



1907

City of Globe

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2007

**CRESTLINE BOOSTER PUMP STATION
ADDENDUM No. 3
November 19, 2018**

Clarifications and Additions

1. Attached is the specification for Hollow Metal Doors and Finish Hardware for the pump house door.
2. Pipe and valves will be installed as shown on attached Exhibit A to provide flow and pressure while the pump station is out of service. This work will be paid for under bid item number 22, "Mobilization/Demobilization/Misc".
3. The contractor is required to provide the I/O for the pump station as per Sheet E-05, 1.01.D. The existing PLC cabinet is intended to be reused and has sufficient I/O.
4. Section I.1, Section 2.10 Combination Air Valves requires combination air valve assemblies on the discharge of all new pump units. The intent is to have one combination air valve on the discharge header of the pumps, as shown in the drawings. Unless the pump manufacturers recommends otherwise.
5. The contractor's bid will cover all construction, materials, equipment, labor, supervision, overhead, profit, and any other expenses required to complete the project as shown in the plans and specifications. Any items not covered in individual bid items will be paid for under bid item number 22, "Mobilization/Demobilization/Misc".

SECTION 08105

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide all labor, materials, tools, equipment and incidentals as shown on the Drawings, specified and required to furnish and install hollow metal doors and frames.
2. Extent of hollow metal doors and frames is shown on the Drawings.
3. Types of products required include the following:
 - a. Seamless, galvanized steel, paper honeycomb core, internally-reinforced, flush doors.
 - b. Fully welded, galvanized steel, internally-reinforced, door frames.
 - c. Miscellaneous supports; special, supplemental and standard finish hardware reinforcements and preparation items; fasteners and accessories; all for high-frequency, high-endurance use.

1.02 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Provide hollow metal doors and frames and accessories manufactured by a single firm specializing in the production of this type of Work and complying with specified standards of ANSI, NFPA, SDI and UL.
2. Provide hollow metal doors and frames from a manufacturer who is a member of SDI.

B. Allowable Tolerances: Provide door and frame manufacturing tolerances in compliance with SDI-117 and as follows:

1. Nominal Clearance Between Door and Frame Head and Jamb: 1/8-inch.
2. Nominal Clearance Between Meeting Edges of Pairs of Doors: 1/8-inch.
3. Nominal Clearance at Bottom of Door: 3/4-inch.
4. Nominal Clearance Between Face of Door and Door Stop: 1/16-inch.
5. Provide all Work plumb and true to adjoining surfaces with all miters and copes accurately formed.
6. Provide completely water- and vapor tight joints.

E. Codes: Comply with applicable requirements of the City of Globe Building Code.

1.03 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Fabrication and installation drawings of hollow metal doors and frames. Include details of each frame type, elevations of each door type, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints, connections and every composite member. Show all door and frame reinforcements, including welds, plate lengths, locations and gages, identified for each component of finish hardware specified in Section 08710, Finish Hardware.
2. Provide a schedule of doors and frames using same reference numbers for details and openings as those shown on the Drawings and Section 08060, Door Schedule.

1.04 DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials:

1. Deliver hollow metal doors and frames cartoned or crated to provide protection during transit and job storage.
2. Inspect hollow metal doors and frames for damage upon delivery. Minor damage may be repaired provided the finish items are equal in all respects to new work and acceptable to ENGINEER; otherwise, remove and replace damaged items.

B. Storage and Handling of Materials:

1. Store doors and frames at the site under cover.
2. Place units up off floors in a manner that will prevent rust and damage.
3. Avoid the use of non-vented plastic or canvas shelters which could create a humidity chamber. If cardboard wrapper on the door becomes wet, remove the carton immediately.
4. Provide a 1/4-inch space between stacked doors to promote air circulation.

1.05 JOB CONDITIONS

A. Scheduling:

1. Coordinate with other Work by furnishing approved Shop Drawings, inserts and similar items at the appropriate times for proper sequencing of construction without delays.
2. Do not install doors and frames until all Work which could damage doors and frames has been completed.
3. Provide temporary doors until construction sequencing allows installation of permanent doors and frames.
4. Do not proceed with the installation of permanent hollow metal doors until CONTRACTOR provides finished Work complying with all requirements of the Specifications.

B. Protection:

1. Protect built-in frame Work with temporary wood protection.

PART 2 - PRODUCTS

2.01 SYSTEM PERFORMANCE

A. Performance Criteria:

1. Door Classification: Provide hollow metal doors of Grades and Models in accordance with ANSI/SDI 100, and ANSI A250.5 as follows:
 - a. Grade III, extra heavy-duty, Model 4, seamless.

