SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Standard and custom hollow metal doors and frames.
2. Steel sidelight, borrowed lite and transom frames.
3. Light frames and glazing installed in hollow metal doors.

B. Related Sections:

1. Division 04 Section "Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section "Glazing" for glass view panels in hollow metal doors.
4. Division 08 Section "Door Hardware".
5. Division 09 Sections "Exterior Painting" and "Interior Painting" for field painting hollow metal doors and frames.
6. Division 28 Section "Access Control" for access control devices installed at door openings and provided as part of a security access control system.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
10. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Doors Under Specified Pressure Differences Across the Specimens.
11. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
12. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
13. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
14. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
15. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
16. NFRC 102 – Procedure for Measuring the Steady State Thermal Transmittance of Fenestration Systems.
17. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
18. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. 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 anchorages, joints, field splices, and connections.
6. Details of accessories.
7. Details of moldings, removable stops, and glazing.
8. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Verification:

1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.

B. Quality Standard: In addition to requirements specified, comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".

C. 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 UL10C (neutral pressure at 40” above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.
2. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
3. Smoke Control Door Assemblies: Comply with NFPA 105.

a. Smoke "S" Label: Doors to bear “S” label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

D. Fire-Rated, Borrowed-Light Frame 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 257. Provide labeled glazing material.

E. Pre-Submittal Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

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

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

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 hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. CECO Door Products (C).
2. Curries Company (CU).
3. Republic Doors (RP).

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

2.3 HOLLOW METAL DOORS

A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.

B. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard polyurethane. Where indicated, provide doors fabricated as thermal-rated assemblies with a minimum R-value of 3.2 or better.
3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053-inch - 1.3-mm) thick steel, Model 2.
4. Vertical Edges: Vertical edges to have the face sheets joined by a continuous weld extending the full height of the door. Welds are to be ground, filled and dressed smooth. Beveled Lock Edge, 1/8 inch in 2 inches (3 mm in 50 mm).
5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

C. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard polystyrene core, securely bonded to both faces.

a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

3. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 1.
4. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
5. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
6. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

D. Manufacturers Basis of Design:

1. Curries Company (CU) – Interior Doors Polystyrene Core - 707 Series.
2. Curries Company (CU) – Exterior Doors Polyurethane Core - 707 Series.

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud Wall Type: Designed to engage stud and not less than 0.042 inch thick.

B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.

C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.5 LIGHT OPENINGS AND GLAZING

A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator’s shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.

B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.

2.6 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

2.7 FABRICATION

A. Fabricate hollow metal work 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. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Electrical Raceways: Provide hollow metal doors to receive electrified hardware with concealed wiring harness and standardized Molex™ plug connectors on both ends to accommodate up to twelve wires. Coordinate connectors on end of the wiring harness to plug directly into the electrified hardware and the through-wire transfer hardware or wiring harness specified in hardware sets in Division 08 Sections "Door Hardware" and "Access Control Hardware". Wire nut connections are not acceptable.

D. Hollow Metal Frames:

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

   a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
4. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
6. Jamb Anchors: Provide number and spacing of anchors as follows:

   a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

      1) Two anchors per jamb up to 60 inches high.
      2) Three anchors per jamb from 60 to 90 inches high.
      3) Four anchors per jamb from 90 to 120 inches high.
      4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

   b. Stud Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

      1) Three anchors per jamb up to 60 inches high.
      2) Four anchors per jamb from 60 to 90 inches high.
      3) Five anchors per jamb from 90 to 96 inches high.
      4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
      5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
7. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
8. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.

E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface mounted door hardware.

3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.8 STEEL FINISHES

A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

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 the Work.

B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

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, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.

1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

   a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
   b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

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

D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

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 hollow metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow metal work immediately after installation.

C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

END OF SECTION 081113

SECTION 08 11 19
STAINLESS STEEL DOOR AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Stainless steel swinging doors and frames.

B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
5. ASTM A167-99: Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
6. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
7. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
8. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
9. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
10. UL 10C (1998) - Positive Pressure Fire Tests of Door Assemblies; UL 1784 (2001) - Standard for Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Templates: Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. 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 preparations for power, signal, and control systems.

D. Samples for Verification:

1. Samples are only required by request of the architect and for manufactures that are not current members of the Steel Door Institute.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain stainless steel doors and frames through one source from a single manufacturer wherever possible.

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 (neutral pressure at 40" above sill) or UL 10C.

1. Oversize Fire-Rated Door Assemblies Construction: 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: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.

C. Fire-Rated, Borrowed-Light Frame 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 257. Label each individual glazed lite.

D. Smoke-Control Door Assemblies: Comply with NFPA 105.

E. Pre-Installation Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing stainless steel doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

1.5 DELIVERY, STORAGE, AND HANDLING

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

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store stainless steel work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch- (102-mm-) high wood blocking. Do not store in a manner that traps excess humidity.

1. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

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, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.8 WARRANTY

A. Provide manufacturer's written warranty against defects in materials and workmanship upon final completion and acceptance of Work in this section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. CECO Door Products (C).
2. Curries Company (CU).
3. Security Metal Products (SM).

B. Substitutions: Material from alternate stainless steel door and frame fabricators will not be accepted on jobsite without prior written and sample approval in accordance with requirements specified in Division 01.

2.2 MATERIALS

A. General: Doors and frames shall be manufactured of commercial quality stainless steel complying with ASTM A167, Type 304 for standard applications and Type 316 for extremely corrosive environments.

B. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Glazing: Comply with requirements in Division 08 Section, "Glazing."

2.3 STAINLESS STEEL DOORS

A. General: Provide 1-3/4 inch doors of type and design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8.

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard polystyrene core.

   a. Polystyrene Core: Manufacturer's standard polystyrene permanently bonded to both faces.
   b. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gage (0.053-inch - 1.3-mm) thick steel, Model 2 (Fully welded, seamless face and edges).
4. Vertical Edges: Vertical edges to have the face sheets joined by a continuous weld extending the full height of the door. Welds are to be ground, filled and dressed smooth. Beveled Edge, 1/8 inch in 2 inches (3 mm in 50 mm).

5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gage (0.053-inch - 1.3-mm), extending the full width of the door and welded to the face sheet. Finish top and bottom to provide a smooth flush condition.
6. Surface Applied Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.

2.4 STAINLESS STEEL FRAMES

A. General: Provide frames of the type and profile indicated, not less than thickness indicated; to comply with ANSI/SDI A250.8.

1. Fabricate frames with mitered corners.
2. Fabricate frames with "closed and tight" mitered, full depth continuously welded seams, finished smooth with no visible seam unless otherwise indicated. Knock down type frames are not permitted.
3. Minimum 16 gage (0.053-inch -1.3-mm) thick steel sheet

B. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

C. Surface Applied Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup anchors to suit frame size, not less than 16 (0.8 mm) gage thickness, 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 0.177 inch (4.5 mm) thick.
2. Stud Wall Type: Designed to engage stud and not less than 16 gage (0.8 mm) thickness.

