

SECTION 13761

BIOMETRIC ACCESS CONTROL SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Biometric Reader Hardware
- B. Biometric Reader Software
- C. ICLASS Smart Cards
- D. Power Supplies
- E. Wiring

1.02 PRODUCTS SUPPLIED BUT NOT INSTALLED UNDER THIS SECTION

- A. ICLASS Smart Cards [\[Delete if not applicable\]](#)

1.03 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

- A. RJ-12 Communications Cable if using serial communications.

1.04 RELATED SECTIONS [\[Choose as related to your project\]](#)

- A. 08460 Automatic Entrance Doors [\(ADA\)](#)
- B. 08470 Revolving Doors
- C. 08740 Electro-Mechanical Hardware [\(card key locking hardware, electrical locks\)](#)
- D. 10450 Pedestrian Control Devices
- E. 10454 Rotary Gates
- F. 10456 Turnstiles
- G. 11150 Parking Control Equipment
- H. 13100 Lightning Protection
- I. 13720 Intrusion Detection Systems
- J. 13740 Video Surveillance Systems
- K. 13750 Communications Systems
- L. 13760 Security Furniture & Racking Systems
- M. 13820 Door Control Systems
- N. 13830 Elevator Monitoring and Control [\(interface with access control\)](#)
- O. 16050 Basic Electrical Materials and Methods
- P. 16120 Conductors and Cables [\(including Fiber Optic\)](#)
- Q. 16260 Uninterruptible Power Supply Systems [\(UPS for Server & Workstations\)](#)

1.05 SUMMARY

A. Labor And Materials

Unless otherwise provided in the Drawings and Specifications, the Contractor shall provide and pay for all labor, materials, equipment, tools, utilities, construction equipment and machinery, transportation and other facilities and services necessary for the proper execution, operation and completion of the Work.

B. Specification Language

Specifications and notes are written in imperative and abbreviated form. Imperative language of the technical specifications is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting “shall”, “shall be”, “the Contractor shall”, and similar mandatory phrases by inference. The words “shall be” shall be supplied by inference where a colon (:) is used within product specifications.

C. Drawings And Specifications

1. Contractor shall be provided **three (3)** sets of the Drawings and Specifications for his use. Additional sets, if requested by Contractor, shall be furnished to the Contractor for the actual cost of reproduction.
2. Contractor shall carefully study the Drawings and Specifications, and shall at once report any error, unforeseen circumstances, inconsistency or omission he may discover.
3. The [CLIENT] Project Manager shall be the interpreter of the requirements of the Drawings and Specifications, subject to the final approval of [CLIENT]. All interpretations and opinions of the Security Consultant shall be made in writing or in the form of drawings.

D. Intent And Correlation

1. The intent of the Project Drawings and Specifications is to include all items necessary for the proper execution and completion of the Work.
2. The Project Drawings and Specifications are complementary, and what is required by any one shall be as binding as if required by both.

1.06 REFERENCES

- A. The Biometric ICLASS system shall have been tested for compliance with all applicable international standards and shall have the following approvals: FCC, UL294, CSA, cUL, CE under R&TTE. These approvals shall be printed on the labeling located on the rear panel of the reader.
- B. The biometric ICLASS system shall include an embedded GEMPLUS GEMEASYLINK680SL ICLASS contactless smart card reader. This device shall be a radio-transceiver with the following characteristics:
 1. Operating Frequency Range: 13.553 – 13.567 MHz
 2. RF Power Rating: 0.0 Watts

3. RF Output Impedance: 50 Ohms
- C. The biometric ICLASS system shall comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- D. The Biometric Reader system shall comply with the Standard for Access Control System Units for UL294 and with CSA C22.2 No. 205 for the cUL Mark.
- E. The Biometric Reader shall have the CE mark, for compliance with CISPR22, EN 55022 and EN 50082-1 requirements. For European Union (EU) countries, the Biometric Reader shall be compliant with CE under the R&TTE Directive, related to the radio transceivers that are part of its design. The Biometric Reader shall be compliant with this directive if, and only if, the user installs the manufacturer's specified Filter Installation Kit. This filter kit shall be included with any Biometric Reader product if it was shipped to a country within the EU.
- F. The Filter Installation Kit shall consist of two filters: a line filter used to minimize conducted emissions from power supply lead lengths greater than 3 meters and a DB15 "Pass-Thru" filter used to minimize radiated emissions.
- G. The biometric reader shall be in compliance with European Certification and meet the essential requirements and other relevant provisions of Directive 1999/5/EC.
- H. Declarations of Conformity shall include:
 1. R&TTE Directive 1999/5/EC
 2. EMC Directive 89/336/EEC
 3. Low Voltage Safety Directive 73/23/EEC

1.07 DEFINITIONS

- A. Words that are in common use are used throughout the Drawings and Specifications, except:
 1. Words which have well-known technical or trade meanings are used in accordance with such recognized meanings.
 2. Whenever the following listed words and phrases are used, they shall be mutually understood to have the following respective meanings:
- B. The words "as indicated." means: as shown on the Drawings, and in accordance with the Specifications.
- C. The words "as required." means: as required to provide a complete and satisfactory Work in full conformance with the Drawings and Specifications.
- D. The word "New" means: new Work to be provided by Contractor.