B. Door and Panel Construction:

1. Provide doors of two outer stretcher-leveled sheets, 16 gage minimum. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces or edges, except around glazed or louvered panel inserts. No fillers shall be used. Provide weep hole openings in the bottom of exterior doors to permit the escape of entrapped moisture.
2. Reinforce inside of doors with honeycomb core completely filling the inside of the door and laminated to the inside of both face panels with an adhesive. The honeycomb material shall have a crushing strength not less than 6,000 pounds per square foot and the lamination shall withstand not less than 1,100 pounds per square foot in shear.

C. Frame Construction:

1. Form frames of cold-rolled sheet material, 16 gage minimum. Provide seamless frames for all Work, unless specifically specified and shown on the Drawings as permitting exposed fasteners.
2. Provide hollow metal frames for doors, transoms, side-lights, borrowed lights, and other openings of size and profile as shown on the Drawings or specified.

2.02 MANUFACTURERS

A. Manufacturer: Provide hollow metal doors and frames from one of the following:

1. Pioneer Industries, Incorporated.
2. Curries
3. Steelcraft
2. Or equal.

2.03 MATERIALS

A. Door Faces and Frames: Zinc-coated, cold-rolled carbon steel sheets of commercial quality, complying with ASTM A 366, and ASTM A 653, G 60 zinc coating, mill-phosphatized.

B. Honeycomb Core: Phenolic resin-impregnated, nominal 1-inch hexagonal cell size, one piece, Kraft fiber core board, with 42 psi minimum crushing strength.

B. Supports and Anchors: Formed sheet metal, hot-dip galvanized after fabrication complying with ASTM A 153, Class B, and in compliance with requirements of ANSI A250.5. Provide supports and anchors as follows:

1. Jamb Anchors: 16-gage minimum, and of the following types:

- a. Masonry Construction: Adjustable, corrugated or perforated, T-shaped to suit frame size with leg not less than 2-inches wide by 10-inches long.
 2. Floor and Head Anchors: 14-gage minimum, and of the following types:
 - a. Monolithic Concrete Slabs: Clip-type, with two holes to receive fasteners, welded to bottom of jambs and mullions.
- D. Inserts, Bolts and Fasteners: Sheet metal hot-dip galvanized complying with ASTM A 153, Class C or D as applicable.
- E. Miscellaneous Accessories:
1. Head Strut Supports: 3/8-inch by 2-inch hot-dipped galvanized steel.
 2. Structural Reinforcing Members: Provide structural reinforcing members as part of frame assembly, where shown on the Drawings at mullions, transoms, or other locations that are to be built into frame.
 3. Head Reinforcing: For frames over 4 feet-0 inch wide, in masonry openings, provide continuous steel channel or angle stiffener, not less than 12-gage for full width of opening, welded to back of frame at head.
 4. Spreader Bars: Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions.
 5. Plaster Guards: 26-gage minimum galvanized steel.

2.04 FABRICATION

- A. General:
1. Fabricate hollow metal units to be rigid, neat in appearance and free for defects, warp or buckle. Accurately form metal to required sizes and profiles.
 2. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify Work that cannot be permanently factory-assembled before shipment, to assure proper assembly at the site. Weld exposed joints continuously, grind, dress, and make smooth, flush and invisible. Filler to conceal manufacturing defects shall not be acceptable.
 3. Exposed Fasteners: Unless otherwise shown on the Drawings or specified, do not use exposed fasteners in the Work. Where exposed fasteners are shown or specified, provide countersunk flat Phillips or Jackson heads for exposed screws and bolts.
- B. Doors:
1. Fabricate all hollow metal doors and panels in compliance with ANSI A250.5.
 2. Fabricate all doors with flush top and bottom closing channel, without exposed fasteners. Reinforce tops and bottoms of doors with inverted, flush-mounted, minimum 20-gage, horizontal steel channels fastened to internal reinforcement channel and with 20-gage closing plate spot welded to closure channel. Close top and bottom edges to provide weather seal, as integral part of door construction or by addition of inverted steel channels and plates.
 3. Edge profiles shall be provided on both stiles of doors beveled 1/8-inch in 2-inches.

C. Frame Construction:

1. Fabricate all hollow metal frames in compliance with ANSI A250.5 and as specified.
2. Fabricate frames with reinforced, mitered corners, that are continuously arc-welded for the full depth and width of the frame, with bottom spreader bar; except provide drywall frames as specified.
3. Grind all exposed welds flush and smooth.
4. Head Reinforcing: Where installed in masonry, leave vertical mullions in frames open at the top so they can be filled with grout.
5. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
6. Plaster Guards: Provide manufacturer's standard plaster guards or dust cover boxes.

