

DOOR HARDWARE

PART 1 - GENERAL

1.1 CONDITIONS

- A. Conditions of the contract (General and Supplementary Conditions) and Division One General Requirements, govern the work of this section.
- B. This section includes all material, and related service necessary to furnish all finish hardware indicated on the drawings, or specified herein.
- C. Furnish UL listed hardware for all labeled and 20 min. openings in conformance with the requirements for the class of opening scheduled. Underwriters' requirements shall have precedence over specification where conflicts exist.
- D. All work shall be in accordance with all applicable state and local building codes. Code requirements shall have precedence over this specification where conflicts exist.
- E. Installer of electronically controlled doors and attendant controllers must be a certified installer of CCURE 9000 (vendor: Software House).
- F. The ongoing security system integration agreement between the Owner and Siemens, a Class B Contractor, stipulates that portions of this scope of work be performed and/or verified compliant by Siemens in order to preserve the operational integrity of disparate subsystems, assure adherence to Owners implementation philosophy, and preserve system warranty. Responding contractor elect shall coordinate with Owner's representative prior to bidding. Siemens contact: James Holden 972-621-5727 Email: james.holden@siemens.com

1.2 WORK INCLUDED

- A. This section includes the following:
 - 1. Furnish door hardware (for hollow metal, wood and aluminum doors) specified herein, listed in the hardware schedule, and/or required by the drawings.
 - 2. Thresholds and Weather-stripping (Aluminum frame seals to be provided by aluminum door supplier)
 - 3. Electro-Mechanical Devices
 - 4. Access Control components and or systems specified within this section.
- B. Where items of hardware are not definitely or correctly specified and is required for the intended service, such omission, error or other discrepancy should be directed to the Architect prior to the bid date for clarification by addendum. Otherwise furnish such items in the type and quantity established by this specification for the appropriate service intended.

1.3 RELATED WORK IN OTHER SECTIONS

- A. This section includes coordination with related work in the following sections:
 - 1. Division 06.
 - 2. Division 08.



3. Division 13.
4. Division 16.

1.4 REFERENCES

- A. Publications of agencies and organizations listed below form a part of this specification section to the extent referenced.
 1. BMHA - Recommended Locations for Builders' Hardware.
 2. NFPA 80 - Standards for Fire Doors and Windows.
 3. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures.
 4. L - Building Material Directory.
 5. DHI - Door and Hardware Institute
 6. WHI - Warnock Hersey
 7. IBC - International Building Code
 8. TAS – Texas Accessibility Standards

1.5 SUBMITTALS

- A. Within ten days after award of contract, submit detailed hardware schedule in quantities as required by Division 1 - General Conditions.
- B. Schedule format shall be consistent with recommendations for a vertical format as set forth in the Door & Hardware Institute's (DHI) publication "Sequence and Format for the Hardware Schedule". Hardware sets shall be consolidated to group multiple door openings which share similar hardware requirements. Schedule shall include the following information:
 1. Door number, location, size, handing, and rating.
 2. Door and frame material, handing.
 3. Degree of swing.
 4. Manufacturer
 5. Product name and catalog number
 6. Function, type and style
 7. Size and finish of each item
 8. Mounting heights
 9. Explanation of abbreviations, symbols, etc.
 10. Numerical door index, indicating the hardware set/ group number for each door.
- C. The schedule will be prepared under the direct supervision of a certified Architectural Hardware Consultant (AHC) employed by the hardware distributor. The supervising AHC shall attend any meetings related to the project when requested by the architect.
- D. Check the specified hardware for suitability and adaptability to the details and surrounding conditions.
- E. Review drawings from related trades as required to verify compatibility with specified hardware. Indicate unsuitable or in compatible items, and proposed substitutions in the hardware schedule.
- F. Provide documentation for all hardware to be furnished on labeled fire doors indicating compliance with positive pressure fire testing UL 10C.



- G. Furnish manufacturers' catalog data for each item of hardware in quantities as required by Division 1 - General Conditions.
- H. Submit a sample of each type of hardware requested by the architect. Samples shall be of the same finish, style, and function as specified herein. Tag each sample with its permanent location so that it may be used in the final work.
- I. Furnish with first submittal, a list of required lead times for all hardware items.
- J. After final approved schedule is returned, transmit corrected copies for distribution and field use in quantities as required by Division 1 - General Conditions.
- K. Furnish approved hardware schedules, template lists, and pertinent templates as requested by related trades.
- L. Furnish necessary diagrams, schematics, voltage and amperage requirements for all electro-mechanical devices or systems as required by related trades.

1.6 QUALITY ASSURANCE

- A. Obtain each type of hardware (hinges, latch & locksets, exit devices, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
- B. Installation of hardware shall be installed or directly supervised and inspected by a skilled installer certified by the manufacturer of locksets, door closers, and exit devices used on the project, or with not less than 3 years' experience in successful completion of projects similar in size and scope.
- C. Provide hardware for all labeled fire doors, which complies with positive pressure fire testing UL 10C.
- D. Comply with all applicable provisions of the standards referenced within section 1.4 of this specification.
- E. Hardware items not covered in this specification shall be reviewed and approved by Facilities.
- F. All Renovations – All products must have prior approval from Facilities.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Hardware supplier shall deliver hardware to the job site unless otherwise specified.
- B. All hardware shall be delivered in manufacturers' original cartons and shall be clearly marked with set and door number.
- C. Coordinate with contractor prior to hardware delivery and recommend secure storage and protection against loss and damage at job site.
- D. Contractor shall receive all hardware and provide secure and proper protection of all hardware items to avoid delays caused by lost or damaged hardware. Contractor shall



report shortages to the Architect and hardware supplier immediately after receipt of material at the job site.

- E. Coordinate with related trades under the direction of the contractor for delivery of hardware items necessary for factory installation.

1.8 PRE-INSTALLATION MEETING

- A. Schedule a hardware pre-installation meeting on site to review and discuss the installation of continuous hinges, locksets, door closers, exit devices, overhead stops, and electromechanical door hardware.
- B. Meeting attendees shall be notified 7 days in advance and shall include: Architect, Contractor, Door Hardware Installers (including low voltage hardware), Manufacturers representatives and a representative from SMU Building Access for above hardware items, and any other effected subcontractors or suppliers.
- C. All attendees shall be prepared to distribute installation manuals, hardware schedules, templates, and physical hardware samples.

1.9 ACCESS CONTROL

- A. Purpose:
 - 1. To establish a process where the M&G Lock Shop will provide appropriate security for campus SMU Facilities in order to protect life, property, and research and to facilitate the administration and control of keys on the campus. Access Control is governed by University Policy 10.9, Key and Card Access Control and applies to all locking devices securing the University, M&G Facilities, and those individuals authorized to use them.
 - 2. All Campus Key Hardware must be keyed to the Campus Master Key System by the SMU Lock Shop or Designee (RA Locksmith for Abloys).
- B. Phase 1 (Scope and Time Line)
 - 1. Schedule Meeting 9 weeks before 1st Phase of Project completion (if that portion of the project will need keys before the completion of the project) or 9 weeks before completion of the complete project with Designated Project Manager to include Director of M&G/Asst Director of Support Services, Lead Locksmith, and all other entities PM deems necessary for meeting.
 - 2. PM will provide Project Information.
 - a. Building / Rooms
 - b. Door Floor Plans
 - c. Fund & Org or FR#
 - d. Project Schedule & Timeline
 - e. Define Designated Building Contact
- C. Phase 2
 - 1. Locksmiths will work with Contractors on the cylinders and creating the key matrix for doors provided in Phase 1 or complete project
 - 2. PM will coordinate with Designated Building Contact and assign Key Holders
 - 3. M&G Facilities Coordinator will Create WO's attached with FR#



- D. Phase 3
 1. Locksmith will coordinate with Contractor for installation or perform installation
 2. Locksmith/Contractor will test keys during installation
 3. M&G Facilities Coordinator will distribute Assigned Keys to Key Holders

1.10 WARRANTY

- A. All hardware items shall be warranted against defects in material and workmanship as set forth in Division One General Requirements.
- B. Repair, replace, or otherwise correct deficient materials and workmanship without additional cost to owner.

PART 2 - PRODUCTS

2.1 FASTENERS

- A. All exposed fasteners shall be Phillips head or as otherwise specified, and shall match the finish of the adjacent hardware. All fasteners ex-posed to the weather shall be non-ferrous or stainless steel. Furnish correct fasteners to accommodate surrounding conditions.
- B. Coordinate required reinforcements for doors and frames. Seek approval of the architect prior to furnishing through-bolts. Furnish through-bolts as required for materials not readily reinforced.

