28 13 26 - FARPOINTE DATA® - *PYRAMID SERIES* PROXIMITY® READERS

1. GENERAL
	* + 1. RELATED DOCUMENTS
				1. Drawings and general provisions of the Contract, including:

General and Supplementary Conditions [OPTIONAL]

Division 01 Specification Sections [OPTIONAL]

Drawings

[LIST]

Related Specification Sections

[LIST]

* + - 1. SUMMARY
				1. Section Includes: Proximity access control readers and credentials (contactless 125-kHz readers and credentials for electronic access control (EAC) based upon radio frequency identification (RFID)).
				2. Related Sections and Divisions:

INCLUDE APPROPRIATE INFORMATION BELOW, INCLUDING A REFERENCE TO ALLOWANCES, IF PROXIMITY READERS AND CREDENTIALS ARE INCLUDED IN ANY ALLOWANCE ITEMS, AND ADD ALLOWANCES TO "RELATED SECTIONS" PARAGRAPH ABOVE. OTHERWISE DELETE FOLLOWING PARAGRAPH.

* + - * 1. Allowances:

INCLUDE APPROPRIATE LANGUAGE BELOW INCLUDING A REFERENCE TO ALTERNATES, IF PRODUCTS SPECIFIED IN THIS SECTION ARE SUBJECT TO ANY ALTERNATE BID ITEMS, AND ADD SUCH ALTERNATES TO "RELATED SECTIONS" PARAGRAPH ABOVE. OTHERWISE DELETE FOLLOWING PARAGRAPH.

* + - 1. DEFINITIONS - ACRONYMS
				1. ABA Track II Magnetic Stripe Format: Binary data format defined by the American Banking Association.
				2. AHJ: Authority Having Jurisdiction - person or office charged with enforcing the Life Safety Code.
				3. ANSI – American National Standards Institute - organization that oversees the development of standards for products.
				4. CE: European Union Conformity.
				5. C-Tick: Australian EMC (Electromagnetic Compatibility) standard.
				6. EACS: Electronic Access Control System.
				7. ETL – Independent Testing to North American product safety standards.
				8. FCC - Federal Communications Commission - agency of the United States government responsible for regulating communications by radio, television, wire, satellite, and cable.
				9. High Coercivity: Strong measure of the ability of a ferromagnetic material to withstand an external magnetic field without becoming demagnetized.
				10. ICC: International Code Council.
				11. IEEE: Institute of Electrical and Electronics Engineers.
				12. NECA: National Electric Code Association.
				13. NFPA: National Fire Protection Association.
				14. OEM: Original Equipment Manufacturer - (OEM) is a company whose products are used as components in another company's product
				15. Proximity Credential: A portable media (card or tag) that carries 2 or more bits of data associated with the identity of an individual or property and is based on 125-kHz RFID technology.
				16. Proximity Reader: A device based on 125-kHz RFID technology that is capable of reading data from a proximity credential when the credential is presented within the device’s read range.
				17. RF: Radio Frequency: Any of the wave frequencies that lie in the range extending from below 3 kilohertz to about 300 gigahertz and that include the frequencies commonly used for communications signals.
				18. RFID: Radio Frequency Identification. Incorporating electromagnetic or electrostatic coupling in the radio frequency portion of the spectrum allowing proximity credentials and readers to communicate without contact.
				19. RoHS: Restriction of Hazardous Substances directive.
				20. System Controller: An electronic device that automates the process of when and where someone may enter or exit an area.
				21. UL 294 – Underwriter Laboratories - Standard for Access Control System Components.
				22. UPS: Uninterruptible Power Supply.
				23. Wiegand™ Connection: A minimum of a five conductor interface, consisting of conductors for Power, Ground, Data 0, Data 1, and LED control, used to transmit binary information between a reader and a system controller.
			2. PERFORMANCE REQUIREMENTS
				1. Design Requirements: Proximity readers shall read user credentials without physical contact, process credential-encoded data and output data to access system controller resulting in instructions to allow/deny access.
				2. Performance Requirements:

Credentials shall be readable when presented in any orientation or at any angle to reader surface.

The reader data output time to the system controller: <95 milliseconds.

Transmission of radio frequency signals into the reader shall not compromise the system.

Presence of small metal objects, such as keys or coins, near the credential shall not alter the code nor prevent the code from being read.

