SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hollow metal doors and frames.

NOTE: The integration of the existing LAWA Security System into the new door and frame may be required. The Contractor shall be responsible for the total and complete coordination of the security system components of the work.

1.2 SUBMITTALS

A. Product Data: Submit product data for each product indicated. Include material descriptions, core descriptions, label compliance, sound and fire-resistance ratings, and finishes for each type of door and frame specified.

B. Shop Drawings: Submit door and frame schedule using same reference designations indicated on Drawings. Include opening size(s), handing of doors, frame throat dimensions, details of each frame type, elevations of door design types, details of construction, location and installation requirements of door hardware and reinforcements, hardware group numbers, details of joints and connections, fire label requirements including fire rating time duration, maximum temperature rise requirements, and smoke label requirements.

NOTE: For Pet Relief Areas, door and frames will be galvanized.

NOTE: On the shop drawings, indicate the routing of electrical conduit with related dimensions and locations of required cutouts in doors and frames that are to accept electric hardware devices.

C. Construction Samples: Submit approximately 18 by 24 inches (450 by 600 mm) construction samples, representing the required construction of doors and frames for Project.

1. Doors: Show vertical-edge, top, and bottom construction; insulation; face stiffeners; and hinge and other applied hardware reinforcement. Include glazing stops if applicable.

2. Welded Frames: Show profile, welded corner joint, welded hinge reinforcement, dust-cover boxes, floor and wall anchors, stops, and silencers. Include glazing stops if applicable.

3. Frames: Show profile, corner joint, welded hinge reinforcement, wall anchors, stops, and silencers.

D. Certificate of Compliance for Fire Rated Doors: Provide copies of Certificate of Compliance for all fire rated door assemblies, all smoke and draft control door assemblies, and all temperature rise rated door assemblies.

E. Oversize Construction Certification: For door assemblies required to be fire rated and exceeding limitations of labeled assemblies, submit certification of a testing agency acceptable to authorities having jurisdiction that each door and frame assembly has been

constructed to comply with design, materials, and construction equivalent to requirements for labeled construction.

1.3 QUALITY ASSURANCE

A. Hollow Metal Door and Frame Standard: Comply with the applicable provisions and recommendations of the following publications by Hollow Metal Manufacturers Association (HMMA) Div. of National Association of Architectural Metal Manufacturers (NAAMM), unless more stringent requirements are indicated in the Contract Documents:

1. HMMA "Hollow Metal Manual".

2. HMMA 861 "Guide Specifications for Commercial Hollow Metal Doors and Frames".

B. Manufacturer Qualifications: A firm experienced in manufacturing hollow metal doors and frames similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 or UL 10C "Standard for Positive Pressure Fire Tests of Door Assemblies"**.** Fire classification labels at all doors with fire ratings greater than 20 minutes shall indicate the temperature rise developed on the unexposed surface of the door after the first 30 minutes of fire exposure.

1. Provide metal labels permanently fastened on each door which is within the size limitations established by the LADBS.

2. Temperature-Rise Rating: Where indicated, provide doors that have a temperature-rise rating of 450 deg F (250 deg C) maximum in 30 minutes of fire exposure.

3. Positive Pressure Rated Door Assemblies: Where indicated provide positive pressure rated fire rated door assemblies. Sizes and configurations as shown on the drawings. Installed door assemblies shall be in accordance with door manufacturers certified assemblies.

a. Test Pressure: Test according to NFPA 252 or UL 10C**.** After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches (1000 mm) or less above the sill**.**

4. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a testing agency acceptable to authorities having jurisdiction that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

D. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257 or UL 9.

E. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames palleted, wrapped, or crated to provide protection during transit and Project site storage.

B. Inspect doors and frames, on delivery, for damage. Tool marks, rust, blemishes, and other damage on exposed surfaces will not be acceptable. Remove and replace damaged items as

directed by Architect. Store doors and frames at building site in a dry location, off the ground, and in such a manner as to prevent deterioration.

C. Contractor to maintain door and frame integrity and quality during storage, installation and ongoing construction until the doors and frames are turned over to LAWA.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide doors and frames by one of the following:

1. Hollow Metal Doors and Frames:

a. Door Components Inc. DCI.
b. Curries Company; an Assa Abloy Group Company.
c. Ceco Door Products; an Assa Abloy Group Company.

2.2 MATERIALS

A. Specified Gage Thickness: All specified gauge thicknesses are Manufacturer's Standard Gauge.

B. Hot-Rolled Steel Sheets: ASTM A1008/A1008M, CS (commercial steel), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Cold-Rolled Steel Sheets: ASTM A 1011/A 1011M, CS (commercial steel), Type B, free from scale, pitting, coil breaks, surface blemishes, buckles, waves, or other defects, exposed (matte) dull finish, suitable for exposed applications.

D. Inserts, Bolts, and Fasteners: Galvanized steel.

1. Expansion Bolts and Shields: FS FF-S-325, Group III, Type 1 or 2.

2. Machine Screws: FS FF-S-92, carbon steel, Type III cross recessed, design I or II recess, style 2C flat head.

E. Filler: Sound deadening and heat retarding mineral fiber insulating material.

2.3 DOORS

A. General: Provide flush-design doors, 1-3/4 inches (44 mm) thick, of seamless hollow construction, unless otherwise indicated. Construct doors with sheets joined at their vertical edges by continuous welding the full height of the door, with no visible seams on their faces or vertical edges, and all welds ground and finished flush.

1. Visible joints or seams around glazed panel inserts are permitted.

2. For single-acting swing doors, bevel both vertical edges 1/8 inch in 2 inches (3 mm in 50 mm).

3. For double-acting swing doors, round vertical edges with 2-1/8-inch (54-mm) radius.

4. Door reveals around jamb to door will be **NO LESS** than 1/8", and no more than 3/16" gap at top and sides of doors.

5. Solid, or fixed type of flat astragal use is not acceptable. Use only split mohair or brush type

6. No automatic door bottoms or sound control auto door bottoms. Use only surface mount rubber door sweeps to control weather and rodents
7. On doors that have access control keypad, locate the keypad on the strike side of the frame and within 24" – 36". This requirement also applies for double doors at the active door leaf.
8. If limiting arm is to be used, it shall be mortised into the jamb and not surface mounted.

NOTE: For the doors, make provisions for the installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replace. Provide all cutouts and reinforcements required for these steel doors to accept security system components.

All new restroom entrance doors shall provide the clearance width necessary to accommodate a 42" wide wheelchair.

B. Interior Door Core Construction: Doors shall be stiffened by continuous vertically formed steel sections which, upon assembly, shall span the full thickness of the interior space between door faces. These stiffeners shall be 0.026-inch (0.6-mm) minimum thickness, spaced so that the vertical interior webs shall be not more than 6 inches (150 mm) apart and spot welded to face sheets a maximum of 5 inches (127 mm) o.c. Place filler between stiffeners for full height of door.

C. Fire Door Cores: A continuous mineral fiberboard core permanently bonded to the inside face of the outer face sheet unless otherwise required to provide fire-protection and temperature-rise ratings indicated.

D. Astragals: As required by NFPA 80 to provide fire ratings indicated. Use split-type astragal where feasible.

E. Top and Bottom Channels: Spot weld metal channels, having a thickness of not less than thickness of face sheet, not more than 6 inches (150 mm) o.c. to face sheets.

1. Reinforce tops and bottoms of doors with inverted horizontal channels of same material as face sheet so flanges of channels are even with bottom and top edges of face sheets.

F. Hardware Reinforcement: Fabricate reinforcing from the same material as door to comply with the following. Offset reinforcement so that faces of mortised hardware items are flush with door surfaces.

1. Hinges and Pivots: 7 gauge (0.167 inch) (4.2 mm) thick by 1-1/2 inches (38 mm) wide by 9 inches (229 mm).
2. Lock Front, Strike, and Flushbolt Reinforcements: 12 gauge (0.093 inch) (2.3 mm) thick by size as required by hardware manufacturer.
3. Lock Reinforcement Units: 14 gauge (0.067 inch) (1.7 mm) thick by size as required by hardware manufacturer.
4. Closer Reinforcements: 12 gauge (0.093 inch) (2.3 mm) thick one piece channel by size as required by hardware manufacturer.
5. Other Hardware Reinforcements: As required for adequate strength and anchorage.
6. In lieu of reinforcement specified, hardware manufacturers recommended reinforcing units may be used.

7. Exit Device Reinforcements: 0.250 inch (6.35 mm) thick by 10 inches (245 mm) high by 4 inches (101 mm) wide centered on exit device case body, unless otherwise recommended by exit device manufacturer.

G. Electrical Requirements: Make provisions for installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replaced.

1. Provide all cutouts and reinforcements required for hollow metal doors to accept security system components.

2. The use of VonDuprin (VON) EPT is mandatory where electrified hinges are scheduled.

a. Hinge Location: Center for doors less than 90 inches (2286 mm) tall or second hinge from door bottom for doors greater than 90 inches (2286 mm); top or bottom electric hinge locations shall not be permitted.

H. Interior Hollow Metal Doors:

1. Typical Interior Doors: Flush design with 18 gauge (0.042-inch-) (1.06-mm-) thick cold-rolled stretcher-leveled steel face sheets and other metal components from hot- or cold-rolled steel sheets.

2. Extra Heavy Use Doors: Flush design with 14 gauge (0.067-inch-) (1.7-mm-) thick cold-rolled, stretcher-leveled steel face sheets and other metal components from hot- or cold-rolled steel sheets. Provide only where indicated.

2.4 FRAMES

A. Fabricate hollow metal frames, formed to profiles indicated, with full 5/8 inch (16 mm) stops, and of the following minimum thicknesses.

1. For interior use, form frames from cold- rolled steel sheet of the following thicknesses:

a. Openings up to and Including 48 Inches (1200 mm) Wide: 16 gauge (0.053 inch) (1.3 mm).
b. Openings More Than 48 Inches (1200 mm) Wide: 14 gauge (0.067 inch) (1.7 mm).

NOTE: For the frames, make provisions for installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replace. Provide all cutouts and reinforcements required for steel frames to accept security system components. Provide welded sheet metal boxes with metal conduit or raceway to permit wiring from electric hinge to other electric door hardware.

B. Provide frames either saw mitered and full (continuously) profile welded, or machine mitered and full (continuously) profile welded, on back side at frame corners and stops with edges straight and true. Grind welds smooth and flush on exposed surfaces.

C. Hardware Reinforcement: Fabricate reinforcements from same material as frame to comply with the following. Offset reinforcement so that faces of mortised hardware items are flush with surface of the frame.

1. Hinges and Pivots: 7 gauge (0.167 inch) (4.2 mm) thick by 1-1/4 inches (32 mm) wide by 10 inches (254 mm).

2. Strike, Surface Mounted Hold Open Arms, and Flushbolt Reinforcements: 12 gauge (0.093 inch) (2.3 mm) thick by size as required by hardware manufacturer.

3. Closer Reinforcements: 12 gauge (0.093 inch) (2.3 mm) thick one piece channel by size as required by hardware manufacturer.

