SECTION 27 0000 – GENERAL TECHNOLOGY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes general administrative and procedural requirements. The following requirements are included to supplement the requirements specified in Division 1 Specification Sections.

B. These specifications apply to the following major systems:

1. Structured cabling
2. Access Control
3. Door Hardware

1.3 GENERAL REQUIREMENTS

A. Bidders must submit a bill of materials with the proposal. BOM must list all major components, quantities, and extended price. BOM is provided for information only to assist in evaluating the various bid proposals. Bidder agrees to the scope of work outlined in the bid documents

B. The bid documentation does not provide for every component or requirement of installation, however, it does establish minimum requirements for the system. The final solution shall be well documented within the bid proposal. Drawings are not intended to be scaled for rough-in or to serve as shop drawings. Take all field measurements required to complete the work. Installation within a reasonable distance from the locations shown on the drawing will be performed without additional cost.

C. Contractor is to visit the site, examine and verify the conditions under which the work will be performed before submitting a bid response. The submitting of a bid response implies that the Contractor has visited the site and understands the conditions under which the work must be conducted. Additional charges will not be allowed because of failure to make this examination or to include all materials and labor to complete the work.

D. Additional information provided with a bid response shall be used in the evaluation of bids, but do not replace the requirements established by the contract documents (project manual, drawings, specifications, etc.). The Technology Designer and Owner will not be responsible for reviewing equipment lists for completeness or conformance to the contract documents. Lists of material, bills of material, etc. submitted by the contractor do not replace the submittal requirements and do not replace the requirements established by the contract.

E. The Contractor shall provide the services necessary to engineer, procure, install, test, and certify the systems described in the bid documents conforming to manufacturer specifications and applicable industry standards.

F. All materials and equipment shall be furnished complete with all accessories normally supplied for a complete and operating system. All materials and equipment shall be new and shall be standard products in production and shall be of the manufacturer's current design. Any items with a known end of manufacture date will be specifically called out for approval before procurement. All equipment of the same or similar systems shall be by the same manufacturer.

G. The methods of implementation shall be in accordance with the latest issue of the various authorities including but not limited to:

1.	ANSI	American National Standards Institute
2.	ASTM	American Society for Testing and Materials
3.	BICSI	Building Industries Consulting Services International
4.	EIA	Electronics Industries Association
5.	FCC	Federal Communications Commission
6.	ICEA	Insulated Cable Engineers Association
7.	IEEE	Institute of Electrical and Electronics Engineers
8.	ISO	International Organization for Standardization
9.	NEC	National Electrical Code
10.	NECA	National Electrical Contractors Association
11.	NEMA	National Electrical Manufacturer's Association
12.	NFPA	National Fire Protection Association
13.	TIA	Telecommunications Industry Association
14.	UL	Underwriters Laboratories, Inc.

H. Notify the Technology Designer before the bid period question deadline, established at the pre-bid meeting, should any changes in bid documents be required to conform to recommended manufacturer guidelines or the applicable codes, rules, or regulations. After entering into Contract, make all changes required to conform to applicable guidelines, ordinances, rules, and regulations without additional expense to the Owner.

I. Any required permits, licenses, inspections, approvals and fees for the work shall be secured and paid for by the Contractor. All work shall conform to all applicable codes, rules, and regulations. Perform all tests required by state, city, county and/or other agencies having jurisdiction. Provide all materials, equipment, etc., and labor required for tests.

J. Contractor shall comply with all rules and regulations of local utility companies. Coordinate requirements with applicable companies supplying service and include the cost of all such items in proposal.

K. Each contractor is to provide any backboards and access panels necessary for their installation. Materials are to be fire-rated. Provide D-rings, spaced no greater than 12" apart, to support cables routed to and along backboards.

L. Each contractor is to use plenum rated cabling and accessories throughout the project.

M. Where not provided by the electrical contractor, each contractor is required to provide their own penetrations, sleeves, and cores with firestopping. Sleeves and cores shall have nylon bushings.

N. Install surge suppressors where ac-power-operated devices are not protected against voltage transients by integral surge suppressors specified in UL 1449. Install surge suppressors at the devices' power-line terminals. All surge suppression devices shall warranty protection of all downstream equipment.

O. Unit prices established for the project shall remain in effect throughout the duration of the contract.

1.4 DEFINITIONS

A. ADA: Americans with Disabilities Act.

B. AIA: American Institute of Architects.

C. FBO: Furnished By Others.

D. IR: Infrared.

E. MC: Main Cross-Connect. (Applies to MDF or Headend references).

F. OFE: Owner Furnished Equipment. (Applies to OFCI references)

G. POE: Power over Ethernet.

H. RF: Radio Frequency.

I. TR: Telecommunications Room. (Applies to MDF or IDF references).

1.5 SUBMITTALS

A. All submittals shall be complete and organized by related items. Incomplete submittal packets will be returned unchecked. Any modifications to or deviations from the bid documents shall be specifically highlighted on the submittals. In addition to requirements specified in Division 1, include the following:

B. Lists of material, bills of material, etc. submitted by the contractor do not replace the submittal requirements and do not replace the requirements established by the contract documents. The Technology Designer and Owner will not be responsible for reviewing lists of material for completeness or conformance to the contract documents.

C. Copies of any professional licenses or certifications requested in the documents.

D. Product Data: For each product indicated in the specifications or included in the scope, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

E. Shop Drawings: Shop drawings are to be provided in both hard-copy and electronic format (AutoCAD format).

1. Include a schematic drawing of each overall system identifying all equipment and the interconnection of components.
2. Include labeling scheme for cables and equipment.

F. Closeout documents will include a spreadsheet including but not limited to identifying system components, installed location, manufacturer, model number, serial number, label designation, and any other pertinent data. Submittals shall include spreadsheet format for approval.

1.6 QUALITY ASSURANCE

A. The Contractor and their Sub-Contractors shall be experienced in all aspects of the work and shall demonstrate direct experience on recent systems of similar type, complexity, and size.

1. Upon request, Contractor shall furnish for both the Contractor and all Sub-Contractors information on the corporation, project manager, and installers indicating recently completed projects, technical experience, and completed training.
2. The Contractor shall maintain consistent staffing for Project Management and lead installers throughout the project, with the exception of illness or loss of personnel. The Technology Designer and Owner reserve the right to require staffing substitutions if deemed beneficial to satisfactory completion of the project.

B. The Contractor shall utilize equipment from manufacturers regularly engaged in the production of similar systems and components for a minimum of five (5) years.

C. The Contractor shall install in accordance with all applicable codes and standards, including federal, state, and local codes and authorities.

1.7 COORDINATION

A. Contractor is to coordinate with other construction and technology contractors.

B. Contractor is to coordinate building access with building staff including scheduling around building activities, building access, etc.

C. Contractors shall be responsible for coordinating their configuration with the Owner, access providers, and other integrators whose systems will interact. If problems occur during implementation or commissioning, all contractors will be responsible for ongoing/additional coordination regarding configuring, testing, and troubleshooting of related/ inter-related devices until a resolution acceptable to the Owner is achieved. This includes coordination with outside agencies such as telephone service providers, cable/satellite TV, and internet service providers when necessary

D. Coordinate layout, rough-in requirements, and installation of the work of this section with the Owner's equipment, furniture, electrical, mechanical, architectural, and other technology trades.

E. Coordinate with the appropriate utility companies for installation and cutover.

F. Where multiple contractors will share a common pathway or faceplate, coordinate requirements and installation.

G. Contractors shall be responsible for coordinating their configuration with the Owner, access providers, and other integrators whose systems will interact. If problems occur during implementation or commissioning, all contractors will be responsible for ongoing/additional coordination regarding configuring, testing, and troubleshooting of related/inter-related devices until a resolution acceptable to the Owner is achieved.

H. Contractor shall uncover Work as needed for review by the Owner, Technology Designer, Architect, Construction Manager, or contractors performing related work. Work uncovered for observation will be replaced at the Contractor’s expense without change in the Contract Time or Contract Sum.

1.8 WARRANTY

A. Contractor is to register all equipment in the Owner’s name, not the Contractor’s. All manufacturer warranty and support must be available to the Owner directly and not required to channel through the Contractor, distributor, or other entity.

B. The contractor warrants the system to be free of defects of workmanship or products and will inspect and repair the system within twenty-four (24) hours during the warranty period at no additional cost to the Owner. The Contractor shall respond on site within four (4) hours notice, and without cost to the Owner, during this warranty period. Contractor agrees to correct system deficiencies and replace components that fail in materials or workmanship including deficiencies arising when used according to the manufacturer or Contractor's written instructions. No warranty or terms therein shall limit or be interpreted to limit remedies as provided by law.

C. When a manufacturer's warranty is provided, it is the Bidder's responsibility to make sure the manufacturer's records reflect the correct warranty period start date as established in the contract terms.

D. All equipment shall be provided with a five (5) year warranty unless noted otherwise. The warranty period shall begin at the date indicated on the certificate of substantial completion or the date of Owner acceptance (to be received in writing and approved by Barton Malow), whichever comes later.

E. The warranty shall include phone support, software assurance, firmware updates, and any other special warranties.

F. The Owner shall not be responsible for additional charges during the equipment warranty period. Labor, service charges, trip charges, etc. to configure and install equipment during the warranty period shall be included in the contractor's warranty.

G. Contractor is to provide documentation for any and all manufacturer's warranties including the operating conditions required for the warranty.

H. Contractor is also to provide terms of any additional warranties as a manufacturer's standard. Special warranty specified shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 GENERAL

A. Contractor is responsible for ensuring that no asbestos containing building materials (ACBM) are used and must certify to the Owner and Technology Designer that none was used.

B. Any equipment, software, system, etc. with time dependent functions (e.g. bell systems) shall automatically adjust for daylight saving time without human intervention.

2.2 MANUFACTURERS

A. Permit Competition. The name of a model, manufacturer or brand in this RFP shall not be considered as exclusive of other brands. Brands and models specified in this RFP are preferred. Owner expects all supplies, materials, equipment or products bid by a Bidder to meet or exceed the specifications set forth in this RFP. Further, it is the Owner's intent that this RFP permit competition. Accordingly, the use of any patent, proprietary name or manufacturer's name is for demonstrative purposes only and is not intended to curtail competition. Whenever any supplies, material, equipment or products requested in this RFP are specified by patent, proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words "or comparable equivalent," whether or not such words appear. The Owner, in its sole and absolute discretion, shall have the right to determine if the proposed equivalent products/brands submitted by Bidder meet the

specifications contained in this RFP and possess equivalent and/or better qualities. It is the Bidder's responsibility to notify the Owner in writing if any specifications or suggested comparable equivalent products/brands require clarification by the Owner prior to the Due Date for Bids. Any and all Bid deviations from specifications must be noted on the Proposal Form.

B. Base bid shall utilize manufacturers listed in the applicable specification sections. Contractor may include deviations as voluntary alternates in addition to the base bid, not in lieu of the base bid.

C. The Owner expects all supplies, materials equipment or products proposed by a Bidder to meet or exceed the Specifications set forth in the Bidding Documents. Further, it is the Owner's intent that the Bidding Documents permit competition. Accordingly, the use of any patent, proprietary name or manufacturer's name is for demonstrative purposes only and is not intended to curtail competition. Whenever any supplies, material, equipment or products requested in the Bidding Documents are specified by patent, proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words "or comparable equivalent," whether or not such words appear. The Owner, in its sole and absolute discretion, shall have the right to determine if the proposed equivalent products/brands submitted by Bidder meet the Specifications contained in the Bidding Documents and possess equivalent and/or better qualities. It shall be the Bidder's responsibility to notify the Owner in writing if any Specifications or suggested comparable equivalent products/brands require clarification by the Owner prior to the Due Date for Bid Proposals.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor's responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

B. Failure or omission of the Contractor to examine the site or documents does not relieve the Contractor. No additional payment will be made to the Contractor for failure to comply.

C. Review building plans and installations to confirm outlet and conduit installation and location. Check outlets, conduits, raceways, cable trays, and other elements in the proposed pathways for compliance with space allocations, clearances, installation tolerances, hazards to cable installation, and other conditions affecting installation in compliance with manufacturer requirements.

D. Contractor shall choose appropriate mounting method and materials for each location based on manufacturer's requirements, wall construction, building structure, etc.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 DEMOLITION

A. Demolition of existing equipment and materials will be performed by the Contractor unless otherwise noted. Demolition work indicated on the drawings are conceptual in nature. Include all items related to the existing system including equipment, cabling, raceway, supports, etc., in order to remove abandoned systems or accomplish the installation of the specified new work.

B. Unless specifically noted to the contrary, removed materials shall not be reused in the work. Salvaged materials that are to be reused shall be stored safe against damage and turned over to the appropriate trade for reuse. Salvaged materials of value that are not to be reused shall remain the property of the Owner

unless such ownership is waived. Items on which the Owner waives ownership shall become the property of the Contractor, who shall remove and legally dispose of same, away from the premises. If requested, Contractor will provide certification showing the items have been environmentally disposed of in accordance with applicable laws.

C. Savings due to items with residual value / trade-in credit / scrap recycling value / etc. should be reflected in the base bid.

D. Reroute cabling and relocate equipment as required to maintain service until systems can be permanently removed.

E. Cables shall be removed to their source and any corresponding labels removed from the equipment or termination point. Dust covers shall be installed in patch panel ports associated with removed cables. Remove corresponding patch cable from patch panel or cross-connect cable from a 66 or 110 block.