2.2 BUTT HINGES

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Ives</u>	<u>Stanley</u>	<u>Hager</u>	<u>McKinney</u>
Heavy Weight, Ball Bearing	5BB1HW	FBB168	BB1168	T4A3786
Heavy Weight, Ball Bearing, Non-Ferrous	5BB1HW	FBB199	BB1199	T4A3786
- B. Unless otherwise specified, furnish the following hinge quantities for each door leaf.
 1. 3 hinges for doors up to 90 inches.
 2. 1 additional hinge for every 30 inches of fraction thereof on doors over 90 inches.
- C. Unless otherwise specified, furnish hinge weight and type as follows:
 1. Heavyweight: 5 knuckle ball bearing hinge 5BB1HW for interior openings.
 2. Heavyweight: 5 knuckle bearing hinge 5BB1HW (Stainless steel) for exterior openings.
- D. Unless otherwise specified, furnish hinges for exterior doors, fabricated from stainless steel.
- E. Unless otherwise specified, furnish hinges in the following sizes:
 1. 4-1/2" x 4-1/2" 1-3/4" thick doors.
- F. Furnish hinges with sufficient width to accommodate trim and allow for 180-degree swing.



- G. Furnish hinges with flat button tips with non-rising pins at interior doors, non-removable loose pins (NRP) at out-swinging lockable doors.
- H. Unless otherwise specified, furnish all hinges to template standards.

2.3 CONTINUOUS ALUMINUM GEARED HINGES

- A. Acceptable manufacturers and respective catalog numbers—**all continuous hinges on electrified doors must be prepped for EPT-10 power transfer hinges:**

	<u>Ives</u>	<u>Select</u>	<u>Hager</u>
Full Mortise Aluminum Geared Continuous Hinge	112HD	SL11HD	780-112HD
Full Mortise – Edge Protected Aluminum Geared Continuous Hinge	224HD	SL24HD	780-224HD

- B. Use at all exterior doors.
- C. Continuous hinges shall be full height geared type hinge providing full height door support up to 450 lbs. Edge mount (unless noted otherwise).
- D. Construct hinges of 6063-T6 Aluminum material. Continuous hinges shall consist of three (3)-interlocking extrusions in a pinless assembly applied to the full height of the door.
- E. All continuous geared hinges shall be manufactured to template screw locations and be non-handed.
- F. Hinge to be able to carry Warnock Hersey Int. or UL for fire rated doors and frames up to 90 minutes.
- G. Provide machine screws for doors which have been reinforced to accept machine screws.
- H. Hinges shall be prepped to accept Electric Power Transfers at all electrified openings.
- I. Note: Fire label for doors and frames should be placed on the header and top rail of fire rated doors and frames.

2.4 POWER TRANSFERS

- A. Acceptable manufacturers and respective catalog numbers:

Concealed Ten Wire	<u>Von Duprin</u> EPT-10
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- B. Concealed power transfers shall be concealed in the door and frame when the door is closed.
- C. Concealed power transfers shall have a steel tube to protect wires from being cut.
- D. Concealed power transfers with spring tubes shall be rejected.
- E. Concealed power transfers shall be supplied with a mud box to house all terminations.



2.5 LOCKS AND LATCHES

- A. Acceptable Manufacturer:
1. Grade 1 Mortise: Schlage; L Series 9000.
 2. Grade 1 Cylindrical: Schlage; ND Vandergard Series RHO. (Clutch or Lever)
- B. **All doors in new construction are to receive online electronic locking door hardware** as well as attendant support equipment and door preparation according to Diagrams in Part 4.
1. Exterior or high volume interior doors: D1, D2
 - a. ADA exteriors require card readers, other exteriors to receive card readers as needed.
 2. Normally locked, fire exit only: D3, D4 (Exterior or high volume-store room)
 3. Mechanical, electrical, telecom rooms and other critical locations where enhanced monitoring/alarms are desired: D5
 4. Interior standard: D6
 5. Special circumstances requiring maglock (i.e. glass doors—**NOTE: INTEGRATION WITH FIRE PANEL MANDATORY**): D7
 6. Wireless locks (AD400) only approved in special circumstances or retrofits where wiring unfeasible. Approval by SMU OIT and Siemens.
- C. Mechanical key override will be installed on all doors and keyed in accordance with SMU key matrix. Key matrix must severely limit issuance (i.e. PD only) of override keys on electronically controlled doors. Override keys will be emergency only.
- D. Mortise Locksets shall be used on doors in means of egress.
1. Classrooms
 2. Main door of dorm room
- E. Cylindrical locksets shall be used on all other applications.
- F. Lock Functions – Unless otherwise specified:
- Mortise Cylindrical (L##### is part number)
1. Classrooms: L9070 ND94LD - use key to lock
 2. Offices: L9050 ND91LD - button with twist
 3. Storerooms: L9080 ND96LD
 4. Non-Locking: L9010 ND10S
 5. Restrooms: L9040 ND40S
 6. Dummy Trim: L9176 ND170
 7. Electrified L9080 PEU-RX (Mortise) – storeroom normally
- G. Unless otherwise specified, all locks and latches to have:
1. 2-3/4" Backset
 2. 1/2" minimum throw latch bolt
 3. 1" throw deadbolt
 4. ANSI A115.2 strikes
- H. Provide guarded latch bolts for all locksets, and latch bolts with sufficient throw to maintain fire rating of both single and paired door assemblies.
- I. Length of strike lip shall be sufficient to clear surrounding trim.



- J. Provide wrought boxes for strikes at inactive doors, wood frames, and metal frames without integral mortar covers.
- K. Interchangeable core type hardware prohibited.
 1. Note: If interchangeable cores are used, the contractor will be charged for any needed hardware replacement costs.
- L. RX-L283 NO (Normally Opened) Contact
- M. Issuance of Keys – Facilities issues keys to gain access to doors that are not secured via the electronic access control system. Requested keys must be picked up at the Dawson Service Center with an SMU ID or government issued identification. Duplicating and/or lending keys is prohibited. Damaged, lost, or stolen keys must be reported to the area building liaison within 5 business days. If a key is lost, the **Lost Key Form** should be filled out and logged in to the key management system. If a key is found that does not belong to the individual, it must be returned to the appropriate building liaison or the Dawson Service Center and the owner of the key will be notified.

2.6 KEYING

- A. Contractor will provide permanent cores.
- B. Acceptable manufacturers and respective catalog numbers:
 1. Academic buildings – Cylinders shall be Abloy Pro Standard Core.
 2. Housing Buildings – Cylinders shall be Medeco Standard Core.
 3. Off Campus Buildings (SMU tenants) – Cylinders shall be Abloy Pro Standard Core.
- C. Keying shall be by the Contractor with the assistance of the SMU Building Access Department and the Building Manager. Contractor to submit Key Matrix to Owner for written approval prior to ordering keys.
- D. Master keys to be delivered using the Sponsorship Process.
- E. Locksets shall be ordered less cylinder and construction cylinders shall be provided during the construction period. Construction Cores shall be 6 pin Schlage C123 Everest keyway.
- F. The Contractor will be responsible for the installation of permanent cylinders with the direction and supervision of SMU's M&G Department.
- G. Keying at card reader-controlled doors: Mechanical key override will be installed on all doors and keyed in accordance with SMU key matrix. Key matrix must severely limit issuance (i.e. PD only) of override keys on electronically controlled doors. Override keys will be emergency only.
- H. Remodels- When remodeling an area and old doors/lock hardware are being removed all cylinders will need to be saved and returned to SMU Lock Shop. Locks and hardware belong to SMU M&G Department Lock Shop.

2.7 EXIT DEVICES

- A. Acceptable Manufacturer:



- S. Devices specified are designed for wide style doors. If door size will not allow for the wide style device, provide the appropriate device to fit the door specified.
- T. All exit devices must have LXRX and Night Latch function.

2.8 CLOSERS

- A. Acceptable Manufacturer:
 - 1. LCN 4041.
 - 2. LCN 1461.
 - 3. No substitutions.
- B. Obtain door closers from a single manufacturer, although several may be indicated as offering products complying with requirements.
- C. Closers shall use high strength cast iron cylinders, forged main arms, and 1 piece forged steel pistons.
- D. Closers shall utilize a stable fluid withstanding temperature range of +120deg F to -30deg F without seasonal adjustment of closer speed to properly close the door. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UL10C.
- E. Provide closers for all labeled doors. Provide closers with adjustable spring power. Size closers to insure exterior and fire rated doors will consistently close and latch doors under existing conditions. Size all other door closers to allow for reduced opening force not to exceed 5 lbs.
- F. Supply appropriate arm assembly, drop plates and mounting brackets where required for each closer to ensure that the closer body and arm are mounted on the non-public side of the door opening and on the interior side of exterior openings, except where required otherwise in the hardware sets.
- G. Pressure Relief Valve, PRV, shall not be acceptable.
- H. All closers shall have a factory documented ten (10) year warranty.

2.9 LOW ENERGY ELECTRO-MECHANICAL AUTOMATIC OPERATORS

- A. Acceptable manufacturers and respective catalog numbers:
 - 1. Electro-Mechanical Operator:
 - a. LCN; 9500 Sr. Swing.
 - b. Besam; 450 Series.
- B. Where low kinetic energy, as defined by ANSI/BHMA Standard A156.19, power operators are indicated for doors required to be accessible to the disabled, provide electrically powered operators complying with the ADA for opening force and time to close standards.
- C. Operator operation shall consist of Motion Sensors, or a touch-free Motion Sensor, as specified in hardware sets.