Different types of credentials may be used interchangeably and shall be compatible with all readers in the system.

The reader shall be of a contactless pass-through type, reading any data programmed to the credential, regardless of credential data configuration.

Damage or vandalism to the reader shall not compromise any other part of the access control system.

* + - 1. ACTION SUBMITTALS
				1. Product Data: Provide details and technical specifications for each product indicated. Include physical dimensions, features, performance, electrical characteristics, ratings, software versions, and operating system details.
				2. Furnish all permits required for the specified work.
				3. Shop Drawings: Include system line diagrams, equipment locations, installation details, and system integration plans.

Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types, quantities, and sizes.

Plans and Elevations: Dimensioned plans and elevations of equipment racks, enclosures, and conduit interconnections, including access and workspace requirements.

Power and Heat Load Calculations: Provide power and heat load calculations for all hardware, including backup UPS capacity calculations.

Wiring Diagrams: For power and signal wiring.

* + - * 1. Equipment and Software List: Include every piece of equipment and software by product/model name and/or number, manufacturer, serial number, revision number, location, and date of original installation. If factory and/or bench testing regimens are required by the project plan, add pretesting record of each piece of equipment and software, listing name of person testing, date of test, and adjustments made.
			1. INFORMATIONAL SUBMITTALS
				1. UL Listing Certificates: For system components, from manufacturer
				2. [LIST OTHERS IF APPLICABLE]
				3. Field quality-control reports.
				4. Warranty: Sample of product warranty for each system component
			2. CLOSEOUT SUBMITTALS
				1. Operation and Maintenance Data: For all system components and software to include in emergency, operation, and maintenance manuals. In addition to items specified in Mater Format Section 017823 "Operation and Maintenance Data," [IF APPLICABLE] include the following:

Lists of spare parts and replacement components recommended for storage at the site for ready access.

Operation Guides

* + - 1. QUALITY ASSURANCE
				1. All work, equipment, materials, construction, and installation provided under the Contract shall comply with the current applicable rules, regulations, standards, and ordinances of the local Authorities Having Jurisdiction (AHJ).
				2. All equipment shall be installed to National, State, and Local laws in accordance with the Authority Having Jurisdiction.
				3. Electrical Components, Devices, Accessories, and Installation shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

Comply with NECA 1.

Comply with NFPA 70.

Comply with NFPA 101.

* + - * 1. Integration between all system components shall be tested and certified for proper interoperability by the manufacturers of each system.
			1. PROJECT CONDITIONS
				1. Environmental Conditions: system components shall be capable of withstanding the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

All Readers:

Operation: Rated for continuous operation in ambient temperatures -40° to 150° degrees F (-40° to 65° degrees C).

Storage: Rated for continuous storage in ambient temperatures -40° to 150° degrees F (-40° to 65° degrees C).

All Credentials:

Operation: Rated for continuous operation in ambient temperatures -40° to 150° degrees F (-40° to 65° degrees C).

Storage: Rated for continuous storage in ambient temperatures -40° to 150° degrees F (-40° to 65° degrees C).

* + - 1. WARRANTY
				1. All Readers: Lifetime - Against Defects In Materials and Workmanship
				2. Magnetic Stripe Credential: One Year - Against Defects In Materials and Workmanship
				3. All Other Credentials: Lifetime - Against Defects In Materials and Workmanship
1. PRODUCTS
	* + 1. APPROVED MANUFACTURER(S) NO SUBSTITUTIONS
				1. Farpointe Data, Inc.
				2. INSERT NAME OF APPROVED SYSTEM MANUFACTURERS
			2. APPROVED SYSTEM INTEGRATORS [OPTIONAL]
				1. INSERT NAME OF APPROVED SYSTEM INTEGRATORS
			3. SYSTEM COMPONENTS
				1. The Card Readers Shall Offer Support of the Following:

General:

125-kHz Proximity Credential Technology Support:

Native *Pyramid Series* Proximity® protocol

HID® standard protocol [OPTIONAL]

AWID® standard protocol [OPTIONAL]

Electrical Connection

Wiegand Standard

Clock & Data

PRO-X™ - RF mitigation technology

Sustain an increased read range in RF saturated environments

Mounting on metallic surfaces shall have minimal impact on read range

Data Format:

Wiegand

ABA Track II (Magnetic Stripe)

MAXsecure High Security technology

Unique key known only to a specific organization’s readers and credentials

Multicolor Status Indicators:

