Section 27 51 00

DISTRIBUTED AUDIO-VIDEO COMMUNICATION SYSTEMS

1. GENERAL
	1. Summary
		1. Work Included
			1. The work of this section includes all labor, materials, equipment, and services necessary to complete a video-based Intercom over Internet Protocol System (IoIP), providing the ability to communicate between door intercom stations and a software-based graphical user interface.
		2. Related Work Specified Elsewhere:
			1. Refer to all associated Division 28 Sections in conjunction with the security drawings for the complete requirements associated with Electronic Safety and Security, including:
				1. Section 27 05 00 – Common Work Results for Communications
				2. Section 27 15 00 – Communications Horizontal Cabling
				3. Section 27 20 00 – Data Communications
			2. Work of this section shall comply with the requirements of the Contract Conditions, the requirements outlined in Division 01 – General Requirements, and with all other Contract Documents.
			3. Refer to Division 08 – Openings, for requirements associated with doors and door hardware, including entrances and storefront openings as required. Contractor shall ensure compatibility with all specified door hardware, including electrified hardware as required.
			4. Refer to Division 26 – Electrical, for work related to the interconnection of equipment to line voltage power sources.
			5. Refer to Division 28 – Electronic Safety and Security, for work related to the electronic locking and unlocking of access controlled doors and entryways
	2. References
		1. Abbreviations and Acronyms
			1. ACS – Access Control System
			2. AHJ – Authority Having Jurisdiction
			3. BLE – Bluetooth Low Energy
			4. HTTPS – Hypertext Transfer Protocol Secure
			5. IoIP – Intercom over Internet Protocol
			6. IP – Internet Protocol
			7. LAN – Local Area Network
			8. PoE – Power over Ethernet
			9. TLS – Transport Layer Security
	3. system description
		1. The video IoIP system provides a real-time, two-way audio/video communications platform between a dedicated remote intercom terminal and a software-based thin client interface installed on a computer workstation or mobile device.
		2. Communications between the intercom terminal and the software interface occur via hardwired LAN connection or cellular 4G/LTE connection. Communications are not reliant upon wired carrier telephone service or building telephone communication infrastructure such as a private branch exchange.
		3. The video IoIP terminal provides an integrated mobile access credential reader. When installed at an electrically locked door or entry portal, the reader provides the ability to grant access when an authorized Bluetooth mobile credential is presented.
		4. The video IoIP terminal provides an integrated facial recognition sensor. When installed at an electrically locked door or entry portal, the terminal provides the ability to grant access upon recognition of a pre-enrolled individual.
	4. Submittals
		1. Product Data
			1. The contractor shall provide manufacturer’s data sheets for all devices they intend to provide.
			2. The contractor shall provide data sheets for all security system signal, control, and power wiring and cables.
		2. Shop Drawings
			1. The contractor shall provide shop drawings showing all equipment, wiring, interconnections, details, and coordination elements.
			2. Shop drawings shall include floor plans indicating the proposed location of all security devices. Floor plans shall reflect actual site conditions and shall show all deviations from contract drawings. Plans shall include junction boxes, conduit routing and sizing, and wiring types.
			3. Shop drawing shall include mounting details for all security field devices. Details shall show junction box location and type, mounting location, conduit connection, and mounting hardware.
		3. Operation and Maintenance Manuals
			1. The contractor shall submit manuals for all equipment and software described by this specification.
			2. Manuals shall include all manufacturer installation, operation, and programming manuals, including general troubleshooting information.
			3. Manuals shall include a table of all device locations, labels, and programming values, such as IP address and software version.
		4. Warranty Documentation
			1. The contractor shall provide a copy of all warranty material associated with labor and materials, including manufacturer warranty information and start date.
	5. Quality Assurance
		1. Regulatory Approvals
			1. All devices of this section shall be supplied, installed, and programmed in accordance with all applicable codes, AHJ requirements, manufacturers instructions, and requirements as set forth by the Construction Manager, Owner, Architect, and Engineer.
			2. The contractor shall install all intercom terminals in conformance to state and local codes, Architectural elevations, and current ADA standards.
			3. All electrically locked door controls and systems shall comply with requirements set by NFPA Sections 70, 72, and 101, as well as local Building, Fire, and Electrical codes.
		2. Installer / Integrator
			1. Bidders shall detail their qualifications to undertake the work noted under this section. Qualifications shall include the following:
				1. Projects of similar cost and scope
				2. Evidence of 3 years’ experience installing, programming, and servicing network and intercom systems.
				3. Evidence of 2 years’ experience installing, programming, and servicing IoIP systems.
	6. Delivery, Storage, And Handling
		1. All materials shall be delivered in unopened containers and packaging unless contractor bench testing was performed prior to arrival on site.
		2. Where installation of equipment occurs prior to construction completion, the contractor shall provide protection of all equipment using any means necessary to ensure “as new” condition upon completion and turnover of the project.
	7. Site Conditions
		1. All materials specified under this section shall not be stored, installed, or exposed to conditions below 32°F or in excess of 95°F, humidity in excess of 95% non-condensing, or in proximity to strong magnetic fields, static electricity, dust, or corrosive materials.
		2. The contractor is responsible for ensuring all line voltage electrical feeds used to power the equipment specified under this section is clean with appropriate grounding.
		3. Before commencing work, the contractor shall examine existing construction conditions and confirm that all dependent work conforms to appropriate levels of workmanship and quality, and are not at variance with the installation of the materials installed under this section.
	8. Warranty
		1. The contractor shall provide warranty documentation from all equipment suppliers and provide copies to the Owner as part of the Operations and Maintenance Manual submittal. Warranties shall state that work performed is free from defects in materials and workmanship for a period not less than one year from the written date of acceptance.
2. PRODUCTS
	1. MANUFACTURERS
		1. Swiftlane, Inc.