B. Floor Anchors: Floor anchors to be provided at each jamb. Formed from same material as frames, not less than 14 gage (0.067-inch -1.7-mm) thick.

C. Mortar Guards: Provide minimum 26 gage mortar guards welded to the back of each hardware cutout.

2.6 FABRICATION

A. General: Fabricate stainless steel work 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. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate stainless steel work to tolerances indicated in ANSI/SDI A250.8.

C. Stainless Steel Doors:

1. Sanitary Water Tight Design Doors: Where indicated, provide optional sanitary design to completely seal door against water penetration.
2. Glazed Lites: Factory cut openings in doors with applied flush trim kit to fit.
3. Astragals: Provide overlapping astragals on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gage strap for continuous hinges specified in hardware sets in Division 08 Section, "Door Hardware".

D. Stainless Steel Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Full depth continuously weld frame seams; grind, fill, dress, and make smooth and flush.

   a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
3. High Frequency Hinge Reinforcement: Provide 12 gage angle reinforcements for butt type hinges on every door and frame assembly.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gage straps for continuous hinges specified in hardware sets in Division 08 Section, "Door Hardware".
5. Electrical Knock Out Boxes: Factory weld 18 gage electrical knock out boxes to frame for electrical hardware preps; this includes but not limited to electric through wire transfer hardware, electrical raceways and wiring harnesses, door position switches, electric strikes, magnetic locks, and jamb mounted card readers as noted in door hardware sets in Division 08 Section, "Door Hardware".

a. Provide electrical knock out boxes as required for Project.
b. Conduit to be coordinated and installed in the field (Division 26) from middle hinge box and strike box to door position box.
c. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 08 Section, "Door Hardware".
d. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.

6. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
7. Jamb Anchors: Provide number and spacing of anchors as follows:

a. Masonry and Stud Wall Types: 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) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 84 inches (2137 mm) high.

E. Surface Hardware Preparation: Factory prepare stainless steel work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section, "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive non-template, mortised and surface-mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of stainless steel work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

F. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricators shop.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of stainless steel work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so glazed lites are capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

2.7 STAINLESS STEEL FINISHES

A. Finish shall be one of the following:
   1. No. 4 - Brushed Satin Finish (general purpose with visible grain).

B. Graining: Where required, graining to run in the vertical direction.

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 the Work.

B. General Contractor to verify the accuracy of dimensions given to door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

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 as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Prior to installation, adjust and securely brace welded stainless steel frames for squareness, alignment, twist, and plumbness.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install stainless steel work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Stainless Steel Frames: Install stainless steel frames of size and profile indicated. Comply with ANSI/SDI A250.11.

   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. Shim as necessary to comply with installation tolerances.

a. At fire-protection-rated openings, install frames according to NFPA 80.
b. Where frames are fabricated in sections because of 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.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with appropriate mortar.
4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.

C. Stainless Steel Doors: Fit stainless steel doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
c. 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.

D. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with door manufacturer's written instructions.

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 work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from stainless steel work immediately after installation.

C. Remove stains and materials that will have and adverse affect on the doors and frames and restore slight blemishes in accordance with manufacturer’s instructions to match original finish.

END OF SECTION 081119

SECTION 08 31 13
ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION:

Section specifies access doors or panels.

1.2 RELATED WORK:

A. Wire mesh and screen access doors: Section 05 50 00, METAL FABRICATIONS.

B. Lock Cylinders: Section 08 71 00, DOOR HARDWARE.

C. Access doors in acoustical ceilings: Section 09 51 00, ACOUSTICAL CEILINGS.

D. Locations of access doors for duct work cleanouts: Section 23 31 00, HVAC DUCTS AND CASINGS, Section 23 37 00, AIR OUTLETS AND INLETS .

1.3 SUBMITTALS:

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings: Access doors, each type, showing construction, location and installation details.

C. Manufacturer's Literature and Data: Access doors, each type.

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.

B. American Society for Testing and Materials (ASTM):

A167-99(R-2009).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip

A1008-10.....Steel Sheet, Cold-Rolled, Carbon, Structural, High Strength Low-Alloy

C. American Welding Society (AWS):

D1.3-08.....Structural Welding Code Sheet Steel

D. National Fire Protection Association (NFPA):

80-10.....Fire Doors and Windows

E. The National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500 Series.....Metal Finishes Manual

F. Underwriters Laboratories, Inc. (UL):

Fire Resistance Directory

PART 2 - PRODUCTS

2.1 FABRICATION, GENERAL

A. Fabricate components to be straight, square, flat and in same plane where required.
   1. Slightly round exposed edges and without burrs, snags and sharp edges.
   2. Exposed welds continuous and ground smooth.
   3. Weld in accordance with AWS D1.3.

B. Number of locks and non-continuous hinges as required to maintain alignment of panel with frame. For fire rated doors, use hinges and locks as required by fire test.

C. Provide anchors or make provisions in frame for anchoring to adjacent construction. Provide size, number and location of anchors on four sides to secure access door in opening. Provide anchors as required by fire test.

2.2 ACCESS DOORS, FIRE RATED:

A. Shall meet requirements for "B" label 1-1/2 hours with maximum temperature rise of 120 degree C (250 degrees F).

B. Comply with NFPA 80 and have Underwriters Laboratories Inc., or other nationally recognized laboratory label for Class B opening.

C. Door Panel: Form of 0.9 mm (0.0359 inch) thick steel or stainless steel sheet, insulated sandwich type construction.

D. Frame: Form of 1.5 mm (0.0598 inch) thick steel sheet of depth and configuration to suit material and type of construction where installed. Provide frame flange at perimeter where installed in concrete masonry or gypsum board openings.
   1. Weld exposed joints in flange and grind smooth.
   2. Provide frame flange at perimeter where installed in concrete masonry or gypsum board.
   3. Provide expanded galvanized metal lath perimeter wings when installed in plaster except veneer plaster.

E. Automatic Closing Device: Provide automatic closing device for door.

F. Hinge: Continuous steel hinge with stainless steel pin.

G. Lock:
   1. Self-latching, with provision for fitting flush a standard screw-in type lock cylinder. Lock cylinder specified in Section 08 71 00, DOOR HARDWARE.

2. Provide latch release device operable from inside of door. Mortise case in door.

2.3 ACCESS DOORS, FLUSH PANEL:

A. Door Panel:

1. Form of 1.9 mm (0.0747 inch) thick steel or 1.5 mm (0.0598 inch) thick stainless steel sheet.
2. Reinforce to maintain flat surface.