Local and/or host controlled 4-state LED (red, green, amber and off)

Hardware:

Input Voltage: 5 to 16 VDC

Brownout Survivability: Readers whose source power dips below the stated operating range shall return to normal behavior once standard operational voltage is restored

Operating Temperature Range: -40 to 150 degrees F (-40 to 65 degrees C)

Cabling:

18 Inch Pigtail Extension

Color-Coded

Shielded

9 Conductors

#24 AWG (0.60 mm)

RFID Operating Frequency: 125-kHz

Fabrication:

Exterior: ABS Plastic

Interior: Electronics sealed in weather and tamper resistant epoxy potting

In Field Reader Control

Control Cards: A selection cards that modify local reader operation

Model: P-300 Proximity Reader:

Read Range: Up to 5 inches (126 mm)

Dimensions: (H x W x T): 3.2 x 1.7 x 0.7 inches (80 x 43 x 17 mm)

Weight: 3 oz. (85 g)

Current Draw: 30 mA typical, 75 mA peak at 12 VDC

Reduced Energy Mode: fleaPower™

Readers shall draw as little as 10 mA at 12 VDC

Readers shall default to a reduced energy mode during low use hours

Readers shall default to a reduced energy mode when primary power is lost

Mounting:

Mounting Screws shall be concealed by cover

Mullion or flat surfaces

Color: Off-White and Black snap on covers included

Audio Tone - minimum 70 dB at 5 inches

OEM / Private Label Area: .9 x.35 inch (23 x 9 mm)

Certifications/Compliances:

FCC

CE

ICC

UL 294

C-Tick

IP67

Model: P-500 Proximity Reader

Read Range: Up to 8 inches (202 mm)

Dimensions: (H x W x T): 4.5 x 3.0 x 0.38 inches (114 x 76 x 10 mm)

Weight: 4 oz. (113 g)

Current Draw: 7 mA minimum, 45 mA typical, 90 mA peak at 12 VDC

Reduced Energy Mode: fleaPower™

Readers shall draw as little as 10 mA at 12 VDC

Readers shall default to a reduced energy mode during low use hours

Readers shall default to a reduced energy mode when primary power is lost

Mounting:

Mounting Screws shall be concealed by cover

ANSI single-gang wall box, or flat surfaces

Color Options: Off-White and Black snap on covers included

Audio Tone - minimum 80 dB at 8 inches

OEM / Private Label Area: .9 x.35 inch (23 x 9 mm)

Certifications/Compliances:

FCC

CE

ICC

UL 294

C-Tick

IP67

Model: P-530 Proximity Reader

Read Range: Up to 5 inches (126 mm)

Dimensions: (H x W x T): 3.25 x 3.25 x 0.8 inches (83 x 83 x 21 mm)

Weight: 4 oz. (113 g)

Current Draw: 30 mA typical, 75 mA peak at 12 VDC

Reduced Energy Mode: fleaPower™

Readers shall draw as little as 10 mA at 12 VDC

Readers shall default to a reduced energy mode during low use hours

Readers shall default to a reduced energy mode when primary power is lost

Mounting:

Mounting Screws shall be concealed by cover

European / Asian wall box or flat surfaces

Color: Off-White and Black snap-on covers included

Audio Tone - minimum 70 dB at 5 inches

OEM / Private Label Area: .9 x.35 inch (23 x 9 mm)

Fabrication - Single-piece weatherproof construction enclosed in epoxy potting preventing access to reader electronics

Certifications/Compliances:

FCC

CE

ICC

C-Tick

IP67

Model: P-620 Proximity Reader and Keypad

Read Range: Up to 5 inches (176 mm)

Dimensions: (H x W x T): 6.1 x 1.78 x 0.91 inches (155 x 45 x 23 mm)

Weight: 4 oz. (113 g)

Current Draw: 70 mA typical, 110 mA peak at 12 VDC

Reduced Energy Mode: fleaPower™

Reader and Keypad shall draw as little as 25 mA at 12 VDC

Reader and Keypad shall default to a reduced energy mode during low use hours

Reader and Keypad shall default to a reduced energy mode when primary power is lost

Mounting:

Mounting Screws shall be concealed by cover

ANSI single-gang wall box, or flat surfaces

Color: Off-White and Black snap-on covers included

Audio Tone - minimum 70 dB at 5 inches

OEM / Private Label Area: .9 x.35 inch (23 x 9 mm)

