

SECTION 28 50 00  
SECURITY COMMUNICATION SYSTEM  
(Part of the Work for Section 260001)

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. Attention is directed to the GENERAL REQUIREMENTS AND COVENANTS - DIVISION I, and the SPECIAL PROVISIONS - DIVISIONS IIA and IIB, which are hereby made a part of this Specification Section.
- B. Examine all Drawings and all Sections of the Specifications for requirements and provisions affecting the Work of this Section.

1.2 TRADE CONTRACT REQUIREMENTS

- A. Work of this Section is part of the Electrical Trade Contract. Refer to Section 26 00 00 "Electrical Trade Contract Requirements" for additional information about this Trade Contract.

1.3 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.4 SUMMARY

- A. IP audio video security communication system.

1.5 RELATED SECTIONS

- 1. Section 08 71 00 Door Hardware
- 2. Division 21 Fire Suppression
- 3. Division 26 Electrical
- 4. Division 27 Communications
- 5. Division 28 Electronic Safety and Security

1.6 ACTION SUBMITTALS

- B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
- C. Product Data: Manufacturer's data sheets on each product to be used, including.
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- D. Shop Drawings: Submit the following:
  - 1. Wiring Diagrams: Indicate wiring for each item of equipment and interconnections between items of equipment.
  - 2. Include manufacturer's names, model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
  - 3. Tower foundation construction details:

- a. Include dimensions and clearances from face of curb or roadway.
  - b. Include plans, elevations, sections, mounting and attachment details.
  - c. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - d. Include foundation construction details, including material descriptions, dimensions, anchor bolts, support devices, and calculations, signed and sealed by a professional engineer licensed in the state of installation.
  - e. Include anchor bolt templates certified by manufacturer.
  - f. Include method and procedure of installation. Include manufacturer's written installations.
- E. Installation and Operation Manuals:
1. Submit manufacturer's installation and operation manual, including operation instructions and component wiring diagrams.
  2. Provide detailed information required for Owner to properly operate equipment.
- 1.7 REFERENCES
- A. American National Standards Institute (ANSI): ANSI/TIA/EIA 568 - Commercial Building Telecommunications Cabling Standard.
  - B. International Organization for Standards (ISO): ISO 9001 - Quality Management Systems – Requirements.
- 1.8 SCOPE OF WORK
- A. The master stations of the video intercom system will be installed as depicted on the security drawings.
  - B. The door substations of the video intercom system will be installed as depicted on the security drawings.
- 1.9 DESCRIPTION OF WORK
- A. General Requirements
    1. Provide labor, materials, tools, equipment, and services for a complete security system as indicated and in accordance with provisions of the contract documents.
    2. Although such work is not specifically indicated, provide supplementary or miscellaneous items, and devices incidental to or necessary for a sound, secure and complete installation.
    3. System devices and components included will be compatible.
    4. Units of the same type of equipment will be products of a single manufacturer. Material and equipment will be new and currently in production. Each major component of equipment will have the manufacturer's model and serial number in a conspicuous place.
- 1.10 SYSTEM DESCRIPTION
- A. General: IP video security communication system.
    1. The video intercom system will be provided as indicated in the Contract Drawings.
  - B. IP Network Compatible Video Intercom System: A network-based communication and security system featuring video entry security, internal communication, emergency stations, and paging.

Units and application in the systems shall be able to unlock doors remotely on a network, assist onsite visitors from an offsite location, broadcast emergency announcements, and communicate using a PoE network.