- D. Operators shall comply with ANSI A156.19, UL 325, and the American with Disabilities Act.
- E. In event of power failure, make door operate manually with controlled spring close as though equipped with a #3 manual door closer, without damage to operator components.
- F. Provide adjustment by microprocessor control for:
 1. Opening speed – up to 32 seconds.
 2. Backcheck.
 3. Hold-open, from 5 to 30 seconds.
 4. Closing speed – up to 32 seconds.
 5. Opening force – 11 lbs.
 6. Acceleration during opening and recycling, for soft start.
 7. Door will safely stop and reverse if an object is encountered in the opening or closing cycle.
- G. Operator equipment shall be completely electromechanical and include the following features:
 1. Close and center door against stop after each cycle, and hold against drafts, winds and stack pressure.
 2. Manual opening force: 14 lb-force (62 N) maximum.
 3. Closing force: 6 lb-force (26.6 N).
 4. Factory-set door hold-open voltage.
 5. Control box and motor/gear box shall be contained in protective housing; utilize precision-machined gears and bearing seats, all-weather lubricant, and shall be mounted on vibration isolators.
 6. Gears shall be manufactured by operator manufacturer specifically for operators.
 7. Motor shall consist of a DC permanent magnet motor with shielded ball bearings. Motor shall stop when door stops or is fully open and when breakaway is operated.
 8. Door operating arm shall be fabricated from forged steel and attached at natural pivot point of door. Do not use slide block in top of door.
 9. Exposed arms shall be factory-polished and finished to match operator enclosure.
 10. Control circuits for actuators and safeties shall be low-voltage, NEC Class II.
 11. Power operators will require 115 VAC power supply.
- H. Enclosure shall consist of a extruded aluminum header concealing all operating parts except arms and manual control switches.
- I. Wall mounted actuators shall consist of a 4-1/2 inch touch-free Motion sensor with a blue filled handicapped symbol. Switches shall be weather resistant and mount on a single gang electrical box furnished by Division 16. Switches shall be Radio Frequency ID (RFID).
- J. Power Operators shall be warranted by the manufacture to be free from defects in material and workmanship for a period of two years.

2.10 OVERHEAD STOPS

- A. Acceptable manufacturers and respective catalog numbers:



	<u>Glynn-Johnson</u>	<u>Rixson</u>
Heavy Duty Surface Mount	GJ900 Series	9 Series
Medium Duty Surface Mount	GJ450 Series	10 Series

- B. Overhead stops (including slide block and end caps) shall be fabricated from metal.
- C. Unless otherwise specified, furnish Heavy Duty overhead stop for doors equipped with regular arm surface type closers that swing more than 140 degrees before striking a wall, for doors that open against equipment, casework, sidelights, or other objects that would make wall bumpers inappropriate, and as specified in hardware groups.
- D. Do not provide holder function for labeled doors.

2.11 FLUSH BOLTS AND DUST PROOF STRIKES

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Ives</u>	<u>Rockwood</u>	<u>Hager</u>	<u>McKinney</u>
Dust Proof Strike	DP2	570	280X	DP1
Constant Latching Flush Bolt	FB51/FB61	1845/1945	293D/294D	FB07M/FB11W
Manual Flush Bolt	FB458	555	282D	FB01M

- B. Unless otherwise specified, provide 12" rods for manual flushbolts for door 7'6" or less, 24" top rods for doors over 7'6" to 8'6".
- C. Unless otherwise specified, provide doors over 8'6" with automatic top bolts.
- D. Provide all flushbolts with non-locking dust proof strikes.

2.12 PULLS, PUSHBARS, PUSH/PULL PLATES

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Ives</u>	<u>Rockwood</u>	<u>Hager</u>	<u>Trimco</u>
1 Straight Pull (3/4" dia., 10" ctc)	8102-0	108	Equivalent	Equivalent
2 Push Plate (.050 6"X 16")	8200 6" X 16"	70C	Equivalent	Equivalent
3 90 Deg Offset Pull (Exterior)	8190-O 10"			

- B. Where possible, provide back-to-back, and concealed mounting for pulls and push bars. Push bar length shall be 3" less door width, or center of stile to center of stile for stile & rail or full glass doors.

2.13 COORDINATORS

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Ives</u>	<u>Door Controls</u>	<u>Rockwood</u>	<u>Hager</u>
Bar Coordinator	COR x FL	600 x Filler	1600 Series	297D x 297F
Mounting Bracket	MB Series	AB, C Series	1601	297 Series

- B. Provide coordinators at all pairs of doors having automatic/constant latching flushbolts and closers on the inactive leaf, and for pairs of doors having vertical rod/mortise exit device combinations with overlapping astragals.



- C. Provide appropriate filler bars, closer mounting brackets, carry bars, and special top latch preparations as required by adjacent hardware.

2.14 KICK PLATES AND MOP PLATES

- A. Furnish protective plates as specified in hardware groups.
- B. Where specified, provide 10" kick plates, 36" armor plates (maximum 40"), and 4" mop plates. Unless otherwise specified, metal protective plates shall be .050" thick.
- C. Protective plates shall be 2" less door width, or 1" less door width at pairs. All protective plates shall be beveled 4 sides and counter sunk. Protection plates over 16" shall not be provided for labeled doors unless specifically approved by door manufacturers listing.
- D. Where required by adjacent hardware, protection plates shall be factory drilled for cylinders or other mortised hardware.
- E. Must match finish of door hardware.

2.15 WALL STOPS AND HOLDERS

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Ives</u>	<u>Trimco</u>	<u>Rockwood</u>
Wrought Convex Wall Bumper	WS406CVX	232W	406
Wrought Concave Wall Bumper	WS406CCV	236W	410
Exterior Door Stop	FS18S	1209	463
Interior Floor Stop	FS436/FS438	1210/1212	441/443

- B. Furnish a stop or holder for all doors. Furnish floor stops only where specified.
- C. Where wall stops are not applicable, furnish overhead stops.
- D. Do not provide holder function for labeled doors.
- E. Floor stops shall be used at exterior doors and at rooms that have an unoccupied space.

2.16 MAGNETIC HOLD OPENS

- A. Preferred Manufacturer:
 1. LCN SEM 7800 Series.
 2. Rixson FM998 Series.
- B. Magnetic holder's housing and armature shall be constructed of a die cast zinc material.
- C. Magnetic holder's housing shall be constructed of a plastic material.
- D. Provide types as listed in groups.
- E. Where wall conditions do not permit the armature to reach the magnet, provide extensions.



- F. Magnetic holders shall be tied to fire alarm control panel (FACP) and meet all city and fire code requirements.
- G. Provide proper voltage and power consumption as required by Division 16.
- H. Coordinate electrical requirements and mounting locations with other trades.

2.17 WEATHERSTRIP, GASKETING

- A. Acceptable manufacturers and respective catalog numbers:

	<u>NGP</u>	<u>Pemko</u>	<u>Mckinney</u>
Weather-strip	130NA	315CR	MCK171A
Smoke Seal	2525	S88	MCKS88
Astragal	125N	305N	MCK305N
Sweeps	C627A/600	345AP/18041CP	MCK345AP/MCK18041CP
Drip Cap	16	346	MCK346

- B. Where specified in the hardware groups, furnish the above products unless otherwise detailed in groups.
- C. Provide weather-stripping all exterior doors and where specified.
- D. Provide intumescent and other required edge sealing systems as required by individual fire door listings to comply with positive pressure standards UL 10C.
- E. Provide 2525 smoke gaskets at all fire rated doors and smoke and draft control assemblies.

2.18 THRESHOLDS

- A. Acceptable manufacturers and respective catalog numbers:

	<u>Pemko</u>	<u>NGP</u>	<u>Reese</u>
Saddle Thresholds	171A	425	S205

- B. Hardware supplier shall verify all finish floor conditions and coordinate proper threshold as required to insure a smooth transition between threshold and interior floor finish.

2.19 MISCELANEOUS ELECTROMECHANICAL PRODUCTS

- A. Electric Strike – Acceptable manufacturers:

	<u>Von Duprin</u>	<u>HES</u>
1 Type 1	6000 Series	8500 Series
2 Type 2	5000 Series	8000 Series

- B. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

- C. Door Position Switch – Acceptable manufacturers:

	<u>Schlage Electronics</u>	<u>Sentrol</u>
1 Concealed	679 Series	1076W

- D. Computer Managed Locks - Acceptable manufacturers:



- E. Online Card reader with key override shall be used at mechanical rooms.
- F. Lever trim shall match locksets when available.
- G. Provide construction cylinders as required. No interchangeable cores.
- H. Provide manufacturer's software when specified.
- I. Provide on-site training as required by the manufacturer.