4. Other Hardware Reinforcements: As required for adequate strength and anchorage.

D. Electrical Requirements: Make provisions for installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replaced.

1. Provide all cutouts and reinforcements required for hollow metal frames to accept security system components.

2. Frames with Electric Hinges and Pivots: Provide welded on UL listed back boxes with metal conduit or raceway to permit wiring from electric hinge or pivot to other electric door hardware.

a. Hinge Location: Center for doors less than 90 inches (2286 mm) tall or second hinge from door bottom for doors greater than 90 inches (2286 mm); top or bottom electric hinge locations shall not be permitted.

E. Mullions and Transom Bars for Sidelights, Transoms, and Borrowed Light Frames: Provide closed or tubular mullions and transom bars where indicated. Fasten mullions and transom bars at crossings and to jambs by butt welding. Reinforce joints between frame members with concealed clip angles or sleeves of same metal and thickness as frame.

F. Jamb Anchors: Locate jamb anchors above hinges and directly opposite on strike jamb as required to secure frames to adjacent construction. At metal stud partitions locate the additional jamb anchor below the top hinge.

1. Masonry Construction: Adjustable, corrugated or perforated, anchors to suit frame size; formed of same material and gauge thickness as frame; at non-rated frames use friction fit T-shaped anchors, at rated frames use anchors consisting of spot welded strap and adjustable anchor; with leg not less than 2 inches (50 mm) wide by 10 inches (250 mm) long. Furnish at least the number of anchors per jamb according to the following frame heights:

a. Two anchors per jamb up to 60 inches (1500 mm) in height.
b. Three anchors per jamb from 60 to 90 inches (1500 to 2250 mm) in height.
c. Four anchors per jamb from 90 to 96 inches (2250 to 2400 mm) in height.
d. One additional anchor per jamb for each 24 inches (600 mm) or fraction thereof more than 96 inches (2400 mm) in height.

2. Metal-Stud Partitions: Metal channel stud zee anchor sized to match stud width, welded to back of frames, formed of same material and gauge thickness as frame. Provide at least the number of anchors for each jamb according to the following heights:

a. Three anchors per jamb up to 60 inches (1500 mm) in height.
b. Four anchors per jamb from 60 to 90 inches (1500 to 2250 mm) in height.
c. Five anchors per jamb from 90 to 96 inches (2250 to 2400 mm) in height.
d. One additional anchor per jamb for each 24 inches (600 mm) or fraction thereof more than 96 inches (2400 mm) in height.

3. In-Place Concrete or Masonry: Anchor frame jambs with minimum 3/8-inch- (9-mm-) diameter countersunk flat head bolts into expansion shields or inserts 6 inches (150 mm) from top and bottom of each jamb with intermediate anchors spaced a maximum of 26 inches (650 mm) o.c. Soffit face of frame shall be punched and dimpled to

accept countersunk bolt head. Reinforce frame with spacer to prevent bowing. Bolt head shall be set slightly below soffit face, filled and ground smooth at time of installation.

G. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, formed of same material as frame, 12 gauge (0.093 inch) (2.3 mm) thick, and punched with two holes to receive two (2) 0.375 inch (9.5 mm) fasteners. Where floor fill or setting beds occur support frame by adjustable floor anchors bolted to the structural substrate. Terminate bottom of frames at finish floor surface. Weld floor anchors to frames with at least 4 spot welds per anchor.

H. Head Strut Supports: Provide 3/8-by-2-inch (9-by-50-mm) vertical steel struts extending from top of frame at each jamb to supporting construction above. Bend top of struts to provide flush contact for securing to supporting construction above by bolting, welding, or other suitable anchorage. Provide adjustable wedged or bolted anchorage to frame jamb members to permit height adjustment during installation. Adapt jamb anchors at struts to permit adjustment.

I. Head Reinforcement: For frames more than 48 inches (1200 mm) wide in masonry wall openings, provide continuous steel channel or angle stiffener, 12 gauge (0.093 inch) (2.3 mm) thick for full width of opening, welded to back of frame at head. Head reinforcements shall not be used as a lintel or load bearing member for masonry.

J. Spreader Bars: Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions to serve as bracing during shipment and handling and to hold frames in proper position until anchorage and adjacent construction have been completed.

K. Door Silencer Holes: Drill strike jamb stop to receive three silencers on single door frames and for two silencers on double door frames. Insert plastic plugs in holes to keep holes clear during installation.

L. Plaster Guards and Removable Access Plates: Provide 26 gauge (0.016-inch-) (0.4-mm-) thick plaster guards or dust-cover boxes of same material as frame, welded to frame at back of hardware cutouts to close off interior of openings and prevent mortar or other materials from obstructing hardware operation. Provide removable access plates in the heads of frames to receive overhead concealed door closers.

2.5 STOPS AND MOLDINGS

A. Provide continuous stops and moldings around glazed panels where indicated.

B. Form fixed stops and moldings integral with frame, on the exterior (non-secured) side of the frame.

C. Provide removable stops and moldings formed of 20 gauge (0.032-inch-) (0.8-mm-) thick steel sheets matching hollow metal frames. Secure with countersunk oval head machine screws spaced uniformly not more than 12 inches (300 mm) o.c. Form corners with butted or mitered hairline joints.

D. Coordinate rabbet width between fixed and removable stops with type of glass or panel and type of installation indicated.

2.6 HOLLOW METAL FRAMES

A. Provide hollow metal door frames to be used as both door buck and trim, formed to profiles shown, of minimum **16 gauge** (0.053 inch) (1.3 mm) thick cold rolled steel.

1. Frames shall be splined, tabbed, and miter fit, knockdown type compatible with adjacent construction conditions.

2. Accurately machine, file, and fit exposed connections with hairline joints.

3. Frame Anchorage: Jamb requirements for installation will be fastened from back with screws to stud framing and into floor.

4. Miter and anchorage type subject to acceptance of Architect.

B. Mortise, reinforce, drill and tap frames for mortise type hardware. Provide internal reinforcement for surface type hardware which is to be field drilled and tapped per requirements hereinbefore specified for welded frames and including silencers. Locate hardware in frames to match location specified and in accordance with the hardware schedule and templates.

NOTE: For any storefront doors, the following is required:
6” stiles, 12” bottom rail, 6” top rail, 6” middle lock rail, top and bottom rods to be surface or internal mounted, glass color will match adjacent existing glass. Use LCN Closure 4040 XP.

2.7 FABRICATION

A. Fabricate doors and frames rigid, neat in appearance, and free of defects, warp, wave, and buckle. Accurately form metal to sizes and profiles indicated. Accurately machine, file, and fit exposed connections with hairline joints. Weld exposed joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

B. Exposed Fasteners: Provide countersunk flat heads for exposed screws and bolts, unless otherwise indicated.

C. Hardware Preparation: Prepare doors and frames to receive hardware, including cutouts, reinforcement, mortising, drilling, and tapping, according to final hardware schedule and templates provided by hardware supplier. Secure reinforcement by spot welding. Comply with applicable requirements of ANSI/BHMA A156.115 and A156.115W specifications for door and frame preparation for hardware. Factory reinforced doors and frames to receive surface-applied hardware. Factory drill and tap for surface-applied hardware, except at push plates and kick plates provide reinforcing only.

1. Locate hardware according to HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames" or otherwise directed by LAWA.

2.8 STEEL SHEET FINISHES

A. General: Clean, treat and prime surfaces of fabricated hollow metal door and frame work, inside and out, whether exposed or concealed in the construction.

B. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale, shavings, filings, and rust, if present, complying with SSPC-SP 3, "Power Tool Cleaning,"

C. Factory Priming for Field-Painted Finish: Apply shop primer immediately after surface preparation and pretreatment. Apply a sufficient number of coats, baked on, to obtain uniformly smooth exposed surfaces. Touch up surfaces having runs, smears, or bare spots.

1. Shop Primer: Manufacturer's or fabricator's standard, fast-curing, corrosion-inhibiting, lead- and chromate-free, universal primer complying with ANSI A250.10 acceptance criteria; compatible with substrate and field-applied finish paint system indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install doors and frames according to the referenced standards, the Architect reviewed shop drawings, and manufacturer's written recommendations and installation instructions.

B. Frames: Install frames where indicated. Extend frame anchorages below fills and finishes. Coordinate the installation of built-in anchors for wall and partition construction as required with other work.

1. Frames: Install frames in locations shown, in perfect alignment and elevation, plumb, level, straight and true, and free from rack.

2. Welded Frames:

a. Set masonry anchorage devices where required for securing frames to in-place concrete or masonry construction.
(1) Set anchorage devices opposite each anchor location as specified and anchorage device manufacturer's written instructions. Leave drilled holes rough, not reamed, and free of dust and debris.

b. Placing Frames: Set frames accurately in position; plumb; align, and brace securely until permanent anchors are set.
(1) At concrete or masonry construction, set frames and secure in place with machine screws and masonry anchorage devices. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
(2) Anchor bottom of frames to floors through floor anchors with threaded fasteners.
(3) Fire rated doors and frames will not be modified, or field spliced in field.
(4) Remove spreader bars only after frames are properly set and secured. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

3. At fire-rated openings, install frames according to NFPA 80.

4. Existing Frames (Salvaged from Alteration Work): Install salvaged existing frames in locations indicated.

C. Doors:

1. Non-Fire Rated Doors: Fit non-fire-rated doors accurately in their respective frames, with the following clearances:

a. Jambs and Head: 1/8 inch minimum – 3/16 inch maximum.
b. Meeting Edges, Pairs of Doors: 1/8 inch – 3/16 inch maximum.
c. Bottom: 3/8 inch (9 mm), if no threshold or carpet.

d. Bottom: 1/8 inch (3 mm), at threshold or carpet.

2. Fire-Rated Doors: Install with clearances as specified in NFPA 80.

3. Smoke Control Doors: Install according to NFPA 105.

4. Existing Doors (Salvaged from Alteration Work): Install salvaged existing doors in locations indicated.

D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturers written instructions.

1. Secure stops with countersunk flat or oval head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (50 mm) o.c. from each corner.

E. Apply hardware in accordance with hardware manufacturer's instructions. Drill and tap for machine screws as required. Do not use self-tapping sheet metal screws. Adjust door installation to provide uniform clearance at head and jambs, and to contact stops uniformly. Adjust hardware items just prior to final inspection. Leave work in complete and proper operating condition.

1. Field cut existing hollow metal doors and frames indicated to receive new hardware. Field cutting shall be executed in a workmanlike manner and shall not void the existing door and frame labeling.

3.2 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items just before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including doors or frames that are warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

C. Remove and replace defective work, including doors or frames that are warped, bowed, or otherwise defective.

D. Institute protective measures required throughout the remainder of the construction period to ensure that hollow metal doors and frames will be without damage or deterioration, at time of substantial completion.

END OF SECTION 08 11 13

SECTION 08 11 19 - STAINLESS-STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stainless-steel, hollow-metal doors.
2. Stainless-steel, hollow-metal frames.

NOTE: The integration of the existing LAWA Security System into the steel door and frame work may be required. The Contractor shall be responsible for the total and complete coordination of the security system components of the work.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

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

NOTE: Reveals will not exceed 3/16 inch, and be no less than 1/8 inch minimum. This includes storefront, stainless steel, and hollow metal.