- E. The word “Provide” means: furnish, install, connect, test and make ready for use.
- F. The words “Relocate existing” means: remove existing item from present location. Reinstall, re-connect, and test existing item and make ready for use at new location as shown on the Drawings.
- G. The words “Remove existing “ means: remove existing item and return item to [CLIENT].
- H. The word “Replace” means: remove existing item and return item to [CLIENT]. Provide new item as indicated.
- I. The word “Work”: The Work is the completed construction required by the Drawings and Specifications, and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.
- J. The word “Furnish” means: supply item as specified. Item to be installed by others.

1.08 CONTRACTOR DESIGN REQUIREMENTS

- A. The Project Drawings represent the level of system design to be provided by [CLIENT]. Contractor shall provide all additional system design work required, including:
 - 1. Conduit layout and sizing.
 - 2. Wire and cable layout and sizing.
 - 3. Point-to-point wiring and equipment hook-up information.
 - 4. Equipment mounting details.
 - 5. Design of equipment cabinets.
 - 6. Other detailed design work required.
- B. Contractor’s design shall conform to all applicable codes and ordinances. All electrical design, including the sizing and placement of conduit, raceways and conductors, shall be in accordance with NFPA 70: National Electrical Code, current version, unless local codes establish more stringent requirements.
- C. Contractor’s design work is subject to review and approval by [CLIENT]’s Project Manager.
- D. Contractor’s design shall also include:
 - 1. The addition of all wire, cable, conduit, connectors and junction boxes required for system operation.
 - 2. Install conduit between the processor and all equipment at each door, as necessary.
 - 3. Complete “as-built” documentation of all security systems, including documentation of existing equipment, wiring, conduits, and raceways.
 - 4. Other Work as defined within the Project Drawings and Specifications.

1.09 SYSTEM DESCRIPTION

- A. The biometric ICLASS reader system shall provide a one-to-one (1:1) fingerprint verification utilizing an embedded numeric keypad and Gemplus ICLASS™ contactless smart card reader that negate the need for external Wiegand input. The Biometric Reader

shall prevent unauthorized access via loaned, lost or stolen cards or PINs by requiring that the SiteKey stored on the card matches that of the reader and that the fingerprint of the person seeking entry match the identity of the cardholder. The Biometric Reader shall also include the ability to implement triple authentication: smart card (what you have), fingerprint (who you are), and numeric password (what you know).

B. Configurations

1. **Basic Operation.** The Biometric Reader is a complete stand-alone system. The reader shall provide a Line Trigger output when biometric authentication is verified. Enrollment shall be accomplished using a serial interface with a laptop computer with biometric software. Once all user have been enrolled, the laptop may be disconnect and the reader perform full functions off-line.
2. **Advanced Operation.** The Biometric Reader shall provide a Wiegand output to an existing or new card access control system to provide higher security at selected doors. The reader shall provide various Wiegand outputs, from 1-64 bits.
3. **Optimal Operation.** The Biometric Reader shall provide a serial (RS232/RS485) and network interface to communicate with a desktop computer running the biometric software to add to delete biometric templates in real time. The biometric software shall be able to run on the same desktop computer as the card access software program and not require a separate computer.

1.10 SUBMITTALS

A. Product Data

Product Data submittal shall only be required if the Contractor requests a substitution or a particular brand product is not specified or recommended.

B. Procedures

1. Provide submittals to [CLIENT]'s Project Manager.
2. Submit **three (3)** copies of each submittal.

C. Shop Drawings

1. General Shop Drawings for the project as described elsewhere.
2. Provide other Shop Drawings only if specifically requested by [CLIENT]'s Project Manager.

D. Manufacturers Installation and Programming Instructions

Provide Manufacturers Installation and Programming Instructions as requested in the various Specification Sections.

E. PROJECT RECORD DRAWINGS

1. Definition: Project Record Drawings are drawings that completely record and document all aspects and features of the Work. (Also known as "as-built" drawings.)