F. Cabling contractor is to provide blank stainless steel faceplates for any empty low-voltage boxes that will remain after demolition.

3.3 INSTALLATION

A. Equipment that extends more than 4" from the wall will be mounted above 80" above finished floor unless reviewed and approved by Technology Designer or Owner.

B. Consult with the Owner's Representative as to the method of completing work so as to avoid interfering with the Owner's operation. All systems shall remain operational and shall only be interrupted at times coordinated with the Owner's Representative.

C. The Contractor shall provide all miscellaneous items and accessories required to make the system operational whether or not such items are specifically mentioned in the plans or specifications.

D. The Contractor shall be familiar with the site and the rooms to ensure a proper installation. The final installation methods are left to the discretion of the contractor in accordance with this specification, within standards of generally accepted workmanship, and in accordance with manufacturer's recommended installation practices.

E. The Contractor shall protect equipment and components during installation. Damage resulting from the Contractor's work shall be promptly replaced or repaired at the Contractor's expense.

F. The Contractor shall provide all lifts and temporary supports necessary to accomplish their installation.

G. The Contractor shall accomplish all cutting, removal and replacement of ceiling tile, drilling, coring and patching of walls, floors, casework, and ceilings required to complete their work. Contractor is responsible for replacing any damaged tiles and cleaning the ceiling grid upon completion of their work.

H. Contractor to ensure Owner and Technology Designer have reviewed above ceiling or concealed work before reinstalling ceiling tiles or other obstructions. If work is performed in occupied areas where ceiling tiles or other obstructions must be re-installed upon completion of work, Contractor will be required to remove and reinstall in selected areas for inspection by Owner or Technology Designer.

I. The Contractor, in accordance with all applicable codes, shall provide fire and smoke stopping through all partitions. Verify that penetrations of rated fire walls are made using products labeled for type of partition penetrated.

J. All cables within racks, cabinets, or enclosures will be cable wrapped with hook and loop tape (Velcro) at no greater than one-foot intervals. Cabling housed in wiring management shall be tied at no less than two-foot intervals.

K. Due to field conditions or other situations, installation locations may have to be relocated a reasonable distance from the plan location. Unless relocations, modifications and reengineering are consistently or substantially unfavorable to either the Contractor or the Owner, there will be no additional charge or credit for this work.

L. No additional compensation will be provided for moving installed equipment for reasons including, but not limited to:

1. Performance issues.
2. Failure to coordinate with other trades for existing conditions and renovations or new construction.
    a. All drawings (including Architectural, Mechanical, Electrical, etc.) are available for review at the jobsite.
3. Locations deviating from design drawings (unless approval has been obtained prior to installation).
4. Failing to follow manufacturer's recommendations.

M. The lack of permanent power does not relieve contractor of installation requirements as dictated in the specifications. If permanent power is not available, contractor must provide temporary power (e.g. UL approved extension cords) to complete installation, configuration, and testing of equipment (e.g. projectors, interactive whiteboards, etc.). Extension cords and/or other means of temporary power are to be removed immediately after the initial installation/configuration. At the time permanent power is completed, contractor to return to make final equipment connections and any necessary adjustments. Refer to the safety section of the project manual for guidelines of proper use with regards to temporary power.

3.4 CLEANING

A. All debris shall be removed daily as required to maintain the work area in a neat, orderly condition.

B. Contractor shall clean all equipment before Owner acceptance using methods and materials recommended by the manufacturer.

3.5 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS

A. Equipment and materials shall be protected from theft, injury, or damage. Equipment set in place must be provided with temporary protection.

B. Provide adequate storage for all equipment and materials delivered to the site. Owner shall not be required to provide secure storage, but will attempt to accommodate the Contractor's requirements.

3.6 IDENTIFICATION

A. Unless noted otherwise, use logical and systematic designations for facility's architectural arrangement and nomenclature.

B. Contractor is responsible for permanently identifying all major components used in the project. Component list, identification method, and nomenclature to be coordinated with and approved by the Technology Designer.

C. All cross connecting cable shall be adequately tagged as “to” and “from.”

3.7 FIELD QUALITY CONTROL

A. All ancillary accessories (e.g. remote controls, keys, etc.) shall be collected, identified by installation location, and turned over to the Owner. Coordinate delivery with Technology Designer to ensure appropriate signoffs are received.

B. The Owner and/or Technology Designer may designate an agent who may be present during testing and may provide additional testing to verify cabling installer results. The agent shall accept or reject the installation.

3.8 DEMONSTRATION AND STARTUP

A. All training and demonstration will be provided at no cost to the District.

B. At the completion of each phase of work, Contractor will provide four (4) hours of startup assistance for out-of-scope work, scheduled at the Owner’s discretion. The assistance time may not be contiguous and does not include travel time to or from the project site. Startup assistance shall utilize staff involved in the onsite installation unless added personnel is needed to complete the base scope of work according to the project schedule or Owner’s requirements. Unused time will be deducted utilizing the labor material price.

C. Bid shall include two training session of twelve (12) hours of training to be used for end-user or administrative training. The assistance time may not be contiguous and does not include travel time to or from the project site. Additional training requirements are listed in individual specification sections.

D. The following systems do not require training to be included in the base bid: classroom AV systems, and structured cabling.

3.9 DOCUMENTATION

A. For multi-phase projects, adequate documentation for completed work shall be submitted as each phase is completed to allow the owner and project team to utilize the system.

B. At the conclusion of the project (or major phase for multi-phase projects), all documentation is to be compiled into an organized, comprehensive package. Copies are to be submitted both in hard copy and electronic formats. CAD drawings shall be in AutoCAD formats. The Contractor is responsible for any fees charged by the architect for providing CAD backgrounds.

C. Contractor responsible for all equipment registration per manufacturer’s instructions.

D. As-Built: In addition to requirements specified in Division 1, include the following:

1. As-built drawings are to reflect all changes between the bid documents and the final installation, including final location of all outlets, racks, penetrations, etc.
2. Drawings for systems showing location and cabinet/enclosure layout. Include all components identifying component manufacturer and model, serial numbers, and connections.

3. Cable tests, OTDR traces, etc. are to be provided in both hardcopy format as well as electronic format. Any software necessary to view the tests must be provided to the Owner.
4. Wiring and systems certification.
5. Certificate of manufacturer's extended warranty, where applicable.
6. Spreadsheet identifying system components, installed location, model number, serial number, label designation, warranty expiration, and any other project-specific pertinent data. Spreadsheet format to be approved by Technology Designer.
7. Drawings shall be created in AutoCAD format. Hand written drawings shall be accepted for draft or working copies only.
8. All as-built and other closeout documentation to be submitted as a PDF in addition to the native file format.

E. Maintenance Data: In addition to requirements specified in Division 1, include the following:

1. Detailed operating instructions covering operation under both normal and abnormal conditions.
2. Routine maintenance procedures for system operation, customized for the particular installation.
3. Lists of spare parts and replacement components recommended being stored at the site.

END OF SECTION 27 0000

SECTION 27 1000 – GENERAL CABLING REQUIREMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 27 0000 – General Technology Requirements

1.2 SUMMARY

A. This Section includes general cabling requirements for contractors installing cabling within their scope of work.

B. Contractor is required to furnish and install cables and accessories in locations as shown on plan drawings, details and specifications.

C. Scope of work includes all physical cable management hardware, including, but not limited to: backboards, cable supports, raceway, and cable management required to complete the system.

D. Where adequate existing pathways are not present, each Contractor is required to provide their own penetrations, sleeves, and cores with firestopping. Sleeves and cores shall have nylon bushings. Contractors are to control dust generated from penetrations, protect nearby equipment and surfaces from dust, and follow all OSHA regulations.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. All cable types
2. Cable supports
3. Firestopping

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Contractor must be certified by the manufacturer of the solution being installed.

B. Installation Supervision: Installation and testing shall be performed by BICSI Registered Installers or manufacturer certified installers, with a consistent supervisor who shall be present at all times when work of this section is performed.

C. Comply with EIA/TIA 568B-2.1, EIA/TIA 569, and EIA/TIA 606.

1.5 COORDINATION

A. Coordinate layout and installation of the work of this section with the Owner's equipment, furniture, electrical, mechanical, architectural, and other technology trades.

B. All Contractors utilizing a shared pathway shall be responsible for coordinating and ensuring that firestopping requirements are fulfilled. Any unused penetrations installed by the electrical contractor for future use shall be firestopped by the data cabling contractor.

C. All Contractors utilizing penetrations shall be present during electrical and fire marshal inspections with adequate firestopping material and shall immediately correct any issues identified during the inspections.

D. Each Contractor is to protect their own cables during installation. Rough cables are to be properly supported and not left on the floor. If conditions necessitate leaving cables Contractor is to put a note on the cables to reduce chance of damage by others and note cable location to controlling contractor.

E. Each Contractor to protect their cables in areas where ceilings will be painted to ensure cable sheath is not painted.

1.6 WARRANTY

A. The contractor warrants the system to be free of defects of workmanship or products and will inspect and repair the system during the warranty period at no additional cost to the Owner. Contractor agrees to correct system deficiencies and replace components that fail in materials or workmanship including deficiencies arising when used according to the manufacturer or Contractor’s written instructions No warranty or terms therein shall limit or be interpreted to limit remedies as provided by law

B. Contractor is also to provide terms of any additional warranties as a manufacturer’s standard. Special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

C. The data and voice structured cable plant shall be covered by the manufacturer’s extended warranty (eg. Panduit Certification Plus System Warranty, Hubbell Premise Wiring Mission Critical Warranty and System Performance Guarantee, etc.).

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Coordinate the features of materials and equipment so they form an integrated system complying with TIA/EIA-568B. Match components and interconnections for optimum future performance.

B. The Contractor is to use plenum rated cabling and accessories throughout the project. All cables shall be continuous and free from splices.

2.2 FACEPLATES AND SURFACE-MOUNTED RACEWAYS

A. These general requirements apply to all contractor(s) unless more specific information is included in a particular contractor’s specification sections (i.e. structured cabling, audiovisual cabling, etc.).

B. Coordinate faceplate requirements with the furniture installer, where applicable.

C. Each contractor shall provide and install blank faceplates / insert on any outlets provided by the electrical contractor for their potential technology use (video outlets, security outlets, data/voice general purpose telecommunication outlets, etc.).

D. Faceplate labels shall be secured to the faceplate (loose or removable labels on the screw covers are not permanent and not acceptable).

E. Cabling contractor is responsible for all surface-mounted raceways and conduit for structured cabling not provided by the electrician. Locations requiring surface-mounted raceways are shown on the technology drawings or described below:

1. Security cameras, wireless access points, audiovisual components, or general communications outlets installed in large open spaces without drop ceilings (i.e. gymnasium, cafeteria).
2. Security cabling for access control systems and intrusion detection systems in vestibules, entrances, doorways, or other areas where cabling cannot be concealed.
3. Other public spaces where cabling cannot be concealed and contractor could have reasonably known they existed.
4. In all other instances requiring surface-mounted raceways that the contractor could not have reasonably known about from construction coordination drawings (e.g. ceiling plans) or pre-bid walkthroughs made available to the contractor whether or not they participated, unit pricing will be utilized. Approval must be obtained prior to installation.

F. The following are general guidelines for raceways:

1. Surface-mounted raceway shall not be used unless the wall or other structure cannot be fished and cut into. Contractor to obtain approval prior to installing surface-mounted raceway in areas not already indicated on the drawings.
2. Surface-mounted raceways shall be sized appropriately for each installation following all manufacturers' guidelines.
3. Steel raceway (e.g. Legrand/Wiremold) shall be used in classroom and office areas. EMT conduit may be used in lieu of steel raceways in gymnasiums or other similar spaces and only after approval is received.
4. All surface-mounted raceways shall be steel construction (e.g. Legrand/Wiremold V700, V4000, etc.).
5. All steel raceways shall be ivory.

G. The following are general guidelines for faceplates:

1. For recessed boxes and surface-mounted faceplates, data faceplates shall be stainless steel with module frames or decora inserts. A/V faceplates may be plastic if necessary to provide the required A/V inserts.
2. Where single-channel surface-mounted raceway and boxes are used, faceplates shall match the raceway color.
3. Where dual-channel surface-mounted raceway is used (e.g. Legrand/Wiremold V4000), faceplate shall match the faceplates used in the existing installation.
4. Plastic faceplates are to be used where necessary to coordinate and match modular furniture systems.
5. Blank faceplates are to be stainless steel. Blank inserts for dual-channel raceway shall match the faceplate type and color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor's responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

B. Review building plans and installations to confirm outlet and conduit installation and location. Check outlets, conduits, raceways, cable trays, and other elements in the proposed pathways for compliance with space allocations, clearances, installation tolerances, hazards to cable installation, and other conditions affecting installation in compliance with manufacturer requirements.

C. Contractors are to examine existing telecommunication rooms, equipment, cabinets, racks, etc. to ensure the conditions will not interfere with their installation. Contractors will be responsible for moving existing items where possible to allow for their installation (e.g. shifting patch panels, wire management, and equipment within a rack or cabinet; moving items on a backboard, etc. to make room for the new installation). If the rework requires re-ordering the existing items or removing wire management, review the layout with the Technology Designer and Owner.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. The Contractor shall provide all miscellaneous items and accessories required to make the system operational whether or not such items are specifically mentioned in the plans and specifications.

B. The Contractor shall be familiar with the site and the rooms to ensure a proper installation. The final installation methods are left to the discretion of the contractor in accordance with this specification, manufacturer's specifications, and within standards of generally accepted workmanship.