65 Langton St.

San Francisco, CA 94103

(833) 607-9438

https://swiftlane.com

* 1. VIDEO INTERCOM SYSTEM
		1. Video intercom terminal shall be as manufactured by Swiftlane, model SwiftReader.
		2. Two-Way Audio/Video
			1. Intercom terminal shall support two-way audio and video between the terminal and another terminal, or to an authorized user of the Swiftlane software.
			2. The terminal shall include an integrated microphone and speakers for two-way audio communication.
			3. The terminal shall include an integrated video camera with a minimum of 7MP resolution. The IoIP system shall provide 1080p adaptive bitrate video intercom capability, and video connectivity over WebRTC for two-way remote first video communication.
		3. Master Intercom System
			1. Intercom terminal shall communicate to an onsite or remote authorized user through client software installed on a mobile phone or desktop computer.
			2. The system shall support automatic fallback in the event that the primary responder fails to answer an incoming intercom call.
		4. Multi-Tenant Intercom
			1. The intercom terminal shall allow a multi-tenant directory feature, providing the ability to search and direct dial an entry from a tenant directory.
			2. Each tenant entry within the directory shall be configurable, allowing that tenant to individually select the information displayed. The tenant shall be able to select name, initials, suite, company name, or other information as private or accessible through the intercom directory.
			3. The tenant shall be able to assign line hunting groups, wherein multiple user terminals are contacted simultaneously, and any user has the opportunity to respond to the intercom call.
		5. Integrated Access Control (Optional)
			1. Video intercom terminal shall include integrated access control mechanisms. Upon validation of a user, either via a LAN connection or using a cloud-based access control system. If programmed to grant access, the door controller shall then have the ability to supply or remove power from an electrified door lock.
			2. Terminal shall include integrated facial recognition reader for authenticating users. All facial biometric templates shall be securely stored in the cloud for recognition across multiple devices or user sites. The facial recognition system shall support matching templates across multiple terminals via a cloud-based access control system.
			3. The integrated facial recognition shall check for 3-dimensional depth data of the user’s face to prevent spoofing attacks through presentation of an authorized user photo. All facial templates shall be transmitted over HTTPS or TLS-based communication channels.
			4. Terminal shall include integrated mobile credential reader. Credential reader shall communicate with user mobile device using BLE 4.2 or later. Mobile credentials are issued through the Swiftlane software application. Mobile credentials shall have the ability to unlock doors via the mobile app over a cellular or Wi-Fi internet connection.
			5. Terminal shall support user authentication through personal identification number (PIN). Terminal shall allow 6-digit PIN numbers or longer for high security applications. Unique PIN numbers shall be assigned to each individual so that access can be revoked without effecting access privileges of other users.
		6. Temporary Visitor Access (Optional)
			1. The intercom terminal shall support the issuance of temporary PIN numbers for one-time visitors or delivery personnel. Temporary PIN codes can be programmed to expire after a set time duration after first use (i.e., 2 minutes).
		7. User Interface
			1. The intercom terminal shall support direct dialing to a front desk location. Front desk shall be assignable to any number of authorized users, so that calls to a front desk may initiate contact to a software assignable hunt group.