2. The purpose of Project Record Drawings is to provide factual information regarding all aspects of the Work, to enable future service, modifications, and additions to the Work.
3. Project Record Drawings are an important element of this Work. Contractor shall accurately maintain Project Record Drawings throughout the course of this project. Project Record Drawings shall include documentation of all Work, including the documentation of existing equipment, wiring, conduits, and raceways that are to be reused in the Work.
4. [CLIENT] Project Manager shall furnish Contractor with two (2) sets of site plans for Contractor's use in preparing Project Record Drawings. One set shall be used as a working set, the other shall be used to prepare the final record set.
5. Contractor shall maintain the working set of Project Record Drawings at the project site throughout the course of the Work. The working set shall be updated on a daily basis as the Work progresses.
6. Project Record Drawings shall accurately show the physical placement of the following:
 - a. Equipment and devices.
 - b. Conduit and raceways.
 - c. Junction and pull box locations.
 - d. End-of-line resistor locations.
 - e. Interfaces to external equipment.
 - f. Connections to power and telephone circuits.
- F. Project Record Drawings shall show the physical placement of each device and conduit or aerial center line, to be accurate to within one foot (1') of the nearest landmark. Where the site plan furnished by [CLIENT] Project Manager conflicts with actual conditions, Contractor shall amend site plan as required. Indicate exact description of conduit runs (above ground, two foot trench, along outside wall of building, etc.).
- G. Project Record Drawings shall show wire and cable runs, zone numbers, tamper circuit configuration, panel/circuit breaker numbers from which equipment is powered, and splice points. Such information may be shown on the site plans.
- H. Project Record Drawings shall be available for inspection by [CLIENT] Project Manager on a daily basis. Incomplete or inaccurate Project Record Drawings may be cause for delay of Contractor's payment.
- I. Upon completion of Work, and prior to Final Acceptance, Contractor shall prepare and submit to [CLIENT] Project Manager a final record set of Project Record Drawings. This set shall consist of all data transferred from the working set, supplemented by Riser Diagrams and other information. The final record set of Project Record Drawings shall be drafted by a skilled draftsman, under the supervision of Contractor. All final Project Record Drawings shall be provided to [CLIENT].

J. System Documentation

1. Definition: System Documentation is a complete collection of all installation, programming, operation, and maintenance manuals and work sheets relating to the equipment provided as part of the Work.
2. Contractor shall maintain a file of System Documentation at the project site throughout the course of the Work. Such file shall be updated with new information as equipment is received and installed. System Documentation shall be available for inspection by [CLIENT] Project Manager on a daily basis.
3. Upon completion of Work, and prior to final Acceptance, Contractor shall prepare and submit to [CLIENT] Project Manager **three (3)** sets of System Documentation.

K. Closeout Submittals

1. Provide a set of as-built drawings and manuals to the [CLIENT] Project Manager
As-Built Drawings
Mounting Details
Product Data
Installation Manuals
Operating Manuals
Maintenance/Service Manuals
2. Provide the [CLIENT] Project Manager- with all programming sheets, keys to the equipment cabinets, as-built drawings, operating manuals, maintenance/repair manuals, spare fuses, all programming sheets and keys to the equipment cabinets, tools for tamper-resistant enclosures and tools for manual resetting devices.

1.11 QUALITY ASSURANCE

A. Qualifications Of Contractor

1. Contractor shall be an installation and service contractor regularly engaged in the sale, installation, maintenance and service of biometric access control systems.
2. Contractor shall have **five (5)** years experience with the installation, start-up and programming of systems of a similar size and complexity to the one proposed.
3. Contractor shall be a factory authorized dealer of the system proposed for at least **two (2)** years.

B. Supervision Of Work

1. Contractor shall employ a competent Foreman to be in responsible charge of the Work. Foreman shall be on the project site daily during the execution of the Work.
2. Contractor's Foreman shall be a regular employee, principle, or officer of Contractor, who is thoroughly experienced in projects of a similar size and type. Contractor shall not use contract employees or Subcontractors as Foremen.

C. Qualifications Of Technicians

1. All electronic systems Work shall be performed by electronic technicians thoroughly trained in the installation and service of specialty low-voltage electronic systems.
2. Journeyman Wireman electrical workers may be used to install conduit, raceways, wiring, and the like, provided that final termination, hook-up, programming, and testing is performed by a qualified electronic technician, and that all such Work is supervised by the Contractor's Foreman.
3. All incidental Work, such as cutting and patching, lock hardware installation, painting, carpentry, and the like, shall be accomplished by skilled craftsmen regularly engaged in such type of work. All such Work shall comply with the highest standards applicable to that respective industry or craft.
4. All 120 VAC power wiring and connections are to be performed by a qualified Journeyman Wireman, licensed to perform such Work in the [CLIENT].