C. Contractor shall be familiar and install in accordance with all applicable codes and standards, including FCC, NEC (NFPA 70), EIA/TIA 568, 569 and 606, BICSI (Telecommunications Distribution Methods Manual, Current Edition), federal, state, and local building/fire codes.

D. All cable above the ceiling must be independently and properly supported to the building structure with hangers or cable tray independent from the ceiling grid or other support systems (e.g. cables shall not be run through trusses). Each contractor will provide all supports necessary for their work.

1. Separate supports are to be used for each type of cabling runs (e.g. data, voice, fiber, video, PA, security, etc.).
2. Cable supports (e.g. J-Hooks) shall be wide enough to maintain required cable bend radius and to avoid pinch points on the corners of the support.
3. All cable hangers/supports shall be no more than 60" apart.
4. Each cable bundle shall include a maximum of 192 cables.
5. Special care will be taken to avoid damage to ceiling grid, ceiling tiles, or other installed work. Cable "draped" across ceiling tiles is unacceptable.

E. Ensure all cables within cable trays are arranged to avoid individual cables supporting the weight of the cable bundle. Cable trays shall have appropriate bend radii for cable and fiber. Provide elbows, supports, and ties to assist in offloading the weight of the cable and adequately support the tray.

F. Support riser cables every floor and at the top of the run with cable grips. Limit number of four-pair data riser cables per grip to fifty (50).

G. Fiber optic cable shall be installed in orange, plenum-rated innerduct. Maximum fill is 40%.

1. If armored fiber optic cabling is used, innerduct requirement does not apply.

H. Fill rates for all cable supports must not exceed the lesser of 50 percent, or as recommended by the manufacturer(s).

I. All wiring shall be protected from moving mechanical or physical contacts. All cabling shall be free from tension at both ends, as well as the length of each run.

J. Cables to be kept a minimum of 18" from power lines, fluorescent fixtures, or heat generating devices. All cross connecting cable shall meet or exceed the transmission characteristics for the cable used in the adjoining segments.

K. All cabling shall be bundled and properly secured and terminated in the telecommunication room cabinet. Cables must be properly supported and separated to avoid crushing or cinching by supports, protective covers, doors, etc. All cables within wire management cabinets will be cable wrapped with Velcro cable ties at no greater than one-foot intervals. Velcro tie-wraps only are to be used.

L. For general communications outlets, Contractor to provide additional 10' of cabling coiled above ceiling at each drop and 10' of cable at each telecommunication room. Unless noted otherwise, specialized systems (i.e. security and wireless) shall have 20' of cable coiled above the ceiling at each drop and 10' of cable at each telecommunication room. The additional lengths of cable shall be included in distance calculations. Cable routing within the telecommunication closet is to be approved by the Technology Designer before beginning termination.

M. In general, adhesives and non-mechanical fastening methods of installation will not be accepted. All conduit, cable and raceway installation support must be mechanically fastened to walls, decks, slab, structure, etc.

N. Install parallel to building lines, follow surface contours, and support the cable according to manufacturer's written instructions. Do not run adjacent and parallel to power or data cables.

O. All horizontal cabling terminations shall be provided with sufficient additional cabling to permit re-termination within the cabinet. The additional lengths of cable shall be included in distance calculations. Service loops shall be irregularly coiled to avoid electromagnetic or antenna effects.

P. All connections of twisted wiring shall be made in such a way as to minimize the extent in which each twisted pair is unraveled at the point of its physical termination. No more than 0.5 inches of exposed untwisted pairs shall be present at these locations.

Q. Provide sufficient pulling lubrication for all underground cable pulls. Do not exceed the manufacturers tension requirements for any installation.

R. Exposed wiring will not be accepted unless approved in writing by the Technology Designer. Cabling shall be in the wall, above the ceiling, or in conduit or raceways designed for the application. A difficult installation will not be sufficient to avoid the requirement for non-exposed wiring.

1. Contractor to install conduit in exposed areas along cable pathway. Conduit can be used for the vertical segment transitioning to the outlet location (e.g. from ceiling space down wall to outlet). Conduit in exposed areas are to be **painted** to match surrounding conduits/ceiling color.
2. Exposed wiring will be acceptable in crawl spaces.

3. Exposed wiring will be acceptable in high bay gymnasiums if the cables are run along a joist and hidden from view. Cables must be concealed from the wall to the joist.
4. No exposed cabling will be allowed in natatoriums.
5. No exposed cabling will be allowed in architecturally significant spaces, such as a entrance lobby.
6. In instances greater than 15’ requiring conduit that the contractor could not have reasonably known about from available drawings (e.g. ceiling plans) or pre-bid walkthroughs made available to the contractor whether or not they participated, the contractor may request reimbursement for the installation. Approval must be obtained prior to installation.

S. In unheated crawl spaces, contractor is to install the cable at least four feet (4’) from the exterior wall mounted securely to the slab or structure.

3.3 IDENTIFICATION

A. In addition to requirements in this Article, comply with TIA/EIA-606.

B. Use logical and systematic designations for facility's architectural arrangement and nomenclature, and a consistent color-coded identification of individual conductors. All rackfields, devices, components, etc. shall be tagged with appropriate designations on the front and rear of the equipment. All devices are to be installed and labeled in a sequential, logical order.

C. Adhesive labels shall meet the legibility, defacement, and adhesion requirements specified in UL969 for indoor use. Cable labels shall have a durable substrate, such as vinyl, suitable for wrapping. Labeling practices shall be consistent across the installation.

D. Cable runs shall be machine labeled within 1” of each termination. All cabling and fiber optics are to be tagged in a consistent manner, approved by the Technology Designer.

E. Fiber Optic Safety Installation. Label all fiber optic junction boxes and termination points with "fiber-optic cable - lasers in-use - possible eye injury" warnings inside and outside of the location.

F. At junction boxes, label with a description of the cable, termination location, and strand count.

3.4 FIELD QUALITY CONTROL

A. Contractor will provide cabling acceptance testing. Agent of owner may provide additional testing and cable acceptance. Contractor is responsible for correcting any instances of test failures.

B. Indicate and interpret test results for compliance with performance requirements of installed systems. All test results shall be marked as “Pass” or “Fail”.

C. All test results must be provided in both hard copy and electronic format.

D. Contractor is responsible for correcting any instances of marginal test results or test failures.

3.5 DOCUMENTATION

A. As-Built Documentation:

1. Include scaled drawings reflecting all changes between the bid documents and the final installation, including final location of all telecommunication rooms, equipment, cable paths, outlets, etc.

2. Drawings shall include all cable routing, outlet locations, and outlet labels.
3. Drawings shall be created in AutoCAD format. Hand written drawings shall be accepted for draft or working copies only.

END OF SECTION 27 1000

SECTION 27 1500 – DATA AND VOICE HORIZONTAL CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 27 0000 – General Technology Requirements
2. 27 1000 – General Cabling Requirements

1.2 SUMMARY

A. This Section includes general cabling requirements for contractors installing structured data or voice cabling within their scope of work.

B. The cabling infrastructure shall be implemented as a data and voice solution compliant with EIA/TIA standards under T568B-2.1. Campus voice, fiber optic, data and video infrastructure shall be implemented compliant with applicable standards.

C. Extent of the cabling systems work is indicated by the drawings and schedules, and is hereby defined to include, but not by of limitation, the provisions of:

1. Horizontal cables to the telecommunication rooms.
2. All termination blocks, outlets/jacks, patch panels, patch cords, etc.
3. Termination, cross connect, and patching.

D. Data and voice cables shall be routed so as not to exceed 90 meters in length. Notify the Technology Designer before bid period question deadline, established at the pre-bid meeting, should any changes in bid documents be required to conform to this limitation. After entering into Contract, Contractor shall provide Technology Designer-approved solution to meet the 90-meter requirement without additional expense to the Owner.

E. Color Coding:

1. The following chart describes the cable type/color for the primary structured cabling systems defined in this spec section.

System	Cable Type	Distribution Cable	Patch Cable (Station)	Patch Cable (Closet)	Jack Color (User End)	Jack Color (Patch Panel)
Security	CAT 6	Green	Green	Green	Green	Green

F. Patching:

1. This Contractor is responsible for patching to all switches. Switches will be provided, by others, equal to the number of data ports. Provide **purple Category 6** patch cables. Quantity shall match the total number of data cables installed.

2. Patch cables shall be the minimum lengths necessary to patch one-for-one while utilizing the wire management. Technology Designer to approve patching method before installation.

3. Do NOT patch unused patch panel ports.

4. Patch cables shall NOT have boots

5. Patch cable manufacturer shall be consistent with the patch panel and jack manufacturer.

G. Cross-connects:

1. This Contractor is responsible for cross connecting between the phone demark and the building systems (e.g. elevators, fire alarm, security, pool controls, fax machines, etc.). This excludes lines used for the Owner's telephone system.

H. Contractor shall provide and install horizontal cable tray in each telecommunication room. Unless noted otherwise, cable tray will start at the edge of the room where incoming cables are fed, provide cable support for all racks, and be secured to the walls.

1.3 DEFINITIONS

A. ER: Equipment Room

B. MC: Main Cross-connect [Applies to references to MDF]

C. TR: Telecommunication Rooms [Applies to references to IDF]

D. PoE: Power over Ethernet

1.4 SUBMITTALS

A. Prior to ordering, confirm colors of horizontal cables, patch cables, and jacks.

B. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. Cable
2. Faceplates
3. Terminations (Patch panels, jacks, etc.)
4. Patch cables (Identify lengths, colors, and quantities)

C. Samples:

1. Faceplate with proposed labeling format.
2. A minimum one-foot sample of each proposed cable-type to be used on this project with labeling.

D. Qualification Data:

1. Include written confirmation from the manufacturer that the bidder is a certified installer for the cable plant solution.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Contractor must be certified by the manufacturer of the solution being installed and be BICSI certified.

B. Layout Responsibility: Preparation of Shop Drawings by an RCDD.

C. Installation Supervision: Installation and testing shall be performed by BICSI Registered Installers or manufacturer certified installers, with a consistent supervisor who shall be present at all times when work of this section is performed.

D. Comply with EIA/TIA 568B-2.1, EIA/TIA 569, and EIA/TIA 606.

1.6 COORDINATION

A. Coordinate voice cables for door entry access and door entry phone with Technology Designer, security contractor, and phone contractor for termination location and method.

1.7 WARRANTY

A. Contractor is also to provide terms of any additional warranties as a manufacturer's standard. Special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. The cable plant shall be covered by the manufacturer's warranty for a minimum of fifteen (15) years (e.g. Panduit Certification Plus System Warranty, Hubbell Premise Wiring Mission Critical Warranty and System Performance Guarantee, etc.).

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Coordinate the features of materials and equipment so they form an integrated system complying with TIA/EIA-568-B. Match components and interconnections for optimum future performance.

B. One manufacturer must be used for all termination jacks, patch panels, and patch cables.

C. Contractor is to use plenum rated cable and cabling accessories throughout this project.

2.2 MANUFACTURERS

A. The following are acceptable manufacturers for general equipment within this section, unless noted otherwise for any product. Any deviations must be approved in writing by the Technology Designer before installation.

1. Voice and Data Cable
   a. Berk-Tek
   b. Belden
   c. Commscope
   d. General
   e. Lucent
   f. Mohawk
   g. Superior Essex
2. Patch Panels, Faceplates, Station Terminations, Jacks, other Accessories
   a. Hubbell
   b. Panduit
   c. Ortronics
   d. Leviton

2.3 DATA CABLE AND TERMINATIONS

A. Cable Standards:

1. Cabling shall be contiguous, plenum rated **Category 6**, four-pair UTP cable compliant with EIA/TIA 568B-2.1 standards.
2. Cable shall be solid copper.
3. Cabling shall be certified as a complete system with other components required herein to achieve manufacturers cabling system extended warranty.

B. Termination Standards:

1. Terminations shall be **Category 6** compliant modular, T568B RJ-45 jacks.
2. Terminate PoE wall-voice outlets on single-gang stainless steel faceplates or raceway module with six-conductor jack and wall telephone mounting lugs.
3. Video surveillance or wireless access point terminations shall be modular T568B RJ-45 jacks in a plenum-rated biscuit box located near the end device or a modular plug terminated link (i.e. direct connect) that meets the ANSI/TIA-568-C.2 clause 6.3 requirements.

C. Surge Suppression: Provide and install in-line surge protection for any cables used for outdoor devices (eg. wireless access points, video surveillance cameras, entry intercoms, etc.).
2. Surge protector is to be rated for 10Gb bandwidth, PoE+, and HiPoE
3. Surge suppression is not required if the equipment is protected by a minimum 6’ overhang (e.g. not required for an entry intercom under an entry canopy).
4. Verify with Owner if they prefer surge protector to be installed at the equipment end or telecommunication room end.
   a. If preference is telecommunication room end, contractor to use 4-channel, 12-channel, etc. where possible to minimize equipment.
5. Manufacturers:
   a. Ditek DTK-MRJPOES (for single cable)
   b. Ditek DTK-DTK-WM4EXTS (for 4-channel locations)
   c. Approved equivalent

2.4 PATCH CABLES

A. Provide Category 6 8-conductor patch cables for use within telecommunication rooms. Provide one for every data cable installed throughout the project. Patch cables shall be the minimum lengths necessary to patch while utilizing the wire management. Technology Designer to approve patching method.