C. Samples for Verification:

1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches (75 by 125 mm).
2. Doors: Include section of vertical-edge, top, and bottom construction; core construction; glazing; and hinge and other applied hardware reinforcement.
3. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.

D. Schedule: Provide a schedule of stainless-steel, hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with a door hardware schedule.

1.3 INFORMATIONAL SUBMITTALS

A. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of stainless-steel, hollow-metal door and frame assembly.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain stainless-steel, hollow-metal work from single source from single manufacturer.

B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

2. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450ºF (250ºC) above ambient after 30 minutes of standard fire-test exposure.

C. Smoke- and Draft-Control Door Assemblies: At corridors, smoke barriers, and smoke partitions, provide assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies that are listed and labeled, by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9. Label each individual glazed lite. Install in compliance with NFPA 80.

E. Pre-installation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

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

B. Shipping Spreaders: Deliver welded frames with two removable spreader bars across bottom of frames, tack welded or mechanically attached to jambs and mullions.

C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch- (100-mm-) high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber.

1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

1.6 PROJECT CONDITIONS

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

1.7 COORDINATION

A. Coordinate installation of anchorages for stainless-steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 STAINLESS-STEEL DOORS AND FRAMES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Ambico Limited.
2. Ceco Door Products; an ASSA ABLOY Group company.
3. CURRIES Company; an ASSA ABLOY Group company.
4. Door Components Inc. DCI

NOTE: Make provisions for installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replace. Provide all cutouts and reinforcements required for steel doors to accept security system components.

2.2 STAINLESS-STEEL DOORS

A. Description: Stainless-steel doors, not less than 1-3/4 inches (44 mm) thick, of seamless, hollow-metal construction. Construct doors with smooth, flush surfaces without visible joints or seams on faces.

1. Face Sheets: Fabricate from 0.078-inch- (1.98-mm-) thick, stainless-steel sheet.
2. Core Construction: Fabricate doors with core indicated.
    a. Welded Steel-Stiffened Core: vertical stiffeners extending full-door height, spaced not more than 6 inches (152 mm) apart, spot welded to face sheets a maximum of 5 inches (127 mm) o.c. Fill spaces between stiffeners with mineral-fiber insulation.
    b. Laminated Core: foam-plastic insulation fastened to face sheets with waterproof adhesive.
    c. Fire-Rated Door Core: As required to provide fire-protection and temperature-rise ratings indicated. Provide stiffeners in a manner which will not compromise the required fire rated construction of the door leaf and assembly.
3. Vertical Edges for Single-Acting Doors: Beveled 1/8 inch in 2 inches (3 mm in 50 mm).
4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch (54-mm) radius.
5. Moldings for Glazed Lites in Doors: 0.038-inch- (0.95-mm-) thick stainless steel.
6. Loose Stops for Glazed Lites in Doors: 0.038-inch- (0.95-mm-) thick stainless steel.

7. Top and Bottom Channels: Closed with continuous channels, 0.062-inch- (1.59-mm-) thick stainless steel.
    a. Securely fastened using adhesive.
8. Hardware Reinforcement: Fabricate according to ANSI/NAAMM-HMMA 866 with reinforcing plates from stainless steel.
9. Electrical Hardware Enclosures: Provide enclosures and junction boxes within doors for electrically operated door hardware, interconnected with UL-approved, 1/2-inch- (12.7-mm-) diameter conduit and connectors.
    a. Where indicated for installation of wiring, provide access plates to junction boxes, fabricate from same material and thickness as face sheet and fasten with at least four security fasteners spaced not more than 6 inches (152 mm) o.c.

B. Performance: Level A, ANSI A250.4.

C. Materials:
1. Stainless-Steel Sheet: ASTM A240/A240M, austenitic stainless steel, Type 304 or 316 as indicated.
2. Steel Sheet: ASTM A1008/A1008M or ASTM A1011/A1011M, Commercial Steel (CS), Type B.
3. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
4. Foam-Plastic Insulation: Manufacturer's standard polystyrene board insulation with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84. Enclose insulation completely within door.
5. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers.

D. Stainless-Steel Finishes:
1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
    a. Run grain of directional finishes with long dimension of each piece.
    b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
    c. Directional Satin Finish: No. 4.

2.3 STAINLESS-STEEL PANELS

A. Provide stainless-steel panels of same construction, materials, and finish as specified for adjoining stainless-steel doors.

NOTE: Make provisions for installation of electrical items specified elsewhere; arrange so wiring can be readily removed and replace. Provide all cutouts and reinforcements required for steel doors to accept security system components. Provide welded on sheet metal boxes with metal conduit or raceway to permit wiring from electric hinge to other electric door hardware.

2.4 STAINLESS-STEEL FRAMES

A. Description: Fabricate stainless-steel frames of construction indicated, with faces of corners mitered and contact edges closed tight.

1. Door Frames: Saw mitered and full (continuously) welded.
    a. Weld frames according to HMMA 820.
2. Sidelight Transom and Borrowed-Light Frames: Saw mitered and full (continuously) welded.
3. Door Frames for Openings 48 Inches (1219 mm) Wide or Less: Fabricate from 0.078-inch- (1.98-mm-) 0.109-inch- (2.78-mm-) thick, stainless-steel sheet.
4. Door Frames for Openings More Than 48 Inches (1219 mm) Wide: Fabricate from 0.109-inch- (2.78-mm-) thick, stainless-steel sheet.
5. Borrowed-Light Frames: Fabricate from 0.078-inch- (1.98-mm-) thick, stainless-steel sheet.
6. Sidelight and Transom Frames: Fabricate from stainless-steel sheet of same thickness as adjacent door frame.
7. Glazing and Panel Stops: Formed integral with stainless-steel frames, minimum 5/8 inch (16 mm) high, unless otherwise indicated.
8. Loose Stops for Glazed Lites and Panels: 0.038-inch- (0.95-mm-) thick stainless steel.
9. Hardware Reinforcement: Fabricate according to ANSI/NAAMM-HMMA 866 with reinforcing plates from stainless steel.
10. Head Reinforcement: 0.109-inch- (2.78-mm-) thick, stainless-steel channel or angle stiffener for openings widths more than 48 inches (1219 mm).
11. Jamb Anchors:
    a. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.062-inch- (1.59-mm-) thick stainless steel with corrugated or perforated straps not less than 2 inches (50 mm) wide by 10 inches (250 mm) long; or wire anchors not less than 0.156 inch (4.0 mm) thick.
    b. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.050-inch- (1.27-mm-) thick stainless steel.
    c. Compression Type for Slip-on Frames: Fabricate adjustable compression anchors from stainless steel.
    d. Post-installed Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch- (9.5-mm-) diameter, stainless-steel bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
12. Floor Anchors: Not less than 0.078-inch- (1.98-mm-) thick stainless steel, and as follows:
    a. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

b. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch (50-mm) height adjustment. Terminate bottom of frames at finish floor surface.

13. Ceiling Struts: Minimum 3/8-inch-thick by 2-inch- (9.5-mm-thick by 50-mm-) wide from stainless steel.

14. Plaster Guards: Not less than 0.019-inch- (0.48-mm-) thick stainless steel.

B. Performance: Level A, ANSI A250.4.

C. Materials:

1. Stainless-Steel Sheet: ASTM A240/A240M, austenitic stainless steel, Type 304 or 316 as indicated.

2. Steel Sheet: ASTM A1008/A1008M or ASTM A1011/A1011M, Commercial Steel (CS), Type B.

3. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

4. Frame Anchors: Stainless-steel sheet. Same type as door face.

5. Frame Anchors: Steel sheet, hot-dip galvanized according to ASTM A153/A153M, Class B.

6. Inserts, Bolts, and Anchor Fasteners: Stainless-steel components complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F738M and ASTM F836M, Alloy Group 1 or 4) for bolts and nuts.

7. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

D. Finishes:

1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.

2. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.

a. Run grain of directional finishes with long dimension of each piece.
b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
c. Directional Satin Finish: No. 4.

2.5 ACCESSORIES

A. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

B. Grout: Comply with ASTM C476, with a slump of not more than 4 inches (102 mm) as measured according to ASTM C143/C143M.

C. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

D. Mineral Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers.

2.6 FABRICATION

A. Stainless-Steel Door Fabrication: Stainless-steel doors to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal.

1. Seamed Edge Construction: Both vertical door edges joined by visible, continuous interlocking seam (lock seam) full height of door.

2. Seamed Edge Construction: Both vertical door edges joined by visible seam that is projection, spot, or tack welded on inside edges of door at minimum 6 inches (152 mm) o.c.

3. Seamless Edge Construction: Door face sheets joined at vertical edges by continuous weld extending full height of door; with edges ground and polished, providing smooth, flush surfaces with no visible seams.

4. Exterior Doors: Close top edges flush and seal joints against water penetration. Provide weep-hole openings in bottom of exterior doors to permit moisture to escape.

5. Stops and Moldings: Factory cut openings in doors. Provide stops and moldings around glazed lites. Form corners of stops and moldings with butted or mitered hairline joints.

    a. Glazed Lites: Provide fixed stops and moldings welded on secure side of door.
    b. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

6. Hardware Preparation: Factory prepare stainless-steel doors to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Section 087100 "Door Hardware."

    a. Reinforce doors to receive non-templated mortised and surface-mounted door hardware.

7. Locate hardware as indicated, or if not indicated, according to HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."

8. Tolerances: Fabricate doors to tolerances indicated in ANSI/NAAMM-HMMA 866.

B. Stainless-Steel Frame Fabrication: Fabricate stainless-steel frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

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

2. Mullions Rails and Transom Bars: Provide closed tubular members with no visible face seams or joints. Fasten members at crossings and to jambs by butt welding according to joint designs in HMMA 820.

    a. Provide false head member to receive lower ceiling where frames extend to finish ceilings of different heights.

3. Provide countersunk, flat-, or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.

5. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
        (1) Two anchors per jamb up to 60 inches (1524 mm) in height.
        (2) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) in height.
        (3) Four anchors per jamb from 90 to 96 inches (2286 to 2438 mm) in height.
        (4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof more than 96 inches (2438 mm) in height.
    b. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:
        (1) Three anchors per jamb up to 60 inches (1524 mm) in height.
        (2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) in height.
        (3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) in height.
        (4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches (610 mm) or fraction thereof more than 96 inches (2438 mm) in height.
        (5) Two anchors per head for frames more than 42 inches (1066 mm) wide and mounted in metal-stud partitions.
    c. Compression Type: Not less than two anchors in each jamb.
    d. Post-installed Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.

6. Head Reinforcement: For frames more than 48 inches (1219 mm) wide, provide continuous head reinforcement for full width of opening, welded to back of frame at head.

7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

8. Stops and Moldings: Provide stops and moldings around glazed lites and solid panels where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

a. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of door or frame.
b. Multiple Glazed Lites: Provide fixed and removable stops and moldings such that each lite is capable of being removed independently.
c. Coordinate rabbet width between fixed and removable stops with type of glazing or panel and type of installation indicated.