D. Finish Hardware Preparation:

1. General:
 - a. Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with approved Finish Hardware Schedule and templates provided by finish hardware supplier and as specified. Comply with applicable requirements of ANSI/DHI A115.1 - A115.17 and ANSI A250.4. Refer to Section 08710, Finish Hardware.
 - b. Obtain approved Finish Hardware Schedule, hardware templates, and samples of finish hardware where necessary to ensure correct detailing and fabrication of the hollow metal doors and frames, from finish hardware supplier.
2. Doors:
 - a. Preparation includes cut-outs for mortised and concealed finish hardware and reinforcements for both concealed and surface-applied finish hardware.
 - b. Drill and tap mortise reinforcements at factory, using templates.
 - c. Detail and fabricate reinforcements with concealed connections designed to develop full strength of reinforcements for high-frequency applications.
 - d. Reinforce doors for required finish hardware, with minimum gages of reinforcements provided as follows:
 - 1) Hinges: Steel plate 3/16-inches thick by 1-1/2-inches wide by 6-inches longer than hinge and secured by not less than six spot or projection welds with top hinge further reinforced with a high-frequency back-up reinforcement.
 - 2) Mortise Locksets and Dead Bolts: 12-gage steel sheet, secured with not less than four spot or projection welds.
 - 3) Flush Bolts: 12-gage steel sheet, secured with not less than two spot or projection welds.
 - 4) Surface-Applied Closers and Overhead Stops: 3/16-inch steel plate, not less than 10-inches long, secured with not less than six spot or projection welds.
 - 5) Automatic Door Bottoms: Reinforce for mortise-type units with 14-gage steel, and 16-gage for surface-applied units.
3. Frames:
 - a. Reinforce frames for required finish hardware with minimum gages as follows:
 - 1) Hinges and Pivots: Special full width of frame, 3/16-inch thick steel plate by 8-inches longer than hinge, secured to both rabbets by not less than twelve spot or projection welds.
 - 2) Strike Plate Clips: 10-gage steel plate by 1-1/2-inches wide by 3-inches long with mortar guard boxout secured with not less than six spot or projection welds.

- 3) Surface-Applied Closers: 3/16-inch steel plate, secured with not less than six spot or projection welds. Coordinate closer function and presence of overhead stops and weather-stripping, with location of reinforcement plate.

2.05 SHOP PAINTING

- A. Clean, treat and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces.
- B. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before the application of the shop coat of paint.
- C. Apply pretreatment to cleaned metal surfaces, using cold phosphate solution (SSPC-PT 2), or basic zinc chromate-vinyl butyral solution (SSPC-PT 27).
- D. Refer to Section 09900, Painting, for field-applied primer and finish paint for exterior or interior exposed ferrous, non-ferrous, or galvanized surfaces.
- E. Apply shop-coat of prime paint within time limits recommended by pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 1.5-mils.
- F. Finish shall be rust inhibitive primer capable of passing a 500 hour salt spray and a 1,000 hour humidity test in accordance with ASTM B 117 as certified by an independent laboratory.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the substrate and conditions under which hollow metal doors and frames are to be installed and notify ENGINEER, in writing, of any conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.
- B. Frames that are bowed, twisted or otherwise unacceptable shall be removed from the site and replaced with properly constructed frames.

3.02 PREPARATION

- A. Drilling and tapping for surface-applied finish hardware may be done at site.
- B. Protective Coating: Protect inside, concealed, faces of door frames in plaster or masonry construction using fibered asphalt emulsion coating. Apply over shop primer approximately 1/8-inches thick and allow to dry before installation.

3.03 INSTALLATION

- A. Install hollow metal units and accessories in accordance with approved Shop Drawings, SDI 105 and as shown on the Drawings and specified.
- B. Placing Frames:

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged. Remove spreader bars only after frames have been properly set and secured.
2. Make field splices in frames as detailed on approved Shop Drawings, welded and finished to match factory work.

C. Setting Masonry Anchorage Devices:

1. In masonry construction, building in of anchors and grouting of frames is included in Section 04201, Unit Masonry Construction.
2. Set anchorage devices opposite each anchor location, in accordance with details on approved Shop Drawings and anchorage device manufacturer's instructions as follows:
 - a. Masonry Walls: Install at least three jamb anchors per jamb up to 7 feet-6 inches height; four anchors up to 8 feet-0 inch jamb height; one additional anchor for each 2 foot-0 inch or fraction thereof over 8 feet-0 inch height.
3. Floor anchors may be set with powder-actuated fasteners instead of masonry anchorage devices and machine screws, if so indicated on approved Shop Drawings.