Keypad Type: Shall be a capacitive type keypad, with twelve keys and no moving parts

Keypad Reliability: Tested to a minimum of 1 million keystroke actuations

Keypad Labeling:

Includes both numeric and alpha labeling

Keypad Output Data Configuration shall be field configurable

Keypad Output Data Configuration Options:

8-Bit Burst (default data output configuration)

4-Bit Burst

26-Bit Wiegand

Certifications/Compliances:

FCC

CE

ICC

UL 294

C-Tick

IP67

Model: P-640 Proximity Reader and Keypad.

Read Range: Up to 7 inches (176 mm)

Dimensions: (H x W x T): 4.6 x 3 x 0.7 inches (117 x 77 x 18 mm)

Weight: 4 oz. (113 g)

Current Draw: 70 mA typical, 110 mA peak at 12 VDC

Reduced Energy Mode: fleaPower™

Reader and Keypad shall draw as little as 25 mA at 12 VDC

Reader and Keypad shall default to a reduced energy mode during low use hours

Reader and Keypad shall default to a reduced energy mode when primary power is lost

Mounting:

Mounting Screws shall be concealed by cover

ANSI single-gang wall box, or flat surfaces

Color: Off-White and Black snap-on covers included

Audio Tone - minimum 75 dB at 7 inches

OEM / Private Label Area: .9 x.35 inch (23 x 9 mm)

Keypad Type: Shall be a capacitive type keypad, with twelve keys and no moving parts

Keypad Reliability: Tested to a minimum of 1 million keystroke actuations

Keypad Labeling:

Includes both numeric and alpha labeling

Shall include a raised pip on the ‘5’ key.

Keypad Backlighting:

When activated, each individual key is backlit in blue colored light

The ‘5’ key is always illuminated

Keypad Output Data Configuration shall be field configurable

Keypad Output Data Configuration Options:

8-Bit Burst (default data output configuration)

4-Bit Burst

26-Bit Wiegand

Certifications/Compliances:

FCC

CE

ICC

UL 294

C-Tick

IP67

Model: P-710 Proximity Reader

Read Range: Up to 15 inches (378 mm).

Dimensions: (H x W x T): 8.5 x 6 x 1 inches (216 x 152 x 25.4 mm)

Weight: 20 oz. (567 g)

Current Draw: 200 mA typical, 600 mA peak at 12 VDC

Mounting:

Mounting screws are concealed by a black adhesive label

ANSI single-gang wall box, or flat surfaces

Color: Black

 Audio Tone - minimum 80 dB at 15 inches

OEM Label Area: 7.38 x 4.75 inch (187 x 121 mm)

Certifications/Compliances:

FCC

ICC

UL 294

IP67

Model: P-900 Proximity Reader

Read Range: Up to 20 inches (504 mm)

Dimensions: (H x W x T): 10.5 x 10.5 x 2 inches (267 x 267 x 51 mm)

Weight: 37.4 oz. (1060 g)

Current Draw: 215 mA typical, 350 mA peak at 12 VDC

Mounting:

Mounting screws are concealed by a black adhesive label

ANSI single/double-gang wall box, parking bollards, or flat surfaces

Color: Black

Audio Tone - minimum 85 dB at 20 inches

OEM Label Area: 9.13 x 4.25 inch (232 x 108 mm)

Certifications/Compliances:

FCC

CE

ICC

UL 294

IP67

* + - * 1. The Proximity Credentials Shall Support the Following:

General:

Passive Operation: Credentials must be powered by the reader and not make use of a battery

Operating Temperature Range: -40 to 150 degrees F (-40 to 65 degrees C)

Humidity: 0 – 95% non-condensing

Credential coding shall be derived from a population of at least 184 trillion possible unique codes

Credential coding shall support up to 64 bits

Supported Data Configurations:

Wiegand

ABA Track II Magnetic Stripe

ID Marking Options:

Matches encoded (factory standard)

None (no ID marking)

Offset numbers

Random numbers

Frequency: 125-kHz Proximity Credential Technology Support for one of the following:

Native Pyramid Series protocol

HID® standard protocol

AWID® standard protocol

PSC-1 Standard Light Proximity Card:

Dimensions: 3.38 x 2.15 x 0.06 inches (86 x 54 x 1.5 mm)