9. Hardware Preparation: Factory prepare stainless-steel frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Section 087100 "Door Hardware."

a. Reinforce frames to receive non-templated mortised and surface-mounted door hardware.
b. Locate hardware as indicated, or if not indicated, according to HMMA 831, "Recommended Hardware Locations for Custom Hollow Metal Doors and Frames."

10. Plaster Guards: Weld guards to frame at back of hardware mortises and mounting holes in frames to be grouted.

11. Tolerances: Fabricate frames to tolerances indicated in ANSI/NAAMM-HMMA 866.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stainless-steel doors and frames.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations of stainless-steel, door-frame connections before frame installation.

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

3.2 PREPARATION

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

B. Prior to installation and with installation spreaders in place, adjust and securely brace stainless-steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

1. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.

2. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.

3. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

4. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive non-templated mortised and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install stainless-steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with ANSI/NAAMM-HMMA 866 and manufacturer's written instructions.

B. Stainless-Steel Frames: Install stainless-steel frames of size and profile indicated.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

   a. At fire-protection-rated openings, install frames according to NFPA 80.
   b. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
   c. Install frames with removable glazing stops located on secure side of opening.
   d. Install door silencers in frames before grouting.
   e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
   f. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
   g. Apply corrosion-resistant coating to backs of grout-filled frames.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with post-installed expansion anchors.

   a. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors, if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.

4. In-Place Concrete or Masonry Construction: Secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

5. In-Place Gypsum Board Partitions: Secure frames in place with post-installed expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

6. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.

7. Grouted Frames: Solidly fill space between frames and substrate with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.

8. Installation Tolerances: Adjust stainless-steel frames for squareness, alignment, twist, and plumb to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Stainless-Steel Doors: Fit non-fire-rated doors accurately in frames with the following clearances:

1. Non-Fire-Rated Doors:

    a. Jambs and Head: 1/8 inch (3 mm) precisely.
    b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) precisely.
    c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).
    d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch (19 mm).

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

3. Smoke-Control Doors: Install doors according to NFPA 105.

D. Glazing: Install glazing in sidelights, transoms, and borrowed lights to comply with installation requirements in Section 08 80 00 "Glazing."

1. Secure stops with countersunk, flat-, or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c., and not more than 2 inches (50 mm) o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work including stainless-steel doors or frames that are warped, bowed, or otherwise unacceptable.

B. Clean grout and other bonding material off stainless-steel doors and frames immediately after installation.

C. Stainless-Steel Touchup: Immediately after erection, smooth any abraded areas of stainless steel and polish to match undamaged finish.

END OF SECTION 08 11 19

SECTION 08 31 13 – ACCESS PANELS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes:

1. Access panels required for access to concealed equipment and assemblies.

1.2 SUBMITTALS

A. Data: Submit the following manufacturer product data.

1. For each type of door and frame indicated, including compliance with Code requirements for those in fire-resistive assemblies.
2. Include construction details relative to materials, individual components and profiles, finishes, and fire ratings for access doors and frames.
3. Supplement with shop drawings where required to show special installation conditions.

B. Mockup of 12” x 12” door and frame with FSIC locking mechanism.

C. Samples: Submit samples for each door face materials, at least 3 by 5 inches, in specified finish.

D. Schedule: Submit complete door and frame schedule, including types, general locations, sizes, construction details, latching or locking provisions, and other data pertinent to installation.

E. Closeout: Deliver keys properly tagged to the Owner.

1.3 QUALITY ASSURANCE

A. All access panels for the Project shall be made by the same manufacturer.

B. In fire-resistive construction, provide fire-resistive assemblies bearing the label of a testing agency acceptable to the Building Department for the fire resistance indicated.

PART 2 - PRODUCTS

2.1 ACCESS PANELS

A. General: Provide trimless, stainless steel units prepared to accept cylinder lock specified in Section 08 71 00.

B. Manufacturers: Basis of design is for Nystrom products. Equal products by one of the following manufacturers will be acceptable if approved by the Owner.

1. Elmdor Manufacturing Co.
2. JL Industries
3. Karp Associates, Inc.
4. Milcor.
5. Williams Brothers Corp.

C. Models:

1. In non-rated gypsum board surfaces, except as specified below: Nystrom Type NW.
    a. Material: Commercial grade cold-rolled steel with 16 gauge (0.053 inch) frame and 14-gauge (0.067 inch) door.
    b. Trim: 22-gauge (0.0299 inch) steel drywall bead.
2. In fire-rated gypsum board surfaces, except as specified below: Nystrom Type IT.
    a. Material: Commercial grade cold-rolled steel with 16-gauge (0.053 inch) frame and 14-gauge (0.067 inch) door.
    b. Insulation: 2-inch thick fire-resistive insulation sandwiched between the faces.
    c. Trim: 1 in. wide exposed flange at tile installation and 22-gauge (0.0299 inch) steel drywall bead, as required by job conditions.
3. Toilet Room walls and ceilings (non-rated): Nystrom Type NT.
    a. Material: Stainless steel, 16-gauge (0.053 inch) frame and 14-gauge (0.067 inch) door.
    b. Trim: 1 in. wide exposed flange at tile installation and 22-gauge (0.0299 inch) steel drywall bead, as required by job conditions.
4. Toilet Room walls and ceilings (fire-rated): Nystrom Type IT.
    a. Material: Stainless steel, 16-gauge (0.053 inch) frame and 14-gauge (0.067 inch) door.
    b. Insulation: 2-inch thick fire-resistive insulation sandwiched between the faces.
    c. Trim: 1 in. wide exposed flange at tile installation and 22-gauge (0.0299 inch) steel drywall bead, as required by job conditions.
5. Size: Unless otherwise indicated on the Drawings and approved by LAWA PDG and FTSD Management, provide 30-inch square or larger opening where a service person needs to enter the space accessible through the access door or panel; elsewhere not less than 12-inch square.

2.2 MATERIALS

A. General:

1. Provide sheet metal selected for its surface flatness, smoothness and freedom from surface blemishes where exposed to view in the finished unit.
2. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, variations in flatness exceeding those permitted by referenced standards for stretcher-leveled metal sheet, stains, discoloration or other imperfections.

B. Steel sheet: Commercial quality cold-rolled carbon steel sheet, stretcher-leveled, complying with the following requirements at the fabricator's option.

1. Electrolytic zinc-coated steel sheet: ASTM A591, with Class C zinc coating; chemically treated in mill with phosphate solution and light chromate rinse.
2. Cold-rolled steel sheet: ASTM A1008

C. Stainless steel sheet: ASTM A167, Type 302 or 304, stretcher-leveled.

D. Hardware:

1. Hinges: Concealed spring hinges or concealed continuous piano hinge set to open 175-degree. For fire-resistive units, provide self-closing mechanism.

2. Locking device: Shall accept LAWA standard Full Size Interchangeable Core (FSIC) format (less core). Locking device is required to hold door in flush, smooth plane when closed. Keying shall match existing.

   a. Provide a minimum of (1) one cylinder lock for doors up to 24 in. x 24 in. and (2) two cylinder locks for doors greater than 24 in. tall. Furnish (2) two keys per lock. Key all locks alike, unless otherwise noted.
   b. For locks on panels 30 inches or larger in any dimension, provide interior latch mechanism to allow door to be opened from the inside without a key.

2.3 FABRICATION

A. Fabricate to profiles indicated without exposed cut edges.

B. Produce flat, flush surfaces without cracking and grain separation at bends.

C. Continuously weld exposed joints and seams; grind, fill, and dress welds to produce smooth flush exposed surfaces in which welds are invisible after final finishing is completed.

D. Prepare doors to accept cylinder locks.

E. Finish:

1. When installed in ceramic tile surfaces, provide stainless steel panels finished with a NAAMM No. 4 (brushed) finish.

2. Elsewhere provide access panels with a baked-on rust-inhibitive primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine adjacent construction and supports.

B. Verify that openings are properly framed, within allowable tolerances, plumb, level, clean, will provide a solid anchoring surface, and that other conditions detrimental to the proper or timely completion of this work are corrected before proceeding with installation.

3.2 INSTALLATION

A. Install at indicated locations, plumb, level, and square with adjacent construction.

B. Attached assemblies securely to supports.

C. When installed in ceramic tile surfaces, coordinate panel location with the tile work so that the panel will align and fit within the tile module with no tile cutting, or a minimum of cutting.

3.3 FIELD QUALITY CONTROL

A. Adjust hardware so the panels operate freely, but not loosely, without sticking or hinge binding, with hardware adjusted and functioning properly.

END OF SECTION 08 31 13

SECTION 08 42 29 - SLIDING AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following types of automatic entrances:

B. Exterior and interior, single slide and bi-parting, sliding automatic entrances, heavy duty. Related Sections:

1. Division 7 Sections for caulking to the extent not specified in this section.
2. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrances furnished and installed separately in Division 8 Section.
3. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.
4. Division 8 Section Glazing for materials and installation requirements of glazing for automatic entrances.
5. Division 26 Sections for electrical connections provided separately, including conduit and wiring, for power to sliding automatic entrances.

1.3 REFERENCES

A. References: Refer to the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 – Accessible and Usable Building and Facilities
2. ICC/IBC – International Building Code
3. NFPA 70 – National Electrical Code
4. NFPA 101 – Life Safety Code

B. American National Standards Institute (ANSI) / Builders' Hardware Manufacturers Association (BHMA).

1. ANSI/BHMA A156.10: American National Standard for Power Operated Pedestrian Doors.
2. ANSI Z97.1: Standards for Safety Glazing Material Used in Buildings.

C. Underwriters Laboratories (UL).

1. UL 325 – Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

D. American Association of Automatic Door Manufacturers (AAADM).

E. American Society for Testing and Materials (ASTM).

1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

F. American Architectural Manufacturers Association (AAMA).

1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

G. National Association of Architectural Metal Manufacturers (NAAMM).

1. Metal Finishes Manual for Architectural and Metal Products.

1.4 DEFINITIONS

A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.

1. Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

B. Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

1.5 PERFORMANCE REQUIREMENTS

A. General: Provide doors that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.

1. Automatic sliding door assemblies shall include but not limited to, heavy-duty aluminum frame type automatic doors, sidelites, framing, operator, actuation system, safety beams, wiring, sealant, and other related accessories.

2. Any parts, components, or sub-assemblies not specifically mentioned herein but necessary for a complete unit, ready for immediate usage, shall be included.

3. All equipment and parts supplied shall be new and unused.

4. Electric operating mechanism shall be belt driven by DC electric motor and mechanical gear assembly. Hydraulic, pneumatic, chain type drive, linear drive entrances shall not be accepted.

5. Sliding automatic entrance doors shall be the Besam SL500 (Basis of Design).

B. Compliance:

1. ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.

2. UL 325 listed.

C. Automatic door equipment shall accommodate heavy pedestrian traffic.

D. Automatic Door equipment accommodates up to the following weights for active leaf doors:

1. Bi-part doors: 300 lbs (136 kg) per active breakout leaf.

2. Single doors: 300 lbs (136 kg) per active breakout leaf.

E. Operating Temperature Range: -30° F to 122° F (-35° C to 50° C).

F. Entrapment Force Requirements:

1. Power Operated Sliding Doors: Not more than 30 lpf (133 N) required to prevent stopped door from closing.

2. Sliding doors provided with a breakaway device shall require no more than 50 lpf (222 N) applied 1 inch (25 mm) from the leading edge of the lock stile for the breakout panel to open.