D. Door Installation:

1. Fit hollow metal doors accurately in their respective frames, with the following clearances:
 - a. Jamb and Head: 3/32-inch.
 - b. Meeting Edges, Pairs of Doors: 1/8-inch.
 - c. Bottom: 3/4-inch, where no threshold or carpet.
 - d. Bottom: At threshold or carpet, 1/8-inch.
3. Finish hardware installation is specified under Section 08710, Finish Hardware. Locate finish hardware as shown on approved Shop Drawings, in accordance with hardware templates provided by finish hardware manufacturers and in accordance with Door and Hardware Institute, Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames.

3.04 ADJUSTMENT AND CLEANING

- A. Check and readjust operating finish hardware items in hollow metal door and frame Work just prior to final inspection. Leave Work in complete and proper operating conditions.
- B. Where problems of installation or damage are cause for rejection of hollow metal door and frame Work, consult SDI-122 and the recommendations of the hollow metal door and frame manufacturer, for suggestions concerning required adjustments in the Work. Submit recommendations to ENGINEER for approval. Replace and repair unacceptable Work, as directed by ENGINEER, so that there will be no doubt as to the acceptability of the Work at the time of Substantial Completion.

- C. Prime Coat Touch-Up: Immediately after installation, sand smooth all rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- D. Provide protective treatment and other precautions required as recommended by manufacturer, through the remainder of the construction period, to ensure that doors and frames will be without damage or deterioration (other than normal weathering) at the time of Final Acceptance.

- END OF SECTION -

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide all labor, materials, tools, equipment and incidentals as shown on the Drawings, specified and required to furnish and install finish hardware.
2. Extent of finish hardware is specified. Finish hardware is defined to include all items known commercially as finish hardware, except special types of unique and non-matching hardware specified in the same Section as the door and door frame.
3. Types of products required:
 - a. Mortise Hinges.
 - b. Concealed Rod and Mortise Panic Exit Devices.
 - c. Overhead Surface-Mounted Door Closers.
 - d. Coordinator on double doors.
 - e. Stripping and Seals.
 - f. Thresholds.
 - g. Miscellaneous items and accessories for a complete installation functioning in compliance with the requirements of governing authorities having jurisdiction at the Site.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with, or before, the finish hardware.
2. Coordinate the Work of other Sections to provide clearances and accurate positioning of recessed or cast-in-place items.

1.02 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Provide finish hardware and accessories manufactured by firms specializing in the production of this type of Work and complying with specified standards of ANSI, BHMA, DHI, NFPA, HMMA, SDI and UL.
2. Provide finish hardware from manufacturers who are members of BHMA and participate in BHMA certification programs.

B. Installer Qualifications: The finish hardware installer shall have in his employ an architectural hardware consultant. The architectural hardware consultant shall be a member of the Door and Hardware Institute, who has passed the DHI certification examine and successfully completed an apprenticeship program. The architectural hardware consultant shall be responsible for preparing finish

hardware schedules and Shop Drawings and be present at the site for the purpose of checking and supervising the Work of the installer during the time of installation and adjustment of the finish hardware Work, and shall prepare a written field report on status of completed finish hardware installation as specified.

C. Performance Criteria:

1. Where the finish, shape, size, fire-resistance-rating, frequency of use, or function of a member receiving finish hardware is such as to prevent, or make unsuitable, the types of finish hardware specified, furnish similar types having as nearly as practicable the same operation but of type or kind more appropriate to the design intention and requirements of governing authorities having jurisdiction. Clearly identify and highlight to ENGINEER all such required modifications on Shop Drawings submitted for approval.
2. If finish hardware for any location is not specified, provide finish hardware equal in design and quality to adjacent finish hardware specified for comparable openings at no additional cost to OWNER.
3. Furnish finish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements, as necessary for proper installation and function.
4. Unless otherwise specified, comply with DHI, Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames and Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames.

E. Codes: Comply with applicable requirements of the City of Globe Building Construction Code and adopted amendments.

F. Source Quality Control:

1. Obtain each type of finish hardware item from only one manufacturer.
2. Provide Finish Hardware Schedule, for submission to, and for approval by, ENGINEER, prepared in compliance with DHI standards.
3. Comply with specified BHMA standards.

1.03 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Copies of manufacturer's data for each item of finish hardware.
2. Copies of the Finish Hardware Schedule in the manner and format specified, complying with the actual construction Progress Schedule requirements (for each draft). Include explanation of abbreviations, symbols, and codes used to present scheduled information.
3. Finish Hardware Schedules are intended for coordination of the Work. Review and acceptance by ENGINEER does not relieve CONTRACTOR of responsibility to fulfill the requirements as shown and specified.
4. Operations and Maintenance Manuals:
 1. Submit complete installation, operation and maintenance manuals including: detailed procedure for routine maintenance and cleaning,

detailed procedures for repairs such as dents, scratches and staining, detailed maintenance data and schedules, description of operation, spare parts information, and parts identification drawings and manual.

