SECTION 08710 – FINISH HARDWARE, ACCESS CONTROL, LOW VOLTAGE WIRING

PART 1 –GENERAL

1.01 RELATED DOCUMENTS

A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.

1.02 DESCRIPTION OF WORK

A. The work of this section includes, but is not limited to, the following:

1. Providing hardware for all doors, except doors provided with their own hardware.
2. Providing lock cylinders for all work requiring cylinders.
3. Providing the services of a qualified hardware consultant to prepare detailed schedules of hardware required for the project.
4. Provide all low voltage wire and wiring for access control system. Locate card access controller in Work Room 117.

1.03 RELATED WORK

A. Carefully examine all of the Contract Documents for requirements which affect the work of this section. Other specifications sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 08100 – Hollow Metal Doors and Frames; work requiring template coordination, metal astragals for fire-rated doors.
2. Section 08210 – Wood Doors; work requiring template coordination, metal astragals for fire-rated doors.
3. Division 26 – Electrical conduit and raceways.

1.04 INTENT

A. A major intent of the work of this section is to provide hardware for every door in the project, except as indicated, so that each door functions correctly for its intended use. Provide only hardware that complies with applicable codes and requirements of authorities having jurisdiction including requirements for barrier–free accessibility.

1.05 QUALITY ASSURANCE

A. Hardware supplier shall have in his employ one or more members of the Door and Hardware Institute to include at least one Certified Architectural Hardware Consultant in good standing, who shall be responsible for preparation of the Finish Hardware Schedule. This Consultant shall be acceptable to the Architect and is to ensure that the intent requirement of this specification is fulfilled, and certify that the work of this section meets or exceeds the requirements specified in this section and the requirements of authorities having jurisdiction.

B. Hardware supplier shall warrant and guarantee, in writing, that hardware supplied is free of defective material and workmanship. Supplier shall further warrant and guarantee for a period of one year from Owner's Use and Occupancy that the hardware shall function in a satisfactory manner without binding, collapse, or dislodging of its parts, provide the installation is made to the manufacturer's recommendations.

C. The hardware supplier shall repair of remedy, without charge, any defect of workmanship or material for which he is responsible hereunder.

1.06 SUBMITTALS

A. Submit the following in accordance with SECTION 01300-SUBMITTALS:

1. Schedule: Submit to the Architect six (6) copies of the complete hardware schedule within the fourteen (14) days after receipt of contract award. Submit therewith complete catalog cuts and descriptive data of all products specifically scheduled therein. No materials shall be ordered or templates issued until the hardware schedule has been approved by the Architect. Form and detail of hardware schedule shall be in vertical format in conformance to the door and hardware industry standards. All hardware sets shall be clearly cross-referenced to the hardware set numbers listed in the specifications.

2. Samples: If requested, submit to the Architect for approval, a complete line of samples as directed. Samples shall be plainly marked giving hardware number used in this specification, the manufacturer's numbers, types and sizes. The Architect will deliver approved samples to the project site to be stored. Samples will remain with the Architect until delivery of all hardware to the project is complete, after which time they will be turned over to the General Contractor for incorporation into the work.

3. Keying System Submission: Before cylinders are ordered, submit a complete proposed keying system for approval. This should be done after a keying meeting has been held with the owner's representative.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of hardware shall be made to the project by the Hardware Supplier in accordance with the instructions of the General Contractor.

B. The finish hardware shall be delivered to the jobsite and received there by the General Contractor. The General Contractor shall prepare a locked storage room with adequate shelving, for all hardware. The storage room shall be in a dry, secure area, and shall not include storage of other products by other trades.

C. The General Contractor shall furnish the Hardware Supplier with receipts for all hardware and accessory items received, and shall send copies of these receipts to the Architect, if requested.

1.08 REGULATORY REQUIREMENTS

A. Conform to all applicable codes. Provide all throws, projections, coatings, knurling, opening and closing forces, and other special functions required by State and Local Building Codes, and all applicable Handicap Code requirements.