D. Subcontractors

1. Definition: A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the Work at the site.
2. Use of any Subcontractor is subject to the approval of [CLIENT]. The Contractor shall identify all Subcontractors on the Bid Form. The Contractor shall make no substitution for any Subcontractor previously selected without approval from [CLIENT].
3. Contractor's Foreman shall be on the project site daily during all periods when Subcontractors are performing any of the Work. Contractor's Foreman shall be in responsible charge of all Work, including any Work being performed by Subcontractors.
4. By an appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Drawings and Specifications, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward [CLIENT].

E. Supervision And Construction Procedures

1. The Contractor shall supervise and direct the Work, using his best skill and attention. Contractor is solely responsible for all construction means, methods, and techniques.
2. The Contractor shall employ a competent foreman who shall be in attendance at the project site during the progress of the Work. The foreman shall represent the Contractor and all communications given to the foreman shall be as binding as if given to the Contractor.

F. Regulatory Requirements

1. All Work is to conform to all building, fire, and electrical codes and ordinances applicable in the [CLIENT]. In case of conflict between the Drawings/Specifications and codes, the codes shall govern. Notify [CLIENT] Project Manager of any such conflicts.
2. Contractor shall secure and pay for all licenses, permits, plan reviews, engineering certifications, and inspections required by regulatory agencies. Contractor shall prepare, at Contractor's expense, any documents, including drawings, that may be required by regulatory agencies.

G. Permits

The Contractor shall make application for and obtain any and all permits required by federal, state, county, city, or other authority having jurisdiction over the work.

1.12 DELIVERY, STORAGE, AND HANDLING

Security of Contractor's Tools and Equipment: [CLIENT] is not responsible for the care, storage or security of any of the Contractor's tools or equipment.

1.13 PROJECT/SITE CONDITIONS

A. Environmental Conditions

1. Power: Electrical power will be supplied by [CLIENT] to the extent that the usage is compatible with available facilities in the vicinity of the work.
2. Telephone: Contractor may use a telephone designated by [CLIENT] for local and toll-free calls. The costs of long distance calls are the responsibility of the Contractor and shall not be charged to [CLIENT].
3. Rest room Facilities: Contractor may use existing Rest room facilities designated by [CLIENT].
4. Parking: [CLIENT] reserves the right to limit or restrict Contractor parking based upon the daily requirements of the other contractors on site.
5. Dust Control: Make provisions to control all dust, dirt, and foreign material caused by the performance of the Work.
6. Use of explosive type fastening equipment is prohibited.
7. Notify [CLIENT] immediately of any damage or possible damage to any other equipment.

B. Clean-Up

1. Contractor shall clean-up, on a daily basis as the Work progresses, all dirt, dust and debris caused by Contractor's operations. Clean-up shall be completed by the end of each workday to the satisfaction of [CLIENT]'s on-site representative.
2. In the event that Contractor fails to clean-up, [CLIENT] may elect to have clean-up performed by others, with the costs of such clean-up being charged to the Contractor.

C. Construction Aids

1. Definition: Construction Aids are facilities and equipment required by personnel to facilitate the execution of the Work. Construction Aids include scaffolds, staging, ladders, platforms, hoists, cranes, lifts, trenchers, core drillers, protective equipment, and other such facilities and equipment.
2. Contractor shall provide all Construction Aids required in the execution of the Work. Construction Aids that are the property of [CLIENT] or other contractors shall not be used without permission.
3. Storage of Construction Aids shall be coordinated with [CLIENT]'s on-site representative.

D. Safety

1. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work.
2. Contractor shall comply with all local, state, and federal regulations and laws for the safety of the work place.

E. Accident Reports

Serious or fatal accidents shall be reported immediately by telephone or radio to the [CLIENT]'s Project Manager.

F. Existing Conditions

1. [CLIENT] does not warrant the condition of any portion of the existing wiring, conduit or raceway systems. Prior to submitting his proposal, Contractor shall examine all existing conditions and determine to what extent the existing wiring, conduit, and raceway systems may be reused.
2. Contractor's proposal price shall include the cost of replacing existing wiring, conduit, and raceways as required.

1.14 SEQUENCING

A. Description

This implementation plan describes the general approach that shall be followed in order to minimize the time for the biometric access control systems to be operational.

B. Approach

Contractor shall plan and schedule all work in such a sequence as to minimize the time before the system is operational. The following is a suggested work sequence:

1. Order all equipment needed and notify any subcontractors to schedule their participation.
2. Perform all system layout work.
3. Insure there are an adequate number of power receptacles available to operate all security equipment and coordinate with [CLIENT] as to where power is available.
4. Provide shop drawings to verify location of all equipment, conduit runs, power connections, etc. Submit shop drawings to [CLIENT] Project Manager.
5. Coordinate with [CLIENT] to provide space in each building's Communications Room for mounting of processors.
6. Provide training on how to fill out the programming sheets for access levels.
7. Prepare and pre-test all equipment to the greatest extent possible.
8. Install all equipment.
9. Provide training on the programming other various options.
10. Test and inspect all systems.
11. Perform all other Work as required.
12. Perform the Acceptance Test.
13. Provide training.
14. Provide as-built drawings.