2.20 PADLOCKS

- A. Padlocks must be ordered through SMU's lock shop.
- B. Preferred Manufacturer:
 - 1. ABLOY

2.21 CABINET LOCKS

- A. Acceptable Manufacturers:
 - 1. Chicago
 - 2. National
 - 3. Timberline
 - 4. Schlage
- B. All locks to a single desk shall be keyed alike.
- C. Where space allows and a need for continual entry for operation of duties or a higher security level is needed. Schlage CL100PB may be used.

2.22 FINISHES AND BASE MATERIALS

- A. Unless otherwise indicated in the hardware groups or herein, hardware finishes shall be applied over base metals as specified in the following finish schedule:

<u>HARDWARE ITEM</u>	<u>BHMA FINISH AND BASE MATERIAL</u>
Butt Hinges: Exterior, or Non-Ferrous	
Butt Hinges: Interior	
Continuous Hinges	
Flush Bolts	
Exit Devices	
Locks and Latches	
Pulls and Push Plates/Bars	
Coordinators	
Closers	
Protective Plates	
Overhead Stops	
Wall Stops and Holders	
Thresholds	
Weather-strip, Sweeps Drip Caps	
Magnetic Holders	
Magnetic Locks	
Miscellaneous	



2.23 EXTRA MATERIALS

- A. Provide no fewer than 10 % (minimum of 1 but no more than 20) for owner's maintenance department stock. Verify with Facilities for amounts of each stock item.
- B. For smaller projects (less than 20 units) extra materials will be determined by Facilities.

2.24 CARD READERS AND ELECTRONICALLY CONTROLLED DOORS

- A. Door control equipment shall be online only.
- B. All building exterior doors shall be equipped with online electronically controlled equipment, regardless of card reader presence.
 - 1. All exterior passages intended to unlock regularly or on a schedule are to be electrified with QEL panic devices.
 - a. Exterior card reader placement at the discretion of Facilities; minimum of 1 exterior card reader entrance per building.
 - 2. Locking handsets requiring manual latch retraction (Schlage AD series, L9080, etc.) shall not be used at medium-high traffic passages.
 - 3. All exterior ADA doors will receive card readers.
 - 4. Automatic door openers
 - a. Required only at ADA identified doors
 - b. Location of exterior push plate to be co-located with card reader on stand-alone pedestal.
 - c. Exterior push plate is to be disabled while door/card reader in locked mode (accomplished through override wiring at opener).
 - 5. Exit only doors (fire escape, no entry) are to receive:
 - a. Delayed release equipment with local audible alarms and electronic interface with CCURE
 - b. Door position switch
- C. Approved card readers (Supplied by Security Installer, though coordination with SMU: AptiQ CardTrax program)
 - 1. Contactless readers

	<u>AptiQ</u>
Contactless	MT15
Contactless w/Keypad	MTK15
Contactless Mullion	MT11
 - 2. Contactless Integrated handset

	<u>Schlage</u>
Wired	AD-300MT
Wired w/Keypad	AD-300MTK
Wireless	AD-400MT
Wireless w/Keypad	AD-400MTK
 - 3. Exceptions by SMU OIT
- D. Access Controllers
 - 1. All controllers to be placed within SMU network closets (BDF or IDF)
 - 2. Only Software House iStar series panels are approved, no exception.
 - a. Currently approved iStar series panels include iSTAR Ultra. As new product is added to this series of controllers by Software House, new



models may or may not meet SMU's system layout philosophy. Controllers not listed above must be approved by SMU and/or Siemens before being proposed.

- b. All iStar controllers, power supplies with back-up batteries, serial and IP communication interfaces, digital input, and output modules, as specified, shall be furnished and installed by Security Contractor.

E. PIMS (wireless access points for AD-400 handsets)

- 1. Only Software House model #PIM400-485 serial RS-485 PIM for support of up to sixteen (16) AD400 series wireless readers is approved, no exception.
 - a. PIM installed locations shall be verified by field measurement with the use of the manufacturers listed signal strength testing tool (Software House TK400).
 - b. Planned PIM installation locations shall be cabled to with a minimum excess of 20ft. (coiled and secured above ceiling) to allow leeway for final PIM placement.
 - c. PIM's shall be powered on individually fused 24VDC circuits with no more than one (1) PIM supported per circuit.
 - d. The PIM power supply shall be battery-backed for a minimum calculated duration of ninety (90) minutes.

F. Power Supplies (Controller, and Door)

- 1. Each access controller (iStar) panel will derive its operational power from a collocated power supply.
 - a. Controller power supplies will require a hardwired terminal-strip connection to a dedicated non-switched 110VAC power circuit.
 - b. The provided 110VAC power circuit shall be rated for 20A and be on critical power or back-up circuit where available.
- 2. In addition to the access controller, panel option modules, serial data interfaces, and other panel-based powered components shall also be supported by the controller power supply.
 - a. Controller power supply sizing and battery back-up shall be based upon calculated maximum current draw of connected devices.
 - b. Power supply sizing shall be verified by OIT and Siemens.
 - c. The Access Controller power supply shall be battery-backed for a minimum calculated duration of ninety (90) minutes.
- 3. Electrified door hardware derives power from a centrally located low voltage DC power supply collocated with and adjacent to access controllers.
 - a. Each door lock hardware set, or double door sets, shall be supported on its own individually fused supply circuit.
 - b. Door lock power supply sizing shall be based upon calculated maximum current draw of connected devices.
 - c. Power supply sizing shall be verified by OIT and Siemens.
- 4. Proposed power supplies shall be modular, component-based, and field configurable and expandable.
 - a. Protected multi-output power distribution modules shall be used to serve controller and controller option modules.
 - b. Protected and controlled multi-output power distribution modules shall be used to serve electrified door hardware and devices.



- c. Each output of each module in dual-voltage systems shall be individually programmable to provide either 12VDC or 24VDC either constantly, or as triggered.
- d. Power supply shall include integral stand-by battery charging capacity.
- e. Power supplies and distribution modules shall be LifeSafety Power FlexPower FPO series. Auxiliary power distribution modules shall be D8 /D8P series. Door lock power distribution shall be M8 / MSP series.
- f. Enclosures for Power and Access Control shall be LifeSafety Power SCLASS pre-wired enclosures for iStar Ultra Panels.
 - 1. Acceptable models are E4S, E6S, E8S and RGS.

G. Cabling

- 1. Wire shall, at a minimum, meet manufacturer's specified types and gauges.
 - a. Data circuit cables shall feature overall shielding, as specified.
 - b. Power circuit wire gauge shall be calculated so that end-of-line voltage drop does not exceed the allowable range of the equipment supported, per manufacturer specification.
 - c. Card Reader composite cable shall be GENERAL CABLE #4EPL1S.41.05 -NO EXCEPTIONS
- 2. Security Contractor shall provide cabling and terminations between the security J-box above the door, and door hardware and devices, as noted within the typical door details.
- 3. Cabling Contractor shall provide cabling between the scheduled BDF / IDF Room access controller and the security J-box above the door. Security door locations shall be cabled to with a minimum excess of 20ft. (coiled and secured above ceiling) by cabling contractor to allow for final cabling to door devices by security contractor.

H. Installation Responsibilities:

- 1. Door hardware installers
 - a. Mount and prep all door hardware
 - 1) Doorframe Prep
 - a) EPT-10
 - b) Position switch
 - c) Electronic latch (if installed)
 - 2) Door Prep
 - a) EPT-10
 - b) Cored for cable to electrified handset or exit trim (if installed)
 - c) Drilled to mount electrified handset (if installed)
 - 3) Provide and install
 - a) ADA opener (intelligent), pedestal(s), & buttons.
 - b) Fully test opener and buttons.
 - c) Door power supplies if required at door (all should be centrally located in closet up to 300 feet away)
 - d) Non-credential reader integrated locking hardware (electric latch, QEL, electric handset—EXCLUDES INTEGRATED READER/LOCKSETS I.E. INGERSOLL-RAND AD SERIES LOCKS)
- 2. Electricians
 - a. Provide power to door power supplies (co-located with access controllers in closet, not close to door in ceiling)



- b. Provide power to access controller power supplies (terminate hard-wired in controller)
 - c. Provide conduit needed for low-voltage and access control wires from door location to nearest accessible ceiling
 - 1) 1 per door for AD locks (at hinge in frame)
 - 2) Up to 3 per door for other hardware
 - a) Crashbar (at hinge in frame)
 - b) Reader (end in single-gang box on wall or pedestal)
 - c) Door contact in doorframe header
3. Data wire pullers
- a. Install network drops for each access controller unit.
 - b. Pull and provide access control and low-voltage wires from closet to door locations with a spare length equivalent from the ceiling to floor and back, coiled in accessible ceiling at entry to conduit at door and at closet.
4. SMU OIT Systems
- a. Configure campus card reader system for devices and set up access permissions/schedules.
5. Security Installers
- a. Furnish all integrated reader handsets (i.e. AD-300).
 - b. Furnish power supplies at controller (if necessary)
 - c. Furnish access controllers
 - 1) Configure clusters, panels, doors, readers, inputs, outputs and all other associated hardware in campus card reader system for devices.
 - d. Complete cable run through conduit into door frame for reader, latch/crashbar, door position switch as necessary.
 - e. Test and verify operation of all equipment
 - 1) Electronically controlled doors
 - a) Unlock/lock
 - b) Credential read (if reader installed)
 - 2) All doors
 - a) Door position
 - b) Latch state
 - c) RTX
 - d) Key override sensor (if installed)
 - 3) Furnish all Mass Notification devices
 - a) Configure devices per SMU OIT network settings



PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of hardware, installer shall examine door frame installation to insure frames have been set square and plumb. Installer shall examine doors, door frames, and adjacent wall, floor, and ceiling for conditions, which would adversely affect proper operation and function of door assemblies. Do not proceed with hardware installation until such deficiencies have been corrected.