B. For fire rated openings, provide hardware complying with NFPA 80 and NFPA 101 without exception. Provide only hardware tested by UL for the type and size of door installed and fire resistance rating required.

1.09 SPECIAL REQUIREMENTS

A. Hardware Supplier shall determine conditions and materials of all doors and frames for proper application of hardware.

B. The Hardware Schedule shall list the actual product series numbers. Bidders are required to follow the manufacturers' catalog requirement for the actual size of door closers, brackets and holders. All door opening sizes are as noted on the Door Schedule and all hardware shall be in strict accordance with requirements of height, width, and thickness.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

Hinges	McKinney	Scranton, PA
	Stanley	New Britain, CT
Locksets	Schlage	Colorado Springs, CO
	Sargent	New Haven, CT
Exit Devices	Sargent	New Haven, CT
	Von Duprin	Indianapolis, IN
Door Closers	Sargent	New Haven, CT
	LCN	Princeton, IL
Door Stop	Glynn Johnson	Indianapolis, IN
	Ives	New Haven, CT
	Rockwood	Rockwood, PA
Card Access System	Sielox	Runnemede, NJ
Push/Pulls	Rockwood	Rockwood, PA
	Burns	Erie, PA
	Ives	New Haven, CT
Protective Plates	Rockwood	Rockwood, PA
	Burns	Erie, PA
	Ives	New Haven, CT
Thresholds/	NGP	Memphis, TN
Weatherstripping/	Pemko	Memphis, TN
Rain Drips	Reese	Rosemount, MN
Silencers	Ives	New Haven, CT
	Glynn Johnson	Indianapolis, IN
	Rockwood	Rockwood, PA

2.02 MATERIALS AND QUALITY

A. All hardware shall be of the best grade of solid metal entirely free from imperfections manufacturer and finish.

B. Qualities, weights, and sizes given herein are the minimum that will be accepted. It is the responsibility of the Hardware Supplier to supply the specified size and weight of hardware and the proper function of hardware in each case and to provide UL approved hardware at all fire rated doors.

C. Provide, as far as possible, locks of one lock manufacturer and hinges of one hinge manufacturer. Modifications to hardware that are necessary to conform to construction shown or specified shall be provided as required for the specified operation and functional features.

2.03 HARDWARE DESIGNATIONS

A. All items of hardware are referenced by manufacturer's names and numbers. The manufacturer's names and numbers are used to define the function, design, and the quality of the material to be supplied.

Substitution of products other than those listed shall be submitted to the Architect at least ten (10) days PRIOR to the bid date. The Architect shall be the sole judge of any proposed substitution.

2.04 TEMPLATES

A. Hardware supplier shall immediately, but not later than three (3) days after approval of his Schedule by the Architect, furnish the General Contractor with complete template information necessary for the fabrication of doors, frames, etc. No templates shall be furnished prior to the approval of the hardware schedule.

2.05 HARDWARE FOR LABELED FIRE DOORS, EXIT DEVICES AND SMOKE DOORS

A. Hardware shall conform to requirements of NFPA 80 for labeled fire doors and to NFPA 101 for exit doors, as well as to other requirements specified. Labeling and listing by UL Building Materials Directory, for class of door being used will be accepted as evidence of conformance to these requirements. Install minimum latch throw as specified on label of individual doors. Provide hardware listed by UL except where heavier materials, larger sizes, or better grades are specified herein under paragraph entitled "Hardware Sets". In lieu of UL labeling and listing, test reports from a nationally recognized testing agency may b e submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements. Specific hardware requirements of door or frame manufacturers which exceed sized or weights of hardware herein listed shall be provided with no additional charge.

2.06 KEYS AND KEYING

A. The hardware supplier shall review the specific hardware functions with the Architect and owner at the time of the keying review, to assure the appropriateness of each of the hardware functions. Failure to make this review does not relieve the hardware supplier from providing the proper functions.

B. Key System: All cylinders shall be Masterkeyed and/or Grandmaster Keys: Furnish six (6) keys for each set, if required.