1.15 SCHEDULING

The Contractor, within five (5) days after being awarded the contract, shall prepare and submit for [CLIENT]'s information, an estimated progress schedule for the Work. The progress schedule shall be related to the entire project, and shall indicate start and completion dates.

1.16 WARRANTY

- A. Contractor warrants that all Work furnished (material and labor) under this Contract will be of good quality, free from faults and defects, and in conformance with the Project Drawings and Specifications.
- B. Contractor shall provide a parts and labor guarantee on all Work. Unless otherwise specified herein, Contractor's guarantee shall be for a period of **two (2)** years from date of Acceptance, except where any specific guarantees from a supplier or equipment manufacturer extends for a longer time.
- C. Contractor's guarantee shall cover all costs associated with troubleshooting, repair, and replacement of defective Work, including costs of labor, transportation, lodging, materials, and equipment.
- D. Guarantee shall not cover any damage to material or equipment caused by accident, misuse, unauthorized modification or repair by [CLIENT], or acts of god.

- E. Contractor shall promptly respond to [CLIENT]'s requests for service during the guarantee period. Contractor shall provide repair service as soon as reasonably possible upon request from [CLIENT], but in no case shall service response exceed **eight (8)** hours from time of request.

1.17 SYSTEM STARTUP

Power shall only be applied to the system after re-checking for proper grounding of the system and measuring all loops for lack of shorts, grounds, and open circuits.

1.18 OWNER'S INSTRUCTIONS

A. Coordination With [Client]

1. Contractor shall closely schedule and coordinate his activities with designated [CLIENT] representatives.
2. Contractor shall provide [CLIENT]'s Project Manager with a work plan on a weekly basis. Such work plan will describe locations of intended activities, types of activities, and potential conflicts to facility operations.

B. [CLIENT]'s Representatives

The following are [CLIENT]'s designated representatives:

PROJECT MANAGER

John Doe
Telephone (123) 456-7890

PROJECT ARCHITECT

Jane Doe
Telephone (123) 456-7890

PROJECT ENGINEER

Donald Doe
Telephone (123) 456-7890

PROJECT CONSULTANT

Fred Doe
Telephone (123) 456-7890

C. [CLIENT]'s Right To Carry Out The Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Project Drawings and Specifications and fails within seven days after receipt of written notice from [CLIENT] to commence and continue correction of such default or neglect with diligence and promptness, [CLIENT] may, after seven days following receipt of an additional written notice and without prejudice to any other remedy [CLIENT] may have, make good such deficiencies. In such case, an appropriate Change Order shall be

issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies.

D. Minor Changes In The Work

[CLIENT] shall have the authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time and not inconsistent with the intent of the Project Drawing and Specifications. Such changes shall be provided by written order.

1.19 COMMISSIONING

- A. After all Work is completed, and prior to requesting the Acceptance test, Contractor shall conduct a final inspection, and pre-test all equipment and system features. Contractor shall correct any deficiencies discovered as the result of the inspection and pre-test.
- B. Contractor shall submit a request for the Acceptance test in writing to the [CLIENT] Project Manager, no less than fourteen days prior to the requested test date. The request for Acceptance test shall be accompanied by a certification from Contractor that all Work is complete and has been pre-tested, and that all corrections have been made.
- C. During Acceptance test, Contractor shall demonstrate all equipment and system features to [CLIENT]. Contractor shall remove covers, open wiring connections, operate equipment, and perform other reasonable work as requested by [CLIENT].
- D. Any portions of the Work found to be deficient or not in compliance with the Project Drawing and Specifications will be rejected. [CLIENT] Project Manager will prepare a list of any such deficiencies observed during the Acceptance test. Contractor shall promptly correct all deficiencies. Upon correction of deficiencies, Contractor shall submit a request in writing to [CLIENT] Project Manager for another Acceptance Test.
- E. If, at the conclusion of the Acceptance Test, all Work is found to be acceptable and in compliance with the Project Drawings and Specifications, [CLIENT] Project Manager will issue a letter of Acceptance to Contractor and [CLIENT].

1.20 MAINTENANCE

- A. Provide full procedures for all database back-ups.
- B. Provide full procedures for server/workstation hard drive maintenance, such as defrag, etc.
- C. Provide full procedures for maintaining physical and software firewalls.
- D. Provide full procedures for upgrading software.
- E. Provide full procedures for testing battery condition on all field panels for adequate back-up time.
- F. Provide full procedures for any other tasks that must be performed to ensure the warranty remains intact.