Length	Color	Quantity

1’	green	PoE Data Drops (security)

B. Patch cable manufacturer shall be consistent with the patch panel and jack manufacturer.

C. Coordinate with Owner and Barton Malow on specific lengths of patch cables before ordering.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor’s responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Review all closet layouts with Technology Designer prior to installation.

B. Contractor shall be familiar and install in accordance with all applicable codes and standards, including FCC, NEC (NFPA 70), EIA/TIA 568, 569 and 606, BICSI (Telecommunications Distribution Methods Manual, current edition), federal, state, and local building/fire codes.

C. Contractor to provide additional cabling coiled above ceiling at both the workstation locations and in telecommunication rooms. The additional lengths of cable shall be included in distance calculations. Cable routing within the telecommunication closet is to be approved by the Owner’s Representative before beginning termination.

D. At station locations, terminate all 8 conductors on all jacks, regardless of data or telephone use.

E. Ensure all cables within cable trays are arranged to avoid individual cables supporting the weight of the cable bundle. Cable trays shall have appropriate bend radii for cable and fiber. Provide elbows, supports, and ties to assist in offloading the weight of the cable and adequately support the tray.

F. Service loops for Cat 6 cables are to be installed in an S-configuration and not a circular loop.

3.3 IDENTIFICATION

A. In addition to requirements in this Article, comply with TIA/EIA-606-A.

B. Data cable patch panels shall be labeled sequentially with letter designations A, B, C, etc. Voice cable patch panels shall be labeled sequentially with a V designation (V1, V2, etc. if more than one).

3.4 FIELD QUALITY CONTROL

A. The installations must be tested and certified as compliant for Category 6 Gigabit connectivity or 6A as applicable. The installation is to be tested to the current EIA/TIA TSB Channel Performance Testing Standard, or equivalent as approved by the Technology Designer. For workstation locations without a patch cable, use a 10’ cable at for testing purposes.

1. Cables are to be tested consistently with the tester in the telecommunication room, and the injector at the workstation termination locations.
2. Testing will be performed after faceplates have been secured to the raceway/wall/floorbox.

B. Document for each pair as well as the worst margin the following test results:

1. Cable identification (Building and Circuit ID)
2. Test date
3. Cable length (ft.)
4. Wiremap
5. Delay (ns)
6. Skew (ns)
7. Resistance (Ohms)
8. Attenuation
9. NEXT
10. ELFEXT
11. Return Loss
12. PSNEXT
13. PSELFEXT

C. Any cables that do not meet the minimum performance criteria established by the standards or manufacturer shall be corrected or replaced at no additional cost to the Owner.

3.5 DEMONSTRATION

A. Contractor shall train the Owner on the layout of the cabling system including the pathways, termination methods, and interconnections.

3.6 DEMONSTRATION

A. Contractor shall train the Owner on the layout of the cabling system including the pathways, termination methods, and interconnections.

3.7 DOCUMENTATION

A. As-Built Documentation:

1. Include scaled drawings reflecting all changes between the bid documents and the final installation, including final location of all telecommunication rooms, equipment, cable paths, outlets, etc.
2. Drawings shall include all cable routing.
3. Drawings shall be created in AutoCAD format. Hand written drawings shall be accepted for draft or working copies only.

B. Cable Testing

1. Cable test results are to be provided in hard copy format as well as electronically organized by building and telecommunication room in a Fluke LinkWare database, or equivalent for applicable testing equipment manufacturer.

C. Warranty

1. Provide certificate of manufacturer's extended warranty for the structured cabling system.

END OF SECTION 27 1500

SECTION 28 1300 – ACCESS CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 08 0671 – Door Hardware Schedule
2. 08 7100 – Door Hardware
3. 08 1113 – Hollow Metal Doors and Frames
4. 27 0000 – General Technology Requirements
5. 27 1000 - General Cabling Requirements
6. 27 1500 - Data and Voice Horizontal Cabling

1.2 EXISTING SYSTEM INFORMATION

A. VMWare information:

1. Wayne RESA currently runs VMWare ESXi 6.0.0 on multiple HP 460 Gen 10 servers. We have multiple VLANs setup and configured to isolate traffic.

B. LDAP/AD information:

1. LDAP/AD is based on Windows 2016 domain controllers
   a. Owner is not storing staff pictures

C. Existing Access Control System

1. Guardall Director
   a. Application Version 4.78.00.0024

D. Existing Video Surveillance System

1. ExacqVision information:

System Information

Serial Number	[redacted]
Model Number	exacqVision Virtual Appliance 14
Motherboard	Intel Corporation 440BX Desktop Reference Platform
BIOS	Phoenix Technologies LTD 6.00
Processor	Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz
Total Memory	4 GB
Operating System	Ubuntu 14.04.5 LTS (kernel 3.13.0-147-generic) (glibc 2.19) 32-bit

2.
3. Version: 19.09.4.0

E. Burger-Baylor has an existing Lenel access control system. Existing Lenel system is to remain and is controlled by Garden City School District. New system will be controlled by Wayne RESA and function separately from the Lenel System. Existing electrified hardware will be used. Contractor is to wire to

existing strikes to new system; provided power supply and install appropriate relays to ensure no power from the new system is back feed to the existing Lenel system.

1.3 SUMMARY

A. This Section includes the following major components related to the security system:

1. Regulating access through entry doors
2. Lockdown Button
3. Schedule Validation Button
4. Controllers
5. Credentials and readers
6. Credential holder database and management
7. Credential creation
8. Reporting
9. Electric strike
10. Magnetic locks
11. Emergency lockdown button
12. Video security communication

B. Contractor to provide power to all electrified hardware included in this project.

C. The intent of this project is to replace the existing burglary/access control system. All electrified hardware will be powered from a fused power supply located in the technology closets. It is this contractor's responsibility to provide appropriately sized power supplies for each building's installation. Contractor is required to provide appropriate power for hardware noted as existing, as well as for all devices included in the access control scope of work. The locations and quantities of each type of device are shown on the drawings or defined in this specification.

D. Provide emergency lockdown station in the main lobby or as shown on the prints. Coordinate final location at each building prior to installation.

E. Provide door release button at the buildings shown on the drawings. Locate buzzer at office receptionist desk.

F. Provide an interior door intercom station at the Annex Building where visitors will be able to contact Owner personnel, to gain access to the building office section. Base stations will allow the District personal to utilize audio and video communications decide on granting visitors access to the building.

G. System shall send notification when a door is propped open. Include request-to-exit detector and door contacts at each door as shown on the prints

H. System shall send notification when a door with door contacts has been forced open from the exterior, or the access control system has been bypassed with a key. Include request-to-exit detectors as shown on the prints.

I. Bid Submission: In addition to the requirements established by the bid proposal form, include the following with the bid submission:

1. Include the **ongoing maintenance costs** for proposed solution (after warranty period expires) with bid submission.
2. Include the **software upgrade costs** for the proposed solution (after warranty period expires) with bid submission.

3. Include a system diagram with the proposed solution detailing the overall equipment and interconnections of the access control system. Show equipment locations, manufacturer/model, and cable types.
4. Provide any equipment rack, space, and electrical requirements for the servers, UPS, etc.
5. Describe the level of integration that your solution provides with Microsoft Windows-based computers, Apple-based computers, and any computer via web-browser. Note limitations of various web browsers. Please explain, in detail. In addition, please include the recommended hardware specifications in order to utilize the access control client.
6. Describe the level of integration that your solution provides with Apple iOS and Android devices. Explain, in detail noting any specific features or limitations.
7. Provide any relevant industry certifications that may be beneficial to this project. For example: noting that installers/engineers are certified by the access control manufacturer you are proposing.
8. Provide a detailed bill of materials, noting any long-lead items.
9. Provide the number of Gigabit Ethernet connections that are required for the system. The number of connections should be denoted on the schematic design.

J. Related work provided by others:

1. Electrical system
2. Phone system
3. Network equipment

1.4 SYSTEM DESCRIPTION

A. System shall consist of one or more networked servers/appliances, and field-installed Controllers, connected by a high-speed electronic data transmission network.

B. The access control system shall be designed to be utilized 24 hours per day/7 days a week/365 days of the year.

C. The access control system shall be based upon standard components and proven technology using open and published protocols.

D. The access control system shall be a fully distributed solution, designed for a multi-site deployment with multiple server installations.

E. The access control system shall offer centralized management of all devices, panels and users, and offer a rule-based system driven by schedules and events.

F. The Contractor will utilize the Owner's WAN for connecting remote buildings.

1. Equipment shall utilize IEEE 802.3 Gigabit Ethernet based on TCP/IP.
2. Any centralized equipment shall be located at Wayne RESA Educational Center

1.5 DEFINITION

A. ABA Track: Magnetic stripe that is encoded on track 2, at 75-bpi density in binary-coded decimal format; for example, 5-bit, 16-character set.

B. CCTV: Closed-circuit television.

C. Central Server: The Server or Appliance designated as the main controlling equipment of the security access system.

D. Controller: An intelligent peripheral control unit controlling local system operations.

E. CPU: Central processing unit.

F. Credential: Data assigned to an entity and used to identify that entity through cards, key fobs, etc.

G. Identifier: A credential card, keypad personal identification number or code, biometric characteristic, or other unique identification entered as data into the entry-control database for the purpose of identifying an individual.

H. RF: Radio frequency.

I. Wiegand: Patented magnetic principle that uses specially treated wires embedded in the credential card.

J. Any generic reference to "card" shall mean "credential" (e.g. "card-holder" is synonymous with "credential-holder."). Any generic reference to "card" shall also refer to "key fob" or similar credential.

1.6 PERFORMANCE REQUIREMENTS

A. Security access system shall use a single database for access-control and credential-creation functions.

B. Distributed Processing: System shall be a distributed system so that information, including time, date, valid codes, access levels, and similar data, is downloaded to Controllers so that each Controller makes access-control decisions for that Location. If communications to Central Server are lost, all Controllers shall automatically buffer event transactions until communications are restored, at which time buffered events shall be uploaded to the Central Server.

C. Solution must support both clients on both Windows and Apple OS platforms.

D. System Network Requirements:

1. Interconnect system components and provide automatic communication of status changes, commands, field-initiated interrupts, and other communications required for proper system operation.
2. Communication shall not require operator initiation or response, and shall return to normal after partial or total network interruption such as power loss or transient upset.
3. System shall automatically annunciate communication failures to the operator and identify the communication link that has experienced a partial or total failure.

E. Central Server shall provide operator interface, interaction, display, control, and dynamic and real-time monitoring. Central Server shall coordinate system networks to interconnect all system components, including workstations and field-installed Controllers.

F. Field equipment shall include Controllers, sensors, and controls. Controllers shall serve as an interface between the Central Server and sensors and controls. Data exchange between the Central Server and the Controllers shall include down-line transmission of commands, software, and databases to Controllers. The up-line data exchange from the Controller to the Central Server shall include status data such as intrusion alarms, status reports, and entry-control records. Controllers are classified as alarm-annunciation or entry-control type.

G. False Alarm Reduction: The design of Central Server and Controllers shall contain features to reduce false alarms. Equipment and software shall comply with SIA CP-01.

H. Data Line Supervision: System shall initiate an alarm in response to opening, closing, shorting, or grounding of data transmission lines.

I. Door Hardware Interface: Coordinate controllers to have electrical characteristics that match the signal and power requirements of door hardware.

1.7 SUBMITTALS

A. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. Controller (Server or Appliance/Software)
2. Credentials and readers
3. Credential database and management
4. Credential creation equipment
5. Electrified hardware

1.8 QUALITY ASSURANCE

A. All installation, configuration and setup of software as well as related work hereto shall by carried out by qualified technicians thoroughly trained and certified by the system manufacturer in the installation and service of the provided software.

B. Source Limitations: Obtain Central Server, Controllers, Identifier readers, and all software through one source from a single manufacturer.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with NFPA 70, "National Electrical Code."

1.9 COORDINATION

A. Coordinate layout and installation of the work of this section with the Owner's equipment, furniture, electrical, mechanical, architectural, and other technology trades.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The following are acceptable manufacturers for general equipment within this section, unless noted otherwise for any product. Any substitutions must be demonstrated to the Owner and Technology Designer for approval in writing before installation.

1. Avigilon
2. Genetec.
3. Lenel Systems International.

4. S2 Security Corporation
5. Or Approved Equivalent

2.2 SYSTEM REQUIREMENTS

A. The proposed system shall provide for a multiple-site integrated security solution. Each building shall operate independently in the event of the loss of network connectivity or power, and synchronize upon restoration.

B. The access control system shall be implemented through a Central Server whether a network appliance architecture with a modular hardware hierarchy and embedded software architecture, or through a Windows-based server with distributed control panels. Provide the most current release of software and patches at the time of implementation.

1. The system shall be capable of running on an existing TCP/IP network and shall be accessible, configurable, and manageable from any network-connected PC with a browser.

2. Browser access for configuration and administration of the system shall be possible from a computer on the same subnet, through routers and gateways from other subnets, and from the Internet. Control and management of the system shall therefore be geographically independent.

3. Security of the data communicated over the network to and from the browser, network controller, and nodes is to be protected by encryption (SSL 128-bit) or authentication.

C. Software shall allow access based on

1. Individual access privileges
2. Group access privileges
3. Schedule (Time of day, holiday, etc.).

2.3 APPLICATION SOFTWARE

A. System Software: Software shall have the following features:

1. Multiuser functionality allowing independent activities and monitoring to occur by a minimum of ten (10) simultaneous users.
2. Open architecture that allows importing and exporting of data and interfacing with other systems.
3. Password-protection for various levels of users (system administrator, staff, etc.).
4. Full integration with Microsoft Active Directory and OpenLDAP.