1. Power Source: Power over Ethernet (802.3af).
2. Network Interface: 10 BASE-T / 100 BASE-TX Ethernet (RJ-45).
3. Network Protocols: IPv4, IPv6, TCP, UDP, SIP, HTTP, HTTPS, MJPEG, RTSP, RTP, RTCP, IGMP, MLD, SMTP, DHCP, NTP, DNS.
4. Bandwidth Usage:
  - a. G.711: 64Kbps x 2 per video call.
  - b. 64Kbps per monitor.
  - c. H.264: 24Kbps ~ 2,048Kbps.
5. Communication: Hands-free (VOX), push-to-talk (simplex), or handset (full-duplex).
6. Video Display: 7 inch color LCD.
7. Camera: Type:
  - a. 1/3 inch color CMOS. 1.23 Megapixels.
  - b. View Area at 0 degree camera angle mounted at 4 feet 11 inches (1500 mm) AFF: 2 feet 3 inches (700 mm) vertical x 3 feet 9 inch (1150 mm) horizontal at 19 inches (500 mm).
8. Video Stream: ONVIF Profile S.
9. Door Release: Programmable Form C dry contact, 24V AC/ DC, 500mA (use RY-24L for larger contact rating, which requires 24V DC power supply) or use RY-IP44 with 4 multipurpose relays.
  - a. Wire Type: CAT-5e or CAT-6.
10. Distance:
  - a. Station to Network Node: 330 feet (100 meters).
11. Exterior communication equipment will have lightning protection.
12. The system will have the ability to roll over a video intercom door station call to another video intercom master station within the complete system. This system functionality will be flexible and configurable by system programming and not rely upon physical wiring connections.
13. A full range of control unit functions, including basic conversation, will be capable: call forwarding, scan monitoring, emergency call, priority call, video audio recording, paging, and zone paging as scheduled, indicated or required.
14. The system can be used in combination with CCTV, access control, an emergency broadcast system, scheduled chime distribution system, or security equipment. This creates a more effective security communication system and ensures a higher level of safety, security, and convenience in each application.
15. The mobile application shall:
  - a. Be available for both Android and iOS
  - b. Receive calls, with two-way audio, live video, and door release
  - c. Hold 500 stations in an address book
  - d. Have 4 Programmable “shortcuts” can be configured to call an individual

station, monitor stations, or page a group of stations

- e. Connect to IX station's over Wi-Fi or a direct network connection using a VPN

1.11 SYSTEM DESIGN

- A. Provide master stations as indicated in the Contract Drawings.
- B. Provide audio video door stations as indicated in the Contract Drawings:
- C. Provide audio only door stations as indicated in the Contract Drawings:
- D. Provide CFA wall boxes as indicated in the Contract Drawings.
  - 1. ADA (28 CFR Part 36 section 4.4.1) compliant.
  - 2. Call for assistance stations wall boxes as depicted on the plans and schedules will consist of a call station with integrated faceplate camera and strobe light enclosed in a hood.
  - 3. The intercom call functionality will be network based and connect to the network.
  - 4. The IP faceplate camera will be displayed on the master intercom.
  - 5. Mounting: Brackets meeting size requirements of manufacturer.
  - 6. Call button mounting height and signage meet ADA regulations.
  - 7. Lettering: Reflective lettering on both sides of box.
    - a. Signage to be "Assistance."
    - b. Signage color to be blue.
  - 8. Blue Beacon and Strobe: Mounted on top, enclosed in a hood.
  - 9. Service: Vandal and weather resistant.
- E. Provide Selective Door/Gate Release.
- F. Provide audio/video streaming via ONVIF Profile S.
- G. Provide ONVIF Profile S camera input (max 500).
- H. Provide Contact input at door station.
- I. Types of sub stations:
  - 1. Vandal resistant,
  - 2. Handset for indoor use,
  - 3. Flush, surface and tower mounts as scheduled, indicated or required.
- J. System Capacity:
  - 1. Video, Audio, and Data Logging:
    - a. PC archives.
    - b. Record video and audio from door stations.
  - 2. Master Station Flexibility:
    - a. Pan-tilt zoom and wide video monitoring function.
    - b. Master station with display for operation and video monitoring.
    - c. Hands-free or handset audio communication.
  - 3. Outside Line Communication:

- a. One telephone line, call transfer to up to three telephone numbers.
  - b. Door and room sub stations to outside telephone line communication.
  4. Internal Audio file for prerecorded message announcement or notification:
    - a. Up to 15 audio files can be uploaded to the system.
    - b. Up to 20 sequences per day for scheduled announcement.
  5. External Audio Input:
    - a. Multiple activation inputs with 2 audio inputs for external source distribution.
  6. Audio Distribution Scheduling:
    - a. Up to 1 year scheduling for calendar schedule.
    - b. Up to 20 daily events can be programmed.
    - c. Individual scheduled activation can also be set one time or daily.
- K. System Functions:
1. Call-Related Functions:
    - a. Video Door Station Call: A designated group of master stations can be called from a video door station; a designated master can answer the call. 170 degrees minimum view from the door station camera can be viewed from the master station, and zoom and pan/tilt operations are functional.
    - b. Sub Station Call: A designated group of master stations can be called from a substation; a designated master can answer the call. External speaker and emergency call button can also be added.
    - c. Group Call/All Call: A designated group of up to the full capacity of the system with a mix of master stations and door stations can be called from a master station. System needs to be pre-programmed to function.
  2. Transfer-Related Function:
    - a. Call (Communication) Transfer: A master station can transfer a conversation to a master station within the system.
  3. Call Forwarding-Related Functions:
    - a. Call Forwarding: Incoming calls can be automatically forwarded to another receiving station or telephone. The receiving station number or telephone number can be registered at the original forwarding station. Unit number will be assigned to each telephone number.
    - b. Time-Based Call Forwarding: Incoming calls to the original station can be automatically rerouted to a designated master station or telephone number during a specific period of the day.
    - c. No Answer Call Forwarding: Calls to the original station are automatically rerouted to a designated receiving station if the called party does not respond within a preset period of time.
  4. Monitoring-Related Functions:
    - a. Monitoring: A door, room or substation can be monitored from a master station. A master station can also disable this function if monitoring is not necessary.
    - b. Scan Monitoring: A pre-programmed door stations or room sub stations can be scan monitored.

5. Paging-Related Functions:
    - a. Zone Paging: Permits paging of individual zones, established by combining multiple master stations, door stations, and room sub stations with or without public address system equipment.
    - b. Pre-Recorded Audio File Paging: Pre-recorded audio file or outside sound sources can be distributed to pre-programmed paging zones.
  6. Priority Call-Related Functions:
    - a. Priority Call: A call from the master station or substation can be pre-programmed with priority level based on normal call, priority call, and urgent call. Urgent call will have the highest priority within individual calls.
    - b. Emergency Paging: Emergency-paging calls can be made to pre-programmed paging zones. Emergency paging will have the highest priority level. Paging can also be pre-programmed with priority level based on normal call, priority call, and urgent call. Urgent call will have the highest priority.
  7. Telephone-Related Functions:
    - a. Outgoing Telephone Calls: Outside telephone lines can be connected to the system, permitting calls from room subs and doors to be forwarded to an outside telephone line.
    - b. Pre-Recorded Audio File Paging Via Telephone: Pre-recorded audio file can be distributed to programmed paging zones or stations via the telephone.
    - c. Time-Based Outside Line Call Forwarding: Three telephone numbers can be pre-programmed to be forwarded if the called party does not respond within a preset period of time.
  8. Scheduled Pre-Recorded Audio File Paging:
    - a. Scheduled Paging and Bell: Paging or bell schedules can be programmed onto daily, weekly or yearly calendar.
- 1.12 QUALITY ASSURANCE
- A. Manufacturer Qualifications: ISO 9001:2008 certified company.
  - B. Installer Qualifications: Minimum 2 years experience installing similar equipment.
  - C. Units of the same type of equipment will be products of a single manufacturer. Material and equipment will be new and currently in production. Each major component of equipment will have the manufacturer's model and serial number in a conspicuous place.
- 1.13 WARRANTY
- A. Manufacturer's Warranty: Submit manufacturer's standard warranty.
- 1.14 DELIVERY, STORAGE, AND HANDLING
- B. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
  - C. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
- 1.15 PROJECT CONDITIONS