B. Frame:

1. Form of 1.5 mm (0.0598 inch) thick steel or stainless steel sheet of depth and configuration to suit material and type of construction where installed.
2. Provide surface mounted units having frame flange at perimeter where installed in concrete, masonry, or gypsum board construction.
3. Weld exposed joints in flange and grind smooth.
4. Provide expanded galvanized metal lath perimeter wings when installed in plaster except veneer plaster.

C. Hinge:

1. Concealed spring hinge to allow panel to open 175 degrees.
2. Provide removable hinge pin to allow removal of panel from frame.

D. Lock:

1. Flush, screwdriver operated cam lock.
2. Provide tamper proof screws (spanner head locks) for access panels in Psychiatric Areas.

2.4 ACCESS DOOR, RECESSED PANEL:

A. Door Panel:

1. Form of 1.2 mm (0.0478 inch) thick steel or stainless steel sheet to form a 25 mm (one inch) deep recessed pan to accommodate the installation of acoustical units acoustical plaster or other materials where shown in walls and ceiling.
2. Reinforce as required to prevent sagging.

B. Frame:

1. Form of 1.5 mm (0.0598 inch) thick steel sheet of depth and configuration to suit installation in suspension system of ceiling or wall framing.
2. Extend sides of frame to protect edge of acoustical units when panel is in open position.

3. Provide shims, bushings, clips and other devices necessary for installation.

C. Hinge: Continuous steel hinge with stainless steel pin or concealed hinge.

D. Lock:

1. Flush screwdriver operated cam lock.
2. Provide sleeve of plastic or stainless steel grommet to protect hole made in acoustical unit for screwdriver access to lock.

2.5 FINISH:

A. Provide in accordance with NAAMM AMP 500 series on exposed surfaces.

B. Steel Surfaces: Baked-on prime coat over a protective phosphate coating.

C. Stainless Steel: No. 4 for exposed surfaces.

2.6 SIZE:

Minimum 600 mm (24 inches) square door unless otherwise shown or required to suit opening in suspension system of ceiling.

PART 3 - EXECUTION

3.1 LOCATION:

A. Provide access panels or doors wherever any valves, traps, dampers, cleanouts, and other control items of mechanical, electrical and conveyor work are concealed in wall or partition, or are above ceiling of gypsum board or plaster.

B. Use fire rated doors in fire rated partitions and ceilings.

C. Use flush panels in partitions and gypsum board or plaster ceilings, except lay-in acoustical panel ceilings or upward access acoustical tile ceilings.

D. Use recessed panel access doors in the following rooms or spaces.

1. Sterile Prep GE120

3.2 INSTALLATION, GENERAL:

A. Install access doors in openings to have sides vertical in wall installations, and parallel to ceiling suspension grid or side walls when installed in ceiling.

B. Set frames so that edge of frames without flanges will finish flush with surrounding finish surfaces.

C. Set frames with flanges to overlap opening and so that face will be uniformly spaced from the finish surface.

D. Set recessed panel access doors recessed so that face of surrounding materials will finish on the same plane, when finish in door is installed.

3.3 ANCHORAGE:

A. Secure frames to adjacent construction using anchors attached to frames or by use of bolts or screws through the frame members.

B. Type, size and number of anchoring device suitable for the material surrounding the opening, maintain alignment, and resist displacement during normal use of access door.

C. Anchors for fire rated access doors shall meet requirements of applicable fire test.

3.4 ADJUSTMENT:

A. Adjust hardware so that door panel will open freely.

B. Adjust door when closed so door panel is centered in the frame.

- - - E N D - - -

SECTION 08 34 73
SOUND CONTROL WOOD DOOR ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Acoustic swinging sound control wood doors and hollow metal frames.
2. Acoustic steel sidelight, borrowed lite and transom frames.
3. Perimeter seals, door bottoms and astragals.
4. Thresholds.
5. Cam-Lift hinges where required by the assembly.
6. Hardware standoff brackets where required.
7. Other additional items as required by specific assemblies.

B. Related Sections:

1. Division 08 Section "Glazing" for glass view panels in sound control wood doors.
2. Division 08 Sections "Door Hardware" and "Access Control Hardware" for door hardware for sound control wood doors and frames.
3. Division 28 Section "Access Control" for access control devices installed at door openings and provided as part of a security access system.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
9. ASTM E336 - Standard Test Method for Measurement of Airborne Sound Insulation in Buildings.
10. ASTM E 413 - Classification for Rating Sound Insulation.
11. Architectural Woodwork Standards - AWS Section 9, Doors; Quality Standards of the Architectural Woodwork Institute (AWI) and Woodwork Institute (WI).
12. ANSI/BHMA A156.15 - Hardware Preparation in Steel Doors and Frames.
13. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
14. ANSI/SDI 124 - Maintenance of Standard Steel Doors and Frames.
15. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
16. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
17. UL 10C (1998) - Positive Pressure Fire Tests of Door Assemblies; UL 1784 (2001) - Standard for Air Leakage Tests of Door Assemblies.
18. Window and Door Manufacturers Association - WDMA I.S.1-A Architectural Wood Flush Doors.

1.3 TESTING AND PERFORMANCE

A. Sound control assemblies to be identical to those tested at an independent acoustical laboratory qualified under the National Voluntary Laboratory Accreditation Program (NVLAP) by the National Institute for Science and Technology (NIST) in accordance with ASTM E90 and ASTM E413.

1.4 SUBMITTALS

A. Product Data: For each type of assembly indicated. Include construction details, core and edge construction, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.

B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the sound control wood door and hollow metal frame supplier in order to prepare the doors and frames to receive the finish hardware items.

C. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

1. Frame details for each frame type, including dimensioned profiles and metal thicknesses.

2. Locations of frame reinforcements and preparations for hardware.
3. Details of moldings, removable stops, and glazing.
4. Details of preparations for power, signal, and control systems.
5. Details of accessories including thresholds and cam-lift hinges if required.
6. Indicate dimensions and locations of mortises and holes for hardware.
7. Indicate dimensions and locations of cutouts.
8. Indicate requirements for veneer matching.
9. Indicate door finish requirements.
10. Indicate fire protection ratings for fire rated doors.

D. Samples for Verification:

1. Samples are only required by request of the architect.

E. Informational Submittals:

1. Provide test reports from a qualified accredited testing agency as outlined in paragraph 1.3(A) of this specification section. Test reports will contain the laboratory name, test report number and date of test. The submitted document shall be the entire raw report from the testing agency.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Obtain acoustic assemblies through one source from a single manufacturer with a minimum **[5]** years of documented experience producing sound control wood door and hollow metal frame assemblies type work similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, latest edition, "Industry Standard for Architectural Wood Flush Doors."

C. Quality Standard: In addition to requirements specified, comply with AWS Section 9 "Architectural Woodwork Standards".