B. Controller Software:

1. Controllers shall operate as an autonomous intelligent processing unit. Controllers shall make decisions about access control, alarm monitoring, linking functions, and door locking schedules for its operation, independent of other system components. Controllers shall be part of a fully distributed processing control network. The portion of the database associated with a Controller and consisting of parameters, constraints, and the latest value or status of points connected to that Controller, shall be maintained in the Controller.

2. Functions: The following functions shall be fully implemented and operational within each Controller:

a. Monitoring inputs.

b. Controlling outputs.
c. Automatically reporting alarms to the Central Server.
d. Reporting of sensor and output status to Central Server on request.
e. Maintaining real time, automatically updated by the Central Server at least once a day.
f. Communicating with the Central Server.
g. Executing Controller resident programs.
h. Diagnosing.
i. Downloading and uploading data to and from the Central Server.

3. Controller Operations at a Location:

a. In the event of communications failure between the Central Server and a Location, there shall be no degradation in operations at the Controllers at that Location. The Controllers at each Location shall be connected to a memory buffer with a capacity to store up to 10,000 events; there shall be no loss of transactions in system history files until the buffer overflows.
b. Buffered events shall be handled in a first-in-first-out mode of operation.

4. Individual Controller Operation:

a. Controllers shall transmit alarms, status changes, and other data to the Central Server when communications circuits are operable. If communications are not available, Controllers shall function in a stand-alone mode and operational data, including the status and alarm data normally transmitted to the Central Server, shall be stored for later transmission to the Central Server. Storage capacity for the latest 1024 events shall be provided at each Controller.
b. Controllers that are reset, or powered up from a non-powered state, shall automatically request a parameter download and reboot to its proper working state. This shall happen without any operator intervention.

5. Operating systems shall include a real-time clock function that maintains seconds, minutes, hours, day, date, and month. The real-time clock shall be automatically synchronized with the Central Server.

C. The system shall provide the following “access control” functions:

1. Login throttling, which can be enabled for the system to limit the number of login attempts from the same IP address in a given period of time.
2. Integrated photo ID creation capability with video verification.
3. User interface secured access under encrypted password control.
4. System-wide timed anti-passback function.
5. Regional anti-passback with mustering and roll call functions.
6. Region occupancy counting and control.
7. Multiple access levels and cards per person.
8. 128-bit card support for Wiegand card readers.
9. Detailed time specifications.
10. Simultaneous support for multiple card data formats.
11. Access privileges variable by threat level.
12. Scheduled portal unlock by time and threat level.
13. Card format decoder quickly discovers unknown card formats.
14. Card enrollment by reader or keyboard.
15. Compatibility with various input devices, including biometric readers.
16. Activation/expiration date/time by person with one minute resolution.
17. Access level disable for immediate lockdown.
18. Use of Threat Levels to alter security system behavior globally.

19. Duress PINs, which can be enabled for the system to allow a valid user to raise an alarm if compelled under duress to use his or her credentials (card and PIN) to allow access for another person.
20. Multiple holiday schedules.
21. Timed unlock schedules.
22. Scheduled actions for arming inputs, activating outputs, and locking and unlocking portals.
23. Dual-reader portal support.
24. Magnetic-stripe reader support with cards using ABA Track 2 format for up to 200 bits.
25. Wiegand keypad PIN support for 4-digit or 6-digit PINs.
26. 8-bit and 4-bit burst keypad support for 4-digit or 6-digit PINs.
27. Integration with alarm panels.
28. DMP intrusion panel high-level TCP/IP integration.
29. Optional storage and recall of ID photos and personal/emergency data.
30. Up to 150,000 person records.
31. Unlimited number of scheduled actions, with the controller downloading up to of 16 per node per day of the soonest-to-activate actions applying to that node, and any others remaining in the database as candidates for downloading later. Expired scheduled actions are removed automatically.
32. Administrators shall be able to specify a specific number of days of non-use that will be allowed before unused cards will be disabled. Administrators shall be able to exempt individual users from this non-use rule.
33. First-in Unlock Rule: The system shall support the use of a First-in unlock rule. It shall be possible to use this rule to control the unlock behavior of portal groups with assigned unlock time specs.
    a. The First-in unlock rule shall require a card read of a specified access level. The portals in the group shall unlock only when the rule is satisfied and the unlock time spec is valid.
34. Double Card Presentation: The system shall support the use of a Double Card Presentation mode. This mode shall allow the presentation of a card twice in quick succession at a designated reader. Such a “double read” shall change the locked portal to an unlocked state until a subsequent relock event or user-designated timeout occurs. The double card presentation mode shall be enabled on an individual portal basis and shall also require a designation on the access level assigned to the cardholder. The mode shall adhere to time spec and threat level restrictions.
35. Keypad timed unlock: It shall be possible to enable a timed unlock feature for a portal that has a combination reader/keypad device. Once this feature is enabled, any cardholder with valid access to the portal shall be able to specify how long the portal will remain unlocked.
    b. A cardholder presents his or her card and then enters the associated PIN, followed by the number sign (#) and the number of minutes (1-99) the portal should remain unlocked.
    c. The portal will remain unlocked for the specified number of minutes; unless it is closed before the timer expires. If the portal remains open after the timer has expired, a “door held open” alarm will be activated.
    d. If reader/keypad devices are located on both sides of the portal, cardholders will be able to use either device to initiate a timed unlock.
36. Two-man entry restriction: It shall be possible to require two valid card reads by different cardholders within a specified number of seconds for entry to a specific portal.
37. The system shall be capable of controlling elevator access to floors.

D. The system shall provide the following “monitoring” functions:

1. Allow users view a full system summary, including an Activity Log, Auto-Monitor, and links to frequent user tasks.
2. Common alarm panel integration for disarm on access, and arm on egress.
3. Support for the direct viewing of integrated IP cameras.
4. Integrated real-time IP-based DVR and NVR systems with stored video replay for events.
5. Provides alarms on video loss, video motion detection, and video restore events.
6. Provides alarms on communication loss and temperature variation.
7. Support for the creation of custom sets of alarm event actions.

8. Provides the ability to record video and link to video for alarm events.
9. Available video control and playback through the System user interface.
10. Provides the ability to assign threat levels to various alarms according to severity.
11. Provides the ability to enter a duty log comment into the Activity Log, or to append a unique or preset comment to a particular log entry while viewing the Activity Log.
12. Support for the display of Activity Log entries that include both the time the event occurred on the node and the time it was reported to the controller.
13. Support for electronic supervision of alarm inputs.
14. Support for the use of output relays for enabling circuits under alarm event control.
15. The system shall provide graphic floorplan capability including graphic display of links to other floorplans, alarms, and system resources such as portals, IP video cameras, inputs, outputs, and temperature monitoring points.
    a. It shall be possible to create floorplan groups for the purpose of assigning or withholding assignment of these groups to system user permissions known as Custom User Roles. If a floorplan group is assigned to a particular system user then the floorplans in that group shall be viewable by that system user.
16. Support for the creation of unlimited customized monitoring layouts through the use of widgets, including layouts sized for the iPad or MacBook Air.
17. System user permissions to grant whole or partial access to system resources, commands, and personal data.
18. Secure access to the user interface under encrypted password control.
19. Delivery of alerts via browsers, email, and text messages.

E. Report Generation:

1. Alarm Reports: Reporting shall be automatic as initially set up. Include alarms recorded by system over the selected time and information about the type of alarm, the type of sensor, the location, the time, and the action taken.
2. Access and Secure Reports: Document zones placed in access, the time placed in access, and the time placed in secure mode.
3. Cardholder Reports: Include data, or selected parts of the data, as well as the ability to be sorted by name, card number, imprinted number, or by any of the user-defined fields.
4. Cardholder by Reader Reports: Based on who has access to a specific reader or group of readers by selecting the readers from a list.
5. Cardholder by Access-Level Reports: Display everyone that has been assigned to the specified access level.
6. Who Is In (Muster) Report: Contain a count of persons that are "In" at a selected Location and a count with detailed listing of name, date, and time of last use, sorted by the last reader used or by the group assignment.
7. History Reports: Custom reports that allows the operator to select any date, time, event type, device, output, input, operator, Location, name, or cardholder to be included or excluded from the report.

F. Visitor Assignment:

1. Provide for and allow an operator to be restricted to only working with visitors. The visitor badging subsystem shall assign credentials and enroll visitors. Allow only access levels that have been designated as approved for visitors.
2. Security access system shall be able to restrict the access levels that may be assigned to credentials that are issued to visitors.
3. The operator may designate any reader as one that deactivates the credential after use at that reader. The history log shall show the return of the credential.
4. System shall have the ability to use the visitor designation in searches and reports. Reports shall be able to print all or any visitor activity.

G. Entry-Control Enrollment Software: Database management functions that allow operators to add, delete, and modify access data as needed.

1. Provide multiple, password-protected access levels. Database management and modification functions shall require a higher operator access level than personnel enrollment functions.
2. Multiple Deactivate Dates for credentials. User-defined fields to be configured as additional stop dates to deactivate any credentials assigned to the credential-holder.
3. Default card data programming to speed data entry for sites where most card data are similar.
4. Enhanced File Import Utility to allow batch importing of cardholder data and images.
5. Credential Expire Function: Allows readers to be configured to deactivate credentials when a card is used at selected devices.
6. Provide a card reader at the location of the badge printer for easy enrollment.

H. Licensing and Updates:

1. Provide a minimum of six (6) district licenses plus two (2) licenses per building for system administration. The user license shall be valid in perpetuity while the Owner stays on the current major software release.
2. Include five (5) years of major and minor software updates from the date of substantial completion.

2.4 SYSTEM DATABASE

A. Security Access Integration:

1. Photo ID badging and photo verification shall use same database as the security access and may query data from cardholder, group, and other personal information to build a custom ID badge.
2. Maintain data of system activity, personnel access control information, system user passwords and custom user role permissions for whole or partial access to system resources and data.
3. Support for the sharing of access levels and user privileges across partitions in a system.
4. Built-in Open Database Connectivity (ODBC) compliant database for personal data.
5. LDAP integration for single-user logon authentication.
6. Unlimited person records.
7. Network-secure API for external application integration.
8. User-defined data fields in personnel records.
9. Storage and recall of ID photos and emergency personal information by name or card. System shall allow sorting of credential holders together by group or other characteristic for a fast and efficient method of reporting on, and enabling or disabling, credentials or codes.
10. Pre-defined reports on system configuration, system activity history, and people.
11. An “audit trail” report that shows changes made to the security database over a specified period of time, including the fields changed and who made the changes.
12. A “credential audit” report that shows all existing access cards by their current status settings including the name of the person to whom it was issued and the card number.
13. Custom report writer interface that allows the interactive creation of custom reports. Reports to be saved for later reuse.
14. Scheduled backup to on-board flash ROM or optional network attached storage (NAS), including FTP servers.
15. Periodic archive creation for historical custom reporting and improved on-board database performance.

B. Key control and tracking shall be an integrated function of cardholder data.

1. Provide the ability to store information about which conventional metal keys are issued and to whom, along with key construction information.

2. Reports shall be designed to list everyone that has possession of a specified key.

2.5 CENTRAL SERVER HARDWARE

A. The Owner will provide Central Server Computer which will be located on the Owners VMWare. Contractor will provide all software for Central Server and the requirements. Contractor to provide Central Server software according to the manufacturer recommended configuration for the size of the project plus 25% future growth.

2.6 CONTROLLERS

A. Controllers: Intelligent peripheral control unit, complying with UL 294, that stores time, date, valid codes, access levels, and similar data downloaded from the Central Server or workstation for controlling its operation.

B. Subject to compliance with requirements in this Article, manufacturers may use multipurpose Controllers.

C. Battery Backup: Sealed, lead acid; sized to provide run time during a power outage of 90 minutes, complying with UL 924.

D. Alarm Annunciation Controller:

1. The Controller shall automatically restore communication within 10 seconds after an interruption with the field device network.

E. Entry-Control Controller:

1. Function: Provide local entry-control functions including one- and two-way communications with access-control devices such as card readers, keypads, door strikes, magnetic latches, gate and door operators, and exit push-buttons.

    a. Operate as a stand-alone portal Controller using the downloaded database during periods of communication loss between the Controller and the field-device network.
    b. Accept information generated by the entry-control devices; automatically process this information to determine valid identification of the individual present at the portal:

        1) On authentication of the credentials or information presented, check privileges of the identified individual, allowing only those actions granted as privileges.
        2) Privileges shall include, but not be limited to, time of day control, day of week control, group control, and visitor escort control.

    c. Maintain a date-, time-, and Location-stamped record of each transaction. A transaction is defined as any successful or unsuccessful attempt to gain access through a controlled portal by the presentation of credentials or other identifying information.

2. Data Line Problems: For periods of loss of communications with Central Server, or when data transmission is degraded and generating continuous checksum errors, the Controller shall continue to control entry by accepting identifying information, making authentication decisions, checking privileges, and controlling portal-control devices.

    a. Store up to 1000 transactions during periods of communication loss between the Controller and access-control devices for subsequent upload to the Central Server on restoration of communication.

b. Backup Power Supply Capacity: 90 minutes of battery supply.