1.6 SUBMITTALS

A. Comply with Division 01 – Submittal Procedures.

B. Product Data: Submit manufacturer's product data sheets and standard details for automatic entrance doors, including installation details, fabrication, finishing hardware, operators, accessories, and other components of the work. Include rough-in diagrams, wiring diagrams, parts lists, and maintenance instructions, as well as certified test data (where required).

C. Templates and Diagrams: Furnish templates, diagrams, and other data to fabricators and installers of related work, as needed for coordination of automatic entrance installation.

D. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections and details, indicating dimensions, materials, and fabrications of doors, frames, sidelites, operator, motion/presence sensor control device, anchors, joint system, expansion provisions, hardware, finish, and other components not included in manufacturer's standard data. Include glazing details (where required).

E. Samples: Submit manufacturer's samples of aluminum finish and glazing.

F. Informational Submittals: Manufacturer's product information and applicable sustainability program credits that are available to contribute towards a LEED rated project certification.

1. Credit MR 4.1 and 4.2: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and pre-consumer recycled content by weight for each Product specified under this Section.

G. Manufacturers Field Reports: Submit manufacturer's field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA A156.10 after completion of installation.

H. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door opening installation in quantity as required in Division 1, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion on the installation test to include spare parts list.

I. Repair and Parts Manuals: Contractor shall provide all factory published literature that is related to the door units and associated components, shall include but not be limited to; fully illustrated parts list, installation and setup procedures, operation manual, troubleshooting manual, AS BUILT schematics and diagrams, and factory repair manuals.

J. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 10 years documented experience installing and maintenance of units similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1. Certified Inspector Qualifications: Certified by AAADM.

B. Manufacturer Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance

1. A manufacturer with company certificate issued by AAADM.

C. Source Limitations for Automatic Entrances: Obtain each type of door, frame, operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated. Manufacturer shall have in place a national service dispatch center providing 24 hours a day, 7 days a week, emergency call back service.

D. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of automatic entrance door assemblies and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

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

F. Emergency Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrances serving as a required means of egress.

1.8 PROJECT CONDITIONS

A. Field Measurements: General Contractor shall verify openings to receive automatic entrance door assemblies by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Mounting Surfaces: General Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.

C. Other trades: General Contractor shall advise of any inadequate conditions or equipment.

1.9 COORDINATION

A. Coordinate sizes and locations of recesses in concrete floors for recessed tracks and thresholds if applicable. Concrete, reinforcement and formwork are specified in Division 03.

B. Templates: Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic entrances to comply with indicated requirements.

C. Electrical System Roughing-in: Coordinate layout and installation of automatic entrance door assemblies with connections to power supplies and access control system as applicable.

1.10 INSPECTION

A. Contractor shall examine the areas and conditions under which automatic doors are to be installed and notify the LAWA designee in writing of conditions detrimental to the proper and timely completion of work. Upon final installation, Contractor shall provide inspection

by a certified AAADM inspector. Inspection shall be verified with a checklist provided by the inspector to ensure compliance with applicable ANSI standards.

1.11 INSTALLATION WORKMANSHIP

A. Comply with manufacturer's specifications and recommendations.

B. Set track and operator plumb, level and true to line, without warp or rack of doors. Anchor securely in place. Isolate aluminum and other materials from sources of electrolysis.

C. Install complete door operator system in accordance with manufacturer's instructions, including drive mechanism, controls, and control switches.

D. All work shall be performed in a safe, professional workmanlike manner. Final adjustments of all components and safeties shall be made before contractor leaves the job site. The contractor shall certify that all safeties are adjusted and tested according to building and safety codes. All work shall be under the direction of the LAWA designee.

1.12 WARRANTY

A. Automatic Entrances shall be free of defects in material and workmanship for a period of one (2) year from the date of substantial completion. Contractor shall provide a full warranty covering all parts, service, materials and labor for the provided door(s). Warranty shall start at time of acceptance of the work by the Los Angeles World Airports designee, for each individual door installed.

B. During the warranty period the Owner shall engage a factory-trained technician to perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Owner.

C. Contractor shall respond and be onsite within four (4) hours of notification, for all warranty repair calls, on a 24-hours a day, seven days a week basis including all holidays, at no charge to Los Angeles World Airports. The contractor shall supply and maintain a 24-hour telephone number with the Los Angeles World Airports' Mechanical Repair Shop.

D. Service intervals shall be consistent with the manufacture's recommendations. Doors will have an AAADM inspection (by a certified inspector) and PM performed every 6 months during the service warranty period.

1.13 SPECIAL FINISH WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warrant does not include normal weathering. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: ASSA ABLOY Entrance Systems.

2.2 SLIDING AUTOMATIC ENTRANCES

A. Model: Besam SL500 sliding automatic doors. (Basis of Design):

1. Biparting aluminum doors and frames with sidelites and active door leaves.

2. Overhead concealed, electro-mechanical, microprocessor controlled, sliding door operator.

3. Operator housing, guide system and door carriers.

4. Door packages shall be single breakaway style, (O-SX-SX-O) unless specified otherwise.

2.3 AUTOMATIC ENTRANCE DOOR ASSEMBLIES

A. General: Provide manufacturer's standard automatic entrance door assemblies including doors, sidelights, framing, headers, carrier assemblies, roller tracks, door operators, activation and safety devices, and accessories required for a complete installation.

B. The sliding leaves shall convert to swinging panels and shall swing out from any point of slide travel to a position of 90 degrees or greater, when pressure is applied to the middle of the door at the leading edge stile. The leaves shall comply with NFPA Standard 101 and ANSI/BHMA A156.10.

C. The fixed side-lite panel shall be installed to the interior of the swing-slide panel.

D. The emergency breakaway function shall immediately disable the door operation until manually reset. A switch shall be installed in the side-lite to stop automatic operation when opened.

E. An electrical power cut off device shall restore power to the operator when the sliding panel is reset. In addition, when the door is broken out, an audible piezo type alarm shall sound until the door is resort or power is shut off. A waterproof toggle switch shall also be installed to manually control the piezo alarm function.

F. Sliding Automatic Entrances:

1. Bi-Parting Entrances:

2. Configuration: Two sliding leaves and two full sidelights.

3. Traffic Pattern: Two-way.

4. Emergency Breakaway Capability: Sliding leaves only.

5. Mounting: Between jambs.

G. All sliding doors (and sidelite panels with breakout) shall have hydraulic closers to return the door to the closed position after breakout. Door panels, when in the broken out position, must be capable of being reset without any upward lifting movement of vertical motion, and shall not touch the floor at any point from 0 to 90 degrees travel. Contractor shall demonstrate this function prior to acceptance of the work.

2.4 ALUMINUM DOORS AND FRAMES

A. **Doors and Frames: Extruded Aluminum, Alloy 6063-T5. Sections shall be true to details** and free from any defects impairing strength, durability or appearance.

B. All doors shall have horizontal door extrusions, including optional muntins with the design characteristics to nest or interlock into the intersecting vertical rails to restrict any twisting or movement of the horizontal member that can produce open sightlines and/or compromise the door leaf integrity.

C. Door panels and sidelite panels shall have a minimum 0.125 inch (3.2 mm) structural wall thickness including adjoining horizontal members and perimeter frames where applicable. Any additional sections shall have safety radius corners on all vertical rails.

D. Automatic sliding door assemblies shall include operator, header and track, jambs, sliding doors, threshold and sidelite if required.

2.5 COMPONENTS

1. Framing Members: Manufacturer's standard extruded aluminum reinforced as required to support imposed loads.

2. Nominal Size: 1-3/4 inch by 4-1/2 inch (45 by 115 mm)

3. Concealed Fastening: Framing shall incorporate a concealed fastening pocket, and continuous flush insert cover, extending full length of each framing member.

B. Stile and Rail Doors and Sidelights: Doors and panels shall be supported by a minimum 1-3/4 inch manufacturer's standard 1-3/4 inch (45 mm) thick by 4-1/2 inch glazed doors with extruded-aluminum tubular stile and rail members. Incorporate concealed tie-rods that span full length of top and bottom rails. All corners, including intersections of stiles and rails or stiles and muntin bars, shall be welded secure.

1. Glazing Stops and Gaskets: Glass stops shall have 0.062 inch wall thickness. Exterior entrances shall have non-removable, security-type glazing bead to prevent unauthorized entry. Door utilizing removable exterior stops will not be accepted.

2. Vertical Rails: Door and panel vertical rails shall be medium stile, approximately 4 inches wide. Sliding door panels shall have a means for adjusting the height at which it travels above the floor.

3. Bottom Rail Design: Minimum 10 inch (254 mm) nominal height kick plates built into each door and sidelite leaf. Bottom rails shall be provided with an adjustable nylon sweep.

4. Muntin Bars: Horizontal tubular rail member for each door; 4 inch (108 mm) nominal width.

5. All panels shall include full weather-stripping. Weather-stripping shall be provided by means of replaceable heavy pile mohair. Complementing mohair weather-stripping shall be provided on joining vertical and lead edge stiles. Single pile weather stripping between the carrier and the header on the lead stile(s) of the sidelite(s) and the pivot stile(s) of the sliding door(s).

C. Glazing: Glazing shall be a minimum thickness of 1/4 inch (6 mm) tempered safety glass, insulated and hermetically sealed. Glazing tint shall match the adjacent windows.

D. Headers: A structural header capable of supporting the entire operator and door system in lengths of up to sixteen (16) feet when glazed with 1/4 inch glass without any additional center supports or tie bolts shall be provided. The header shall be able to support the glass and storefront above the doors where applicable. Header shall be fabricated from extruded aluminum and extending full width of automatic entrance door units to conceal door operators, carrier assemblies, and roller tracks. Roller track shall be a replaceable aluminum track. Header shall be complete with continuous hinged or removable access panel with a mechanism to the access panel open during repair, service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

1. Size: 4-1/2 inches wide by 7 inches high. Header height including the replaceable sensor cap which spans the clear door opening width is 8 inches high.

2. Mounting: Concealed, with one side of header flush with framing.

E. Carrier Assemblies and Overhead Roller Tracks: Manufacturer's standard carrier assembly that allows vertical adjustment of at least 1/8 inch (3 mm); consisting of urethane with precision steel lubricated ball-bearing wheels, operating on a continuous roller track. Each leaf shall have a minimum of four (4) 1-7/16" diameter Delrin ball bearing wheels with single journal, sealed oil-impregnated bearings and two (2) self-aligning anti-risers per leaf. Support panels from carrier assembly by load wheels and anti-riser wheels with factory adjusted cantilever and pivot assembly. Minimum load wheel diameter shall be 2-1/2 inch (64 mm); minimum anti-rise roller diameter shall be 2 inch (51 mm).

F. Concealed guides shall stabilize bottom of door. Door construction shall be by means of an integrated corner block with 3/8 inch all-thread through bolt from each stile.