3.2 INSTALLATION

- A. Install all hardware in accordance with the approved hardware schedule and manufacturers instructions for installation and adjustment.
- B. Set units level, plumb and true to the line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- C. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accord with industry standards.
- D. Drill appropriate size pilot holes for all hardware attached to wood doors and frames.
- E. Shim doors as required to maintain proper operating clearance between door and frame.
- F. Unless otherwise specified, locate all hardware in accordance with the recommended locations for builders hardware for standard doors and frames as published by the Door and Hardware Institute.
- G. Use only fasteners supplied by or approved by the manufacturer for each respective item of hardware.
- H. Mortise and cut to close tolerance and conceal evidence of cutting in the finished work.
- I. Conceal push and pull bar fasteners where possible. Do not install through bolts through push plates.
- J. Install hardware on UL labeled openings in accordance with manufacturer's requirements to maintain the label.
- K. Install hardware in accordance with supplemental "S" label instructions on all fire rated openings.
- L. Install wall stops to contact lever handles or pulls. Do not mount wall stops on casework, or equipment.
- M. Where necessary, adjust doors and hardware as required to eliminate binding between strike and latchbolt. Doors should not rattle.
- N. Install door closers on corridor side of lobby doors, room side of corridor doors, and stair side of stairways.



- O. Adjust spring power of door closers to insure exterior and fire rated doors will consistently close and latch doors under existing conditions. Adjust all other door closers to insure opening force does not to exceed 5 lbs.
- P. Adjust "sweep", "latch", & "back check" valves on all door closers to properly control door throughout the opening and closing cycle. Adjust total closing speed as required to comply with all applicable state and local building codes.
- Q. Unless otherwise specified or detailed, install thresholds with the bevel in vertical alignment with the outside door face. Notch and closely fit thresholds to frame profile. Set thresholds in full bed of sealant.
- R. Compress sweep during installation as recommended by sweep manufacturer to facilitate a water resistant seal.
- S. Deliver to the owner 1 complete set of installation and adjustment instructions, and tools as furnished with the hardware.

3.3 QUALITY ASSURANCE

- A. After installation has been completed, the hardware supplier and manufacturers representative for locksets, door closers, exit devices, and overhead stops shall check the project and verify compliance with installation instructions, adjustment of all hardware items, and proper application according to the approved hardware schedule. Hardware supplier shall submit a list of all hardware that has not been installed correctly.
- B. After installation has been completed, the hardware supplier and manufacturers representative shall meet with the owner to explain the functions, uses, adjustment, and maintenance of each item of hardware.
- C. Apply self-adhesive gasketing on frame stop at head & latch side and on rabbet of frame at hinge side.

3.4 ADJUSTMENT AND CLEANING

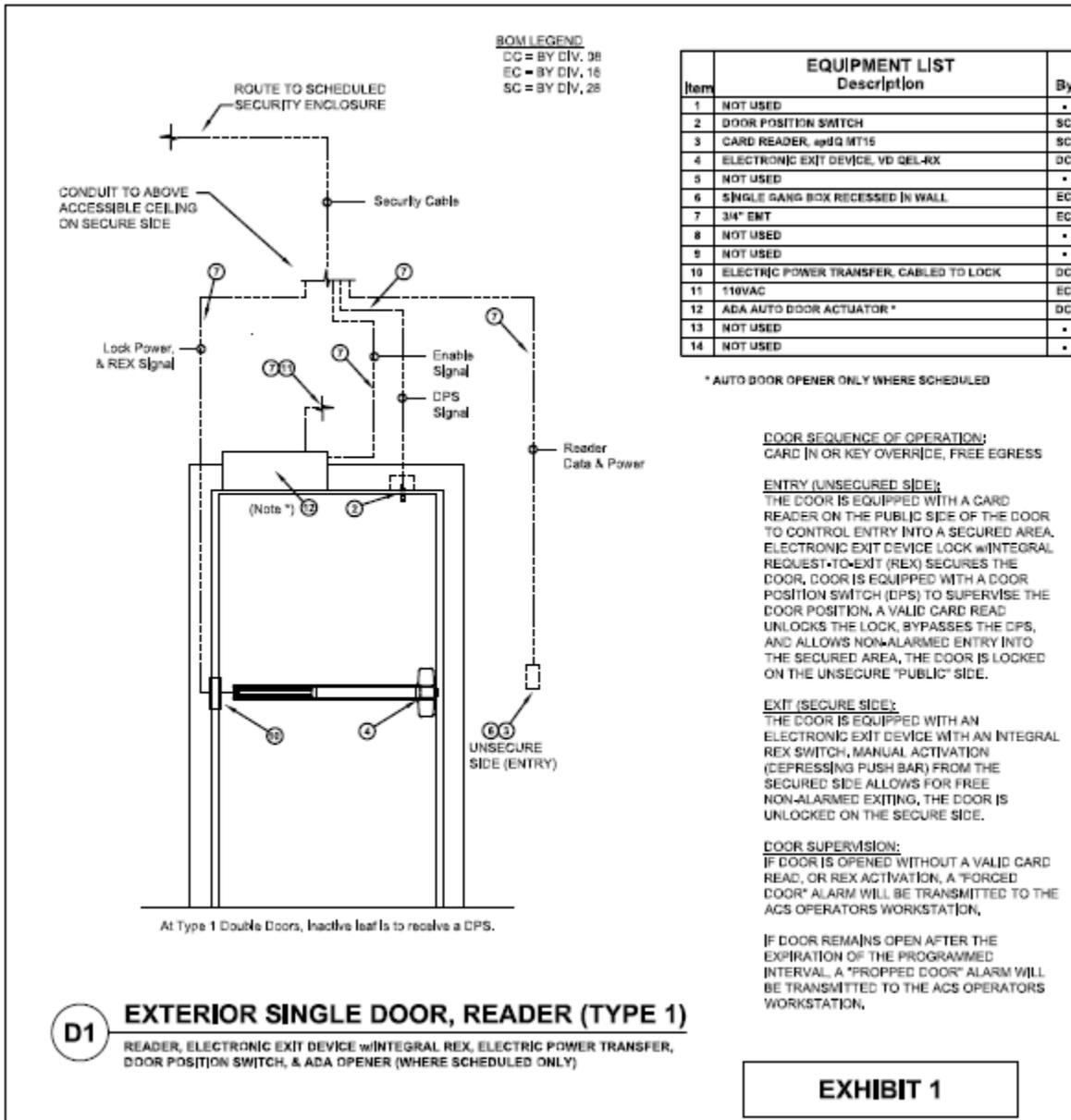
- A. At final completion, and when H.V.A.C. equipment is in operation, installer shall make final adjustments to and verify proper operation of all door closers and other items of hardware. . Lubricate moving parts with type lubrication recommended by the manufacturer.
- B. All hardware shall be left clean and in good operation. Hardware found to be disfigured, defective, or inoperative shall be repaired or replaced.