3. Controller shall integrate with ADA operators to automatically fire and open the door without any further action than presenting a credential at the respective reader. This shall be able to be defined both globally and on an individual user level.

2.7 KEYPAD READERS

A. Designed for use with unique combinations of alphanumeric and other symbols as an Identifier. Keys of keypads shall contain an integral alphanumeric/special symbol keyboard with symbols arranged in ascending ASCII-code ordinal sequence. Communications protocol shall be compatible with Controller.

1. Keys and display shall be backlit.
2. Duress Codes: Provide duress situation indication by entering a special code.

2.8 CARD READERS

A. General Requirements:

1. Operate on secure, standards-based platforms.
2. Operate on the SIA Open Supervised Device Protocol (OSDP) standards for secure transmission of data from the reader to the controller.
3. Support for mobile devices using Seos.
4. Flexible to support future technologies.
5. Secured communications using OSDP with Secure Channel Protocol.
6. The card reader shall have a read range of 4 inches.

B. Communications
1. Wiegand
2. Clock-and-Data
3. Open Supervised Device Protocol (OSDP) via RS-485

C. Feedback: Provide audible and visual (LED or other) feedback to provide visual and audible status indications and user prompts. Indicate power on/off, whether user passage requests have been accepted or rejected, and whether the door is locked or unlocked.

D. Power: Card reader shall be powered from its associated Controller, including its standby power source.

E. Manufacturer:

1. Interior and Exterior Doors
   a. HID Signo™ 20 for mullion locations
   b. HID Signo™ 20K for mullion keypad locations
   c. HID Signo™ 40K for wall switch locations
   d. HID Signo™ 40K for wall switch keypad locations
   e. Approved Equivalent

2.9 ELECTRIC STRIKE

A. General Requirements:

1. Contractor is to survey existing doors for the appropriate electric strike for the conditions.

2. The lock shall work with the existing door lock set.
3. The lock shall be rated at 250000 or greater cycles of operation.
4. Provide exit devices as needed for each door.
5. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

B. Manufacturer:

1. HES (e.g. Surface Mounted: HES 9400/9600 Series Electric Strike (630 - Stainless Steel))
2. HES (e.g. Electrified Strikes: HES 1600CS Complete Pac for Latchbolt & Deadbolt Locks (630 - Stainless Steel))
3. Approved Equivalent

2.10 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE) – EL-CEPT Series.
b. Securitron (SU) - EL-CEPT Series.
c. Von Duprin (VD) - EPT-10 Series.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
   a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
   b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

a. Hager Companies (HA) - Quick Connect.
b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.
c. Stanley Hardware (ST) – WH Series.

2.11 PASSIVE INFRARED SENSOR

A. Manufacturer:
1. Honeywell IS310 (White)

2. Bosch DS150i (White)
3. Securitron XMS
4. Approved Equivalent

2.12 DOOR CONTACT

A. Manufacturer:
1. Securitron DPS-M-BK
2. Approved Equivalent

2.13 POWER SUPPLY

A. Manufacturer:
1. Altronix Power Supply (eFlow6NX8D)
2. Network Communication Module (LINQ2)
3. Approved Equivalent

2.14 LOCKDOWN BUTTON

A. General Requirements:

1. Provide lockdown of all doors controlled by the card access system.
2. #7 cover indoor/outdoor
3. #9 Turn-to-Reset illuminated green, red or white
4. In the event of a lock-down the system shall notify District Administration, local Police Department, or any other individual(s) identified during installation. Notification methods shall include email and phone support.
5. Label faceplate “LOCKDOWN”. Label shall be silk-screened. (Final color to be determined)

B. Manufacturer:
1. Safety Technology International model SS2279LD-EN
2. Approved equivalent.

2.15 VISITOR MANAGEMENT

A. Provide equipment for enrolling personnel into and removing personnel from system database as well as the assignment of credentials.
1. Provide on enrollment reader to be located at the location of the card printer (Wall Switch Style).

B. Enrollment equipment shall support encoding of credential cards including cryptographic and other internal security checks as required for system.

1. Allow only authorized entry-control enrollment personnel to access the enrollment equipment using passwords.
2. Include enrollment subsystem configuration controls and electronic diagnostic aids for subsystem setup and troubleshooting with the Central Server.
3. Enrollment station records printer shall meet requirements of the report printer.

C. System Capacity: Number of credentials shall be limited only by hard disk space.

2.16 PORTABLE TABLET SYSTEM MANAGEMENT

A. General Requirements
1. Provide a tablet device for easy management and access to the access control system. Tablet device will be used to check on status and alerts generated by the software.
2. Contractor to work with Owner for password protection.
3. Provide easy access to access control software through the tablet.
4. Provide protective case
5. Provide Wall Mount
   a. Work with Owner for final mounting location
   b. Owner must be able to take tablet out of wall mount

B. Manufacturer
1. Apple iPad (10.2-inch, Wi-Fi, 32GB) - Space Gray (Latest Model)
2. Amazon Fire HD 10 Tablet (10.1" 1080p full HD display, 32 GB) – Black
3. Samsung Galaxy Tab A 10.1 32 GB Wifi Tablet Black (2019)
4. Or approved equivalent

2.17 SMART CARDS (Quantity of 500)

A. General Requirements:
1. Combines smart card technology with photo-identification capability on a single card.
2. Graphics-quality surface for use with direct image printers.
3. Vertical or horizontal slot punch capability. Owner to decide on the orientation of the card.

B. Manufacturer:
1. HID Global Corporation – iClass Seos Smart Card

2.18 CARD PRINTER

A. Manufacturer:
1. HID Global Corporation - Fargo HDP5000 Card Printer and Encoder
   a. Single-sided over-the-edge printing.
   b. Full-color, continuous-tone printing at 300 DPI.
   c. (1) Printer at the Administration Building
   d. Must include (2) spare full-color ribbon cartridges
2. Include (1) USB digital cameras, including (1) tripods.
3. Approved Equivalent

2.19 DOOR STATION VIDEO INTERCOM

A. General Requirements
1. The JP Series shall provide a large 7-inch (180 mm) touch screen monitor for clear visitor identification and easy operation control. The JP Series shall be installed at a maximum of 4 door locations and connected to a maximum of 8 inside locations with internal communication between stations. Connection to and integration of CCTV cameras for surveillance capabilities shall be available.
   a. The system shall be hard wired and constructed with a 2-wire communication system for the door stations and a Cat5e/6 communication system for the video locations system.
   b. Hearing Assistance: Provide T-Coil connection for hearing aids.
2. Functional Components: As indicated on the drawings or as required to complete system.
   a. Master Station.

b. JP-4MED: Hands-free/Handset color video intercom master station.

3. Sub Master Station:
   a. JP-4HD: Hands-free/Handset color video intercom sub master station.
4. Video Door Station:
   a. JP-DA: PanTilt & Zoom video door station, surface mount.
   b. JP-DV: PanTilt & Zoom vandal-resistant video door station, surface mount.
   c. JP-DVF: PanTilt & Zoom vandal-resistant video door station, flush mount.
5. Door Station:
   a. GT-D: Audio only door station.
6. Long Distance/CCTV Adaptor:
   a. JPW-BA: Long distance/CCTV adaptor.
7. Distribution Adaptor:
   a. JP-8Z: Distribution adaptor.
8. Power Supply:
   a. PS-2420UL: 24V DC Power supply.
9. Call Extension Speaker:
   a. IER-2: Call extension speaker.
10. External Devices:
    a. RY-3DL: Multiple door release adaptor.
    b. AC-10S: Access control keypad, surface mount.
    c. JP-DV + AC-10S: Pantilit & Zoom vandal-resistant video door station. Surface mounted with access control keypad

B. System Design: Unless noted otherwise on drawings provide system layout as follows. Three wiring methods are possible: Station-to-Station, Centralized Wiring, or Combined Wiring, where both methods are employed in the same system.
   1. Provide Station-to-Station Wiring: Directly connect a master station to a sub master station.
      a. Maximum distance of farthest sub master from master station: 980 feet (300 m), cumulative.
      b. Maximum distance between sub master stations in station-to-station wiring: 98 feet (30 m) when 3 stations are powered off 1 power supply, or 165 feet (50 m) when 2 stations powered off of 1 power supply.

C. Manufacturer:
   1. Aiphone Corporation – JP Series

2.20 HANDS-FREE/HANDSET COLOR VIDEO INTERCOM SYSTEM

A. General Requirements
   1. Color Video Intercom System: JP Series Intercom System as manufactured by Aiphone Corporation.
   2. Room Master Station: JP-4MED 7 inches (180 mm) Digital PTZ Video Master Station with Memory.
      a. The JP Series shall accommodate up to 4 Door Stations and 8 Master Stations in a single system.
      b. Provide icon driven One Touch Hands Free operation. Touch the screen to communicate with visitors using the built-in microphone and speaker or use the handset at any time during conversation for privacy.
   3. Operation: From Master Station. Provide the following.
      a. Room Call: Touch screen icon to call a single sub master station or all sub master stations simultaneously.
      b. Play: Touch screen icon to play recorded images from door stations.
      c. Settings: Touch screen icon to program settings and adjustments.
      d. Security: Touch screen icon to activate the security mode or to change security settings.
      e. Monitor: Touch screen icon to monitor a door station or sub master station.

f. Option: Touch screen icon to activate the connected external device(s).

4. Available Functions During Monitoring: Provide the following.
   a. Pan-Tilt-Zoom/Wide camera control
   b. When monitoring is started, an image shall be shown in wide mode. Pan & Tilt and adjusting images shall be possible from the Master Station.
   c. Door release shall be possible from the Master Station.
   d. Volume control shall be possible from the Master Station.
   e. Manual recording shall be possible from the Master Station.

B. Room Station (Sub Master Station): JP-4HD
   1. Provide icon driven One Touch Hands Free operation. Touch the screen to communicate using the built-in microphone and speaker or use the handset at any time during conversation for privacy.
   2. Physical Characteristics:
      a. Power supply: DC 24V (from power supply).
      b. Current Consumption: 200 mA.
      c. Communication: Handset - Simultaneous communication.
      d. Communication: Hands-free - Auto-voice actuation.
      e. Ambient Temperature: 32 degree F to 104 degrees F (0 to 40 degrees C).
      f. Monitor: 7 inch color LCD monitor.
      g. Electrical box: 3-gang box.
      h. Material: Flame resistant ABS resin.
      i. Color: White.
      j. Dimensions: 5-11/16 inches H x 10-1/16 inches W x 1-7/8 inches D (145 mm by 255 mm by 48 mm).
      k. Weight: Approx. 1.74 lbs (790 g).
   3. The JP-4MED shall automatically record images. Recording starts approximately 2 seconds after receiving a call.
   4. 170 degree wide angle and 100 degree vertical angle camera to minimize blind spots, ensuring a clear view of the door station area.
   5. Zoom for Clarity/ Pantilt for Control:
      a. Video door stations feature a wide angle camera to observe more activity behind the door. In addition, digital PanTilt and Zoom can focus on an area for greater detail.
      b. Oversized buttons and intuitive icons allow for quick navigation and control. Conventional push buttons shall not be permitted.
      c. Equipped with an advanced light adjustment feature to compensate for varying light levels. If a picture is too dark, increase of the brightness level at the door station shall be controlled at the master station.
   6. Record Images of Visitors:
      a. After a call is placed, the JP Series records 6 images per call to internal memory.
      b. Provide an SD / SDHC card (not included) as the primary storage location, with which recording frequency increases to 4 pictures per second for up to 10 seconds per call.
      c. Provide documentation of outside disturbances by manually recording them at any time.
   7. Physical Characteristics:
      a. Operating Temperature: 14 degrees F to 140 degrees F (-10 to 60 degrees C).
      b. Dimensions:
         1) JP-DA 5-1/8 inches x 3-7/8 inches x 1-9/16 inches (131 x 99 x 40 mm).
         2) JP-DV 6-13/16 inches x 3-7/8 inches x 1 inch (173 x 98 x 25 mm).
         3) JP-DVF 8-1/4 inches x 5-5/16 inches x 7/32 inch (209 x 135 x 5.5 mm).
         4) JP-DVF back box 7-3/32 inches x 4-3/8 inches x 1-25/32 inches (180 x 110 x 45 mm)
      c. Power Supply: DC 24V (from master station).
      d. Current Consumption: 90 mA.
      e. Mounting:
         1) JP-DA: Surface mount to 2x4 electrical box.
         2) JP-DV: Surface mount direct to surface.
         3) JP-DVF: Flush mount with included back box.

f. Weight:
1) JP-DA: 0.46 lbs (210g).
2) JP-DV: 1.3 lbs (550g).
3) JP-DVF: 1.2 lbs (550g).
4) Back Box: 0.95 lbs (430g).
g. Power Supply: PS-2420UL, 24V DC Power supply.

8. Distribution Adaptor: JP-8Z.
a. Power Supply: DC 24V (from power supply)
b. Current Consumption: 90 mA
c. Operating Temperature: 32 degree F to 104 degrees F (0 to 40 degrees C).
d. Mounting: Wall-mount.
e. Weight: Approx. 7.5 oz (210 g).