1. Master keys, Grandmaster Keys: Furnish six (6) keys for each set, if required.

2. Furnish three (3) change keys for each cylinder keyed differently; six (6) change keys for each set keyed alike, and in sets where only (2) cylinders are keyed alike, four (4) change keys will be required.

3. All keying is to be done at the factory to avoid duplication of the new cylinders.

4. Master Keys shall be sent to the Owner by registered mail, return receipt required.

5. Supply a bitting list for all change keys and master keys to the Owner.

6. All lock cylinders shall be set to Construction key for use by the Contractor during the construction period. Furnish ten (10) Construction keys and two (2) voiding the Construction key feature.

2.07 FASTENERS

A. Manufacture hardware to conform to published templates, generally prepared for machine screw installation.

B. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Furnish exposed screws to match the hardware finish, or, if exposed in surfaces of other work, to match the finish of such other work as closely as possible, except as otherwise indicated.

C. Provide concealed fasteners for hardware units which are exposed when the door is closed, except to the extent no standard manufactured units of the type specified are available with concealed fasteners. Do not use thru-bolts unless specifically approved by the Architect.

D. All hardware shall be installed only with fasteners supplied by manufacturers of specific products.

2.08 PACKING AND MARKING

A. All hardware shall have the required screws, bolts and fastenings necessary for proper installation and shall be wrapped in the same package as the hardware item for which it is intended and shall match finish of hardware with which to be used.

B. Each package shall be clearly labeled indicating the portion of the work for which it is intended.

2.09 ENVIROMENTAL CONCERN FOR PACKGING

A. The hardware shipped to the jobsite is to be packaged in biodegradable packs such as paper or cardboard boxes and wrapping. If non-biodegradable packing such as plastic, plastic bags or large amounts of Styrofoam is utilized, then the Contractor will be responsible for the disposal of the non-biodegradable packing to a licensed or authorized collector for recycling of the non-degradable packing.

2.10 FINISH HARDWARE DESCRIPTION

A. Hardware items shall conform to respective specifications and standards and to requirements specified herein.

B. MATERIALS AND FINISH MATERIALS AND FINISHES SHALL BE:

1. Interior Butts: US26D (BHMA 652)
2. Exterior Geared Hinges US28 (BHMA 628)
3. Door Closers: Sprayed to match hardware finish.
4. Exit Devices: US26D (BHMA 626)
5. Kick, Push Plates: US32D (BHMA 630)
6. All other hardware shall be: US26D (BHMA 626), or as scheduled.

C. HINGES

1. Number of hinges per door, two hinges for doors up to and including five feet in height and an additional hinge for each two and one half feet or fraction thereof.

2. Hinges shall be as follows:

Exterior	McKinney	TA2314	4 ½ x 4 ½ NRP
	Stanley	FBB191	4 ½ x 4 ½ NRP
Interior	McKinney	TA2714	4 ½ x 4 ½
	Stanley	FBB179	4 ½ x 4 ½
Elec	McKinney	TA2714-CC8	
	Stanley	CEFBB179	

D. DOOR CLOSERS:

1. Door closers shall have fully hydraulic, full rack and pinion action. Cylinder body shall be 1-1/2” in diameter, and double heat treated pinion shall be 11/16” in diameter.

2. Hydraulic fluid shall be of a type requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.

3. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and hydraulic back-check.

4. All closers shall have solid forged steel main arms (and forged forearms for parallel arm closers).

5. Closer arms (and metal covers when specified) shall have a powder coating finish.

6. Provide drop, mounting plates, where required.

7. Do not locate closers on the side of doors facing corridors, passageways or similar type areas. Where it is necessary, due to certain conditions and approval of the Architect, to have closers in corridors, provide such closers with parallel or track type arms.

8. All door closers shall be adjusted by the installer in accordance with the manufacturer's templates and written instructions. Closers with parallel arms shall have back-check features adjusted prior to installation.

9. Closers shall conform to all applicable code requirements relative to setting closing speeds for closers and maximum pressure for operating interior and exterior doors.