PART 2 PRODUCTS

2.01 GENERAL

- A. All products not provided by [CLIENT] shall be new and unused, and shall be of manufacturer's current and standard production.
- B. Where two or more equipment items of the same kind are provided, all shall be identical and provided by the same manufacturer.
- C. Drawings and Specifications indicate major system components, and may not show every component, connector, module, or accessory that may be required to support the operation specified. Contractor shall provide all components needed for complete and satisfactory operation.
- D. Product Availability
 - 1. Contractor, prior to submitting a proposal, shall determine product availability and delivery time, and shall include such considerations into his proposed Contract Time.
 - 2. Certain products specified may only be available through factory authorized dealers and distributors. Contractor shall verify his ability to procure the products specified prior to submitting a proposal.
- E. Wire And Cable
 - 1. General: Provide all wire and cable required to install systems as indicated. Wire and cable shall be sized to provide minimum voltage drop and minimum resistance to the devices being supplied.
 - 2. All cables shall be specifically designed for their intended use (direct burial, aerial, etc.).
 - 3. Comply with equipment manufacturers recommendations for wire and cable size and type.
 - 4. Comply with all applicable codes and ordinances.
- F. Conduit And Raceway Systems
 - 1. General: The placing of surface mounted conduit on the exterior of any building shall be approved by [CLIENT] prior to its installation.
 - 2. Interior Conduit:
 - a. Electrical Metallic Tubing (EMT)
 - b. Flexible Metal Conduit
 - c. Provide fittings and connectors as required for installation of EMT or flexible conduit.
 - 3. Surface Raceways:
 - a. Sheet metal channel with fitted cover, suitable for use as surface metal raceway, WIREMOLD or approved equal.
 - b. Provide fittings, elbows, and connectors designed for use with raceway system.

4. Exterior Conduit: (any of the following as determined by local code requirements):
 - a. Rigid Steel Conduit
 - b. Rigid Aluminum Conduit
 - c. Rigid Nonmetallic Conduit (only if buried 18" below ground surface).
 - d. Intermediate Metal Conduit
 - e. Provide rain-tight fittings and connectors as required for installation of exterior conduit.
 5. Exterior Flexible Conduit:
 - a. Liquidtight Flexible Conduit: Flexible metal conduit with PVC jacket.
 - b. Provide rain-tight fittings and connectors as required for installation of Liquidtight Flexible Conduit.
- G. Junction And Pull Boxes
1. Interior Boxes: Sheet Metal Outlet Boxes: Sizes to be determined in accordance with code requirements for conductor fill. No box shall be smaller than a single gang 1-1/2 deep. Provide box covers as required.
 2. Exterior Boxes: All exterior boxes shall NEMA 4 or NEMA 3R, watertight and dust-tight
 3. All interior and exterior boxes shall have their covers fastened using security screws.
- H. Lightning Protection
1. The Contractor shall provide suitable lightning protection for all processors/controllers.
 2. All lightning protection equipment shall be UL listed.

2.02 BIOMETRIC ACCESS CONTROL SYSTEM

- A. Biometric Reader Hardware
The access control biometric reader shall be a model V-Station iCLASS as manufactured by Bioscrypt.
- B. Biometric Reader Software
The access control biometric reader shall be a model VeriAdmin as manufactured by Bioscrypt.
- C. ICLASS Class Smart Cards
1. HID model ICLASS class Smart Cards
- D. Power Supply To Biometric Reader
1. Altronix model AL125UL Power Supply
- E. Wiring

1. Two twisted pairs of stranded 22AWG wires with an overall shield for biometric reader to remote work station
2. Six stranded conductors of 22AWG wires with an overall shield for biometric reader to Wiegand input reader
3. One pair of 18AWG or better parallel conductors to the power supply
4. One 16AWG conductor or better to earth ground

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS

- a. The system shall only be provided by Contractors who are factory authorized to install, service and maintain the system by the access control manufacturer.
- b. The Contractor must have been a factory authorized dealer with the proposed manufacturer for a period of at least **two (2)** years before the Bid Opening Date.
- c. The Contractor's installers and technicians shall also be factory trained and certified to perform such tasks.

3.02 EXAMINATION

- A. The Contractor shall be required to visit the installation site prior to bidding the job.
- B. The Contractor shall report any discrepancies between the Specifications, Drawings, and Site Examination prior to the Bid Opening Date.

3.03 PREPARATION

- A. The Contractor shall order all required parts and equipment upon notification of award of the Work.
- B. The Contractor shall bench test all equipment prior to delivery to the job site.
- C. The Contractor shall verify the availability of power where required. If a new source of power is required, a licensed electrician shall be used to install it.
- D. The Contractor shall arrange for obtaining all programming information including access times, free access times, door groups, operator levels, etc.