Clamshell-type plastic card

Reinforced vertical slot punch

Beveled edges

Size: 3.38 x 2.15 x 0.06 inches (86 x 54 x 1.5 mm)

Printing: via Adhesive Overlay

Read Range: Up to 8 inches (202 mm)

PSI-4 Printable Proximity Card:

Dimensions: 3.3 x 2.1 x 0.046 inches (86 x 54 x 0.84 mm)

Slot Punch Indicators: Vertical and Horizontal

Read Range: Up to 7 inches (176 mm)

Finish:

Front: Printable gloss white

Back: Printable gloss white with slot punch indicators

Printing: Front and back surfaces suitable for edge-to-edge dye sublimation printing

Graphic Options:

None (standard)

Custom color graphics

PSM-2 Multi-Technology Printable Proximity Card:

Dimensions: 3.3 x 2.1 x 0.031 inches (86 x 54 x 0.79 mm)

Operating Temperature: –35° F to 122° F (–37° C to +50° C)

Slot Punch Indicators: Vertical and Horizontal

Read Range: Up to 7 inches (176 mm)

Finish:

Front: [Printable gloss] white

Back: [Printable gloss] white with slot punch indicators

Printing:

Front surface suitable for edge-to-edge dye sublimation printing

Back (without magnetic stripe) surface suitable for edge-to-edge dye sublimation printing

Graphic Options:

None (standard)

Custom graphics

Magnetic Stripe Options:

None

3-track high coercivity

PDT-1 Proximity Disc Tag:

Dimensions: 1" diameter × 0.0625" thick (25.4 × 1.6 mm)

Read Range: Up to 3.5 inches (88 mm)

Attachment Method: Industrial adhesive

Graphic Options:

None

Custom graphics (front only)

PSK-3 Proximity Key Ring Tag:

Dimensions: 1.2" W × 1.5" H × 0.15" D (30 × 38 × 3.8 mm)

Slot Punch: Reinforced brass eyelet

Read Range: Up to 3.5 inches (88 mm)

Finish:

ABS plastic (Gray)

Graphic Options:

None (standard)

Custom graphics

OEM / Private Label Area: 0.11" W × 0.25" H (2.8 × 6.4 mm); corner radius of 0.63" (16 mm)

1. EXAMINATION
	* + - 1. Examine cable pathways including conduit, raceways, cable trays, and other pathway elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.
				2. Examine rough-in for control cable and conduit systems to card readers, and other EACS components to verify conduit and back-box locations prior to installation of EACS devices.
				3. Examine available network capacity and support infrastructure.
				4. Examine install location for compliance with surface requirements, space allocations, installation tolerance, hazards to safe system operation, and other conditions affecting installation.
				5. Commencement of work by installer is acceptance of substrate surface requirements, space allocations, installation tolerance, hazards to safe system operation, and other conditions affecting installation.
				6. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. PREPARATION
				1. Comply with ANSI/TIA-606-B Labelling Standard.

Develop acceptance test concept and, on approval, develop specifics of the test.

Develop cable and asset-management system details; input data from construction documents. Include system schematics and technical drawings in electronic format.

* + - * 1. In meetings with Architect and Owner, present Project planning documents and review, adjust, and prepare final programming and configuration documents. Use final documents to program and configure system software.
			1. CABLING
				1. Comply with NECA 1, "Good Workmanship in Electrical Construction"
				2. Install cables and wiring according to national, state, and local laws.
				3. Wiring Method: Install wiring in raceway and cable tray except within consoles, cabinets, desks, and counters. Conceal raceway and wiring except in unfinished spaces.
				4. Junction boxes and enclosures containing security-system components or cabling, and which are easily accessible to employees or to the public, shall be provided with tamper resistant fasteners and/or tamper detection switches. In addition, hinged enclosure doors shall be equipped with locking hardware. Boxes above ceiling level in occupied areas of the building shall not be considered accessible. Junction boxes and small device enclosures below ceiling level and easily accessible to employees or the public shall be covered with a suitable cover plate and secured with tamperproof screws.
			2. CABLE APPLICATION
				1. Comply with TIA 569-C, "Commercial Building Standard for Telecommunications Pathways and Spaces."
				2. Card Readers and Keypads and Peripheral Devices:

Install number of conductor pairs recommended by device manufacturer for the functions specified.