10. Door closers meeting this specification are as follows:

	LCN	Sargent
Exterior	4111S-CUSH	281 – CPS
	4111S-H-CUSH	281 – CPSH
Interior	4011	281- 0
	4111	281 – P10
	4040SE	2407 Series
	4000T	281 – OT x spec. TEMP.
	4310ME-SF	2980
	4040SE-DE	2477

E. EXIT DEVICES:

1. Shall be Von Duprin or Sargent as follows:

Function	Von Duprin	Sargent
A	CD99NL-OP	16-8804
B	99EO	8810
C	99L-2	8813ET
D	99L-BE	8815ET
E	99NL-F	12-8804
F	99L-F	12-8813ET
G	99L-F-BE	12-8815ET
H	9927EO	8710
I	9927L	8713ET
J	9927L-BE	8715ET
K	CD9927EO x LBR	16-PP/PR8710
L	9927L x LBR	PP/PR8713ET
M	9927L-BE x LBR	PP/PR8715ET
N	CD99271F	CD8710 x 306
O	9927L-F	12-8713ET
P	9927L-F-BE	12-8715ET
Q	9927EO-F x LBR	12-PP/PR8710
R	9927L-F x LBR	12-PP/PR8713ET
S	9927L-F-BE x LBR	12PP/PR8715ET
T	EL9927TP	56-8710 x 306
U	EL99L-F	55 56-12 8813 ETL
V	EL99NL-OP	55 56-8804
W	EL9927EO	55 56 8710

NOTE: Lever design shall match lock trim

F. HEAVY DUTY LEVER HANDLE CYLINDRICAL LOCKS:

1. Locksets for this project shall be heavy duty cylindrical key-in-lever handle type locksets.

2. Locksets shall be 2 ¾" backset with ½" throw latchbolt, with deadlocking latch, and a cylindrical housing of steel with a zinc dichromate finish.

3. Locksets shall be fastened by thru-bolts, thru the 3 ½" diameter inside rose back plate into the threaded studs in the outside rose back plate. Thru-bolts shall be placed in separate bolt holes, thru the door and outside the cylindrical case at 180 deg. from each other.

4. The inside and outside rose scalps shall be 3 ½"diameter wrought brass or bronze. When assembled, all thru-bolts in the face of the door shall be concealed from view. The lever handles shall be solid cast in the same finish as the rose.

5. The ½' throw latchbolt shall be listed and approved for use by Underwriters Laboratories.

6. Strikes shall be curved lip ANSI A115.2 4 7/8" x 1 ¼" wrought brass or bronze.

7. The following locksets shall be considered acceptable for this project:

Schlage	"ND" Series	RHO Design
Sargent	10 Line	LL Design

8. Lock functions as indicated in the hardware schedule shall be as follows:

Function	Schlage	Sargent
A(Storeroom)	80	04
B(Storeroom)	80 (Knurled)	04
C(Office)	50	05
D(Passage)	10	15
E(Vestibule)	60	16
F(Classroom)	70	37
G(Spec Classroom)	71	38
H(Privacy)	40	65
I(Dummy)	170	93
J(Electric Lock)	EU-REX	71 RX
K(Key Pad)		KP10G77

G. PUSH PLATES, DOOR PULLS, PUSH/PULL BARS:

1. Shall be as manufactured by Rockwood, Burns or Ives.

   a. Push plates shall be 4" x 16" x .050 thickness unless otherwise listed in hardware sets.

Rockwood	70 Series
Burns	50 Series
Quality	40 Series

   b. Door pulls shall be 1" x 10"

Type A

Rockwood	BF111
Burns	BF26C
Quality	BF163-10"

c. Push/pull bars

Type A (Wide Stile Doors)

Rockwood	BF11147 x T1006 Mounting
Burns	BF26C x 442 x Sim. Mounting as Above
Quality	BF 482 x Sim. Mounting as Above

H. KICK PLATES, ARMOR PLATES, MOP PLATES:

1. Kick plates shall be 8 in. high. Armor plates shall be 34 in. high. Mop plates shall be 4 in. high. All plates shall be 2 in. less the width of door. Plates shall be .050 thickness, bevel 4 edges, screws shall be oval head counter-sunk.