3.04 INSTALLATION

- A. The Contractor shall coordinate with the [CLIENT]'s IT Department if connecting to their network.
- B. The Contractor shall carefully follow the instructions in the manufacturers' Installation Manual to insure all steps have been taken to provide a reliable, easy to operate system.
- C. The Administrator Terminal shall be connected to the remote terminals before connecting to any card reader processors.
- D. The Contractor shall coordinate with the [CLIENT]'s locksmith if converting from mechanical to electric locks.

- E. Perform all Work as indicated in the Drawings and Specifications.
- F. The Contractor shall install the appropriate cable from the CPU to readers, door contacts, request-to-exit devices, and electric locks at each door and/or gate.
- G. All communications cables shall be kept away from power circuits.
- H. The Contractor shall install the power supply(s) for electric locks in locations where they won't interfere with other operations.
- I. The Contractor shall also execute adequate testing of the system to insure proper operation.
- J. The Contractor shall provide adequate training of the system users to insure adequate understanding to prevent operating errors.

3.05 WORKMANSHIP

- A. Comply with highest industry standards, except when specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform Work with persons experienced and qualified to produce workmanship specified.
- C. Maintain quality control over suppliers and Subcontractors.
- D. Quality of workmanship is considered important. [CLIENT] Project Manager will have the authority to reject Work which does not conform to the Drawings and Specifications.

3.06 EQUIPMENT PRE-TEST

All equipment shall be bench tested prior to delivery to job site and prior to installation. Bench test per manufacturer's installation instructions.

3.07 WIRE AND CABLE

- A. Design, layout, size, and plan new wire and cable runs as required.
- B. All wire and cable from the processors to all devices at each door shall be "home-run" unless otherwise specified.
- C. All wire and cable, including any wire and cable that is existing and will be reused in the Work, shall be installed in conduit or surface metal raceway, except as follows:
- D. Wire or cable, in lengths of less than ten (10) feet, that is "fished" within walls, ceilings, and door frames.
- E. All wire and cable passing thru metalwork shall be sleeved by an approved grommet or bushing.
- F. Avoid splicing conductors. All splices shall be made in junction boxes (except at equipment). Splices shall be made with an approved crimp connection. Wire nuts shall not be used on any low-voltage wiring.
- G. Identify all wire and cable at terminations and at every junction box. Identification shall be made with an approved permanent label, Brady or equal.

3.08 WIRE AND CABLE TERMINATIONS

- A. Identify all inputs and outputs on terminal strips with permanent marking labels.
- B. Neatly dress and tie all wiring. The length of conductors within enclosures shall be sufficient to neatly train the conductor to the terminal point with no excess. Run all wire and cable parallel or normal to walls, floors and ground.
- C. Install connectors as required by equipment manufacturers.
- D. Terminations shall be made so that there is no bare conductor at the terminal. The conductor insulation shall bear against the terminal or connector shoulder.
- E. Do not obstruct equipment controls or indicators with wire or cable. Route wire and cable away from heat producing components such as resistors, regulators, and the like.

3.09 CONDUIT AND RACEWAY INSTALLATION

- A. Design, lay-out, size and plan new conduit and raceway systems as required.
- B. Indoor Requirements:
 - 1. Route exposed conduit and raceway parallel and perpendicular to walls and adjacent piping.
 - 2. Maintain minimum six (6) inch clearance between conduit and piping.
 - 3. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps.
 - 4. Use conduit bodies to make sharp changes in direction, as around beams. Fasten conduits and raceways to structural steel using approved spring clips or clamps.
 - 5. Where conduit penetrates fire-rated walls and floors, seal opening with UL listed fire rated sealer or other methods as approved by codes.
 - 6. No exposed conduit, raceway, or junction box shall be installed within any office area.
 - 7. Install all boxes straight and plumb.
 - 8. Do not support conduit from mechanical, plumbing, or fire sprinkler systems.
 - 9. Drill or core drill all holes in walls, ceilings, or floors where required for new conduits. Do not cause damage to any structural steel or other structural support member by drilling or cutting.
 - 10. Do not use flexible conduit in lengths longer than six (6) feet.
- C. Outdoor Requirements:
 - 1. Where conduit penetrates exterior walls, seal opening around conduit in an approved manner to make watertight.
 - 2. Use galvanized straps and fasteners on all exterior conduit.
 - 3. All exterior boxes will only be used to aid in pulling the cable between points.

3.10 PENETRATIONS

- A. Do not penetrate any roof, flashing, exterior wall, or parapet without prior approval from [CLIENT]'s designated Construction Project representative.