2. Hardware schedule, including manufacturer, finish and model numbers shall be included in the Operations and Maintenance Manuals as outlined in paragraph 3.6.B below..

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials:

1. Deliver items of finish hardware sufficiently in advance of their setting for proper inspection.
2. Deliver all items of finish hardware in manufacturer's original, undamaged packages, bearing accurate representation of the item within each package.
3. Pack each piece of finish hardware separately, complete with screws, keying, instructions and templates, tagged to correspond with items submitted on approved Shop Drawings and as specified.
4. Inspect items upon delivery for damage. Items that arrive in damaged condition shall be permanently removed from the site and not offered again for approval by ENGINEER.

B. Storage and Handling of Materials:

1. Provide secure storage area for finish hardware items, secured by locks and accessible only to finish hardware installer, ENGINEER and CONTRACTOR.
2. Store finish hardware in manufacturers' original packages.
3. Control the handling and installation of finish hardware items which are not immediately replaceable, so that the completion of the Work will not be delayed by finish hardware losses, both before and after installation.

1.05 JOB CONDITIONS

A. Scheduling:

1. Deliver individually packaged finish hardware items at the proper time to the proper locations for installation.
2. Coordinate with other Work by furnishing Shop Drawings, inserts, templates and similar items at the appropriate times for proper sequencing of construction without delays.

PART 2 - PRODUCTS

2.01 MATERIALS AND FABRICATION

A. General:

1. Hand of Door: The Drawings show the swing or hand of each door leaf (left, right, reverse bevel, etc.). Furnish each item of finish hardware for proper installation and operation of the door swing as shown on the Drawings.

2. **Manufacturer's Name Plate:** Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with labels required by governing authorities.
3. **Base Metals:** Produce finish hardware units of the basic metal and forming method specified, using the manufacturer's standard metal alloy, composition, temper and hardness. Do not substitute materials or forming methods for those specified.
4. **Fasteners:** Manufacture finish hardware to conform to published templates, generally prepared for machine screw installation. Do not provide finish hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
5. **Furnish screws for installation, with each finish hardware item.** Provide Phillips flat-head screws, except as otherwise specified. Finish exposed (exposed under any condition) screws to match the hardware finish or, if exposed in surfaces on other Work, to match the finish of such other Work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
6. **Provide fasteners which are compatible with both the unit fastened and the substrate, and which will not cause corrosion or deterioration of finish hardware, base material or fastener.**
7. **Provide concealed fasteners for finish hardware units which are not exposed when the door is closed, except to the extent no standard manufacturer units of the type specified are available with concealed fasteners.** Do not use through bolts for installation where the bolt head or the nut on the opposite face is exposed in other Work under any condition, except where it is not possible to adequately reinforce the Work and use machine screws or concealed fasteners of another standard type to satisfactorily avoid the use of through bolts.
8. **Tools for Maintenance:** Furnish a complete set of specialized tools as required for OWNER'S continued adjustment, maintenance, removal and replacement of finish hardware.

B. Mortise Hinges:

1. **Templates and Screws:** Provide only template-produced units.
2. **Base Metal:** Except as otherwise specified, fabricate hinges from stainless steel and finish to match the latch and lock set.
3. **Number of Hinges:**
 - a. **Three Hinges:** For doors with heights **61 to 90 inches (1549 to 2286 mm)**.
 - b. **Four Hinges:** For doors with heights **91 to 120 inches (2311 to 3048 mm)**.
4. **Hinge Size:** Except as otherwise specified or as required to comply with UL and NFPA, provide hinges of the following sizes:
 - a. **Interior Doors:**
 - 1) **Average use, maximum 36-inches wide: 4-1/2-inch by 4 1/2-inch standard weight (0.134-inches).**
5. **Types of Hinges:** Provide full-mortise type, antifriction-bearing hinges, swaged for mortise applications, inner leaf beveled, square cornered, unless manufacturer's recommendations indicate that half-mortise, half-surface,

full-surface or other type should be used for the frame and door type or condition.