G. Thresholds: Manufacturer's standard thresholds as indicated below:

1. Thresholds, where required, shall be 1/2 inch high by 4-1/2 inch width continuous aluminum threshold.

2. Shall span the entire width of the sliding door header, and fit between the vertical framing members.

3. Threshold design shall allow for optional extruded ramps to securely interlock to flat section to meet ADA requirements.

4. All thresholds to conform to details and requirements for code compliance.

H. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.

I. Signage: Provide signage in accordance with ANSI/BHMA A156.10. The doors shall be clearly marked with a sign reading "IN EMERGENCY PUSH TO OPEN."

2.6 DOOR OPERATORS

A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under heavy traffic load for type of occupancy indicated.

1. The entire door operating mechanism shall be totally removable as a unit from the door header. The operating mechanism shall include the motor, gearbox, electronic circuitry, and transport system.

2. Doors shall be capable of opening within 3 seconds and closing within 4 seconds with an adjustable hold open time of 0 to 60 seconds minimum, speeds shall be field adjustable.

3. Electromechanical Operators: Besam electro-mechanical controlled unit utilizing a high-efficiency, energy efficient, DC motor requiring a maximum of 3 amp current draw, allowing 5 door systems on one (1) 20 amp circuit. The supplied system shall have the capability to operate at full performance well beyond a brown out and high line voltage conditions (85V – 265V) sensing changes and adjusting automatically. The operator shall allow an adjustable hold open time delay of 0 to 60 seconds and have internal software to incorporate a self-diagnostic system.

4. Operation: Power opening and power closing.
5. Features:
6. Adjustable opening and closing speeds.
7. Adjustable back-check and latching.
8. Adjustable braking.
9. Adjustable hold-open time between 0 and 30 seconds.
10. Obstruction recycle.
11. On/Off switch to control electric power to operator.
12. Energy conservation switch that reduces door-opening width.
13. Closed loop speed control with active braking and acceleration.
14. Adjustable obstruction recycle time delay.
15. Self-adjusting stop position.
16. Self-adjusting closing compression force.
17. Onboard sensor power supply.
18. Onboard sensor monitoring.
19. Optional Switch to open/Switch to close operation.
20. Mounting: Concealed.
21. Drive System: Synchronous belt type.

B. A clutch shall be provided to regulate the closing force to a maximum of 30 lbs. as required by ANSI rules and regulations.

C. The operator shall include an electronic sensing device that will reverse the door from closing when a maximum force of approximately 30 lbf (as required by ANSI/BHMA A156.10) is exerted to prevent the door from closing. The reverser shall be field adjustable to meet conditions.

D. Besam factory-adjusted configuration, with opening and closing speeds set to comply with ANSI/BHMA A156.10 requirements. Should the drive train operations deviate from design criteria ranges, Watchdog Control Circuit Monitoring will assume comment of the system and shut down the automatic function allowing a secondary supervisory circuit to perform as a backup.

E. Door Cycle Counter: The units shall have an electronic re-settable cycle counter, with the capacity to count up to one million (1,000,000) cycles. Counter shall have the ability to retain cycle data memory in the event of an electrical interruption. It shall be mounted in the header area for service reference and not be visible or accessible to the general public.

F. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 5 amps.

2.7 ELECTRICAL CONTROLS

A. Electrical Control System: Electrical control system shall include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send

signals to microprocessor controller to define door position and speed. Systems utilizing external magnets and magnetic switches are not acceptable. A single controller shall be capable of controlling up to 2 operators per entrance system.

B. Performance Data: The microprocessor shall collect and store performance data as follows:

1. Counter: A non-resettable counter to track operating cycles.
2. Event Reporting: Unit shall include event and error recording including number of occurrences of events and errors, and cycle count of most recent events and errors.
3. LED Display: Display presenting the current operating state of the controller.
4. Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:
5. Automatic Reset Upon Power Up.
6. Main Fuse Protection.
7. Electronic Surge Protection.
8. Internal Power Supply Protection.
9. Resetable sensor supply fuse protection.
10. Motor Protection, over-current protection.

C. Soft Start/Stop: A “soft-start” “soft-stop” motor driving circuit shall be provided for smooth normal opening and recycling.

D. Obstruction Recycle: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.

E. Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be a software driven handheld interface. The following parameters may be adjusted via the configuration tool.

1. Operating speeds and forces as required to meet ANSI/BHMA A156.10.
2. Adjustable and variable features as specified in 2.6.
3. Reduced opening position.
4. Fail Safe/Secure control.
5. Firmware update.
6. Trouble Shooting
7. I/O Status.
8. Electrical component monitoring including parameter summary.
9. Software for local configuration tool shall be available as a free download from the sliding automatic entrance manufacturer’s internet site. Software shall be compatible

with the following operating system platforms: Palm®, Android®, and Windows Mobile®.

2.8 MOTION DETECTOR

A. Motion Sensors: Motion sensors shall be mounted on each side of door header to detect pedestrians in the activating zone, and to provide a signal to open doors in accordance with ANSI/BHMA A156.10. Units shall be programmable for bi-directional or uni-directional operation and shall incorporate K-band microwave frequency to detect all motion in both directions. Detectors shall be a "BEA" Wizard II motion and presence detector. Detectors located on the outside shall be NEMA 4 rated for all weather conditions.

B. Presence Sensors: Presence sensors shall be provided to sense people or objects in the threshold safety zone in accordance with ANSI/BHMA A156.10. Units shall be self-contained, fully adjustable, and shall function accordingly with motion sensors provided. The sensor shall be enabled simultaneously with the door-opening signal and shall emit an elliptical shaped infrared presence zone, centered on the doorway threshold line. Presence sensors shall be capable of selectively retuning to adjust for objects which may enter the safety zone; tuning out, or disregarding, the presence of small nuisance objects and not tuning out large objects regardless of the time the object is present in the safety zone. The door shall close only after all sensors detect a clear surveillance field.

C. Photoelectric Beams: In addition to the threshold sensor, each sliding door unit shall include a minimum of two (2) doorway photoelectric beams mounted in the vertical rails of the sidelite at heights of 24" and 48". Photoelectric beams shall be pulsed infrared type, including sender receiver assemblies for recessed mounting. Beams shall be monitored by electrical controls for faults and shall fail safe.

2.9 HARDWARE

A. General: Provide units in sizes and types recommended by automatic entrance door and hardware manufacturers for entrances and uses indicated.

B. Emergency Breakaway Feature: Provide release hardware that allows panel(s) to swing out in direction of egress to full 90 degrees from any position in sliding mode. Maximum force to open panel shall be 50 lbf (222 N) according to ANSI/BHMA A156.10. Interrupt powered operation of panel operator while in breakaway mode.

1. Emergency breakaway feature shall include at least one adjustable detent device mounted, in the top of each sliding breakaway panel, and in the top and bottom of each non-sliding breakaway panel, to control panel breakaway force.

2. Wind Resistant Damper: Provide factory installed concealed gas dampers in sliding or non-sliding breakaway panel to protect door panels from wind damage. Dampers shall be designed to slow panel movement after breakout.

C. Deadlocks: No locking required.

D. Control Key Switch: A five way control key switch using a Schlage A 126 keyway shall be installed at all locations with the following options:

1. Off position

2. Hold open position

3. Two-way traffic

4. One way traffic

5. Partial Opening energy saving option allowing door to automatically adjust opening width based on amount of usage, that is, full open during high use and partial open during low use. The control for this setting is programmable allowing adjustment to both the usage setting and the opening width.

E. Power Switch: Sliding automatic entrances shall be fitted with a water-resistant toggle switch on the upper right hand side of the interior door header that disables the door operator and allows for manual movement of doors.

F. Sliding Weather Stripping: Manufacturer's standard replaceable components complying with AAMA 701; made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

G. Weather Sweeps: Manufacturer's standard adjustable nylon brush sweep mounted to underside of door bottom.

2.10 FABRICATION

A. General: Factory fabricates automatic entrance door assembly components to designs, sizes, and thickness indicated and to comply with indicated standards.

1. Form aluminum shapes before finishing.
2. Use concealed fasteners to greatest extent possible.
3. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
4. Reinforce members as required to receive fastener threads.

B. Framing: Provide automatic entrances as prefabricated assemblies.

1. Fabricate tubular and channel frame assemblies with manufacturer's standard mechanical or welded joints. Provide sub-frames and reinforcement as required for a complete system to support required loads.
2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.
3. Form profiles that are sharp, straight, and free of defects or deformations.
4. Prepare components to receive concealed fasteners and anchor and connection devices.
5. Fabricate components with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.

C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

D. Welding: Comply with AWS A5.10/A5.10M - Specification for Bare Aluminum and Aluminum-Alloy Welding Electrodes and Rods.

E. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.

F. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated.

G. Hardware: Factory install hardware to the greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site.

H. Specialty Tools: Contractor shall supply all specialty tool sets that may be needed for maintenance, service and repairs to the completed units supplied.

2.11 ALUMINUM FINISHES

A. General: Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes.

B. The exposed surfaces of the doors shall be anodized to match the surrounding storefront finish. Anodized finishes shall comply with AAMA 611, AA-M12C22A41, Class I, 0.018 mm thick for clear anodizing or AAMA 611, AA-M12C22A44, Class I, 0.018 mm thick for color anodizing.

1. AAMA 606.1

2. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

C. Two (2) coat industrial painted coating may be required to match the surrounding finish. Finish will consist of one (1) coat of primer and one (1) coat of industrial coating per LAWA request. Aluminum extrusions to receive a painted coating shall be mill finish aluminum, painting over anodizing or pre-painted material will not be acceptable (see Special Finish warranty in Warranties).

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine conditions for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrances. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Do not install damaged components. Fit frame joints to produce joints free of burrs and distortion. Rigidly secure non-movement joints.

B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.

2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.

C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

D. Glazing: Performed under Division 8 Section "Glazing" in accordance with sliding automatic entrance manufacturer’s instructions.

E. Sealants: Comply with requirements specified in Division7 Section "Joint Sealants".

3.3 FIELD QUALITY CONTROL

A. Testing Services: Factory Trained Installer shall test and inspect each automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

3.4 ADJUSTING

A. Adjust door operators, controls, and hardware for smooth and safe operation, for tight closure, and complying with requirements in ANSI/BHMA A156.10.

3.5 CLEANING AND PROTECTION

A. Clean glass and aluminum surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish. Comply with requirements in Division 8 Section “Glazing”, for cleaning and maintaining glass.

3.6 TRAINING

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain Sliding Automatic Entrances. Provide minimum of 4 hours each (2 day shifts) of classroom and hands on training to LAWA Facilities and Maintenance personnel.

END OF SECTION 08 42 29

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes door hardware.

> **NOTE:** All door hardware for public rest rooms will be stainless steel, including all hardware for the toilet partitions.

1.2 SUBMITTALS

A. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: Submit samples of exposed door hardware for each type indicated below, in specified finish. Tag with full description for coordination with the Door Hardware Schedule.

1. Door Hardware: As follows:

   a. Locks and latches.
   b. Operating trim.

2. Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

C. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect's review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.

