SECTION 08 71 00 – DOOR HARDWARE

Missouri State University has determined that standardization of hardware on our campus is vital in an effort to provide the best service possible for the students, faculty and staff that we serve. To that end, the following items are to be used on all our projects constructed on our campuses. A proprietary specification is in the best interest of the University. Deviation from the standards listed below will require prior written approval from the Director of Planning, Design and Construction. Any request to deviate from these standards must be submitted to allow for a thorough review and possible testing of the substitution.

All hardware shall be specified to provide fully functional, secure and weatherproof installation as required for all doors. The University does not limit the manufacturer of hardware not listed in the following standards. Hardware being used in a project that is not listed here shall be selected to meet the quality set forth in this standard and shall be appropriate for the type of project. This standard is a guide for writing the hardware specification and shall be written by a certified Architectural Hardware Consultant that is either familiar with Missouri State University standards or shall have direct communications with the University during the development of the specification.

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Mechanical door hardware for swinging doors.

2. Electrified door hardware.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Details of electrified door hardware.

C. Samples: For each exposed product and for each color and texture specified.

D. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   a. Format: Use same scheduling sequence, format and door numbers as in the Contract Documents.
   b. Content: Include the following information:
      1) Identification number, location, hand, fire rating, size, and material of each door and frame.
      2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
      3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
      4) Description of electrified door hardware sequences of operation and interfaces with other building control systems.

2. Keying Schedule: Prepared by hardware supplier.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

B. Source Limitations: Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

D. Means of Egress Doors: Latches do not require more than 15 lbf. to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.

2. Comply with the following maximum opening-force requirements:
   a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf. applied perpendicular to door.
   b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.

4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

1.4 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Geneal Contractor, all required trades, MSU PD&C Project Manager and MSU Networking & Telecommunications.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with General Contractor and all required trades for connections to power supply and building safety and security systems.

E. Existing Openings: Where hardware components are scheduled for application within existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

F. Keying Conference: Conduct conference at Owner's designated site to coordinate cylinder keying for use

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Consultant shall provide a door hardware schedule in Part 3 under "Door Hardware Schedule" listing all required components for each door.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.

2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule". Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.

2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

3. Basis of Design Products: Where Specifications name a product, or refer to a scheduled product and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
   a. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents, and that it will produce the indicated results, and that it is compatible with other portions of the Work.
   b. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements.
   c. Evidence that proposed product provides specified warranty.

d. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
e. Samples, if requested.

4. Product, Manufacturer: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements. Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.

5. Owner's Standard: Where Specifications refer to a product or manufacturer as an Owner standard, substitutions are not allowed.

2.2 HINGES

A. Non-electrified butt hinges shall be manufactured by Hager, no substitutions. Actual hinge shall be selected based upon the application.

B. Electrified butt hinges used with electrified Yale mortise locksets shall be McKinney ElectroLynx Hinge (QC Option), no substitutions.

1. McKinney ElectroLynx retrofit harnesses with factory applied connectors shall be used.

2. Provide wire harness lengths as required for the application.

3. Wire nuts or field wire connections in lieu of factory applied connectors are not acceptable.

C. Electrified butt hinges used with electrified Von Duprin exit devices shall be manufactured by Ives, 5BB1 TW8CON 652, no substitutions.

1. Allegion Connect 8 pin wiring harnesses with factory applied connectors (CON) shall be used.

2. Provide wire harness lengths as required for the application.

3. Wire nuts or field wire connections in lieu of factory applied connectors are not acceptable.

Hinge Description	Type
5K Full Mortise Swing Clear (Non- Ferrous) .190 inch	Type 1
5K Full Mortise (Ferrous) .134 inch	Type 2
5K Full Mortise (Non- Ferrous) .134 inch	Type 3
5K Full Mortise (Ferrous) .180 inch	Type 4
5K Full Mortise (Non-Ferrous) .180 inch	Type 5
Heavy Duty Continuous Hinge - Exterior	Type 6
Heavy Duty Continuous Hinge – Interior	Type 7