- B. When penetrating a fire wall for passage of cables and/or conduit, always provide a fire-stop system that complies with code and the local authority having jurisdiction.

3.11 FIRE RATED DOORS AND FRAMES

Do nothing to modify a UL. rated door or frame that would void the UL. label or fire rating.

3.12 GROUNDING

Provide earth-grounding of equipment as required by equipment manufacturer. Earth ground shall be connected to ground rod or approved cold water pipe. Electrical or telephone ground connections shall not be used as earth grounds. Connections to mounting posts or building structural steel shall not be used as earth grounds.

3.13 POWER TO SECURITY EQUIPMENT

- A. Power all equipment from 120 VAC circuit dedicated for security use, except as noted. Mark all panel circuit breakers with labels worded "Security Equipment - Do Not Operate", or equivalent.
- B. All plug-in transformers shall be located at the security control panels. Secure all low-voltage plug-in transformers to outlet with screw or strap. Clearly label all transformers to identify purpose and use.

3.14 CUTTING AND PATCHING

The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work.

3.15 PAINTING

Not Applicable.

Or

All surface raceway systems shall be painted to match the surfaces they are attached to.

3.16 PLYWOOD BACKING

- A. Install the processor(s), power supplies, and all other related equipment on a plywood backboard for testing in the shop. The mounted assembly will then be transported "as is" to the job site for mounting in the Communication Room.
- B. Fasten the plywood backing to the wall using a hanger bolt at the four corners which align with pre-drilled holes in the plywood. Secure with flat washers and a nut.

3.17 FIELD QUALITY CONTROL

- A. Upon reaching Substantial Completion, perform a complete test and inspection of the system. If found to be installed and operating properly, notify [Client] of your readiness to perform the formal Test & Inspection of the complete system.
- B. Submit the Record Drawings (as-builts) to [Client] for review prior to inspection.
- C. During the formal Test & Inspection (Commissioning) of the system, have personnel available with tools and equipment to remove devices from their mounts to inspect wiring connections. Provide wiring diagrams and labeling charts to properly identify all wiring.

- D. If corrections are needed, the Contractor will be provided with a Punch-List of all discrepancies. Perform the needed corrections in a timely fashion.
- E. Notify [Client] when ready to perform a re-inspection of the installation.

3.18 INITIAL PROGRAMMING AND CONFIGURATION

- A. Contractor shall provide initial programming and configuration of the security management system. Programming shall include defining hardware, doors, monitor points, clearance codes, time codes, door groups, alarm groups, operating sequences, camera call-ups, and the like. Input of all program data shall be by Contractor. Contractor shall consult with Security Consultant and Owner to determine operating parameters.
- B. Contractor shall develop and input system graphics, such as maps and standby screens. Owner shall provide floor plan drawings as the basis for the creation of maps. Development of maps shall include the creation of icons for all doors, monitor points, and tamper circuits. Owner shall provide floor plan drawings, in the form of AutoCad .DWG or .DXF files, as the basis for the creation of maps.
- C. Owner, with the cooperation and assistance of Contractor, will input the cardholder data for each access card.
- D. Contractor shall maintain hard copy worksheets which fully document the system program and configuration. Worksheets shall be kept up to date on a daily basis by Contractor until final Acceptance by Owner. Worksheets shall be subject to inspection and approval by Owner. Provide final copies to Owner prior to Project Close-out.
- E. Contractor shall maintain a complete, up-to-date magnetic tape backup of the system configuration and cardholder database. Backup shall be maintained throughout programming period until final Acceptance by Owner. Submit back-up tapes to Owner upon Final Acceptance.
- F. Approximately sixty (60) days after start-up of system, Contractor shall return to project to provide follow-up assistance with system configuration as requested by Owner. Contractor shall include an allowance of forty (40) hours of labor for follow-up assistance in his Base Bid price.

3.19 TRAINING

- A. Contractor shall provide complete operator training on the Administer Software System. Training shall consist of **two (2)** hours of classroom instruction for the people selected by Owner, plus **one (1)** hour of individual hands-on training for people selected by Owner. Hands-on training shall include the opportunity for each person to operate the system, and to practice each operation that an operator would be expected to perform.
- B. Training shall cover all operating features of the system, including the following:
 - 1. System set-up and template database configuration.
 - 2. Access control features.
 - 3. Alarm monitoring features.

4. Report generation and searches.
 5. Template management.
 6. Backup procedures
 7. Routine maintenance and adjustment procedures.
- C. Training sessions are to be held at Owner's facility, and are to be scheduled at the convenience of Owner. Contractor shall provide written training outline and agenda for each training session prior to scheduling.
- E. Contractor shall provide **five (5)** copies of written training materials.

END OF SECTION