I. STOPS

1. Shall be furnished at all doors. Wherever and opened door or any item of hardware thereon strikes a wall, at 90 degrees. Provide wall bumpers, unless otherwise indicated in hardware sets.

2. Where wall bumpers cannot be effectively used, a floor stop shall be furnished and installed.

3. Provide roller bumpers for each door where two doors interfere with each other in swinging.

Manufacturer	Wall Bumpers	Floor Stops	Roller Bumpers
Rockwood	409	440, 442	456
Ives	407 ½	436B, 438B	470 Series
Glynn Johnson	WB 50XT	FB13, FB14	RB-3

4. Where overhead stops are listed they shall be the surface mounted type as follows:

Manufacturer	Series
Glynn Johnson	GJ450
Sargent	1540
ABH	4400

J. THRESHOLDS, WEATHERSTRIP, SEAL:

1. Thresholds shall be as detailed and furnished on all doors where shown on drawings. Thresholds shall be aluminum unless otherwise indicated. Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section “Joint Sealants”.

2. Weatherstripping shall be furnished on all exterior doors unless otherwise indicated.

Product	Pemko	NGP
Threshold	as detailed	
Brush Seal	45062AP	A626A
Auto. Door Bottom	430CR	420
Door Sweep	345AV	101AV
Set Astragals	351C x 351CP	140 x 140P
Astragal	357SP	139SP
Rain Drip	346C	16A

K. POWER SUPPLY:

Provide Securitron BPS0 power supply or Von Duprin PS873.

L. LOW-ENERGY OPERATOR:

Provide Horton 4100LE low energy operator. Push button switches to be wireless type radio control unit. Provide MC-25 interface switch for all operators with card access control.

M. ACCESS CONTROL SYSTEM

A. Approved Manufacturers:

1. Sielox

B. This document includes a general description, functional requirements, characteristics, and criteria for the Access Control System (ACS).

C. This specification provides information necessary to produce a complete proposal for a sophisticated, easy-to-use software, intelligent field advanced processing controller, communication devices, card readers/keypads, access cards, I/O boards, power supplies, conduit, raceways, enclosures, mounting hardware, and all other equipment as indicated on the contract drawings if supplied and as specified herein. All material shall be the manufacturer’s standard catalog products.

D. This document provides the information necessary to produce a complete proposal for a highly secure, easy-to-use and dependable Access Control System (ACS). The ACS shall provide the speed and flexibility of 32-bit multiple-technology controllers and be managed by a client/WEB Client/server/ application using an intuitive graphical operator interface on the Microsoft Windows 2003, 2005, Vista, or XP PRO operating system. The ACS shall include all computer hardware and software, field controllers, communication boards, power supplies, conduit if applicable, raceways if applicable, and all other equipment as indicated and as specified herein. All material shall be the manufacturer'' standard catalog products. All products are to be NEW.

E. The ACS shall be a 32-bit native Microsoft Windows 2003, 2005, Vista, or XP PRO application with multi-operator and multi-threaded (multi-tasking) capability, allowing independent activities and monitoring to occur simultaneously at different locations. Full WEB based or Hosted Access Control Systems are not acceptable.

F. The WEB Client workstation shall be easy to use and employ intuitive icon based operator interface.

G. The ACS shall be designed with the ability to expand as the project needs grow.

H. The ACS shall be simple and economical enough to support a single site, yet powerful and flexible enough to manage a multiple-site network.

I. ACS shall operate in a WEB client/server/ (or client/database server to hardware server) configuration on high-quality Pentium processor personal computers running Microsoft Windows 2003, 2005, Vista, or XP PRO operating system and Microsoft SQL/MSDE database.

J. The software shall be designed to support the manufacturer's past & present generation access control hardware and additional OEM components.

K. The ACS shall allow ODBC database access either through a defined ODBC interface or an SDK library set

L. The ACS shall conform to standard networking protocols, including: Ethernet, TCP/IP (Ethernet) and NetBEUI.

M. Any workstation shall have the ability to display up to four independently configured viewers, each with its own title, filter, columns, and optional cardholder image display.