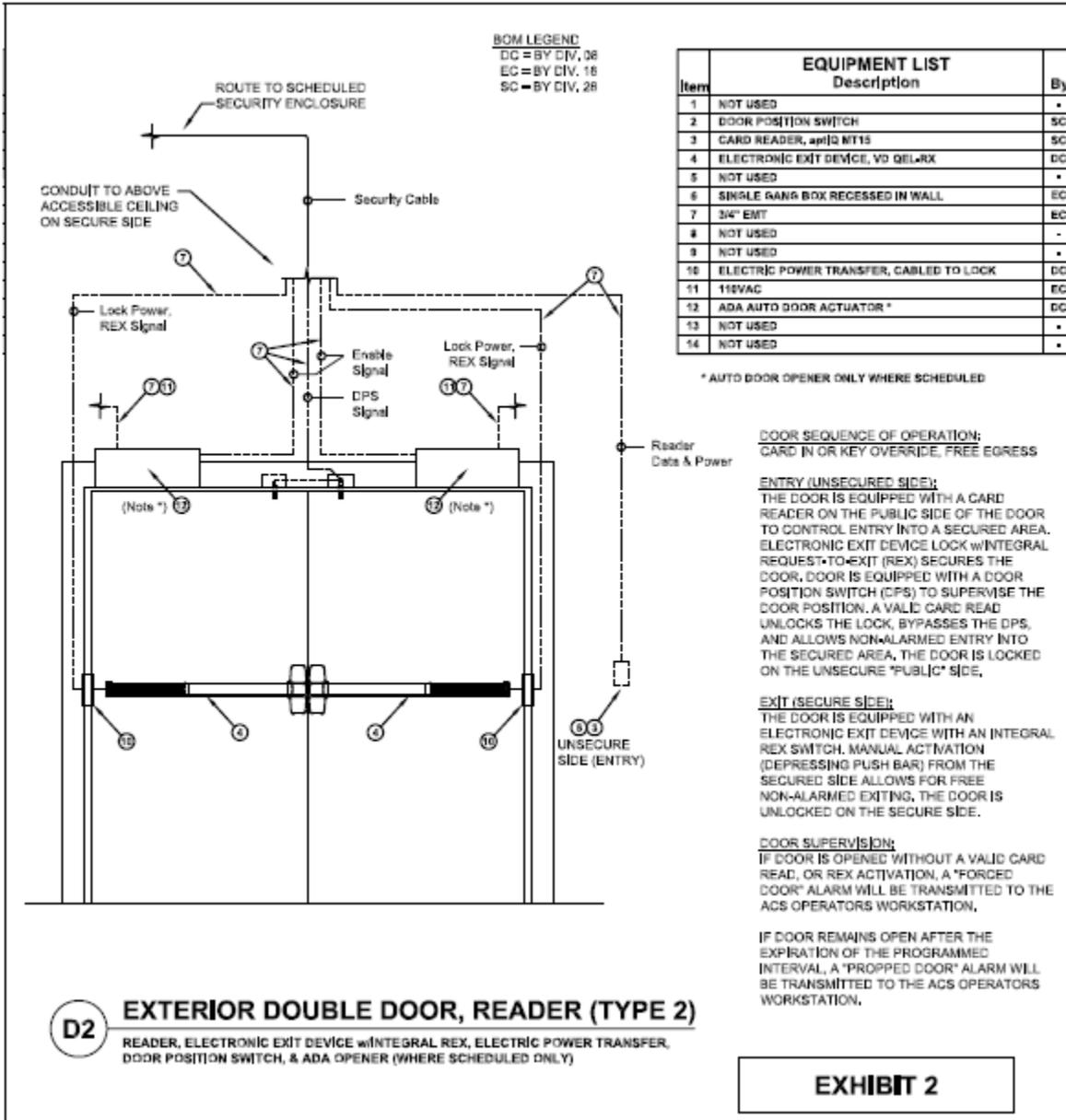
3.5 HARDWARE SCHEDULE

- A. The following schedule of hardware groups are intended to describe opening function. The hardware supplier is cautioned to refer to the preamble of this specification for a complete description of all materials and services to be furnished under this section.

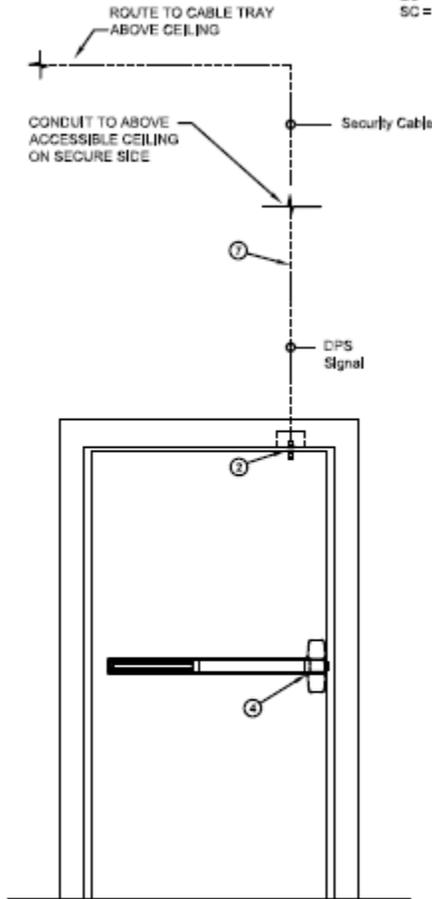


PART 4 - Diagrams: Electronic Door Controls





BQM LEGEND
 DC = BY DIV. 08
 EC = BY DIV. 18
 SC = BY DIV. 28



Item	Description	Qty.
1	NOT USED	*
2	DOOR POSITION SWITCH	SC
3	NOT USED	*
4	MECHANICAL EXIT DEVICE	DC
5	NOT USED	*
6	SINGLE GANG BOX RECESSED IN WALL	EC
7	1/2" EMT, MINIMUM	EC
8	NOT USED	*
9	NOT USED	-
10	NOT USED	-
11	NOT USED	*
12	ADA AUTO DOOR ACTUATOR *	DC
13	NOT USED	*
14	NOT USED	*

DOOR SEQUENCE OF OPERATION:
 NO ENTRY, FREE EGRESS ONLY

ENTRY (UNSECURED SIDE):
 THE DOOR IS EQUIPPED WITH EXIT ONLY DOOR HARDWARE AND IS SECURED TO THE PUBLIC SIDE. DOOR IS EQUIPPED WITH A DOOR POSITION SWITCH (DPS) TO SUPERVISE THE DOOR POSITION. THE DOOR IS LOCKED ON THE UNSECURE "PUBLIC" SIDE WITH NO PROVISIONS FOR ENTRY.

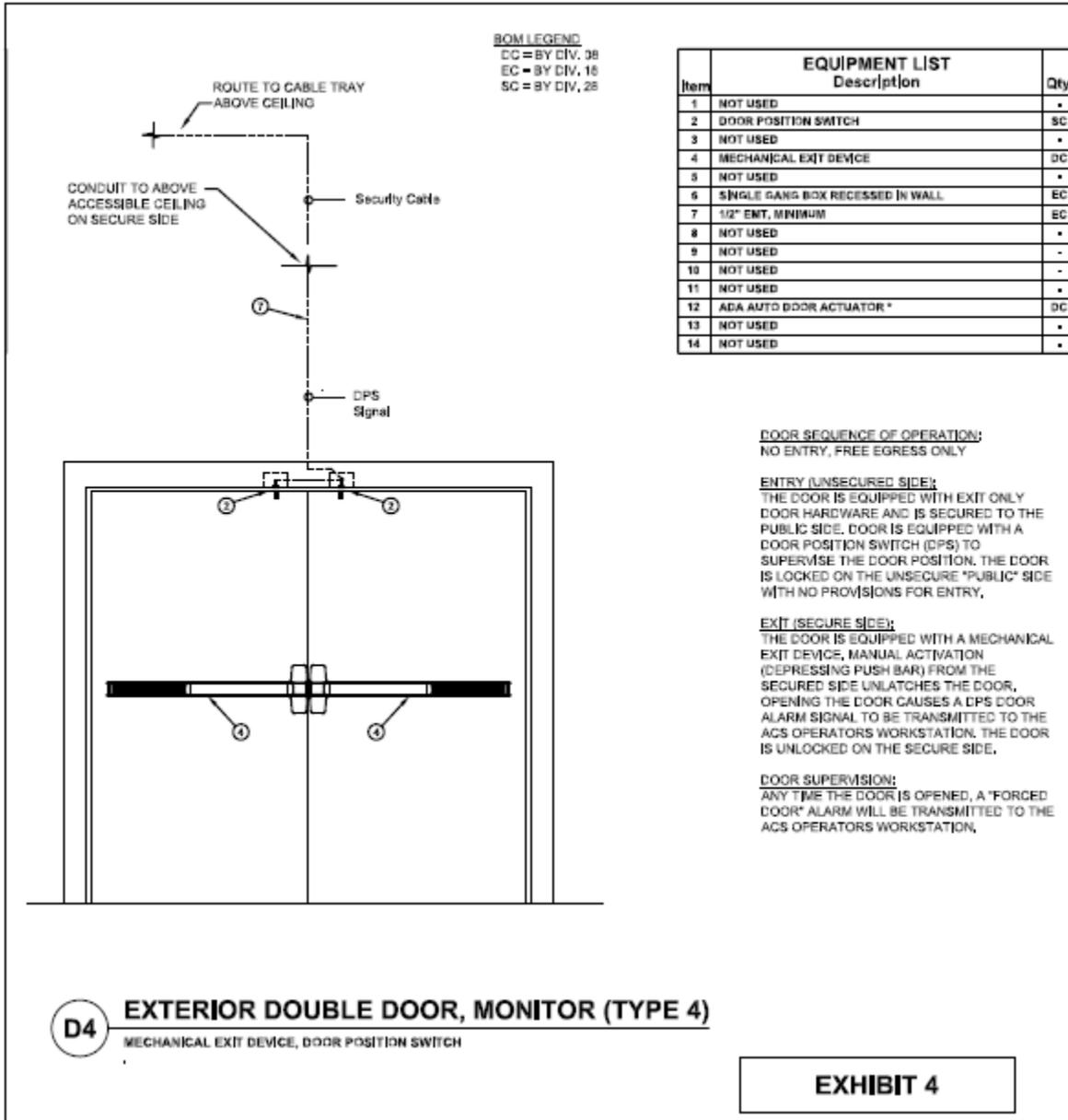
EXIT (SECURE SIDE):
 THE DOOR IS EQUIPPED WITH A MECHANICAL EXIT DEVICE, MANUAL ACTIVATION (DEPRESSING PUSH BAR) FROM THE SECURED SIDE UNLATCHES THE DOOR, OPENING THE DOOR CAUSES A DPS DOOR ALARM SIGNAL TO BE TRANSMITTED TO THE ACS OPERATORS WORKSTATION. THE DOOR IS UNLOCKED ON THE SECURE SIDE.