4. Application:
a. Exterior out swinging doors (unless otherwise specified) Type 5 x NRP
b. Exterior in swinging doors and vestibule doors Type
c. Interior doors Type 2 & Type 4
d. Provide NRP (non-removable pins) at out swinging lockable doors and exterior applications.
e. Patient rooms, clean, soil, exam rooms Type 1
f. Restrooms, showers and selected clean areas Type 3

g. Continuous hinges as required. Type 6 & Type 7

5. Hinge Size:
   a. 2-1/4 inch doors: 5 inch x 5 inch
   b. Doors 42 inches and wider: 5 inch x 4-1/2 inch
   c. 1-3/4 inch doors: 4-1/2 inch x 4-1/2 inch

6. Hinge Thickness:
   a. Standard weight: .134 inch at offices, exam, mechanical, electrical and data rooms.
   b. Heavy weight: .180 inch at all high use openings and any doors over 36 inches in width.
7. Hinge Quantity:
   a. 2 hinges per leaf for openings up to 60 inches high.
   b. 1 additional hinge per leaf for each additional 30 inches in height or fraction thereof.
   c. 4 hinges at Dutch doors up to 90 inches in height

D. Factory pre-drilled 5/32 inch hole with No. 12, 1-1/4 inch steel threaded wood screws for hinges on wood doors.

E. Qualifications:

1. Stainless steel hinges shall be used in rooms which are subject to extensive moisture.

2.3 ELECTRIC POWER TRANSFER

A. Manufacturer: Power transfer shall be Von Duprin EPT-10 CON, no substitutions.

1. Allegion Connect 8 pin wiring harnesses with factory applied connectors (CON) shall be used.

2. Provide wire harness lengths as required for the application.

3. Wire nuts or field wire connections in lieu of factory applied connectors are not acceptable.

B. Locate electric power transfer per manufacturer's template and UL requirements.

2.4 MECHANICAL LOCKS AND LATCHES

A. Non-electrified lockset shall be Yale 8800 Series mortise lockset, no substitutions.

1. Locksets are to be supplied with the Carmel, CRSL lever handle.

B. In a renovation or under special circumstances, a Yale 5400LN Series cylindrical lockset may be required.

C. Mechanical Functions

Type
For offices: Classroom or Office Lock
For classrooms: Classroom or Office Lock
Storerooms: Storeroom Lock
Rooms not requiring a lockable door: Passage or Closet Latch

D. Electrified lockset shall be Yale 8800 Series ITS, Fail Secure, mortise lockset, no substitutions.

1. McKinney ElectroLynx retrofit harnesses with factory applied connectors shall be used.

2. Provide wire harness lengths as required for the application.

3. Wire nuts or field wire connections in lieu of factory applied connectors are not acceptable.

E. Stand Alone Pushbutton Lockset

1. Where a pushbutton lockset is required for access control, the manufacturer shall be Alarm Lock, no substitutions. The following series shall be used:

Type	Trilogy	Notes
Mortise Applications	Trilogy T2 DL3500 Series	No scheduling or audit trail with key override
Cylindrical Applications	Trilogy T2 DL2700 Series	No scheduling or audit trail with key override
Interchangeable core and Rim Cylinder adapter kit	ETDL Series	2,000 user codes, 40,000 event audit trail, 500 scheduled event capability

2.5 LOCK CYLINDERS

A. Medeco, 6 pin high security cylinders, K3S keyway with Z47 cams.

1. All applications require permanent cores.

2. A letter of authorization will be provided by the University to the hardware supplier upon award of contract allowing the purchase of restricted section product.

3. Keys: One box of key blanks (KY-17660-K305) is to be provided for every thirty (30) cylinders on the project. When less than 30 cylinders are required on a project, no key blanks are required.

4. The Planning, Design & Construction project manager shall be notified when the cylinders and key blanks have been shipped.

5. All restricted cylinders and key blanks for the project shall be supplied by the Contractor and shipped directly to the Academic Locksmith at Missouri State University. Shipping labels for cylinders and key blanks should be clearly labeled with the University's project name and number and sent to the following address:
   a. Missouri State University, Facilities Management. ATTN: Academic Locksmith. 901 South National Avenue, Springfield, MO 65897.

2.6 KEYING

A. MSU Locksmith will key cylinders, cut keys and install cylinders.

B. The contractor is responsible for the project site and any temporary construction keying during construction. For any locks installed at a perimeter fence or for any temporary cylinders installed within the construction site, 2 copies of the keys to access the site and building shall be distributed to the University project manager.