N. All core ACS hardware and software shall be developed and manufactured by the same manufacturer.

O. System must provide full WEB client capabilities and supporting any WEB browser, such as Internet Explorer, Safari, Firefox, etc. Security for the WEB Client must be at a minimum 256-bit AES encryption.

P. System Software and AC Controllers must support the following features: Systems that do not support these features will not be accepted as an alternative.

1. First Person rule for automatic unlocks/lock with multiple time intervals
2. Email on Alarms or any event driven action
3. Unlimited Access groups
4. Unlimited Time Zones each with eight intervals each
5. Minimum of 2,000 users per Access Control Controller
6. 32 Holidays'
7. Password Protected Administrators and Unlimited configurations for operators
8. Minimum 200 standard reports
9. Auto Database backup
10. Minimum 99 Alarm Levels with full detailed response description with audio
11. Auto Activation and Expiration for users
12. Time and Attendance Interface
13. Individual Expiring Access Levels per Card Holder
14. System must have a optional System Developer Kit or API
15. Unlimited Cardholder Custom Fields with minimum of 256 charters
16. Local, Regional, and Global input/output linking
17. Event filtering with email capabilities
18. Scheduler for recurring functions i.e. auto door unlocks and auto lock, reports, building lighting control, etc.
19. Access Control Manufacture must be in business a minimum 15 years manufacturing access control controllers, software, and readers
20. System is required to support 64 access points for expansion and 2,568 inputs/outputs
21. Each access control door controller must hold at minimum 10,000 transactions in its on-board data storage without communication to the host
22. Access control controllers must be of the two door type controllers for ease of expansion and cost. Systems that utilize a master controller with door expansions from the master system/controller will not be accepted.
23. All door controllers need to be Distributed Processing with real time clock on board each controller with battery back-up for memory for a period of 3 months. In addition to memory back-up Controllers are to support at minimum two hours of complete operation in the event of a power outage.
24. System must be able to provide Muster Reports
25. Controllers need to be UL 294 and 1076 or ETL Certified to the UL Listing. Controllers not providing this listing will not be accepted

26. Controllers need to accept TCP/IP communication directly to the controller
27. Anti-pass back
28. Secure communications via 3DES, 168-bit encryption
29. The ACS shall provide interactive on-line help with extensive on-line manual. The on-line manual shall be available to allow the operator to obtain detailed help without having to consult a manual.
30. N-Man rule for counting card holders in a protected area

Q. Access Control Controllers:

1. The controllers shall be capable of communicating to the host computer using the following communications options:

    a. LAN/WAN networking
    b. RS-485
    c. Dial-up Modem

2. All database information shall be stored at the controller level resulting in decision making being performed at the controller level thus reducing degraded mode operation.
3. Controllers shall support direct wiring of a Wiegand output reader without the need for a separate reader interface board.
4. Controllers shall be compatible with any identification device that transmits data using Wiegand, clock/data, or other industry standard protocol. This shall include but not limited to proximity, bar code, magnetic stripe, Wiegand, keypads and biometric readers.
5. 10 Base-T, 100 Base-T, or 10/100 Base-T communications.
6. Web-based diagnostics for IP controller analysis from any networked computer
7. The ACS shall support proximity card, Wiegand, magnetic stripe, and barcode technologies

R. Readers: Provide Proximity type readers with read range of 3 to 5 inch:

1. Approved Manufacturers:

    a. HID
    b. AWID
    c. Exceed ID

S. Field Quality Control

1. Installation

a. The contractor shall install all system components and appurtenances in accordance with the manufacturer's instructions, and shall furnish all necessary interconnections, services, and adjustments required for a complete and operable system as specified and shown. Control signal, communications, and data transmission line grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation. Provide mounting hardware as required.

b. Coordinate wiring of controlled or monitored doors with owner

c. All low voltage wiring outside the control console, cabinets, boxes, and similar enclosures, shall be plenum rated where required by code. Cable shall not be pulled into conduits or placed in raceways, compartments, outlet boxes, junction boxes, or similar fittings with other building wiring.