- A. Inspect locations where installation work will be performed and verify that conditions found are in accordance with the Contract Drawings and are acceptable for installation work. Report discrepancies in writing to the Engineer requesting clarification.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers
  - 1. Aiphone Corporation IX Series 2
  - 2. Commend USA
  - 3. Talk-A-Phone
  - 4. 2N
  - 5. Or Approved Equal

### 2.2 PRODUCTS:

- A. Video Intercom System:
  - 1. The control unit
  - 2. The master intercom station
  - 3. The audio/video door station(s) and associated backbox(es), if required
  - 4. The heater and thermostat for the exterior mounted video door station(s), if required
  - 5. The tower and associated mounting equipment
  - 6. The wall box and associated mounting equipment
  - 7. Media Converters
  - 8. Power supply
  - 9. Rack tray

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive video security communication system.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

### 3.2 INSTALLATION

- A. Install video security communication system in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Mount equipment plumb, level, square, and secure.
- C. CAT Cables:
  - 1. Run cables from and homerun to one central location where the control unit will be installed.
  - 2. Maintain twists of cable pairs to point of termination or no more than 0.5 inch (13 mm) untwisted.

3. Do not remove more than 1 inch (25 mm) of jacket when terminating cables.
  4. Cable Bends:
    - a. Make gradual bends of cable, where necessary.
    - b. Do not make bends of cable sharper than 1-inch (25 mm) radius.
    - c. Do not allow cable to be sharply bent or kinked.
  5. Cable Ties: Dress cables neatly with cable ties using low to moderate pressure.
  6. Cross-connect cables, where necessary, using CAT rated punch blocks and components.
  7. Do not splice or bridge cables.
  8. Cable Pulling:
    - a. Pull cable with low to moderate force.
    - b. Do not use oil or lubricants not specifically designed for cable pulling.
  9. Keep cables as far away from potential sources of EMI as possible.
  10. Do not tie cables to electrical conduits or lay cables on electrical fixtures.
  11. Cable Supports:
    - a. Install proper cable supports a maximum of 5 feet (1524 mm) apart.
    - b. Do not support cables by ceiling tiles.
  12. Label Cable Termination Points: Use unique number for each cable segment.
  13. Testing Cables: Test installed cable segments with cable tester.
  14. Jacks: Install jacks to prevent dust and contaminants from settling on contacts.
  15. Cable Slack:
    - a. Leave extra slack on cables, neatly coiled-up in ceiling or nearest concealed place.
    - b. Leave a minimum of 1 foot (305 mm) of cable slack at door station side and a minimum of 10 feet 3048 mm) of cable slack at CEU side.
  16. Do not install cables taught.
  17. Grommets: Protect cables with grommets where passing through metal studs or items that could damage cables.
  18. Do not mix TIA/EIA 568A and 568B wiring on same installation. Use TIA/EIA 568B wiring throughout installation.
  19. Staples:
    - a. Do not use staples that crimp cables tightly.
    - b. Do not use T-18 and T-25 cable staples.
  20. Use firestopping for cables that penetrate firewalls.
  21. Use plenum-rated cables where mandated.
- 3.3 ADJUSTING
- A. Adjust integrated security and communication system for proper operation in accordance with manufacturer's instructions.
- 3.4 DEMONSTRATION AND TRAINING



- A. Demonstration:
    - 1. Demonstrate that integrated security and communication system functions properly.
    - 2. Perform demonstration at final system inspection by qualified representative of manufacturer.
  - B. Instruction and Training:
    - 1. Provide instruction and training of Owner's personnel as required for operation of integrated security and communication system.
    - 2. Provide hands-on demonstration of operation of system components and complete system, including user-level program changes and functions.
    - 3. Provide instruction and training by qualified representative of manufacturer.
- 3.5 PROTECTION
- A. Protect installed system from damage during construction.

END OF SECTION