6. Hinge Pins: Except as otherwise specified, provide hinge pins as follows:
 - a. Pins: Stainless Steel.
 - b. All Doors : Non-removable pins. Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed.
7. ANSI/BHMA: A156.1 and A156.7.
8. Manufacturer: Provide one of the following:
 - a. McKinney Products Company, an ASSA ABLOY Group Company
 - b. Stanley Hinges, A Division of Stanley Security Solutions.
 - c. Ives Hinges, Ives Architectural Products, an Allegion PLC Company.
 - d. Hager Hinges, by Hager Companies.
- b. Schlage Manufacturing Company; an Allegion PLC Company L-Series Mortise Lock, 17 Lever, B-rose with 64-42x26Dx106 L Cam.
10. Product and Manufacturer (Electrified): Provide one of the following:
 - a. Sargent Manufacturing Company, an ASSA ABLOY Group Company RX64-8200 Series LL Trim.
 - b. Schlage Manufacturing Company; an Allegion PLC Company RX L-Series Mortise Lock, 9080EU(24 volts) with 17 Lever, B-rose with 64-42x26Dx106 L Cam.

C. Panic Exit Devices:

1. Exit Doors: Provide mortise panic exit device for single doors and concealed vertical rod for double doors.
2. Strikes: Provide manufacturer's standard wrought stainless steel jamb-mounted top latch bolt and bottom latch bolt for each location and use shown to allow independent opening and closing of each leaf of double doors with panic exit devices; complying with UL List of Inspected Fire Protection Equipment and Materials and NFPA 80 requirements.
3. Lock Throws: Provide minimum of 3/4-inch latch bolt throw complying with UL List of Inspected Fire Protection Equipment and Materials and NFPA 80 requirements.
4. Provide the following features and materials:
 - a. Latch Bolt: Two-piece; mechanical; anti-friction; stainless steel.
 - b. Dead Bolt: One-piece; stainless steel with two enclosed hardened-steel roller armor pins.
 - c. Case: Wrought steel, zinc dichromatized.
 - d. Cylinders: High-security; brass; pick- and drill-resistant; ANSI/BHMA A156.5 - E09211A, Sargent Manufacturing Company; an ASSA ABLOY group Company, series 64 construction cores
 - e. Armor Front: 8-inches by 1-1/4-inches wide minimum; steel.
 - f. Escutcheon: 8-inches by 2-1/2-inches wide by 3/16-inches thick minimum; stainless steel, US 32D.
 - g. Hubs: Sintered steel, copper infiltrated.
 - h. Vertical Rod Devices: not permitted unless required by code.
 - i. Concealed bolts: Minimum 1/2-inch diameter, stainless steel.
6. Backset: Provide minimum backset of 2-3/4-inches.
7. Finish: US 32D satin.

8. ANSI/BHMA: A156.3, Type 3 and Type 8, Grade 1; F08, entrance by lever, key locks or unlocks lever for entrances shown as accessible to people with disabilities as required by ADAAG.
9. Manufacturer: Provide one of the following:
 - a. Von Duprin Manufacturing Company; an Allegion PLC Company
 - b. Sargent Manufacturing Company; an ASSA ABLOY Group Company.
 - c. Or Equal

D. Cylinders and Keying System:

1. Equip all locks with manufacturer's cylinders with interchangeable-core pin tumbler inserts. Furnish only temporary construction cores for the construction period, and remove these before Substantial Completion. Construction control keys and cores shall not be part of OWNER'S permanent keying system.
2. Permanent keys and cores shall be furnished by the Owner and coordinated with OWNER.
3. Cylinder Material: Brass, bronze or stainless steel.
4. Cylinder Features: 6-pin, high-security, removable core.

E. Overhead, Surface-Mounted, Door Closers:

1. Provide all doors with heavy-duty surface-mounted overhead door closers. Provide both active and inactive door leaves with closers.
2. Size of Units: Except as otherwise specified, comply with the manufacturer's recommendations for size of door control unit, depending upon size of door, exposure to weather, and anticipated frequency of use.
3. Where parallel arms are specified, and for closers on exterior doors, provide closer unit one size larger than recommended for use with standard arms.
4. Use parallel arm arrangement for doors that would otherwise have the door closer appearing in finished corridors or entries.
5. Provide hold open feature for all non-fire-resistant-rated doors.
6. Provide long arm to allow door to swing 180° where long arm will eliminate floor mounted stops.
7. Provide closers with spring power adjustment feature capable of increasing spring power 15 percent minimum in all closer sizes.
8. Provide individual regulating valves for closing and latching speeds, and separate adjustable backcheck valve.
9. Provide delayed closing action feature on all door closers. Position valve at top of closure.
10. Provide the following materials and features:
 - a. Full Metal Cover: Aluminum.
 - b. Case: Cast iron.
 - c. Arms: Plated to match full metal covers.
 - d. Other Parts: Steel.
 - e. Extreme temperature fluid.
 - f. Security torx machine screws.
 - g. Ten year warranty.
 - h. Provide manufacturer's optional corrosion protection.
11. Finishes: US 26D satin chrome. Color coordinate all arms and other accessories.