d. All inputs shall be protected against surges induced on device wiring. Outputs shall be protected against surges induced on control and device wiring installed outdoors. All communications equipment shall be protected against surges induced on any communications circuit. All cables and conductors, except fiber optics, which serve as communications circuits from security console to field equipment, and between field equipment, shall have surge protection circuits installed at each end.

e. All boxes and enclosures containing security system components and/or cabling and which are easily accessible to employees or to the public shall be provided with a lock. Boxes above ceiling level in occupied areas of the building shall not be considered accessible.

f. All junction boxes and small device enclosures below ceiling level and easily accessible to employees or the public shall be covered with a suitable cover plate and secured with tamper proof screws.

g. All exposed metallic flexible conduit and armored cable shall be dressed down neatly and secured with low profile, metal fasteners.

h. End-of-Line resistors shall be installed at the field device location and/or at the controller panel location.

i. ACS device locations on floor plans are intended to generally indicate areas where such devices are to be located. Security Contractor and CPORT Credit Union will be responsible for determining final location of these devices in accordance with Owner's requirements.

j. Provide such materials as necessary for a complete and functioning installation. Install in accordance with referenced codes and these specifications. Use weatherproof equipment or covers where installed in areas exposed to weather.

k. Seal penetrations through fire rated construction in accordance with draft stop penetrations in all partitions not required to be fire stopped. Draft stop material shall be pliable and elastic, similar to Dow Corning silicone sealant.

l. Product data submitted shall include manufacturer's documentation that specifically states which circuits are power-limited in accordance with NEC Article 725.

m. Protect cable from damage when passing through building structure or conduit system. Provide sleeves wherever cable penetrates floors or partitions; for sleeves. Provide conduit stubs where wiring runs inside walls or partitions. Provide bushings wherever cable enters sleeves, conduit, junction boxes, equipment backboxes, or control enclosures. Install cable in conduit where it would otherwise be exposed, as in mechanical and electrical equipment rooms.

N. OCCUPANCY INDICATOR DEADBOLT

A. Equal to Arrow model E50

PART 3—EXECUTION

3.01. INSPECTION

1. It shall be the general contractors responsibility to inspect all doors openings and doors to determine that each door and door frame has been properly prepared for the required hardware. If errors in dimensions or preparation are encountered, they are to be corrected by the responsible parties prior to the installation of hardware.

3.02 PREPARATION

1. All doors and frames, requiring field preparation for finish hardware, shall be carefully mortised, drilled for pilot holes, or tapped for machine screws for all items of finish hardware in accordance with the manufacturers templates and instructions.

3.03 INSTALLATION/ADJUSTMENT/LOCATION

1. All materials shall be installed in a workmanlike manner following the manufacture's recommended instructions.

2. Exit Devices shall be carefully installed so as to permit friction free operation of crossbar, touch bar, lever. Latching mechanism shall also operate freely without friction or binding.

3. Door Closers shall be installed in accordance with the manufacturer's instructions. Each door closer shall be carefully installed, on each door, at the degree of opening indicated on the hardware schedule. Arm position shall be shown on the instruction sheets and required by the finish hardware schedule.

4. The adjustments for all door closers shall be the installer's responsibility and these adjustments shall be made at the time of installation of the door closer. The closing speed and the latching speed valves, shall be adjusted individually to provide a smooth, continuous closing action without slamming. The delayed action feature or back check valve shall also be adjusted so as to permit the correct delayed action cycle or hydraulic back check valve shall also be adjusted so as the opening cycle. All valves must be properly adjusted at the time of installation. Each door closer has adjustable spring power capable of being adjusted, in the field from size 2 thru 6. It shall be the installers' responsibility to adjust the spring power for each door closer in exact accordance with the spring power adjustment chart illustrated in the door closer installation sheet packed with each door closed.

5. Installation of all other hardware, including locksets, push-pull latches, overhead holders, door stops, plates and other items, shall be carefully coordinated with the hardware schedule and the manufacturer's instruction sheets.