D. Sound control assemblies shall be tested in accordance with the standards and conditions set forth in paragraphs 1.2(C) and 1.3(A) of this specification section.

1. Provide acoustical assemblies with minimum STC rating as specified and indicated on the door schedule.

E. Provide manufacturer’s recommended installation instructions which will become the basis for accepting or rejecting actual sound control assembly installation.

F. 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 (neutral pressure at 40" above sill) or UL 10C..

1. Oversize Fire-Rated Door Assemblies Construction: 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: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
3. Smoke Control Door Assemblies: Comply with NFPA 105.
4. Blocking: Indicate size and location of blocking in 45, 60 and 90 minute doors

G. Pre-Installation Conference: Conduct conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing sound control doors and hollow metal frames.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sound control wood door assemblies work palletized, and crated to provide protection during transit and Project-site storage.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Mark each door on top rail with opening number used on Shop Drawings.

1.7 PROJECT CONDITIONS

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

B. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.8 COORDINATION

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

1.9 WARRANTY

A. Provide manufacturer's standard written warranty in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Ambico, Ltd (AM).
2. Graham Wood Doors (GR)
3. Security Metal Products (SM).

B. Substitutions: Material from alternate acoustical sound control wood door assembly fabricators will not be accepted on jobsite without prior written and sample approval in accordance with requirements specified in Division 01.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

D. Door Hardware: Provide required door hardware including cam-lift hinges, perimeter seals, door bottoms, astragals, thresholds and hardware standoff brackets required to meet the specified STC rating. Balance of door hardware is to be furnished under Division 08 Section, "Door Hardware".

E. Glazing: Vision panels to be designed and tested by the manufacturer to meet the specified STC rating and comply with requirements in Division 08 Section, "Glazing.".

2.3 SOUND CONTROL WOOD DOORS

A. General: Provide minimum 5-ply construction, 1-3/4" thickness with seamless construction. No visible joints shall be permitted on the

exposed faces. Face and edge veneer or laminate to be as selected from manufacturer’s samples.

1. Design: Flush panel.
2. Core Construction: Manufacturer's standard sound control door core construction designed and tested for the specified STC rating.

   a. Fire Door Core: As required to provide fire-protection level specified.

3. Vertical Edges: Beveled both edges, 1/8 inch in 2 inches (3 mm in 50 mm).

2.4 SOUND CONTROL HOLLOW METAL FRAMES

A. General: Provide frames of the type and profile indicated, not less than thickness indicated; to comply with ANSI/SDI A250.8.

1. Fabricate frames with mitered corners.
2. Fabricate frames with "closed and tight" mitered full depth continuously welded seams, finished smooth with no visible seam unless otherwise indicated. Knock down type frames are not permitted.
3. Minimum 14 gage (0.067-inch -1.7-mm) thick steel sheet.

B. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.

C. Surface Applied Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup anchors to suit frame size, not less than 14 gage (0.067-inch -1.7-mm) thick, with corrugated or perforated straps not less than 2 inches (50 mm) wide by 10 inches (250 mm) long.

B. Floor Anchors: Floor anchors to be provided at each jamb. Formed from same material as frames, not less than 14 gage (0.067-inch -1.7-mm) thick.

C. Mortar Guards: Provide minimum 26 gage mortar guards welded to the back of each hardware cutout.

2.6 FABRICATION

A. Factory fit doors to suit frame opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

1. Comply with requirements in NFPA 80 for fire rated doors.

B. Sound Control Wood Doors:

1. Factory Installed Glazed Lites: Factory cut opening and install glazing in doors as indicated. Doors with factory installed glass to include all of the required glazing material and allow for independent removal of each pane of glass.
2. Astragals: Provide overlapping astragals as required on one leaf of pairs of doors where required for specified STC rating or by NFPA 80 for fire-performance rating. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted.

C. Sound Control Hollow Metal Frames:

1. Welded Frames: Full depth continuously weld frame seams; grind, fill, dress, and make smooth, flush, and invisible.

   a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.

2. High Frequency Hinge Reinforcement: Provide 12 gage angle reinforcements for butt type hinges on every door and frame assembly.
3. Electrical Knock Out Boxes: Factory weld 18 gage electrical knock out boxes to frame for electrical hardware preps; this includes but not limited to electric through wire transfer hardware, electrical raceways and wiring harnesses, door position switches, electric strikes, magnetic locks, and jamb mounted card readers as noted in door hardware sets in Division 08 Section, "Door Hardware".

   a. Provide electrical knock out boxes as required for Project.
   b. Conduit to be coordinated and installed in the field (Division 26) from middle hinge box and strike box to door position box.
   c. Electrical knock out boxes to comply with NFPA requirements and fit electrical door hardware as specified in hardware sets in Division 08 Section, "Door Hardware".
   d. Electrical knock out boxes for continuous hinges should be located in the center of the vertical dimension on the hinge jamb.

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) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 84 inches (2137 mm) high.

D. Factory machine doors for hardware that is not surface applied. Comply with final hardware schedules, door frame Shop Drawings, ANSI/DHI A115 series standards, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining. Reinforce frames to receive non-template, mortised and surface-mounted door hardware.
2. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

2.7 FINISHES

A. Hollow Metal Frame Prime Finish: Sound control frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces exposed to view to receive a factory applied coat of rust inhibiting shop primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.'

B. Wood Door Finishes: Comply with referenced quality standards for finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
2. Transparent Finish: Provide a clear protective coating over the wood veneer allowing the natural color and grain of the selected wood species to provide the appearance specified. Stain is applied to the wood surface underneath the transparent finish to add color and design flexibility.
3. Opaque Finish: Field applied solid painted colors over specified paint grade veneer.

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 the Work.

B. General Contractor to verify the accuracy of dimensions given to door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).

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, adjust and securely brace welded sound control hollow metal frames for squareness, alignment, twist, and plumbness.

C. Prepare wood doors and hollow metal frames to receive non-template, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install sound control wood door assemblies work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Sound Control Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.

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. Shim as necessary to comply with installation tolerances.

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

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with appropriate mortar.
4. Wood or Metal Partitions: As required by the specified STC rating, and in accordance with the manufacturer's recommended

instructions, coordinate installation of frames to allow for solidly filling space between frames and wood or metal partitions with light weight plaster grout.

C. Sound Control Wood Doors: Fit sound control wood doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
c. Between Bottom of Door and Top of Threshold: Standard bottom clearance as required by manufacturer.

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

3. Factory Glazing: Factory install glazing in doors as indicated.

D. Install perimeter seals, door bottoms, astragals and thresholds in accordance with manufacturer's written installation instructions.

3.4 FIELD QUALITY CONTROL

A. Qualified independent testing agency to test specific wood door sound control assembly installations as selected by the Owner/Architect in accordance with ASTM E336. Installed product to perform no less than five ASTC or NIC rating points below the specified laboratory STC rating. Installations that do not meet criteria, to be adjusted and retested until compliance is obtained.