C. Preparation
1. Verify the following compliance before starting installation.
a. All units, except for the entrance station and tenant door station, are designed for indoor use only. Do not use outdoors.
b. The unit turns inoperative during power failure.
c. In areas where broadcasting station antennas are close by, intercom system may be affected by radio frequency interference.
d. Keep the intercom wires at least 1 foot (30 cm) away from strong electrical wiring (AC 100-240 V) including, in particular, wiring for inverter electrical appliances. Noise and malfunction could result.
e. Keep the unit more than 3.3 feet (1 m) away from radio or TV set.
f. If a strong light shines on the main unit screen, the picture may turn white or only silhouettes will be visible.
g. Other manufacturer's devices (such as sensor, detectors, door releases) used with this system, comply with the manufacturer's installation requirements.
h. The LCD panel is manufactured with very high precision techniques, inevitably will have a very small portion of its picture elements always lit or not lit at all. This is not considered a unit malfunction. Please be aware of this in advance.

D. Installation
1. Install integrated security and communication system in accordance with manufacturer's instructions at locations indicated on the Drawings.
2. Mount equipment plumb, level, square, and secure. For video entrance stations and video door stations, comply with manufacturer's design requirements to provide optimum picture quality of station monitoring.

E. Set-Up and Training
1. Adjust integrated security and communication system for proper operation in accordance with manufacturer's instructions.

F. DEMONSTRATION AND TRAINING
1. Demonstration:
a. Demonstrate that integrated security and communication system functions properly.
2. Perform demonstration at final system inspection by qualified representative of manufacturer.

G. 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.

H. Protection

1. Protect installed integrated security and communication system from damage during construction.

I. Signage Specifications
   1. General Requirements:
      a. Size: 12”x12”
      b. Material: Aluminum or other outdoor rated material.
      c. Lettering: Review size and layout options with Owner. Include braille lettering.
      d. Wording, layout, and format to be created by Owner and may be different for each sign.
   2. Installation:
      a. Coordinate the placement of signage at each building with Owner or owner’s representative. Use installation method appropriate for each locations’ conditions and materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor’s responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

B. Prior to installation, a site survey must be performed to determine equipment placement. Any issues with the systems, design, or installation must be brought to the attention of the Technology Designer before the bid is submitted.

C. Examine pathway elements intended for cables. Check raceways, cable trays, and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.

D. Notify the Technology Designer of any conditions that would adversely affect installation or subsequent use.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with recommendations in SIA CP-01.

B. Review project plan with Technology Designer and Owner to clarify Owner requirements before installation. Create detailed Project planning and publish documents for review and approval.

1. Propose start and stop times for time zones and holidays, and match up access levels for doors.
2. Set up groups, facility codes, linking, and list inputs and outputs for each Controller.
3. Establish timeline and workflow for credential creation and enrollment into the access control system. Anticipate work will be required on-site, as VPN access may not be granted by the owner.
4. Assign action message names and compose messages.
5. Set up alarms. Establish interlocks between alarms, intruder detection, and video surveillance features.
6. Prepare and install alarm graphic maps.
7. Develop user-defined fields.

8. Develop screen layout formats.
9. Propose setups for guard tours and key control.
10. Complete system diagnostics and operation verification.
11. Prepare a specific plan for system testing, startup, and demonstration.
12. Develop acceptance test concept and, on approval, develop specifics of the test.

3.3 INSTALLATION

A. The Contractor must install and configure the system according to the manufacturer's sequence and guidelines as well as generally accepted standard practices.

B. The Contractor must provide all miscellaneous items and accessories required to make the system operational whether or not such items are specifically mentioned in the plans and specifications.

C. The Contractor must protect equipment and components during installation until final acceptance of the project, and clean all equipment before Owner acceptance using methods and materials recommended by the manufacturer.

D. All security devices (proximity readers, keypads, etc.) must be installed according to ADA requirements.

E. Integrate ADA operators into the access control system. Integration must disable the operator from the building exterior while the door is in a latched position, but must work when scheduled open or upon a valid card read. Operators must work at all times when exiting the building.

F. This contractor is to provide power to all electrified hardware included in this project.

G. Contractor is responsible for configuration of all door schedules, hardware schedules, and hardware specifications to fully understand the extent of their work prior to bid submission. These devices include, but are not limited to:1.Electrified latch retraction devices (electrified crash bars) 2.Electrified mortise locksets 3.Cut-in electric strikes4.Surface mount electric strikes (where provided by others)

H. Walk site with Owner and Barton Malow before mounting any equipment in closet, IDF or MDF space.

3.4 SYSTEM SOFTWARE

A. Develop, install, and test software and databases for the complete and proper operation of systems involved. Assign software license to Owner.

3.5 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. 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.

3.6 STARTUP SERVICE

A. Provide import template for user information. Populate database with Owner-provided import file.

B. Enroll and prepare credentials and access cards for Owner's staff (approximately 250 users).

3.7 DEMONSTRATION

A. Develop site specific training modules and materials for the following:

1. Admin Training must include but is not limited to:
    a. System architecture
    b. Computer system administration personnel to manage and repair the LAN and databases and to update and maintain software.
    c. Configuration and setup
    d. Interface controls
    e. Logs and reports
    f. Badge setup, configuration and printing
    g. Events, alarms and notifications
    h. System integration
    i. Video intercom
2. Basic User
    a. Interface controls
    b. Badge setup, configuration and printing
    c. Events, alarms and notifications
    d. Lockdown
    e. Video intercom

B. The Contractor’s trainer will supply system documentation and training aids customized to this installation. Documentation must be tailored for system administrators and typical users.

C. At the completion of each phase of work, Contractor will provide four (4) hours of startup assistance for out-of-scope work, scheduled at the Owner’s discretion. The assistance time may not be contiguous and does not include travel time to or from the project site. Startup assistance will utilize staff involved in the onsite installation unless added personnel is needed to complete the base scope of work according to the project schedule or Owner’s requirements. Unused time will be deducted utilizing the labor material price.

3.8 DOCUMENTATION

A. As-Built Documentation: In addition to the requirements listed in section 27 0000, include the following:

1. Letter or tabloid sized composite floorplan drawing of each building indicating controlled access location, reader type, and descriptive title. In addition to copies included in the as-built submission, provide one copy to each building office and the document in electronic format.

3.9 WARRANTY

A. The following warranties must be provided by the awarded contractor at no additional cost to the Owner.

1. Access Control Controller and Panels - The controller and related panels must be warranted with a five (5) year complete warranty, including product maintenance/software updates. The warranty period will start on the date of substantial completion. The awarded contractor will be required to replace any defective product at no additional cost, including labor. The warranty must cover defects in workmanship and material.

B. Final payment will not relieve the awarded contractor of these obligations.

END OF SECTION 28 1300

SECTION 080671 – DOOR HARDWARE SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section references specification sections relating to commercial door hardware for the following:

1. Swinging doors.
2. Sliding Doors.
3. Other doors to the extent indicated.

B. Commercial door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical and access control door hardware.
3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
4. Automatic operators.
5. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Door Hardware”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:

   a. Type, style, function, size, label, hand, and finish of each door hardware item.
   b. Manufacturer of each item.
   c. Fastenings and other pertinent information.
   d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   e. Explanation of abbreviations, symbols, and codes contained in schedule.
   f. Mounting locations for door hardware.
   g. Door and frame sizes and materials.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.

D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service

representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Refer to “PART 3 – EXECUTION” for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a

hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.

2. The supplier is responsible for handing and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.

1. Section 08 71 00 – Door Hardware.

C. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. RO - Rockwood
4. DJ - Don-Jo
5. RU - Corbin Russwin
6. OT - Other
7. HS - HES
8. NO - Norton
9. SU - Securitron

Hardware Sets

Set: 1.0

Doors: A.1.I.1_A.1.I.2

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style reader with keypad card reader. Reuse existing reader cabling. Reuse existing electric strike cabling.

Set: 2.0

Doors: A.1.I.3_A.1.I.4

1	Wrap-Around	40-S-CW		DJ	
1	Fail Secure Lock	ML20906-SEC NSA M92 GMK	626	RU	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	ElectroLynx Harness	QC-C (power transfer to lock or electric strike location)		MK	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Remove existing cypher lockset.

Set: 3.0

Doors: A.1.I.5_A.1.I.6

1	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing wall switch size reader. Reuse existing reader cabling. Reuse existing latch retractor cabling.

Set: 4.0

Doors: A.1.I.7

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing wall switch size reader. Ruse existing reader cabling. Reuse existing electric strike cabling.

Set: 5.0

Doors: A.1.E.2

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style reader. Reuse existing reader cabling. Reuse existing electric strike cabling.

Set: 6.0

Doors: A.1.E.1

1	Electric Strike	9600	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None.

Set: 7.0

Doors: B.1.E.1_B.1.E.2

2	Continuous Hinge	DFM-HD1		PE	
2	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
2	DOOR OPERATOR	EXISTING DOOR OPERATOR	689	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electric latch retractor cabling. Tie in and integrate ADA operator and buttons.

Set: 8.0

Doors: B.1.I.1_B.1.1.2

2	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡

2	DOOR OPERATOR	EXISTING DOOR OPERATOR	689	OT	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electric latch retractor cabling. Tie in and integrate ADA operator and buttons.

Set: 9.0

Doors: B.1.E.3

1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: None

Set: 10.0

Doors: B.1.I.3

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 11.0

Doors: B.1.E.4

1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: None

Set: 12.0

Doors: B.1.E.5

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: None

Set: 13.0

Doors: B.1.E.6

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 14.0

Doors: B.1.E.7_B.1.E.8

2	Continuous Hinge	CFM-HD1		PE	
1	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Remove exiting pivot hinges. Replace existing mullion style card reader. Reuse existing card reader cabling. Reuse existing latch retraction cabling.

Set: 15.0

Doors: B.1.E.9

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 16.0

Doors: B.1.I.1

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 17.0

Doors: C.1.I.2_C.1.I.3

2	Surface Vert Rod Exit, Storeroom	ED5470 N959ET M55 M91 M92 MELR	630	RU	⚡
2	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
2	ElectroLynx Harness	QC-C (power transfer to exit device rail)		MK	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Surface Position Switch	MSS-1-RT		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 18.0

Doors: C1.I.4_C.1.I.5

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Cabling required for existing electric strike.

Set: 19.0

Doors: C.1.I.5.1

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 20.0

Doors: C.1.I.6_C.1.I.7

2	Surface Vert Rod Exit, Storeroom	ED5470 N959ET M55 M91 M92 MELR	630	RU	⚡
2	Surface Closer	7500	689	NO	
2	Electric Power Transfer	EL-CEPT		SU	⚡
2	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
2	ElectroLynx Harness	QC-C (power transfer to exit device rail)		MK	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 21.0

Doors: C.1.I.8_C.1.I.9

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡

1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 22.0

Doors: C.1.I.10

1	Wrap-Around	40-S-CW		DJ	
1	Fail Secure Lock	ML20906-SEC NSA M92 GMK	626	RU	⚡
1	Door Cord	TSB-C		SU	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	ElectroLynx Harness	QC-C (power transfer to lock or electric strike location)		MK	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Remove cypher lockset

Set: 23.0

Doors: C.1.E.1

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: Overhead door.

Set: 24.0

Doors: C.1.E.2

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electric strike cabling.

Set: 25.0

Doors: C.1.I.11_C.1.I.12

2	Surface Vert Rod Exit, Storeroom	ED5470 N959ET M55 M91 M92 MELR	630	RU	⚡
2	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
2	ElectroLynx Harness	QC-C (power transfer to exit device rail)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 26.0

Doors: C.1.I.13_C.1.I.14

1	Wrap-Around	40-S-CW		DJ	
1	Fail Secure Lock	ML20906-SEC NSA M92 GMK	626	RU	⚡
1	Door Cord	TSB-C		SU	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 27.0

Doors: C.1.I.15_C.1.I.16

1	Hinge, Full Mortise	TA2714 x QC12	US26D	MK	⚡
1	Dust Proof Strike	570	US26D	RO	
1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
2	Surface Closer	7500	689	NO	
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 40 - WALL SWITCH MOUNT	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡

1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 28.0

Doors: C.1.I.17

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	Surface Closer	7500	689	NO	
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 29.0

Doors: C.1.I.18

1	NO WORK	NO NEW WORK	630	OT	

Set: 30.0

Doors: C.1.E.3

1 ELETRIC STRIKE		EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing power transfer hinge and electric strike cabling.

Set: 31.0

Doors: A.2.I.1_A.2.I.2

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader with keypad card reader. Reuse existing card reader cabling. Reuse existing electric strike cabling.

Set: 32.0

Doors: A.2.I.3

1	ELECTRIC LOCK	EXISITNG ELETRIC LOCK	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electric strike cabling.

Set: 33.0

Doors: A.2.I.4

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 34.0

Doors: A.2.I.5

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 35.0

Doors: A.2.I.6

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 36.0

Doors: A.2.I.7

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 37.0

Doors: A.2.I.8

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡

1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 38.0

Doors: A.2.I.9

1	ELECTRIC LOCK	EXISITNG ELETRIC LOCK	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electrified mortise lock and cabling.

Set: 39.0

Doors: A.2.I.10

1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 40.0

Doors: C.2.I.3

1	ELECTRIC LOCK	EXISITNG ELETRIC LOCK	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electrified mortise lock and cabling.

Set: 41.0

Doors: C.2.I.1_C.2.I.2

ELECTRIC STRIKE	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
CARD READER	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
Concealed Position Switch	Concealed Position Switch	DPS-M-BK		SU	⚡
Motion Sensor	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader with keypad card reader. Reuse existing card reader cabling. Reuse existing electric strike cabling.

Set: 42.0

Doors: B.2.I.1 (2ND FLOOR, B WING)

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: Replace existing door contact. Demo old cabling and use new.