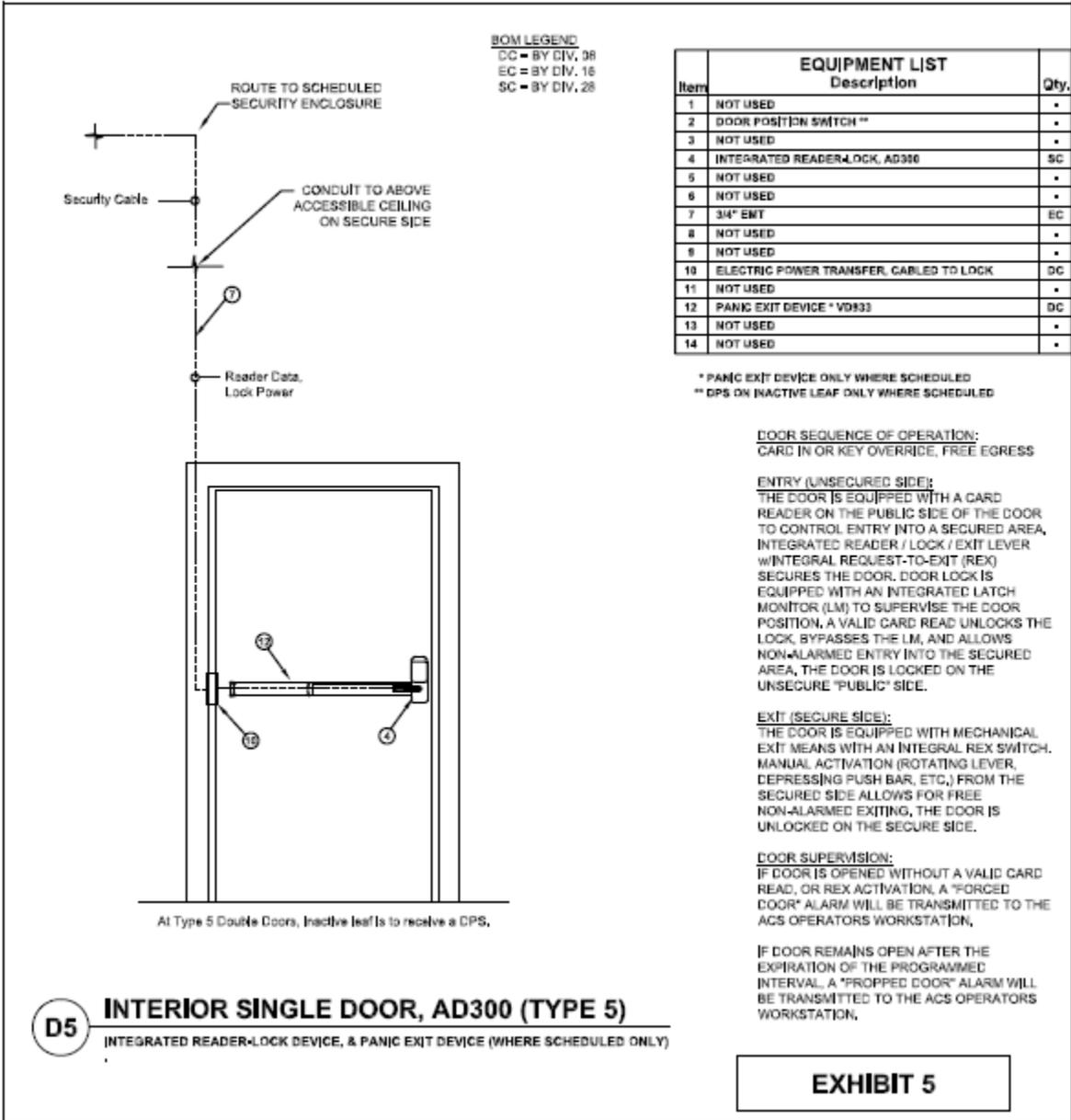
DOOR SUPERVISION:
 ANY TIME THE DOOR IS OPENED, A "FORCED DOOR" ALARM WILL BE TRANSMITTED TO THE ACS OPERATORS WORKSTATION.

D3 **EXTERIOR SINGLE DOOR, MONITOR (TYPE 3)**
 MECHANICAL EXIT DEVICE, DOOR POSITION SWITCH

EXHIBIT 3







BOM LEGEND
 CC = BY DIV. 08
 EC = BY DIV. 16
 SC = BY DIV. 28

Item	EQUIPMENT LIST Description	Qty.
1	NOT USED	.
2	DOOR POSITION SWITCH **	.
3	NOT USED	.
4	INTEGRATED READER/LOCK, AD300	SC
5	NOT USED	.
6	NOT USED	.
7	3/4" EMT	EC
8	NOT USED	.
9	NOT USED	.
10	ELECTRIC POWER TRANSFER, CABLED TO LOCK	DC
11	NOT USED	.
12	PANIC EXIT DEVICE * VDR33	DC
13	NOT USED	.
14	NOT USED	.

* PANIC EXIT DEVICE ONLY WHERE SCHEDULED
 ** DPS ON INACTIVE LEAF ONLY WHERE SCHEDULED

DOOR SEQUENCE OF OPERATION:
 CARD IN OR KEY OVERRIDE, FREE EGRESS

ENTRY (UNSECURED SIDE):
 THE DOOR IS EQUIPPED WITH A CARD READER ON THE PUBLIC SIDE OF THE DOOR TO CONTROL ENTRY INTO A SECURED AREA, INTEGRATED READER / LOCK / EXIT LEVER w/INTEGRAL REQUEST-TO-EXIT (REX) SECURES THE DOOR. DOOR LOCK IS EQUIPPED WITH AN INTEGRATED LATCH MONITOR (LM) TO SUPERVISE THE DOOR POSITION, A VALID CARD READ UNLOCKS THE LOCK, BYPASSES THE LM, AND ALLOWS NON-ALARMED ENTRY INTO THE SECURED AREA, THE DOOR IS LOCKED ON THE UNSECURE "PUBLIC" SIDE.

EXIT (SECURE SIDE):
 THE DOOR IS EQUIPPED WITH MECHANICAL EXIT MEANS WITH AN INTEGRAL REX SWITCH. MANUAL ACTIVATION (ROTATING LEVER, DEPRESSING PUSH BAR, ETC.) FROM THE SECURED SIDE ALLOWS FOR FREE NON-ALARMED EXITING, THE DOOR IS UNLOCKED ON THE SECURE SIDE.

DOOR SUPERVISION:
 IF DOOR IS OPENED WITHOUT A VALID CARD READ, OR REX ACTIVATION, A "FORCED DOOR" ALARM WILL BE TRANSMITTED TO THE ACS OPERATORS WORKSTATION.