3.5 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 sound control wood door assemblies work that is 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, rust-inhibitive primer.

C. Finished Doors: Replace doors that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 083473

SECTION 08 41 13
ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies aluminum entrance work including storefront construction, hung doors, and other components to make a complete assembly.

1.2 RELATED WORK:

A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS. Glass and Glazing: Section 08 80 00, GLAZING.

B. Hardware: Section 08 71 00, DOOR HARDWARE.

C. Automatic Door Actuators: Section 08 71 13, AUTOMATIC DOOR OPERATORS.

D. Texture and color of finish: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS:

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings: 1:2 (half size) scale showing construction, anchorage, reinforcement, and installation details. Show interfaces and relationships to work of other trades and continuity with adjacent thermal, weather, air and vapor barriers.

C. Manufacturer’s Literature and Data:

1. Doors, each type.
2. Entrance and Storefront construction.

D. Calculations: Submit calculations and certification of performance of this work signed and sealed by Professional Engineer registered in the state where the work is located. Indicate how design requirements for loading and other performance criteria have been satisfied.

E. Samples:

1. Door corner section, 450 mm x 450 mm (18 x 18 inches), of each door type specified, showing vertical and top hinge edges, door closer reinforcement, internal reinforcement. //Two (2) samples of anodized aluminum of each color showing finish and maximum shade range.

F. Test Reports: Submit certified test reports for specified tests.

G. Manufacturer's Certificates:

1. Stating that aluminum has been given specified thickness of anodizing.

2. Indicating manufacturer's qualifications specified.

1.4 QUALITY ASSURANCE:

A. Contracting Officer Representative (COR) approval is required of products of proposed manufacturer, suppliers, and installers.

B. Certify manufacturer regularly and presently manufactures aluminum entrances and storefronts as one of their principal products.

C. Source: When aluminum entrances are part of a building enclosure system, including storefront framing, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer. Provision of products from numerous sources for site assembly without complete single source design and supply responsibility is not acceptable.

D. Installer: A firm with a minimum of three (3) years' experience in type of work required by this Section and which is acceptable to manufacturers of primary materials.

E. Design Criteria: Drawings indicate sizes, member spacings, profiles, and dimensional requirements of work of this Section. Minor deviations will be accepted in order to utilize manufacturer's standard products when, in the CORs sole judgment, such deviations do not materially detract from the design concept or intended performances.

F. Engineering: Furnish services of a Professional Engineer, registered in the State of the District of Columbia, to design and certify that work of this Section conforms to performance requirements specified.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Deliver aluminum entrance and storefront material to the site in packages or containers; labeled for identification with the manufacturer's name, brand and contents.

B. Store aluminum entrance and storefront material in a weather-tight and dry storage facility.

C. Protect from damage from handling, weather and construction operations before, during and after installation.

1.6 APPLICABLE PUBLICATIONS:

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society of Civil Engineers (ASCE)

ASCE 7-10.....Minimum Design Loads for Buildings and Other Structures

C. ASTM International (ASTM):

B209-14 ..... Aluminum and Aluminum-Alloy Sheet and Plate

B209M-14 ..... Aluminum and Aluminum-Alloy Sheet and Plate (Metric)

B221-14 ..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

B221M-13 ..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)

D1187/D1187M-97(R2011). Asphalt-Base Emulsions for Use as Protective Coatings for Metal

E1886-13a ..... Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missiles(s) and Exposes to Cyclic Pressure Differentials

E1996-14a ..... Performance of Exterior Windows, Curtain Walls, Doors, and impact Protective Systems Impacted by Windborne Debris in Hurricanes

E283-04(R2012) ..... Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

E330/E330M-14 ..... Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

E331-00(R2009) ..... Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference

F1642-12 ..... Test Method for Glazing and Glazing Systems Subject to Airblast Loadings

F468-13 ..... Nonferrous Bolts, Hex Cap Screws, and Studs for General Use

F593-13a ..... Stainless Steel Bolts, Hex Cap Screws, and Studs

D. National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500-06 Series ..... Metal Finishes Manual

E. American Architectural Manufacturer's Association (AAMA):

611-14.....Voluntary Specification for Anodized Architectural Aluminum

1503-09.....Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections

2604-13.....High Performance Organic Coatings on Architectural Aluminum Extrusions and Panels

2605-13.....Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels

F. American Welding Society (AWS):

D1.2/D1.2M-08.....Structural Welding Code Aluminum

G. U.S. Veterans Administration:

Physical Security Design Manual for VA Facilities (VAPSDG); Life Safety Protected

Physical Security Design Manual for VA Facilities (VAPSDG); Mission Critical Facilities

Architectural Design Manual for VA Facilities (VASDM)

H. Environmental Protection Agency (EPA):

40 CFR 59(2014).....National Volatile Organic Compound Emission Standards for Consumer and Commercial Products

1.7 PERFORMANCE REQUIREMENTS:

A. When tested in accordance with ASTM E330/E330M, shapes and thickness of framing members to be sufficient to withstand a design wind load of not less than 1.4kilopascals (30 pounds per square foot) of supported area with a deflection of not more than 1/175 times the length of the member and a safety factor of not less than 1.65 (applied to overall load failure of the unit). Provide glazing beads, moldings, and trim of not less than 1.25 mm (0.050 inch) thickness.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Aluminum, ASTM B209M (B209) and B221M (B221):

1. Alloy 6063 temper T5 for doors, door frames.
2. Alloy 6061 temper T6 for guide tracks for sliding doors and other extruded structural members.

3. For color anodized finish, use aluminum alloy as required to produce specified color.

B. Fasteners:
1. Aluminum: ASTM F468, Alloy 2024.
2. Stainless Steel: ASTM F593, Alloy Groups 1, 2 and 3.

C. Non-Absorptive Dielectric Tape:
1. A vinyl plastic tape, 0.18 to 0.25 mm (7 – 10 mils) thick, pressure-sensitive adhesive.

D. Bituminous Coating: ASTM D1187/D1187M; Cold-applied asphalt mastic, compounded for 0.4 mm (15 mil) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

E. Sealants are to have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, (EPA Method 24).

2.2 FABRICATION:

A. Fabricate doors, of extruded aluminum sections not less than 3 mm (0.125 inch) thick. Fabricate glazing beads of aluminum not less than 1.0 mm (0.050 inch) thick.

B. Form metal parts and fit and assemble joints, except those joints designed to accommodate movement. Seal joints to prevent leakage of both air and water.

C. Use electrodes and method to make welds in aluminum in accordance with the recommended practice AWS D1.2/D1.2M.
1. Make welds behind finished surfaces so as to cause no distortion or discoloration of the exposed side.
2. Clean welded joints of welding flux and dress exposed and contact surfaces.