12. ANSI/BHMA: A156.4, Grade 1.
13. Manufacturer: Provide one of the following:
 - a. LCN Manufacturing Company; an Allegion PLC Company.
 - b. Sargent Manufacturing Company; an ASSA ABLOY Group Company.
 - c. Or Equal

F. Protection Armor:

- a. Provide one armor plate per leaf of each door scheduled to receive armor-plate protection.
- b. Provide 16-gage stainless steel with No. 4 finish 10-inches high by 2-inches less in width than width of door on the push side and 1-inch less than door width on pull side.
- c. ANSI/BHMA: A156.6, J101; B3E.
- d. Manufacturer: Provide one of the following:
 - 1) Rockwood, an ASSA ABLOY Group Company.
 - 2) Trimco.
 - 3) Ives Protection Armor, Ives Architectural Products, an Allegion PLC Company.

G. Stripping and Seals:

1. Provide perimeter weather stripping at all exterior doors. Provide stripping and seals for interior doors where scheduled in List of Finish Hardware Items at end of Part 3.
2. Continuity of Stripping: Except as otherwise specified, stripping at each opening shall be continuous and without unnecessary interruptions at door corners and hardware.
3. Replaceable Seal Strips: Resilient or flexible seal strip of every unit shall be easily replaceable and readily available from stocks maintained by the manufacturer.
4. Provide bumper-type weather-stripping at jambs and head, including a resilient insert and metal retainer strip, surface-applied, of the following metal, finish and resilient bumper material:
 - a. Housing: Extruded aluminum with dark bronze anodized finish; 0.062-inch minimum thickness of main walls and flanges.
 - b. Dimensions: 1-3/8-inches by 7/8-inches; stop-mounted.
 - c. Seals: Closed-cell extruded silicone.
 - d. ANSI/BHMA: A156.22, R3E264.
 - e. Product and Manufacturer: Provide one of the following:
 - 1) No. 350DSPK and 2891 DPK (for parallel arms) by Pemko Manufacturing Company.
 - 2) National Guard Products, Incorporated.
5. Provide surface-mounted door-bottom sweep of manufacturer's standard design, as follows:
 - a. Housing: Extruded aluminum, 0.062-inch thick, with mill aluminum finish.
 - b. Seal: Nylon Brush (NB).
 - c. Mounting: Surface.
 - d. ANSI/BHMA: A156.22, R3E344.
 - e. Product and Manufacturer: Provide one of the following:
 - a) No. 18061DNB by Pemko Manufacturing Company.

b) National Guard Products, Incorporated.

H. Thresholds:

1. All exterior and interior doors shall be provided with thresholds. Where one or more mullions are specified, cut threshold to allow mullions to extend continuously for the entire opening.
2. Metal: Mill finish extruded aluminum.
3. Surface Pattern: Fluted tread, manufacturer's standard.
4. Provide countersunk stainless steel screws and expansion shields.
5. Width: 5-inches wide and of length sufficient to span full width of rough openings; coped and scribed neatly at and around door frames.
6. Construction:
 - a. Single-piece, complying with manufacturer's recommendations.
7. Profile: Provide manufacturer's unit which conforms with the minimum size and profile requirements specified.
 - a. Floor Drop: Except where no change in floor elevation is shown from one side of threshold to the other, provide profile that accommodates 1/2-inch drop in floor elevation, unless another dimension is shown on the Drawings.
8. Thickness: 1/2-inch minimum.
9. ANSI/BHMA: A156.21, J12100.
10. Product and Manufacturer: Provide one of the following:
 - a. 171A by Pemko Manufacturing Company.
 - b. National Guard Products, Incorporated.

- I. Sealants: Provide elastomeric sealant complying with FS TT-S-00227, Type 2 (non-sag) Class A for use with thresholds.

2.02 HARDWARE FINISHES

- A. Provide matching finishes for finish hardware units at each door or opening, to the greatest extent possible in compliance with ANSI/BHMA A156.18.
- B. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of finish hardware exposed at the same door or opening. In general, match all items to the manufacturer's standard finish for the latch and lock set for color and texture.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the substrate to receive finish hardware, and the conditions under which the Work will be performed, and notify ENGINEER, in writing, of unsatisfactory conditions. Do not proceed with the finish hardware Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.02 PREPARATION

- A. Templates: Furnish finish hardware templates to each fabricator of doors, frames and other Work to be factory-prepared for the installation of finish hardware. Check the Shop Drawings of such other Work, to confirm that adequate provisions are made for the proper installation of the finish hardware.
- B. Prepare Work to receive finish hardware Work in compliance with ANSI/DHI A115.1.