1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

2. Content: Include the following information:

   a. Type, style, function, size, label, hand, and finish of each door hardware item.
   b. Manufacturer of each item.
   c. Fastenings and other pertinent information.
   d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   e. Explanation of abbreviations, symbols, and codes contained in schedule.
   f. Mounting locations for door hardware. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts for hardware. Detail conditions requiring custom extended lip strikes, or other special or custom conditions.
   g. Door and frame sizes and materials.

h. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.
   (1) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.

D. Keying Schedule: Submit keying schedule prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

E. Warranties: Submit special warranties specified in this Section.

F. Fire-Rated Door Assembly Testing: Submit a written record of each fire door assembly to LAWA and to the LADBS for future building inspections.

NOTE: Perform a field survey of each opening prior to submitting shop drawings. Verify the appropriateness of the assigned hardware group for the designated opening.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Supplier Qualifications: Door hardware supplier, who has completed a minimum of three (3) projects over the last 5 years which were similar in material, design and extent to that indicated for the project and which have resulted in construction with a record of successful in service performance, and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Source Limitations: Obtain each type of door hardware from a single manufacturer, unless otherwise indicated.

D. Regulatory Requirements: Comply with the following:

1. Provide hardware items complying with the applicable provisions for accessibility and usability by the disabled and handicapped in compliance with Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG) for Buildings and Facilities.

2. NFPA 101: Comply with applicable provisions for means of egress doors.

3. Electrified Door Hardware: Listed and classified by Underwriter's Laboratories, Inc. or by a testing agency acceptable to authorities having jurisdiction, as suitable for the purpose indicated.

4. LADBS requirements.

E. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by Underwriter's Laboratories, Inc. for fire ratings indicated, based on testing according to NFPA 252. Provide only door hardware items that are identical to items tested by UL for the types and sizes of doors required. In case of conflict between

type of hardware specified and type required for accessibility or fire protection, furnish type required by NFPA and UL. Doors indicated in fire rated partitions and walls shall be positive latching and self-closing, with smoke gaskets where required by applicable codes.

1. Wherever exit device hardware is required on doors, comply with UL 305. Furnish hardware to door manufacturer for installation at factory. Provide supplementary label, "Fire Exit Hardware", on each exit device to certify that panic hardware has been panic load tested with door.

F. Keying Conference: Conduct conference at Project site to comply with LAWA requirements. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. The degree of security required,
2. Preliminary key system schematic diagram.
3. LAWA Requirements for key control system.
4. Address for delivery of keys to LAWA.

G. Pre-Installation Conference: Conduct conference at Project site to comply with LAWA keying and security requirements. Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review required testing, inspecting, and certifying procedures.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.5 COORDINATION

A. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

NOTE: Coordinate the layout and installation of electrified door hardware with connections to power supplies, fire alarms systems and detection devices, access control system, security system and the building control system.

B. Existing Openings: Where hardware components are scheduled for application to 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.

1.6 WARRANTY

A. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Faulty operation of door hardware.
2. Deterioration of metals, metal finishes, and other materials beyond normal use.

B. Warranty Period for Electromagnetic Locks: Five years from date of Substantial Completion.

C. Warranty Period for Manual Closers: Ten years from date of Substantial Completion.

D. Warranty Period for Concealed Floor Closers: Five years from date of Substantial Completion.

E. Warranty Period for Exit Devices: Five years from date of Substantial Completion.

F. Warranty Period for Other Hardware: Two years from date of Substantial Completion.

G. Warranty for Mortised Mechanical Lock and Latch-sets: Ten years from date of Substantial Completion.

H. Warranty for Heavy Duty Cylindrical Mechanical Lock and Latch-sets: Seven years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED LAWA DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets are keyed to each scheduled door in the door and frame schedule, and the Door Hardware Schedule.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.
2. The hardware supplier shall review each hardware set and compare it with the door types, details, and sizes as shown and verify each hardware item for function, hand, backset, and method of fastening through shop drawing submittals.

Locking Hardware

ITEM	MANUF.	MODEL	FIN.	GRADE	NOTE	SUB
Lock Cylinder	(SCH) Schlage	20-740-XP IC Format	26D		Owner's Standard	N/A
Lock Cylinder	(MED) Medeco	32T0201-26-DSS	26D		CBP spaces	N/A
Lockset	(SCH) Schlage	L9000 Series	26D	1	Follow architect spec for lock function	N/A
Electrify Lockset	(SCH) Schlage	L9000 EU Series	26D	1	Follow architect spec for lock function	N/A
Exit Device	(VON) Von Duprin	98 Series	26D	1	Follow architect spec for lock function/type	N/A
Protector Bar	(RM) Rockwood	HDR116EDPL	32D		Rear portion of exit device	N/A
Protector Bar	(RM) Rockwood	HD2230	32D			N/A
Lever Guard	(RM) Rockwood	R111LPB	32D			N/A
Electrify Exit Device	(VON) Von Duprin	EL 98 Series	26D	1	Follow architect spec for lock function/type	N/A
Power Transfer	(VON) Von Duprin	EPT 2 / EPT 10	SP28		Wire size must be per manufacturer specs	N/A
Power Supply	(VON) Von Duprin	PS900 Series	N/A		Follow architect spec for power requirement	N/A
Electric Strike	(VON) Von Duprin	6000 Series (Fail Secure)	26D	1	Not to be used on surface mount rim exit device	N/A
Cyber Cylinder	(VDX) Videx Key System		26D		Comparable fit into Schlage FSIC housing	N/A
Magnetic Holder	(RIX) Rixson		26D		For daily operational use. Needs a release switch.	
Mag Release switch	(CAM) Camden	9080	26D		Use with magnetic holder	
Privacy Mortise Indicator	(SCH) Schlage	L9044 03A L283-722 626 with optional L283-418XL583-363 626	626		Without deadbolt	N/A
		L9440 03A with optional L283-422 626 & L283-418XL583-363 626	626		With deadbolt	N/A

NOTE: Except for OEM equipment's panels or utility enclosures, any access panels or key switches where key operations are required to gain access, they should be able to accept LAWA FSIC and re-key into LAWA key system.

Door Type: Single, hollow metal, 36”-48” Custodial/Hopper, Interior

ITEM	MANUF.	MODEL	NOTE	SUB
Hinge	(IVE) Ives	CHS	½” surface continuous hinge surface continuous hinge Aux hinge reinforcement DCI solid strap in frame	N/A
Door Closer	(LCN) LCN	4040XP		N/A
Kickplate	(IVE) Ives	8400 B4E	12” kickplate on both sides	N/A
Door Stop	(IVE) Ives	FS544	Kick down holder	N/A
Silencer	(IVE) Ives	SR64		N/A

Notes: 1. Door must be top lapped and sealed

Door Type: Single, hollow metal, 36”-48” Standard ACAMS Egress, Interior

ITEM	MANUF.	MODEL	NOTE	SUB
Hinge	(IVE) Ives	5BB1HW	(3) 4-1/2 x 4-1/2 hinges on doors less than 36” (4) 4-1/2 x 4-1/2 hinges on doors larger than 36”	N/A
Door Closer	(LCN) LCN	4040XP		N/A
Kickplate	(IVE) Ives	8400 B4E	12” kickplate on push side	N/A
Door Stop	(IVE) Ives	F.S. Series	Dome stop	N/A
Silencer	(IVE) Ives	SR64	Door silencer	N/A
Vision Lite	Anemostat	Safe-Wire	Clear. Vision lite where applicable	N/A

Door Type: Single, hollow metal, 36”-48” Light Traffic, Office, Interior

ITEM	MANUF.	MODEL	NOTE	SUB
Hinge	(IVE) Ives	5BB1HW	(3) 4-1/2 x 4-1/2 hinges on doors less than 36” (4) 4-1/2 x 4-1/2 hinges on doors larger than 36”	N/A
Door Closer	(LCN) LCN	4040XP		N/A
Kickplate	(IVE) Ives	8400 B4E	12” kickplate on push side	N/A
Door Stop	(IVE) Ives	F.S. Series	Dome stop	N/A
Silencer	(IVE) Ives	SR64	Door silencer	N/A
Vision Lite	Anemostat	Safe-Wire	Clear. Vision lite where applicable	N/A

Door Type: Single or double, hollow metal, 36”-48” Heavy Traffic, Service Area

ITEM	MANUF.	MODEL	NOTE	SUB
Hinge	(IVE) Ives	CHS	½” surface continuous hinge surface continuous hinge Aux hinge reinforcement DCI solid strap in frame	N/A
Door Closer	(LCN) LCN	4040XP		N/A
Protector Bar	(RM) Rockwood	HDR116EDPL	Mount over rear portion of exit device.	N/A
Protector Bar	(RM) Rockwood	HD2230		N/A
Lever Guard	(RM) Rockwood	R111LPB		N/A
Kickplate	(IVE) Ives	8400 B4E	12” kickplate on push side	N/A
Door Stop	(IVE) Ives	FS18L	Dome stop	N/A
Hold Open			Magnetic hold opens (at top of door) where applicable with release switch	
Silencer	(IVE) Ives	SR64	Door silencers or mutes	N/A
Vision Lite	Anemostat	Safe-wire	Vision lite where applicable	N/A

Door Type: Single, hollow metal, 36”-48” **ACAM Exterior**

ITEM	MANUF.	MODEL	NOTE	SUB
Hinge	(IVE) Ives	5BB1HW	(3) 4-1/2 x 4-1/2 hinges on doors less than 36” (4) 4-1/2 x 4-1/2 hinges on doors larger than 36”	N/A
Door Closer	(LCN) LCN	4040XP		N/A
Kickplate	(IVE) Ives	8400 B4E	12” kickplate on push side	N/A
Door Stop	(IVE) Ives	FS18L	Dome stop	N/A
Hold Open			Magnetic hold opens (at top of door) where applicable with release switch	
Silencer	(IVE) Ives	SR64	Door silencers	N/A
Vision Lite	Anemostat	Safe-wire	Vision lite where applicable	N/A
Threshold	(PEM) Pemko		Aluminum	N/A

Notes: 1. Door must be top lapped and sealed

NOTE: Nursing Rooms, Family Restrooms and Pet Relief Rooms will have occupancy indicator hardware.

2.2 HINGING METHODS

A. Conventional Hinges: High strength stainless steel pins with concealed bearings.

2.3 LOCKS AND LATCHES

A. Mortise Lock and Latch Sets: Heavy duty, commercial, mortise bodies complying with BHMA A156.13 Series 1000, Grade 1, with through-bolted lever trim. Furnish mortise type, field reversible without disassembly, field multifunctional without opening lock cases, lock and latch sets with 1 or 2 piece anti-friction deadlocking stainless steel latchbolts having a minimum 3/4 inch (19 mm) throw, 2-3/4 inches (70 mm) backset, and UL listed for 3 hour doors. All lock and latch sets, to be furnished complete with heavy 0.109 inch (2.77 mm) (12 gage) wrought steel zinc dichromate or chrome plated case, trim, adjustable beveled square cornered armored fronts, cold forged steel or stainless steel hubs, and 6 pin cylinders. Conceal fastenings, washers and bushings. Provide formed metal or black plastic box strikes for each lock and latch set. Provide brass, bronze or stainless steel strikes with curved lips of sufficient length to protect frames. Provide solid forged or cast levers with wrought roses. Where electro-mechanical locksets are scheduled provide transformers properly sized for conversion of power supply to the power characteristics of the electromechanical locksets. Where electro-mechanical locksets are scheduled provide request to exit (REX) monitoring feature.