D. Make provisions in doors and frames to receive the specified hardware and accessories.
1. Coordinate schedule and template for hardware specified under Section 08 71 00, DOOR HARDWARE.
2. Where concealed closers or other mechanisms are required, provide the necessary space, cutouts, and reinforcement for secure fastening.

E. Fit and assemble the work at the manufacturer's plant. Mark work that cannot be permanently plant-assembled to assure proper assembly in the field.

2.3 PROTECTION OF ALUMINUM:

A. Isolate aluminum from contact with dissimilar metals other than stainless steel, white bronze, or zinc by one of the following:
   1. Coat the dissimilar metal with a protective bituminous coating.
   2. Place caulking compound, non-absorptive tape, or gasket between the aluminum and the dissimilar metal.
   3. Paint aluminum in contact with mortar, concrete and plaster, with a coat of aluminum paint primer.

2.4 FRAMES:

A. Fabricate doors, frames, mullions, transoms, frames for fixed glass and similar members from extruded aluminum not less than 3 mm (0.125 inch) thick.
B. Provide integral stops and glass rebates and applied snap-on type trim.
C. Provide concealed screws, bolts and other fasteners.
D. Secure cover boxes to frames in back of lock strike cutouts.
E. Fabricate framework with thermal breaks in frames where insulating glass is scheduled and specified under Section 08 80 00, GLAZING.

2.5 STILE AND RAIL DOORS:

A. Nominal 45 mm (1-3/4 inch) thick, with stile and head rail 90 mm (3-1/2 inches) wide, and bottom rail 254 mm (10 inches) wide.
B. Bevel single-acting doors 3 mm (1/8 inch) at lock, hinge and meeting stile edges.
   1. Provide clearances of 2 mm (1/16 inch) at hinge stiles, 3 mm (1/8 inch) at lock stiles center and top rails, and 5 mm (3/16 inch) at floors and thresholds.
   2. Form glass rebates integrally with stiles and rails.
   3. Glazing beads may be formed integrally with stiles and rails or applied type secured with fasteners at 152 mm (6 inches) on centers.
C. Construct doors with a system of welded joints or interlocking dovetail joints between stiles and rails. Clamp door together through top and bottom rails with 9 mm (3/8 inch) primed steel rod extending into the stiles, and having a self-locking nut and washer at each end. Reinforce stiles and rails to prevent door distortion when tie rods are tightened. Provide a compensating spring-type washer under each nut to take up any stresses that may develop. Construct joints between rails and stiles to remain rigid and tight when door is operated.

2.6 FLUSH PANEL DOORS:

A. Nominal 45 mm (1-3/4 inches) thick. Form from aluminum face sheets not less than 1.5 mm (0.060 inch) thick with internal impact reinforcement, laminated to the door edges and the core.

B. Provide extruded aluminum tubular members to form the perimeter of the door. Reinforce doors internally with extruded tubular members welded in place, and extending full width of door at top, bottom, and intermediate points.

C. Fill voids between tubular members with noncombustible mineral insulation.

2.7 REINFORCEMENT FOR BUILDERS HARDWARE:

A. Fabricate from stainless steel plates.

1. Hinge and pivot reinforcing: 4.55 mm (0.1793 inch) thick.
2. Reinforcing for lock face, flush bolts, concealed holders, concealed or surface mounted closers: 2.66 mm (0.1046 inch) thick.
3. Reinforcing for all other surface mounted hardware: 1.5 mm (0.0598 inch) thick.

2.8 FINISH:

A. In accordance with NAAMM AMP 500 series.

B. Anodized Aluminum:

1. Clear Finish: AAMA 611 (AA-M12C22A41) Chemically etched medium matte, with clear anodic coating, Class I Architectural, 0.18 mm (7 mils) thick.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Allowable Installation Tolerances: Install work plumb and true, in alignment and in relation to lines and grades shown. Variation of 3 mm (1/8 inch) in 2438 mm (8 feet), non-accumulative, is maximum permissible for plumb, level, warp, bow and alignment.

B. Anchor aluminum frames to adjoining construction at heads, jambs and bottom and to steel supports, and bracing. Anchor frames with stainless steel or aluminum countersunk flathead, expansion bolts or machine screws, as applicable. Provide aluminum clips for internal connections of adjoining frame sections.

C. Provide protection against galvanic action. Isolate dissimilar materials with bituminous coating or non-absorptive dielectric tape.

D. Where work is installed within masonry or concrete openings, place no parts other than built-in anchors and provision for operating devices

located in the floor, until after the masonry or concrete work is completed.

E. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances.

1. Variation from Plane: Limit variation from plane or location shown to 32 mm in 3.65 m (1/8 inch in 12 feet); 6.3 mm (1/4 inch) over total length.
2. Alignment: Where surfaces abut in line, limit offset from true alignment to 2 mm (1/16 inch). Where surfaces meet at corners, limit offset from true alignment to 8 mm (1/32 inch).
3. Diagonal Measurements: Limit difference between diagonal measurements to 3 mm (1/8 inch).

F. Install hardware specified under Section 08 71 00, DOOR HARDWARE.

3.2 ADJUSTING:

A. After installation of entrance and storefront work is completed, adjust and lubricate operating mechanisms to ensure proper performance.

3.3 PROTECTION, CLEANING AND REPAIRING:

A. Remove all mastic smears and other unsightly marks, and repair any damaged or disfiguration of the work. Protect the installed work against damage or abuse. Protect aluminum surfaces from contact with lime, mortar, cement, acids, plaster, and other harmful contaminants.

- - - E N D - - -

SECTION 08 71 00
DOOR HARDWARE

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 commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Automatic operators.

C. Related Sections:

1. Division 06 Section “Rough Carpentry”.
2. Division 08 Section “Hollow Metal Doors and Frames”.
3. Division 08 Section “Flush Wood Doors”.
4. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
5. Division 28 Section “Access Control”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. UL/ULC and CSA C22.2 – Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
8. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. 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 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.
g. Door and frame sizes and materials.
h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring,

communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified 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.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this

Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Automatic Operator Supplier Qualifications: Power operator products and accessories are required to be supplied and installed through current members of the manufacturer's "Power Operator Preferred Installer" program. Suppliers are to be factory trained, certified, and a direct purchaser of the specified power operators and be responsible for the installation and maintenance of the units and accessories indicated for the Project.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training

will include the use of installation manuals, hardware schedules, templates and physical product samples as required.

2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. 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.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Twenty five years for manual surface door closer bodies.
4. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3.