Set: 43.0

Doors: B.2.I.2 (2ND FLOOR, B WING)

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: Replace existing door contact. Demo old cabling and use new.

Set: 44.0

Doors: B.2.I.3

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: Replace existing door contact. Demo old cabling and use new.

Set: 45.0

Doors: B.2.I.4

2	Electric Strike	9600	630	HS	⚡
2	SMART Pac Bridge Rectifier	2005M3		HS	⚡

2	ElectroLynx Adaptor	2004M		HS	⚡
2	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: None

Set: 46.0

Doors: A.3.I.3

1	ELECTRIC LOCK	EXISITNG ELETRIC LOCK	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electrified mortise lock cabling.

Set: 47.0

Doors: A.3.I.1_A.3.I.2

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader with keypad card reader. Reuse existing reader cabling. Reuse existing electric strike cabling.

Set: 48.0

Doors: B.2.I.1 (3RD FLOOR, B WING)

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: None

Set: 49.0

Doors: B.2.I.2 (3RD FLOOR, B WING)

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: None

Set: 50.0

Doors: B.3.I.2

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 51.0

Doors: C.3.I.1_C.3.I.2

1	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
2	Surface Closer	7500	689	NO	
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
1	Motion Sensor	XMS		SU	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader with keypad card reader. Reuse existing reader cabling. Reuse existing electric strike cabling.

Set: 52.0

Doors: B.2.I.2

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: Replace existing position switch. New cabling required.

Set: 53.0

Doors: C.3.I.3

1	ELECTRIC LOCK	EXISITNG ELETRIC LOCK	630	OT	⚡

1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Reuse existing electrified mortise lock cabling.

Set: 54.0

Doors: PENTHOUSE C WING

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 55.0

Doors: PENTHOUSE A WING

1	Storeroom Lock	ML2057 NSA GMK	626	RU	
1	Electric Strike	1006CS	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Surface Position Switch	MSS-1-RT		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 56.0

Doors: D.1.E.1_D.1.E.2

2	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡

2	DOOR OPERATOR	EXISTING DOOR OPERATOR	689	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Ruse existing reader cabling. Existing latch retraction on both doors. Reuse existing latch retraction cabling. Tie in and integrate ADA operator and buttons.

Set: 57.0

Doors: D.1.I.1_D.1.I.2

1	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Existing latch retraction on both doors. Reuse existing latch retraction cabling.

Set: 58.0

Doors: D.2.I.1_D.2.I.2

2	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	AIPHONE	AIPHONE JP SERIES INTERCOM	630	OT	
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Replace existing stand-alone card reader keypad. Remove and replace existing Aiphone. Reuse existing electric strike cabling.

Set: 59.0

Doors: AA3

2	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
2	DOOR OPERATOR	EXISTING DOOR OPERATOR	689	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Existing latch retraction on both doors. Reuse existing latch retraction cabling. Tie in and integrate ADA operator and buttons.

Set: 60.0

Doors: AA4

1	MAGNETIC LOCK	EXISTING MAGNETIC LOCK	630	OT	
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	PUSH BUTTON	EXISTING REQUEST TO EXIT BUTTON	630	OT	
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Existing double maglock. Reuse existing maglock cabling. Tie in existing request to exit button into new system.

Set: 61.0

Doors: AA5

1	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Existing latch retraction on both doors. Reuse existing latch retraction cabling.

Set: 62.0

Doors: AA6

1	EXIT DEVICE	EXISTING LATCH RETRACTION EXIT DEVICE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡

Door and Cabling Notes: Replace existing mullion style card reader. Reuse existing reader cabling. Existing latch retraction. Reuse existing latch retraction cabling.

Set: 63.0

Doors: AA7

1	Electric Strike	9600	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 64.0

Doors: AA8

1	Surface Position Switch	MSS-1-RT		SU	⚡

Door and Cabling Notes: None

Set: 65.0

Doors: MISC

1	Repair Kit	QC-R001		MK	⚡
1	Crimp Tool	QC-R003		MK	⚡

Set: 66.0

Doors: E.1.E.1_E.1.E.2

2	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
1	AIPHONE	AIPHONE JP SERIES INTERCOM	630	OT	
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Demo existing Aiphone. Patch and fill any holes not covered by new Aiphone.

Set: 67.0

Doors: E.1.I.1_E.1.I.2

2	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Reuse existing strikes.

Set: 68.0

Doors: E.1.E.5

2	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20K - MULLION W/ KEYPAD	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Remove existing stand-alone keypad. Reuse existing strike.

Set 69.0

Doors: E.1.E.3 & E.1E.4

1	Electric Strike	9600	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set 70.0

Doors: E.1.I.6 & E.1.I.7

1	Electric Strike	9600	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set 71.0

Door: 140

1	Electric Strike	9600	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 72.0

Doors: 159

2	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Reuse existing strikes.

Set 73.0

Door: 171, 177, 66, 57,11,20, 33

1	Electric Strike	9600	630	HS	⚡
1	SMART Pac Bridge Rectifier	2005M3		HS	⚡
1	ElectroLynx Adaptor	2004M		HS	⚡
1	ElectroLynx Harness	QC-C1500P (power transfer or electric strike to junction box above)		MK	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: None

Set: 74.0

Doors: 180A, 180B

2	ELECTRIC STRIKE	EXISTING ELECTRIC STRIKE	630	OT	⚡
1	CARD READER	SIGNO MODEL 20 - MULLION	BLACK	HS	⚡
2	Concealed Position Switch	DPS-M-BK		SU	⚡
1	Motion Sensor	XMS		SU	⚡
1	Power Supply	AQLx-E1 (Amp capacity as required)		SU	⚡

Door and Cabling Notes: Reuse existing strikes.

END OF SECTION 080671

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Louvers installed in hollow metal doors.
4. Light frames and glazing installed in hollow metal doors.

B. Related Sections:

1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section "Glazing" for glass view panels in hollow metal doors.
4. Division 08 Section "Door Hardware".
5. Division 08 Section "Access Control Hardware".
6. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
10. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Include the following:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of anchorages, joints, field splices, and connections.
6. Details of accessories.
7. Details of moldings, removable stops, and glazing.
8. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Verification:

1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL10C (neutral pressure at 40” above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
3. Smoke Control Door Assemblies: Comply with NFPA 105.

    a. Smoke "S" Label: Doors to bear “S” label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257. Provide labeled glazing material.

E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:

1. CECO Door Products (C).
2. Curries Company (CU).

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, and ANSI/SDI A250.4 for physical performance level.

1. Design: Flush panel.
2. Core Construction: Foamed in place polyurethane and steel reinforced core with no stiffener face welds.

a. Provide 18 gauge steel vertical reinforcements 6 inches apart and welded in place. Foamed in place polyurethane core is chemically bonded to all interior surfaces. No face welding is permitted.
b. Thermal properties to rate at a fully operable minimum U-Factor 0.37 and R-Value 2.6, including insulated door, Mercury thermal-break frame and threshold.

c. Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.38 and R-Value 2.6, including insulated door, kerf type frame, and threshold.

3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch - 1.3-mm) thick steel, Model 2.
4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.

a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Manufacturers Basis of Design:

1. Curries Company (CU) - Polystyrene Core - 707 Series.
2. Curries Company (CU) - Energy Efficient - 797 Mercury Series.

2.4 HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.

B. Thermal Break Frames: Subject to the same compliance standards and requirements as standard hollow metal frames. Tested for thermal performance in accordance with NFRC 102, and resistance to air infiltration in accordance with NFRC 400. Where indicated provide thermally

broken frame profiles available for use in both masonry and drywall construction. Fabricate with 1/16" positive thermal break and integral vinyl weatherstripping.

C. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 14 gauge (0.067-inch -1.7-mm) thick steel sheet.
3. Manufacturers Basis of Design:

    a. Curries Company (CU) – Thermal Break TQ Series.

D. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.

1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
2. Frames: Minimum 16 gauge (0.053-inch -1.3-mm) thick steel sheet.
3. Manufacturers Basis of Design:

    a. Curries Company (CU) - CM Series.
    b. Curries Company (CU) - M Series.

E. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

F. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.6 LOUVERS

A. Metal Louvers: Unless otherwise indicated provide louvers to meet the following requirements.

1. Blade Type: Vision proof inverted V or inverted Y.
2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

B. Louvers for Fire Rated Doors: Metal louvers with fusible link and closing device, listed and labeled for use in doors with fire protection rating of 1-1/2 hours and less.

1. Manufacturers: Subject to compliance with requirements, provide louvers to meet rating indicated.
2. Metal and Finish: Galvanized steel, 0.040 inch thick, factory primed for paint finish with baked enamel or powder coated finish. Match pre-finished door paint color where applicable.

2.7 LIGHT OPENINGS AND GLAZING

A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator’s shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.

B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.

C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.

D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

2.8 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.9 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.

2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

    a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

    b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.

3) Five anchors per jamb from 90 to 96 inches high.
4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.

10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.10 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

    a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 081113

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Automatic operators.
4. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
4. Division 08 Section “All-Glass Entrances”.
5. Division 08 Section “Automatic Door Operators”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. UL/ULC and CSA C22.2 – Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
8. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C – Positive Pressure Fire Tests of Door Assemblies.
3. CAN/ULC-S104 – Standard Method for Fire Tests of Door Assemblies.
4. ANSI/UL 294 – Access Control System Units.
5. ULC-S319 - Electronic Access Control Systems.
6. ULC-60839-11-1, Alarm and Electronic Security Systems - Part 11-1: Electronic Access Control Systems - System and Components Requirements.
7. CAN-ULC-S132 -- Standard Method of Tests for Emergency Exit and Emergency Fire Exit Hardware.
8. CAN-ULC-S533 - Egress Door Securing and Releasing Devices.
9. UL 305 – Panic Hardware.
10. ULC-S132, Emergency Exit and Emergency Fire Exit Hardware.
11. ULC-S533 – Egress Door Securing and Releasing Devices.
12. ANSI/UL 437- Key Locks.
13. ULC-S328, - Burglary Resistant Key Locks.

F. Registrations: All hardware specified herein shall be registered with the following agencies, as applicable:

1. Federal Communications Commission (FCC).
2. Industry Canada (IC).
3. California State Fire Marshall.
4. Florida Department of Business & Professional Regulation.
5. New York State Office of Mental Health (OMH).

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.
    c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Twenty five years for manual overhead door closer bodies.
4. Five years for motorized electric latch retraction exit devices.
5. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

   a. Two Hinges: For doors with heights up to 60 inches.
   b. Three Hinges: For doors with heights 61 to 90 inches.
   c. Four Hinges: For doors with heights 91 to 120 inches.
   d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

   a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
   b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

   a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
   b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

   a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Manufacturers:

   a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).

B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:

   a. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.3 POWER TRANSFER DEVICES

A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

    a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - QC (# wires) Option.

B. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

    a. Securitron (SU) - EL-CEPT Series.

C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

    a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
    b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

    a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
5. Keyway: Match Facility Standard.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).

F. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) – ML2000 Series.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.7 ELECTRIC STRIKES

A. Standard Electric Strikes: Electric strikes tested to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Manufacturers:

a. HES (HS) - 1006 Series.

B. Surface Mounted Rim Electric Strikes: Surface mounted rim exit device electric strikes tested to ANSI/BHMA A156.31, Grade 1, and UL Listed for both Burglary Resistance and for use on fire rated door assemblies. Construction includes internally mounted solenoid with two heavy-duty, stainless steel locking mechanisms operating independently to provide tamper resistance. Strikes tested for a minimum of 500,000 operating cycles. Provide strikes with 12 or 24 VDC capability supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike. Strike requires no cutting to the jamb prior to installation.

1. Manufacturers:

a. HES (HS) - 9400/9500/9600/9700/9800 Series.

C. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.8 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.

6. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.

7. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.

8. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.

9. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

10. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

11. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.

12. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

13. Rail Sizing: Provide exit device rails factory sized for proper door width application.

14. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.

2.9 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.

4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or

aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

    a. Norton Door Controls (NO) – 7500 Series.

2.10 ELECTRONIC ACCESSORIES

A. Request-to-Exit Motion Sensor: Request-to-Exit Sensors motion detectors specifically designed for detecting exiting through a door from the secure area to a non-secure area. Include built-in timers (up to 60 second adjustable timing), door monitor with sounder alert, internal vertical pointability coverage, 12VDC or 24VDC power and selectable relay trigger with fail safe/fail secure modes.

1. Manufacturers:

    a. Securitron (SU) - XMS Series.

B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

    a. Securitron (SU) - DPS Series.

C. Intelligent Switching Power Supplies: Provide power supplies with single, dual or multi-voltage configurations at 12 and/or 24VDC. Power Supply shall have battery backup function with an integrated battery charging circuit. The power supply shall have a standard, integrated Fire Alarm Interface (FAI). The power supply shall provide capability for secondary voltage, power distribution, direct lock control and network monitoring through add on modules. The power supply shall be expandable up to 16 individually protected outputs. Output modules shall provide individually protected, continuous outputs and/or individually protected, relay controlled outputs. Network modules shall provide remote monitoring functions such as status reporting, fault reporting and information logging.

1. Manufacturers:

    a. Securitron (SU) - AQL Series.

2.11 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.12 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Section "Closeout Procedures" for project punch and reporting requirements including compliance with approved submittals and verification door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.

2. The supplier is responsible for handing and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Refer to Section 080671, Door Hardware Sets, for hardware sets.

END OF SECTION 087100