1. Chassis: cold-rolled steel, handing field-changeable without disassembly.
2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.
3. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable. Provide security design independent breakaway spindles. Breakage of outside lever shall not allow access to inside lever’s hubworks to gain wrongful entry.
4. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
5. Deadbolts: stainless steel 1-inch throw.
6. Electric operation: Manufacturer-installed continuous duty solenoid.

7. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
8. Scheduled Lock Series and Design: Schlage L series, 03A design.
9. Certifications:
    a. ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
    b. ANSI/ASTM F476-84 Grade 31 UL Listed.

2.4 EXIT DEVICES

A. Exit Devices: Exit devices and exit device accessories shall conform to BHMA A156.3, Grade 1. Trim shall be wrought construction and commercial plain design with straight, beveled or smoothly rounded sides, corners and edges. Keyed devices shall be furnished less cylinders. Cylinders shall be as herein specified keyed to building system.

B. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to the LADBS, for panic protection, based on testing according to UL 305.

1. Independent lab-tested 1,000,000 cycles.
2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. 0.75-inch throw deadlocking latchbolts.
4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
5. No exposed screws to show through glass doors.
6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
7. Releasable in normal operation with 15-lb. maximum operating force for fire doors and 5-lb maximum operating force for interior and exterior exit doors.
8. Flush end cap design as opposed to typical "bottle-cap" design end cap.
9. Comply with CBC Section 1003.3.1.9.

C. Specific features:

1. Non-Fire Rated Devices: cylinder dogging.
2. Lever Trim: Breakaway type, forged brass or bronze escutcheon min 0.130” thickness, compression spring drive, match lockset lever design.
3. Rod and latch guards with sloped full-width kick plates for doors fitted with surface vertical rod devices with bottom latches.
4. Fire-Labeled Devices: UL label indicating “Fire Exit Hardware”. Vertical rod devices less bottom rod (LBR) unless otherwise scheduled.
5. Delayed Egress Devices: Function achieved within single exit device component, including latch, delayed locking device, request-to-exit switch, nuisance alarm, remote alarm, key switch, indicator lamp, relay, internal horn, door position input, external inhibit input plus fire alarm input. NFPA 101 “Special Locking Arrangement” compliant.

6. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.

2.5 CYLINDERS AND KEYING

A. Cores for Bored Cylindrical Locksets: Provide key-in lever 6 pin cores for all bored cylindrical locksets, keyed into base building system, as manufactured by the bored lockset manufacturer.

B. Cylinders: All cylinders shall be Owner's key way FSIC format. All core shall be provided to LAWA Lockshop prior to installation with the two (2) key blanks per each core. LAWA Lockshop will key the core per key plan and distribute key.

1. Long lead time: Contractor shall request authorization form to procure proprietary LAWA core and blanks from LAWA Lockshop prior to Project. All cores will be authorized by LAWA Lockshop prior to ordering.

C. Provide correct core housing per LAWA Lockshop Standards that includes a compression and blocking ring to receive the appropriate core as specified.

D. Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the LAWA Lockshop. Supplier and Contractor will meet with the LAWA Lockshop and obtain final instructions in writing. Provide two (2) nickel silver keys for each lock, and 6 keys for each grandmaster and master key system. Provide 2 blank keys for each lock for the LAWA's convenience in making additional keys.

1. Temporary Cylinders: Provide temporary cylinders in locks during construction and as may be necessary for security or as may be requested by the LAWA Lockshop. All temporary cylinders shall be Schlage FSIC format, individually keyed as required and subject to a single master key.

E. Key Control System: Furnish a key control system with complete accessories including key gathering envelopes, labels, reserve pattern key tags with self-locking key clips, key receipt forms, key receipt holders, 3 way visible card index, temporary key markers and permanent key markers.

2.6 STRIKES

A. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article 'Locks and Latches'.

B. Dustproof Floor Strikes: Complying with BHMA A156.16, Type L04251, L04021 or L14021, one of the following:

1. No. 80; Door Controls International.

2. DP2; H.B. Ives.

3. 3910; Triangle Brass Manufacturing Company, Inc. (TBM or Trimco).

4. 570; Rockwood Manufacturing Company (RM).

C. Electric Strikes: Complying with BHMA A156.5, Grade 1. Mortised type for devices mounted in hollow metal frames. Unless otherwise required to interphase with the security access system furnish in 24 volt DC continuous voltage for silent operation. Provide each

strike with extended lips as required to suit jamb conditions and fail secure function. Remote electrical control from card reader or control panel will unlock strike jaw, releasing latchbolt of the deadlatch, so door can be opened without operating latch by key cylinders from outside of secured room. Electric strikes shall be UL listed for up to 3 hour fire door assemblies.

1. 6000 Series Electric Strikes; Von Duprin.

2.7 CLOSERS

A. Surface-Mounted Closers: Closers shall be certified by ETL laboratories and the manufacturer to a minimum of 8,000,000 cycles and meet BHMA A156.4, Grade 1. Closers used in conjunction with overhead stops and holders shall be templated and coordinated to function properly. Properly detail closers to meet application requirements by providing drop plates, brackets, etc. to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Closers shall have adjustable spring power, full rack and pinion, independent closing speed and latch regulating V-slotted valves, fully hydraulic with a high strength cast iron cylinder and solid forged steel arms, bore diameter of 1-1/2 inches (38.1 mm), pinion shaft diameter of 5/8 inches (15.87 mm), adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled. Provide metal covers of clean line design with plated or primed for paint finish as scheduled and that require removal in order to make adjustments to closer.

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Independent lab-tested 10,000,000 cycles.
4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
6. Adjustable to open with not more than 5 lbs pressure to open at exterior doors and 5 lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.
7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units. Do not use LCN 3077 CNS Cush-n-Stop arm style.
9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
10. Exterior doors do not require seasonal adjustments in temperatures from 120ºF to –30ºF, furnish data on request.
11. Non-flaming fluid, will not fuel door or floor covering fires.
12. Pressure Relief Valves (PRV): unsafe, not permitted.

13. LCN 4040XP is the LAWA preferred style of closer.

2.8 PROTECTIVE TRIM UNITS

A. Kick and Armor Plates: Fabricate protection plates from minimum 0.050 inch (1.3 mm) thick **stainless steel**, beveled top and 2 sides (B3E), square corners, complying with BHMA A156.6, and fastened with oval head Phillips fasteners countersunk into plate surface.

1. Series 8400; H. B. Ives (IVS).
2. K1050 Doorplate Series; Rockwood Manufacturing Company (RM).
3. KA050-2 Armor Plate and KOO50 for Kick Plates; Triangle Brass Manufacturing Company, Inc. (TBM or Trimco).

B. Size: Furnish kick and armor plates sized 2 inches (51 mm) less than door width. Furnish kickplates 12 inches (305 mm) high, furnish armor plates 48 inches (1219 mm) high unless otherwise indicated. Provide protective plates with cutouts for locks, louvers and windows to the extent indicated. Mount protective plates flush with bottom of door.

2.9 OTHER HARDWARE

A. Door Coordinators shall not be used.

B. Automatic Flush Bolts: No automatic flush bolts shall be used. Instead, use two (2) top rod's or one (1) top rod and open back strike.

C. Overhead Stops: Stainless steel (100 series). Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

D. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90^{o} stop / 95^{o} deadstop. Note degree of opening in submittal.

E. Seals: Finished to match adjacent frame color. Resilient seal material: polypropylene, nylon brush, or solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability. Proposed substitutions: submit for approval.

1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
2. Non-corroding fasteners at in-swinging exterior doors.
3. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.

F. Thresholds: Comply with CBC Section 1133B.2.4.1.

1. Exteriors: Seal perimeter to exclude water and vermin. Use butyl-rubber or polyisobutylene sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).

2. Fire-rated openings, 90 min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.

3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.

4. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

G. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

H. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.10 FABRICATION

A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturers labels, names, or designs.

B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips oval-head screws with finished heads to match surface of door hardware item being attached. Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry. Use through bolts for renovation work only where existing door blocking and reinforcements are unknown.

1. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed through bolting of hardware items. Doors installed with exposed through bolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.

2.11 FINISHES

A. Designations: The abbreviations used to schedule hardware finishes are generally BHMA (Federal Standards where indicated in parenthesis) designations. Comply with base material and finish requirements indicated by the following:

1. BHMA 600 (USP): Primed for painting.

2. BHMA 626 (US26D): Satin chromium plated.

3. BHMA 630 (US32D): Satin stainless steel.

PART 3 - EXECUTION

3.1 PREPARATION

A. Hardware for fire door assemblies shall be installed in accordance with NFPA 80. Hardware for smoke and draft control door assemblies shall be installed in accordance with NFPA 105. Install hardware for non-labeled and non-smoke and draft door assemblies in accordance with BHMA A156.115 for steel doors and frames, BHMA A156.115-W series for wood doors, and hardware manufacturers installation instructions for doors and frames fabricated from other than steel or wood.

1. All modifications to fire doors and frame for electric and mortised hardware shall be made by the respective door and frame manufacturers.

B. Smoke Seals at S Labeled Door Assemblies: Provide and install smoke seals at S labeled doors in accordance with door manufacturer's instructions.

3.2 INSTALLATION

A. Mounting Heights: Mount door hardware units at the following heights, unless specifically indicated on the drawings or required to comply with LADBS regulations:

1. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor, per CBC Section 1133B.2.5.1.

2. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

B. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, and secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units. Do not install surface-mounted items until finishes have been completed on substrates involved.

C. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to LAWA.

1. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth - - no applied patches.

2. Remove unused existing floor closers; fill empty floor closer cavities with concrete.

D. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of LAWA, permanent key all lock cylinders. Record and file all keys in the key control system, and turn system over to LAWA for sole possession and control.

E. Key control storage system shall be installed where directed by the LAWA.

3.3 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that

cannot be adjusted to operate as intended. Adjust door control devices to compensate for building stack pressures, final operation of forced air mechanical equipment and to comply with referenced accessibility requirements.

1. Test each electrical hardware item to determine if devices are properly functioning. Wiring shall be tested for correct voltage, current carrying capacity, and proper grounding. Stray voltages in wiring shall be eliminated.
2. Coordinate with electrical installation for interface and connection with life safety and security systems.

B. Fire-Rated Door Assembly Testing: Upon completion of the installation, test each fire door assembly in the project to confirm proper operation of its closing device and that it meets all criteria of a fire door assembly as per NFPA 80 2007 Edition. The inspection of the fire doors is to be performed by individuals with knowledge and understanding of the operation components of the type of door being subjected to testing. A written record shall be maintained and transmitted to LAWA and be made available to the LADBS. The record shall list each fire door assembly throughout the project, and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

END OF SECTION 08 71 00