Products are identified by using door hardware designations, as follows:

C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity, unless otherwise indicated:

    a. Two Hinges: For doors with heights up to 60 inches.
    b. Three Hinges: For doors with heights 61 to 90 inches.
    c. Four Hinges: For doors with heights 91 to 120 inches.
    d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

    a. Widths up to 3’5”: 4-1/2” standard or heavy weight as specified.
    b. Sizes from 3’6” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

    a. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:

    a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Acceptable Manufacturers:

    a. Bommer Industries (BO).
    b. Lawrence Brothers (LA).
    c. McKinney Products (MK).

2.3 POWER TRANSFER DEVICES

A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Acceptable Manufacturers:

    a. McKinney Products (MK) - QC (# wires) Option.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
    a. McKinney Products (MK) - Electrical Connecting Kit: QC-R001.
    b. McKinney Products (MK) - Connector Hand Tool: QC-R003.

2. Acceptable Manufacturers:

    a. McKinney Products (MK) – QC-C Series.

C. Provide mortar guard enclosure on steel frames installed at masonry openings for each electrical hinge specified.

2.4 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

4. Acceptable Manufacturers:

    a. Door Controls International (DC).
    b. Rockwood Manufacturing (RO).
    c. Trimco (TC).

2.5 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

1. Acceptable Manufacturers:

    a. Stanley Best (BE).
    b. To Match Existing.

C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
4. Keyway: Match Facility Standard.

D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:

1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.

E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.

3. Existing System: Key locks to Owner's existing system.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Three (3) each.
2. Master Keys (per Master Key Level/Group): Five (5) each.
3. Construction Keys: Ten (10) each.
4. Construction Control Keys: Two (2) each.
5. Permanent Control Keys: Two (2 each).

G. Construction Keying: Provide construction master keyed brass temporary cores.

H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

I. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Acceptable Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

J. Key Control Software: Provide one network version of "Key Wizard" branded key management software package that includes one year of technical support and upgrades to software at no charge. Provide factory key system formatted for importing into “Key Wizard” software.

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Acceptable Manufacturers:

a. Corbin Russwin Hardware (RU) – ML2000 Series.
b. Sargent Manufacturing (SA) – 8200 Series.
c. Yale Locks and Hardware (YA) – 8800FL Series.

2.7 ELECTROMECHANICAL LOCKING DEVICES

A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.

1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.
2. Acceptable Manufacturers:

    a. Corbin Russwin Hardware (RU) - ML20900 Series.
    b. Sargent Manufacturing (SA) - 8200 Series.
    c. Yale Locks and Hardware (YA) - 8890 Series.

2.8 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Dustproof Strikes: BHMA A156.16.

2.9 ELECTROMAGNETIC LOCKING DEVICES

A. Surface Electromagnetic Locks (Heavy Duty): Electromagnetic locks to be surface mounted type conforming to ANSI A156.23, Grade 1 with minimum holding force strength of 1,200 pounds. Locks to be capable of either 12 or 24 voltage and be UL listed for use on fire rated door assemblies. Electronics are to be fully sealed against tampering and allow exterior weatherproof applications. As indicated in Hardware Sets, provide specified mounting brackets and housings. Power supply to be by the same manufacturer as the lock with combined products having a lifetime replacement warranty.

1. Acceptable Manufacturers:

a. Folger Adam (FA) - Series.
b. Secuity Door Controls (SD) - Series.
c. Securitron (SU) – M62 Series.

2.10 ELECTRIC STRIKES

A. Standard Electric Strikes: Heavy duty, cylindrical and mortise lock electric strikes conforming to ANSI/BHMA A156.31, Grade 1, UL listed for both Burglary Resistance and for use on fire rated door assemblies. Stainless steel construction with dual interlocking plunger design tested to exceed 3000 lbs. of static strength and 350 ft-lbs. of dynamic strength. Strikes tested for a minimum 1 million operating cycles. Provide strikes with 12 or 24 VDC capability and supplied standard as fail-secure unless otherwise specified. Option available for latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Acceptable Manufacturers:

a. Folger Adam EDC (FO).
b. HES (HS).
c. Von Duprin (VD).

2.11 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.

6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

8. Rail Sizing: Provide exit device rails factory sized for proper door width application.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Acceptable Manufacturers:

    a. Corbin Russwin Hardware (RU) – ED5000 Series.
    b. Sargent Manufacturing (SA) - 80 Series.
    c. Von Duprin (VD) - 98 XP Series.

2.12 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt and security type fasteners as required for proper installation.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Acceptable Manufacturers:

a. Corbin Russwin Hardware (RU) – DC6000 Series.
b. Sargent Manufacturing (SA) - 351 Series.
c. Norton Door Controls (NO) - 7500 Series.

C. Door Closers, Surface Mounted (Cam Action): ANSI/BHMA 156.4, Grade 1 certified surface mounted, high efficiency door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be of the cam and roller design, one piece cast aluminum silicon alloy body with adjustable backcheck and independently controlled valves for closing sweep and latch speed.

1. Acceptable Manufacturers:

a. Corbin Russwin (RU) - DC5000 Series.
b. Norton Door Controls (NO) - 2800ST Series.
c. Sargent Manufacturing (SA) - 421 Series.

2.13 AUTOMATIC DOOR OPERATORS

A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.

1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.

B. Electrohydraulic Door Operators: Self-contained low-pressure units with rack and pinion design contained within a cast aluminum housing. Door closing speed controlled by independent hydraulic adjustment valves in the sweep and latch range of the closing cycle. Operator is to provide conventional door closer opening and closing forces unless the power operator motor is activated. Unit is to include an adjustable hydraulic backcheck valve to cushion the door speed if opened violently. Non-handed units for both push and pull side applications.

C. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.

D. Standard: Certified ANSI/BHMA A156.19.

1. Performance Requirements:

a. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
b. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.

E. Configuration: Surface mounted. Door operators to control single swinging and pair of swinging doors.

F. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19. When not in automatic mode, door operator to function as manual door closer with fully adjustable opening and closing forces, with or without electrical power.

1. On-off switch to control power to be key switch operated.

G. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.

H. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes,

magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.

I. Activation Devices: Provide activation devices in accordance with ANSI/BHMA A156.19 standard, for condition of exposure indicated and for long term, maintenance free operation under normal traffic load operation. Coordinate activation control with electrified hardware and access control interfaces. Activation switches are standard SPST, with optional DPDT availability.

J. Signage: As required by cited ANSI/BHMA A156.19 standard for the type of operator.

1. Acceptable Manufacturers:

a. Besam Automated Entrance Systems (BM) - SW100 Series.
b. Chase Doors (CH) - Series.
c. Norton Door Controls (NO) - 6000 Series.

2.14 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.

2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1″ LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:

a. Stainless Steel: 300 grade, 050-inch thick.

4. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.

5. Acceptable Manufacturers:

a. Hiawatha, Inc. (HI).
b. Rockwood Manufacturing (RO).
c. Trimco (TR).