2.7 EXIT DEVICES AND AUXILIARY ITEMS

A. Non-electrified and electrified exit devices shall be Von Duprin 99 Series or 33A Series, no substitutions.

1. Trims shall be 996L for 99 Series, 360 for 33A Series, function dependent on access requirements.

2. Electrified exit devices shall have Quiet Electric Latch Retraction (QEL), Latch bolt Monitoring (LX), Request to Exit (RX), Low Current (LC) and factory applied connectors (CON).

3. Provide Allegion 679 Series door position switch with electrified exit devices. Prep door and frame for door position switch.

4. Where dogging is required, standard hex key or cylinder dogging shall be provided.

5. No dogging at card access security doors.

6. Electrified exist devices shall be Fail Secure.

7. All exist devices shall be UL listed for panic. Fire Exit devices for labeled doors shall be UL listed as “Fire Exit Hardware”

8. Provide steel keyed removable mullions at exterior pair of doors only when required.

9. Provide surface vertical rods with no bottom rod at cross corridor doors and double egress doors.

10. Provide rated surface vertical rods with no bottom rod with fire pins on rated corridor doors and double egress doors.

11. When delayed egress (D) is desired for an opening then provide signage indicating “Emergency Exit Only – Push until alarm sounds. Door can be opened in 15 seconds.” Signage to be placed on push side of door.

12. Provide exits with MicroShield antimicrobial coating.

2.8 ELECTRIC STRIKES

A. All electric strikes shall be manufactured by HES, 1006 CLB, no substitutions.

1. Electric strikes shall be used only when electric locksets are not feasible.

2. Provide electric strikes designed for use with the specified type of lock shown at each opening.

3. Electric strikes shall be UL listed as Burglary-Resistant Electric Door Strikes and where required shall be UL listed as Electric Strikes for Fire Doors and Frames.

4. Provide Fail Secure type electric strikes, unless otherwise specified.

5. Provide HES Smart Pac II controller for electric strikes for reduction of voltage when in continuous use to extend the life of the electric strike.

2.9 POWER SUPPLY

A. Von Duprin PS914 series power supply, as required for the application, no substitutions.

B. Requirements:

1. Provide power supplies per manufacturer's recommendations for the electrified locking component, operation of electrified locks, electrified exit devices, electric strikes, and other components requiring a power supply.

2. Provide the appropriate quantity of power supplies as recommended by the manufacturer of the electrified locking hardware with consideration for each electrified component using the power supply, the location of the power supply, and the approved wiring diagrams. Coordinate location of the power supplies with General Contractor, Electrical Sub-contractor, PD&C and MSU Networking and Telecommunications.

3. Provide a power supply that is regulated and filtered 24 VDC, or as required, and UL class 2 listed. Verify voltage with the Electrical Sub-contractor.

2.10 FLUSH BOLTS AND DUSTPROOF STRIKES

A. When required, flush bolts and dustproof strikes shall be manufactured by Rockwood, no substitutions.

Description	Rockwood
Manual flush bolts (hollow metal doors)	555
Automatic flush bolts (hollow metal doors)	2942
Manual flush bolts (wood doors)	557
Automatic flush bolts (wood doors)	2842
Dust proof strike	570 x 571
Door coordinator with filler bar and brackets	2600 x 2601 AB

1. Provide mortise dust proof strike at openings with bottom flush bolts on doors.

2. Non-labeled Openings: Provide 2 flush bolts for inactive leaf of pairs of locked and latched doors. Located centerline of top bolt not more than 78 inches from finished floor. Provide dustproof strike for bottom bolt.

3. Labeled Openings: Provide automatic flush bolt sets as applicable for inactive leaf of pairs of doors. Provide dustproof strike for bottom bolt.

4. Provide door coordinator to allow inactive leaf to close before active leaf. Provide filler bar and mounting accessories for complete operational installation.

2.11 SURFACE CLOSERS

A. All door closers shall be manufactured by LCN, Heavy-Duty Grade, no substitutions.

1. Actual closer shall be selected based upon the specific open and door requirements.

2. Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.

3. Provide drop plates, brackets or adapters for arms and closer body as required for proper installation.

4. Mount closers on room side of corridor doors, inside of exterior doors and stair side of stairway doors. All surface mounted closures shall be through bolted.