Follow device manufacturer’s installation requirements for maximum cable distances and sizes.

* + - 1. GROUNDING
				1. Comply with Section 260526 "Grounding and Bonding for Electrical Systems." [IF APPLICABLE]
				2. Comply with IEEE 1100, "Recommended Practice for Power and Grounding Electronic Equipment."
				3. Ground cable shields, drain conductors, and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
				4. Signal Ground:

Terminal: Locate in each equipment room and wiring closet; isolate from power system and equipment grounding.

Bus: Mount on wall of main equipment room with standoff insulators.

* + - 1. IDENTIFICATION
				1. In addition to requirements in this article, comply with applicable requirements in Section 260553 "Identification for Electrical Systems" [IF APPLICABLE] and with TIA/EIA 606-B.
				2. Label each terminal strip and screw terminal in each cabinet, rack, or panel.

All wiring conductors connected to terminal strips shall be individually numbered, and each cable or wiring group being extended from a panel or cabinet to a building-mounted device shall be identified with the name and number of the particular device as shown.

* + - * 1. At completion, cable and asset management documentation shall reflect as-built conditions.
			1. FIELD QUALITY CONTROL
				1. Perform tests and inspections:

Testing Agency: Engage a qualified testing agency to perform tests and inspections.[OPTIONAL]

Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.[OPTIONAL]

Factory Commissioning: Onsite visit by the Manufacturer’s in-house personnel to inspect, test, and assess system programming, functionality, and performance. [OPTIONAL]

* + - * 1. Tests and Inspections:

LAN Cable Procedures: Inspect for physical damage and test each conductor signal path for continuity and shorts. Test for faulty connectors, splices, and terminations. Test according to TIA/EIA 568-C, "Commercial Building Telecommunications Cabling Standards - Part 1: General Requirements." Link performance for UTP cables must comply with minimum criteria in TIA/EIA 568-C.

As appropriate, test each reader for proper LED and audio tone function, as well as read range and data output accuracy.

Test each circuit and component of each system. Tests shall include, but are not limited to, measurements of power-supply output under maximum load, signal loop resistance, and leakage to ground where applicable. System components with battery backup shall be operated on battery power for a period of not less than 10 percent of the calculated battery operating time. Provide special equipment and software if testing requires special or dedicated equipment.

Operational Test: After installation of cables and connectors, demonstrate product capability and compliance with requirements. Test each signal path for end-to-end performance from each end of all pairs installed. Remove temporary connections when tests have been satisfactorily completed.

* + - * 1. Devices and circuits will be considered defective if they do not pass tests and inspections.
				2. Prepare test and inspection reports.
			1. CLEANING
				1. Clean components soiled by work as recommended by manufacturer.
				2. Remove surplus materials and debris from site.
			2. STARTUP SERVICE
				1. Engage a factory-authorized service representative to supervise and assist with startup service.[OPTIONAL]
				2. Provide onsite visit by Manufacturer’s in-house personnel to train Owner’s operations personnel.[OPTIONAL]
				3. Complete installation and startup checks according to approved procedures that were developed in "Preparation" Article and with manufacturer's written instructions.
				4. Enroll and prepare badges and access cards for Owner's operators, management, and security personnel.[OPTIONAL]
			3. ADJUSTING
				1. Occupancy Adjustments: When requested within 30 days of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project for this purpose. Tasks shall include, but are not limited to, the following:

Check cable connections.

Check proper operation of card readers, intrusion sensors, integrated systems, and database configuration. Verify system configuration and adjust settings needed.

Recommend changes to the system configuration and settings to improve Owner's use.

Provide a written report of adjustments and recommendations.

* + - 1. DEMONSTRATION
				1. Demonstrate proper operating procedures to owner's representative.
				2. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain the system equipment.[OPTIONAL]
				3. Develop and provide separate training modules for the following:

Computer system administration personnel to manage and repair the LAN and databases and to update and maintain software.

Operators who prepare and input credentials, monitor the system, and to enroll personnel.

Security personnel.

Hardware maintenance personnel.

Corporate management.

* + - 1. MAINTENANCE
				1. The Contractor shall offer a Software Upgrade and Support Agreement (SUSP).

As part of the agreement, normal business hours (9:00 AM – 6:00 PM), telephone support shall be available.

The option of 24/7 telephone support shall be offered.

END OF SECTION 281326