3.03 INSTALLATION

- A. Mount finish hardware units at heights recommended in, Door and Hardware Institute, "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames" and "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames", except as otherwise specified or required to comply with governing authorities having jurisdiction at the site, HMMA 830 and ADAAG requirements. Refer to and comply with the requirements of Section 08105, Hollow Metal Doors and Frames.
- B. Install each finish hardware item in compliance with the manufacturer's instructions and recommendations and approved Shop Drawings. Wherever cutting and fitting is required to install finish hardware onto or into surfaces which are later to be painted or finished in another way, install each item completely and then remove and store in a secure place during the finish application. After completion of the finishes, re-install each item. Do not install surface-mounted items until finishes have been completed on the substrate.
- C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Cut and fit threshold and floor covers to profile of door frames, with mitered corners and hair-line joints. Join units with concealed welds or concealed mechanical joints. Cut smooth openings for spindles, bolts and similar items, if any.
- F. Screw thresholds to substrate with No. 10 or larger screws, of the proper type for permanent anchorage and of bronze or stainless steel which will not corrode in contact with the threshold metal.
- G. Set thresholds in a bead of elastomeric sealant to completely fill concealed voids and exclude moisture from every source. Do not plug drainage holes or block weeps. Remove excess sealant before sealant cures to a firm set.

3.04 FIELD QUALITY CONTROL

- A. Provide a written field report, prepared by installer's architectural hardware consultant, identifying actual condition, location, manufacturer, and product designation for each item of finish hardware actually present on each door at the site, including whether finish hardware is adjusted and operating properly,

compared with each item referenced to approved Shop Drawings and Contract requirements.

- B. Installer's hardware consultant shall provide opinions to, and assist ENGINEER in determining, acceptability of installation as Work proceeds. All comments and discussions, conversations and meetings with ENGINEER shall be included in written field report for submission to ENGINEER for review and approval at completion of finish hardware installation.
- C. As part of written field report to be submitted to ENGINEER for approval, recommend remedial actions for Work not in compliance with the Specifications. No payment for Work shall be made until remedial recommendations and actions have been approved by ENGINEER and incorporated into the Work.

3.05 ADJUSTMENT AND CLEANING

- A. Adjust and check each operating item of finish hardware and each door, to ensure proper operation or function of every unit. Lubricate moving parts with the type lubrication recommended by manufacturer (graphite-type if no other recommended). Replace units which cannot be adjusted and lubricated to operate freely and smoothly as intended for the application.
- B. Final Adjustment: Where finish hardware installation is made more than one month prior to Substantial Completion, return to the Work during the week prior to acceptance or occupancy, and make a final check and adjustment of all finish hardware items in each space and area. Clean and relubricate operating items as necessary to restore proper function and finish of finish hardware and doors. Adjust door control devices to compensate for final operating of heating and ventilating equipment.
- C. Provide manufacturer's authorized representative to instruct and train OWNER'S personnel in proper adjustment and maintenance of finish hardware during the final adjustment of finish hardware.
- D. Finish hardware which is blemished or defective will be rejected even though it was set in place before defects were discovered. Remove and replace with new finish hardware. Repair all resultant damage to other Work.
- E. Continued Maintenance Service: Approximately six months after the acceptance of finish hardware in each area, the installer, accompanied by the representative of the latch and lock manufacturer, shall return to the Project and re-adjust every item of hardware to restore proper function of doors and finish hardware. Consult with and instruct OWNER'S personnel in recommended additions to the maintenance procedures. Clean and lubricate operational items wherever required. Replace finish hardware items which have deteriorated or failed due to faulty design, materials or installation of finish hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the finish hardware.

3.06 LIST OF FINISH HARDWARE ITEMS

A. Scheduled items for each door are generic and rely on information specified above. The listing of hardware functions and types provided are only a general guideline for the final Finish Hardware Schedule. Submit a Finish Hardware Schedule acceptable to all governing authorities having jurisdiction at the site.

B. Hardware Schedule: Provide the following finish hardware items:

HW Set 1 (Exterior Single Doors)

Hinges
Mortise Panic Device
Door Closer with Hold Open
Protection Plate (Push Side)
Weather-stripping and Door Bottom
Threshold

HW Set 2 (Exterior Double Doors)

Hinges
Concealed Vertical Rod Panic Device
Door Closer with Hold Open (Each Leaf)
Coordinator
Protection Plate (Push Side each Leaf)
Astragal with Weather-stripping
Weather-stripping and Door Bottom
Threshold

- END OF SECTION -