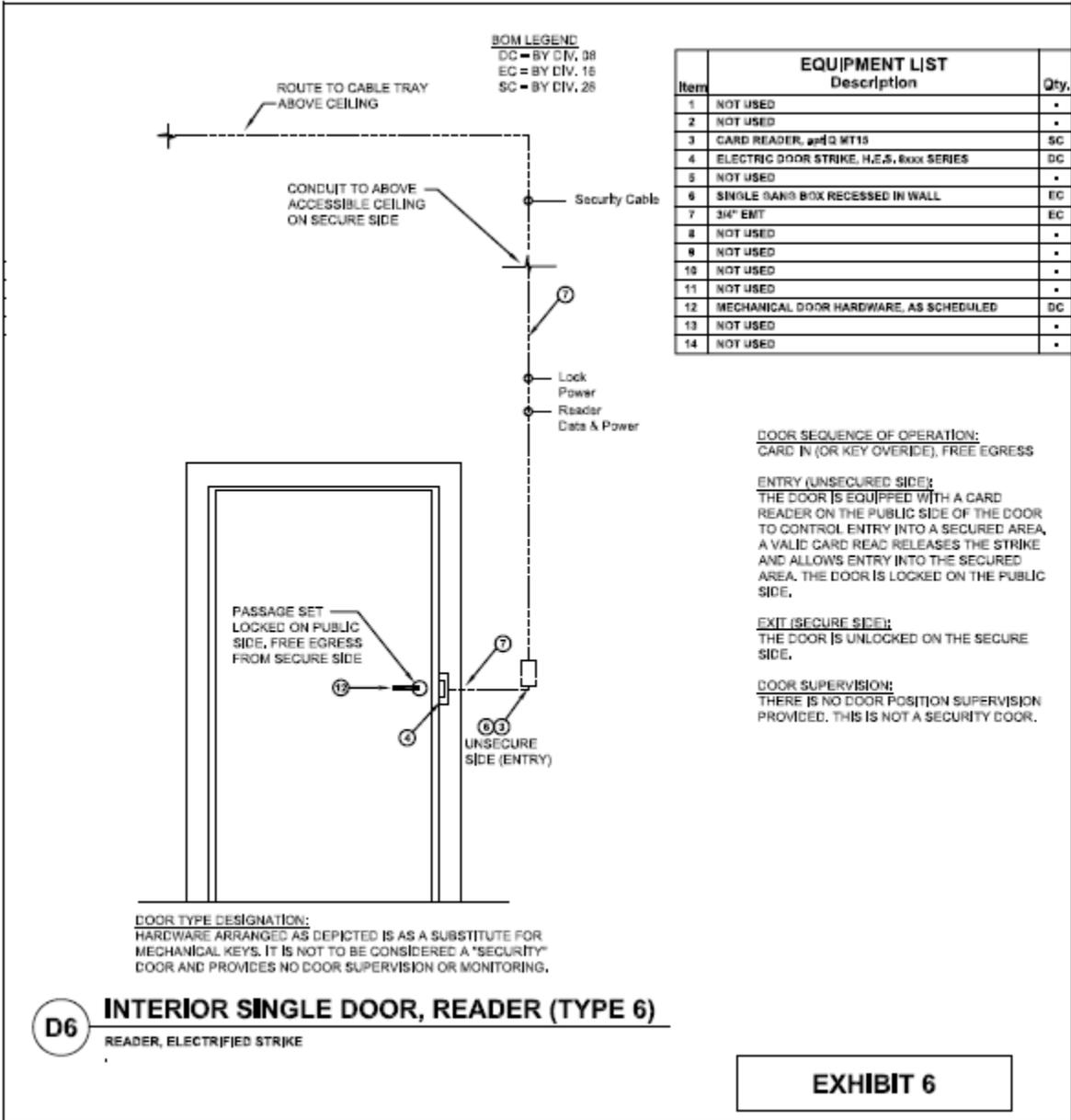
IF DOOR REMAINS OPEN AFTER THE EXPIRATION OF THE PROGRAMMED INTERVAL, A "PROPPED DOOR" ALARM WILL BE TRANSMITTED TO THE ACS OPERATORS WORKSTATION.

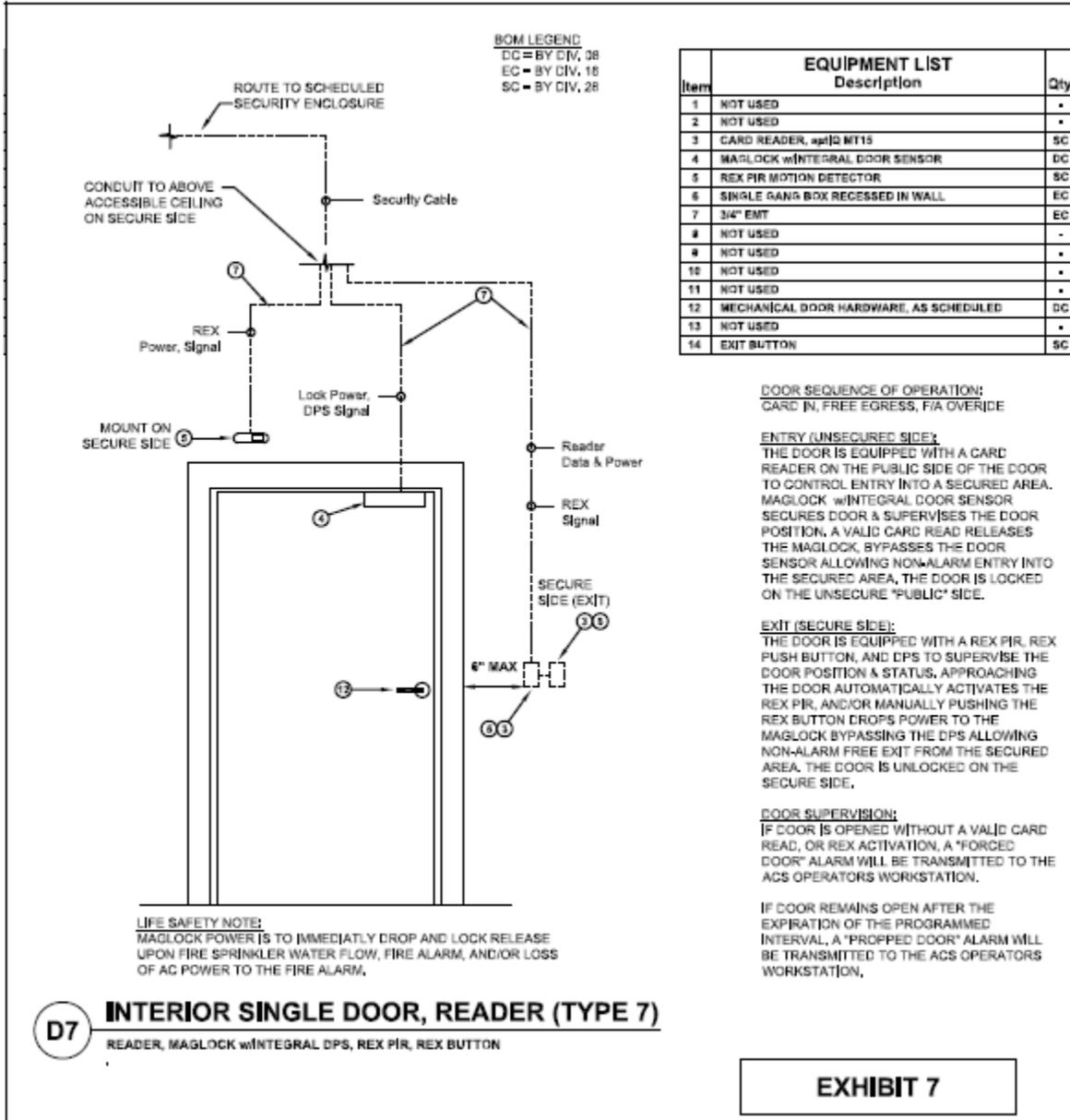
At Type 5 Double Doors, Inactive leaf is to receive a DPS.

D5 INTERIOR SINGLE DOOR, AD300 (TYPE 5)
 INTEGRATED READER/LOCK DEVICE, & PANIC EXIT DEVICE (WHERE SCHEDULED ONLY)

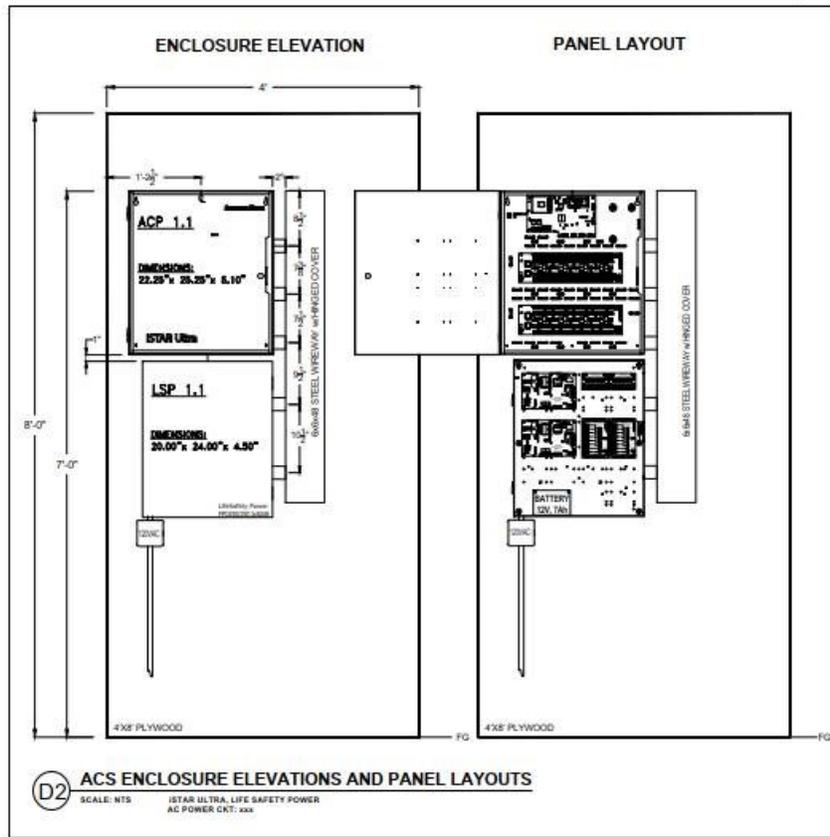
EXHIBIT 5







iStar Security Panel Layout



END OF SECTION 08710

