCOMMUNICATION AMPLIFIER

- A. Minimum Output Power: Adequate for all functions.
- B. Total Harmonic Distortion: Less than 0.5 percent at rated output power with load equivalent to one station connected to output terminals.
- C. Minimum Signal-to-Noise Ratio: 45 dB, at rated output.
- D. Frequency Response: Within plus or minus 3 dB from 70 to 10,000 Hz.
- E. Output Regulation: Maintains output level within 2 dB from full to no load.
- F. Input Sensitivity: Matched to input circuit and to provide full-rated output with sound-pressure level of less than 10 dynes/sq. cm impinging on master stations, speaker microphones, or handset transmitters.
- G. Amplifier Protection: Prevents damage from shorted or open output.

1.11 CONDUCTORS AND CABLES

- A. Conductors: Jacketed, twisted pair and twisted multipair, untinned solid copper. Sizes as recommended by system manufacturer, but no smaller than No. 22 AWG.
- B. Insulation: Thermoplastic, not less than 1/32 inch (0.8 mm) thick.
- C. Shielding: For speaker-microphone leads and elsewhere where recommended by manufacturer; No. 34 AWG, tinned, soft-copper strands formed into a braid or equivalent foil.
 - 1. Minimum Shielding Coverage on Conductors: 60 percent.
- D. Plenum Cable: Listed and labeled for plenum installation.

1.12 RACEWAYS

- A. Intercommunication and Program System Raceways and Boxes: Comply with requirements in Section 260533 "Raceway and Boxes for Electrical Systems."
- B. Intercommunication and Program System Raceways and Boxes: Same as required for electrical branch circuits specified in Section 260533 "Raceway and Boxes for Electrical Systems."

- C. Intercommunication and Program System Raceways and Boxes: EMT or Metal wireways.
- D. Outlet boxes shall be not less than **2 inches (50 mm)** wide, **3 inches (75 mm)** high, and **2-1/2 inches (64 mm)** deep.
- E. Flexible metal conduit is prohibited.

PART 2 - EXECUTION

2.1 WIRING METHODS

- A. Wiring Method: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters, and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal raceway and cables except in unfinished spaces.
 - 1. Install plenum cable in environmental air spaces, including plenum ceilings.
 - 2. Comply with requirements for raceways and boxes specified in Section 260533 "Raceway and Boxes for Electrical Systems."
- B. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.
- C. Wiring within Enclosures: Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

2.2 INSTALLATION OF RACEWAYS

- A. Comply with requirements in Section 260533 "Raceway and Boxes for Electrical Systems" for installation of conduits and wireways.
- B. Install manufactured conduit sweeps and long-radius elbows whenever possible.

2.3 INSTALLATION OF CABLES

- A. Comply with NECA 1.
- B. General Requirements:
 - 1. Terminate conductors; no cable shall contain unterminated elements. Make terminations only at outlets and terminals.
 - 2. Splices, Taps, and Terminations: Arrange on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures. Cables may not be spliced.

3. Secure and support cables at intervals not exceeding **30 inches (760 mm)** and not more than **6 inches (150 mm)** from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
4. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.
5. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
6. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used.

C. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunication spaces with terminating hardware and interconnection equipment.
2. Cable shall not be run through structural members or be in contact with pipes, ducts, or other potentially damaging items.

- D. Separation of Wires: Separate speaker-microphone, line-level, speaker-level, and power wiring runs. Install in separate raceways or, where exposed or in same enclosure, separate conductors at least **12 inches (300 mm)** apart for speaker microphones and adjacent parallel power and telephone wiring. Separate other intercommunication equipment conductors as recommended by equipment manufacturer.

2.4 INSTALLATION

- A. Match input and output impedances and signal levels at signal interfaces. Provide matching networks where required.
- B. Identification of Conductors and Cables: Color-code conductors and apply wire and cable marking tape to designate wires and cables so they identify media in coordination with system wiring diagrams.
- C. Weatherproof Equipment: For units that are mounted outdoors, in damp locations, or where exposed to weather, install consistent with requirements of weatherproof rating.
- D. Speaker-Line Matching Transformer Connections: Make initial connections using tap settings indicated on Drawings.
- E. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- F. Building entry panels shall be flush or surfaced mounted to a steel mounted recessed back box, set into a masonry wall. The back box shall be mounted so that the bottom of the box shall be 48" above the finished floor.

- G. Apartment station panels shall be flush mounted and be located as indicated on the drawings. Top of the unit shall be located at 54" above the finished floor and 48" above finished floor in ADA Handicapped Adaptable apartments.

2.5 GROUNDING

- A. Ground cable shields and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- B. Signal Ground Terminal: Locate at main equipment cabinet. Isolate from power system and equipment grounding.
- C. Install grounding electrodes as specified in Section 260526 "Grounding and Bonding for Electrical Systems."

2.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
 - 1. Schedule tests with at least seven days' advance notice of test performance.
 - 2. After installing intercommunications and program systems and after electrical circuitry has been energized, test for compliance with requirements.
 - 3. Operational Test: Test originating station-to-station messages at each intercommunication station. Verify proper routing and volume levels and that system is free of noise and distortion. Test each available message path from each station on system.
- C. Inspection: Verify that units and controls are properly labeled and interconnecting wires and terminals are identified. Prepare a list of final tap settings of paging speaker-line matching transformers.
- D. Intercommunications and program systems will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

END OF SECTION 275123