			2. The intercom terminal shall support the integration of a tenant directory, wherein a terminal user may browse the directory and direct dial any listed entry.
			3. If activated, the intercom terminal shall support automatic initiation of a two-way video feed to the remote authorized user.
			4. The intercom terminal shall support the ability to enter PIN codes for access. PIN codes may be assigned on a revocable permanent basis or temporarily for visitors.
			5. Intercom hardware shall support remote, centralized firmware updates through the Swiftlane software application.
		8. Connectivity
			1. Communications between the intercom terminal and other intercom terminals, the Swiftlane software system, and the optional door controller shall be through standard 10/100/1000 Base-T Ethernet network cabling.
			2. Intercom terminals shall have the ability to connect to the internet for remote video calling. LAN-based internet connectivity shall be available through a hardwired connection or over Wi-Fi, if the wireless signal strength at the intercom is supportive of intercom bandwidth requirements.
			3. All connections between an intercom terminal and the internet shall be encrypted using HTTPS or TLS protocol for encryption and security of data in transit.
			4. Communications between the intercom terminal and the Swiftlane software system shall optionally be enabled over cellular 4G/LTE. Intercom terminals shall have the ability to automatically fail over to cellular communications in the event that internet access through the LAN becomes unavailable.
		9. Power
			1. Power to the terminal shall be through standard IEEE standard 802.3af PoE or 802.3at PoE+ protocol. Power consumption shall not exceed 12 watts.
			2. If PoE power is not available, intercom terminal shall optionally be able to be powered through standard USB connectivity.
		10. Physical Characteristics
			1. Terminal shall consist of a touchscreen interface housed in a vandal-proof, brushed aluminum enclosure.
			2. Terminal shall be capable of being mounted to a standard single-gang electrical box.
			3. Intercom housing shall support a straight-on or angled enclosure, allowing the intercom terminal to face towards the door. Options shall be available for right and left-side door mounting.
			4. Terminal shall support the use of tamper-resistant fasteners to provide vandalism protection.
			5. Terminal shall support the installation of an integrated sun shield enclosure, providing protection from light exposure when deployed in an outdoor environment.
		11. Operating Conditions
			1. Terminal shall be suited for outdoor use, with an operating temperature range of -4°F to 96°F.
1. EXECUTION
	1. CONTRACTOR’S ENGINEERIGN AND DESIGN RESPONSIBILITIES
		1. All systems installed under this section shall comply with the rules and regulations of the local Building Code, and as required for local AHJ approvals. Where deviations exist from local codes and regulatory requirements between this section and associated documents, local code requirements shall govern.
	2. INSTALLATION
		1. All materials shall be installed per manufacturer’s instructions, unless otherwise noted.
		2. All equipment shall be installed to facilitate maintenance, service, and repair of components as necessary. Provide adequate cabling service loops, accessible back boxes, and cable tagging for all intercom units.
		3. Wall mounted equipment shall be installed square and plumb.
		4. Cable runs shall be installed in accordance with electrical standards, national, and local codes. Observe all manufacturer cable band radii and maximum cable distance. Observe 100m maximum cabling distance for all CAT6 network cabling.