5. Provide back-check for closers.

6. Provide closers meeting UL 10C positive pressure test requirements.

7. Provide delayed action (DA) closers at openings with cart traffic.

8. Provide closer arms from heavy duty forged steel, provide compression stop and hold open function at exterior openings.

9. Field adjust spring tension as necessary.

2.12 AUTOMATIC DOOR OPERATORS (LOW ENERGY)

A. All automatic door operators shall be manufactured by LCN, no substitutions.

1. Exterior door operators shall be 9500/2800 Senior Swing Low Energy Series.

2. Interior door operators shall be 4642 Auto Equalizer Low Energy Series.
   a. Provide automatic operator with two-year maintenance and warranty contract. Provide all required components for each door application.
   b. Provide interface board to work with electrified door release hardware at access control doors.
   c. Standard Actuator: Stainless steel push plate actuator switch with all required accessories, 4.75 inches square, with “Push to Open” and ADA symbol engraved on it (8310-853TA).
   d. Jamb Actuator: Stainless steel push plate actuator switch with all required accessories, 1.5 inches x 4.75 inches, with “Push to Open” and ADA symbol engraved on it (8310-818T).
   e. Bollards: LCN 8310-866, Finish 689 Aluminum
   f. Installation to be completed by factory certified supplier and quality assurance per AAADM (American Association of Automatic Door Manufacturers)

2.13 WALL STOPS AND HOLDERS

A. When required, acceptable Manufacturers and Types:

Type	Rockwood	Ives
Wall stop - Concave	409	WS407
Heavy duty wall stop	475	447

1. Provide concave wall stops at doors with blocked walls behind them.

2. Floor stops are not permitted, use overhead stop where wall stop is not permitted.

3. Wall stops are not permitted with the use of hospital latches, use concealed overhead stops.

2.14 OVERHEAD STOPS AND HOLDERS

A. When required, doorstops shall be manufactured by Rixson, no substitutions.

Type	Rixson
Surface mounted heavy duty overhead stops	9-series
Concealed mounted heavy duty overhead stop	1-series

1. Provide concealed overhead stops at new construction for doors that swing more than 90 degrees before striking wall and for doors that open against equipment, casework, sidelights and any other object.

2. Provide surface overhead stops for existing applications where the use of wall stops is not feasible.

3. Provide sex bolt attachments for mineral core door applications.

4. Proper wall blocking shall be provided behind stop.

5. Provide concealed overhead stops at doors with hospital latches.

6. Floor stops are not permitted.

2.15 MAGNETIC HOLDERS

A. When required, magnetic holders shall be: Rixsen, FM-998, wall mounted electromagnetic hold opens.

1. For use on fire rated doors and hallways.

2. Provide wall mounted magnetic holders tied to fire alarm panel and released upon loss of power.

3. Verify voltage with Electrical Sub-contractor

4. Provide extensions and mounting brackets for complete installation.

5. Only Rixsen magnets are field selectable for 12 or 24 volts or AC or DC currents.

2.16 DOOR GASKETING

A. When required, door gasketing shall be: Pemko Bulb Seal, S88BL

1. Refer to drawings for special details. Provide accessories, shims and fasteners.

2. Provide adhesive applied smoke gasketing at fire and smoke rated openings.

3. Provide gaskets for 20-minute doors and doors designated for smoke and draft control.

4. Where frame applied intumescent seals are required by the manufacturer, provide gaskets that comply with UL 10C positive pressure test.

2.17 THRESHOLDS

A. When required, thresholds shall be manufactured by Pemko.

Type	Pemko
Saddle threshold	171A
Lip threshold	2005A

1. Where thresholds are specified in hardware groups, provide 171A thresholds unless detailed otherwise.
   a. Refer to drawings for special details. Provide accessories, shims and fasteners.
   b. Where thresholds occur at openings with one or more mullions, they shall be cut for the mullions and extended continuously for the entire opening.

2.18 WEATHER STIPPING

A. When required, weather stripping shall be manufactured by Pemko.

Type	Pemko
Brush Door Bottom Sweep	345ANB
Bulb Weather Stripping	2891APK
Rain Drips	346C

1. Provide brush type sweeps with integral rain drip at exterior doors.

2. Provide self-tapping fasteners for weather stripping being applied to hollow metal frames.

3. Provide 1-1/2-inch-wide solid aluminum stock for weather stripping for applied closer bracket and applied door hardware to frame without interruption of perimeter seal.