6. Locations for finish hardware shall be in accordance with dimensions listed in the pamphlet “Recommended locations for Builders’ Hardware” published by the Door and Hardware Institute.

3.04 FIELD QUALITY CONTROL

1. Upon completion of the installation of the finish hardware, it shall be the responsibility of the finish hardware supplier to visit the project and to examine the hardware for each door on which he has provided hardware and to verify that all hardware is in proper working order. Should he find items of hardware not operating problem he should make a report, in writing, to the general contractor, advising him of the problem and the measures required to correct the problem.

3.05 PROTECTION

1. All exposed portions of finish hardware shall be carefully protected, by use of cloth, adhesive backed paper or other materials, immediately after installation of the hardware item on the door. The finish shall remain protected until completion of the project. Prior to acceptance of the project by the Architect and owner, the general contractor shall remove the protective material exposing the finish hardware.

3.06 CLEANING

1. It shall be the responsibility of the general contractor to clean all items of finish hardware and to remove any remaining pieces of protective materials and labels.

3.07 INSTRUCTIONS AND TOOLS

1. It shall be the responsibility of the finish hardware supplier to provide installation and repair manuals and adjusting tools, wrenches, etc… for the following operating products.

    a. Locksets (all types)
    b. Exit Devices (all types)
    c. Door Closers

3.08 HARDWARE SETS

1. Each Hardware Set listed below represents the complete hardware requirements for one opening. (Single Door or Pair of Doors). Furnish the quantities required for each set for the work.

HW 1

Doors #100A
Each Leaf Shall Have: Hinges, (1) Electric Hinge, Exit Device (Function V), Pull, Kick Plate, Card Reader, Automatic Operator
(Balance of Hardware by Aluminum Door Supplier)

HW 2

Doors #112A
Each Leaf Shall Have: Hinges, (2) Electric Hinges, Exit Devices (Function T, W), Pulls, Kick Plates, Door Closers (Cush N Stop Arm), Drop Plates, Auto Unlock

HW 3

Door #112B
Each Leaf Shall Have: Hinges, Push/Pull Bars, Door Closers, Drop Plates, Kick Plates, Door Stops

HW 4

Door #107B
Each Leaf Shall Have: Hinges, Exit Device (Function B), Door Closer (Cush N Stop Arm), Threshold, Weatherstripping, Door Sweep

HW 5

Door #114
Each Leaf Shall Have: Hinges, Lockset (Function A), Door Closer, Threshold, Weatherstripping, Door Sweep

HW 6

Door #100B
Each Leaf Shall Have: Hinges, (2) Electric Hinges, Exit Devices (Function T, W), Pulls, Kick Plate, Automatic Operator, Door Closer, Drop Plate, Card Reader, Door Stops

HW 7

Doors #105A, 107A, 117, 203
Each Leaf Shall Have: Hinges, (1) Electric Hinge, Lockset (Function J), Door Closer, Kick Plate, Door Stop, Card Reader

HW 8

Doors #101, 102
Each Leaf Shall Have: Hinges, Lockset (Function K), Occupancy Indicator Deadbolt, Door Closer, Kick Plate, Door Stop

HW 9

Doors #105B, 109, 110, 111, 113, 115, 118, 205
Each Leaf Shall Have: Hinges, Lockset (Function D), Door Stop

HW 10

Doors #106, 206
Each Leaf Shall Have: Hinges, Lockset (Function D), Overhead Stop

HW 11

Doors #103
Each Leaf Shall Have: Hinges, Lockset (Function A), Overhead Stop

HW 12

Door #200
Each Leaf Shall Have: Hinges, Lockset (Function D), Door Closer, Kick Plate, Door Stop

HW 13

Door #202
Each Leaf Shall Have: Hinges, Lockset (Function B), Door Closer, Door Stop

HW 14

Door #204
Each Leaf Shall Have: Hinges, Lockset (Function F), Door Stop

HW 15

MISC.
A. Power Supply 10 AMP
B. (100) Proximity Cards

END OF SECTION