4. Provide rain drip at head of exterior door openings and extend 2” past door width.

2.19 ASTRAGALS

A. When required, astragals shall be manufactured by Pemko.

Type	Pemko
Brush Meeting Stiles Set	18041CNB
Brush Mortise Door Edge	369AP

1. Provide surface applied meeting stiles on pull side at pairs of doors that do not have door coordinators or auto flush bolts. Provide at fire and/or smoke rated openings.

2. Provide mortise doors edge seals to limit visibility at double acting doors on hinge and strike stiles.

3. Provide door manufacturers standard metal edge astragal at doors with door coordinators or auto flush bolts.

2.20 DOOR TRIM

A. When required, acceptable Manufacturers and Types:

Type	Rockwood	Ives
Push Plate – 4” x 16”	70E	8200
Pull & Plate - 4” x 16” – 10” CTC	111 x 70C	8303-0
Kickplate	K1050	8400

1. Push Plates
   a. Plate size to be 4 inches x 16 inches unless otherwise indicated.

2. Pulls
   a. 10 inches center to center with 1” diameter pull.
   b. Where required, mount back to back with push plate.

3. Kick Plates and Armor Plates
   a. Provide width 2 inches less than door width on push side at doors with closers.
   b. Kick plate to be 10 inches in height
   c. Armor plates to be 36 inches in height

4. Edge Guards
   a. Minimum .050-inch thick, stainless steel, mortised; only as requested

5. Provide above listed products with MicroShield antimicrobial coating.

2.21 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.

3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.22 FINISHES

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

B. Finishes, unless otherwise specified:

1. Butts: Out-swinging Exterior Doors, Clean rooms, Toilet rooms with Showers, Surgical areas:
   a. US32D (BHMA 630) on Stainless Steel

2. Butts: Interior Doors

a. US26D (BHMA 652) on Steel

3. Flush Bolts:
   a. US26D (BHMA 626) on Brass or Bronze

4. Exit Devices:
   a. US32D (BHMA 630) on Stainless Steel

5. Locks and Latches:
   a. US26D (BHMA 626) on Brass or Bronze

6. Push Plates, Pulls and Push Bars:
   a. US32D (BHMA 630) on Stainless Steel

7. Coordinators:
   a. USP (BHMA 600) on Steel

8. Kick Plates, Armor Plates, and Edge Guards:
   a. US32D (BHMA 630) on Stainless Steel

9. Overhead Stops and Holders:
   a. US26D (BHMA 626) on Brass or Bronze

10. Closers: Surface mounted.
    a. Sprayed Aluminum Lacquer

11. Latch Protectors:
    a. US32D (BHMA 630) on Stainless Steel

12. Miscellaneous Hardware:
    a. US26D (BHMA 626) on Brass or Bronze

PART 3 - EXECUTION

3.1 HARDWARE INSTALLATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Mounting Heights: Mount door hardware units at heights indicated or as required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.

2. Custom Steel Doors and Frames: HMMA 831.

C. Install each door hardware item to comply with manufacturer's 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. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

D. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

E. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

F. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

G. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

H. 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.

3.2 ACCESS CONTROL INSTALLATION

A. Comply with recommendations in SIA CP-01.

B. Comply with TIA/EIA 606-A, "Administration Standard for Commercial Telecommunications Infrastructure."

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

D. Examine roughing-in for LAN and control cable conduit systems to PCs, controllers, readers, and other cable-connected devices to verify actual locations of conduit and back boxes before device installation.

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

3.3 SYSTEMS, SOFTWARE, AND HARDWARE

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

B. Coordinate with the Owner to ensure that the new components will be properly programmed into the system.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: General Contractor, Supplier and/or Manufacturer’s representative will perform a final inspection of installed door hardware and will provide an audit report stating whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating, and adjusted.

B. Card access-controlled doors shall be tested to verify proper installation, operation, and communication.

1. General Contractor will coordinate and schedule an audit meeting for all card access-controlled doors. Meeting will include representatives from required sub-contractors/suppliers, PD&C, MSU Campus Construction Team and MSU Networking and Telecommunications. Each door shall be tested while all parties are present.

3.5 DOOR HARDWARE SCHEDULE (To be supplied by Consultant)

END OF SECTION 08 71 00