2.15 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Acceptable Manufacturers:

a. Door Controls International (DC).
b. Rockwood Manufacturing (RO).
c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Acceptable Manufacturers:

a. Rixson Door Controls (RF).
b. Rockwood Manufacturing (RO).
c. Sargent Manufacturing (SA).

2.16 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: 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 UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.

D. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

E. Acceptable Manufacturers:

1. National Guard Products (NG).
2. Pemko Manufacturing (PE).
3. Reese Enterprises, Inc. (RE).

2.17 ELECTRONIC ACCESSORIES

A. Touchless Switches: FCC certified microwave sensing switch used for REX or activation of various access control devices in place of a traditional wired switch. Unit to have an adjustable sensing zone from 4″ to 24″. At exterior locations furnish foam gaskets and weather covers. Provide single gang or double gang unit as specified in the hardware sets

1. Acceptable Manufacturers:

a. Norton Door Controls (NO) - 679 Series.
b. Securitron (SU) - WSS Series.

B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Acceptable Manufacturers:

a. Sargent Manufacturing (SA) – 3280 Series.
b. Security Door Controls (SD) - DPS Series.
c. Securitron (SU) - DPS Series.

C. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Acceptable Manufacturers:

a. Corbin Russwin Hardware (RU) – 782.
b. Sargent Manufacturing (SA) – 3500 Series.
c. Securitron (SU) - BPS Series.
d. Von Duprin (VD) - PS.

2.18 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.19 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

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

D. Antimicrobial Finishes: Where specified, finishes on locksets, latchsets, exit devices and push/pull trim to incorporate an FDA recognized. Silver Ion, antimicrobial coating (MicroShield™) listed for use on equipment as a suppressant to the growth and spread of a broad range of bacteria, algae, fungus, mold and mildew.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Power Operator products and accessories are required to be installed through current members of the manufacturer's "Power Operator Preferred Installer" program.

D. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

PHASE 1

Set: PH1-1 – EMS

Doors: GE113

3 Hinge (A8111)	T4A3786 5" x 4-1/2"	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Overhead Stop (C01541)	69XS x 90 deg	US26D	SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH1-2 – AMMS

Doors: GE113A.1

6 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Flush Bolt (L04251)	555 x 12"	US26D	RO
1 Closer (C02011) *(For active leaf of pair only)*	351 O	EN	SA
2 Kickplate (J102)	K1050 10" x 1" LDW 4BE CSK	US32D	RO
2 Door Stop (L02131)	481	US26D	RO

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door manufacturer

Set: PH1-3 – Exterior AMMS

Doors: GE113A.2

6 Hinge (A2111)	T4A3386 4-1/2" x 4-1/2" NRP	US32D	MK
1 Storeroom Lockset (F15)	72 SG 8251 LNL x CMK	US26D	SA
2 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Flush Bolt (L04251)	555 x 12"	US26D	RO
1 Closer (C02021) *(For active leaf of pair only)*	351 P3	EN	SA
1 Mounting Bracket	770SPB		ZE
2 Kickplate (J102)	K1050 10" x 1" LDW 4BE CSK	US32D	RO
2 Overhead Stop (C02541)	59XS x 90 deg	US26D	SA
2 Mounting Bracket	770SPB		ZE
2 Door Bottom Seal (R0Y536)	345 AV x DOW		PE
1 Drip Strip	346 C x DOW + 4"		PE

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door

manufacturer

Set: PH1-4 – Utility

Doors: GE113B

3 Hinge (A8112)	TA2714 4-1/2" x 4-1/2" NRP	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA
3 Silencer (L03011)	608		RO

Set: PH1-5 – Mechanical Room

Doors: GE115B

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA
1 Mounting Bracket	770SPB		ZE
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH1-6 – Electric Room

Doors: GE115C

2 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	US26D	MK
1 Electric Hinge (A8111) *(Install at middle hinge)*	T4A3786 4-1/2" x 4-1/2" QC-12	US26D	MK
1 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-C1500P		MK
1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness *(Install between electric hinge and electrified lockset)*	QC-CXXX x required length		MK
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA
1 Mounting Bracket	770SPB		ZE
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Card Reader contractor	Furnished and installed by security	00	

1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to unlock the corridor side lever of the electrified exit device

Push bar of electrified exit device always free for immediate egress

Set: PH1-7 – Mechanical Room

Doors: GE265A

5 Hinge (A8112)	TA2714 4-1/2" x 4-1/2" NRP	US26D	MK
1 Electric Hinge (A8112)	TA2714 4-1/2" x 4-1/2" QC-12	US26D	MK
(Install at middle hinge-active leaf only)			
1 ElectroLynx Harness	QC-C1500P		MK
(Install between electric hinge and junction box)			
1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness	QC-CXXX x required length		MK
(Install between electric hinge and electrified lockset)			
2 Flush Bolt (L04251)	555 x 12"	US26D	RO
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA
(For active leaf of pair only)			
2 Kickplate (J102)	K1050 10" x 1" LDW 4BE CSK	US32D	RO
1 Overhead Stop (C02541)	59XS x 90 deg	US26D	SA
(For inactive leaf of pair only)			
1 Threshold (J32130)	1715 A x DOW x MS & ES25		PE
1 Set of Gasketing (R0Y155)	S88 BL x DOW x DOH		PE
2 Door Bottom Seal (R0Y416)	321 CN x DOW		PE
1 Card Reader	Furnished and installed by security contractor	00	
2 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

Flat metal astragal furnished by door manufacturer

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to unlock the corridor side lever of the electrified lockset

Mechanical room side lever of the electrified lockset always free for immediate egress

Set: PH1-8 – Exterior Mechanical Room

Doors: GE265B

6 Hinge (A2112)	TA2314 4-1/2" x 4-1/2" NRP	US32D	MK
1 Storeroom Lockset (F15)	72 SG 8251 LNL x CMK	US26D	SA
1 Set Auto Flush Bolts	Type 25 Less Bottom Bolt		

1 Coordinator	Type 21A		
1 Overlapping Astragal with Self-Adhesive Seal	R0Y634 x R0Y154 x Thru-Bolts		
2 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02021)	351 P10	EN	SA
2 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Threshold (J32130)	1715 A x DOW x MS & ES25		PE
1 Set of Gasketing (R0Y165)	316 AS x DOW x DOH		PE
1 Door Bottom Seal (R0Y536)	345 AV x DOW		PE
1 Drip Strip	346 C x DOW + 4"		PE

PHASE 2

Set: PH2-1 – EMS

Doors: GE101

3 Hinge (A8111)	T4A3786 5" x 4-1/2"	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH2-2 – Corridor Storage

Doors: GE113D

4 Hinge (A8111)	T4A3786 5" x 4-1/2" NRP	US26D	MK
2 Electric Hinge (A8111) *(Install at middle hinge-both leaves)*	T4A3786 5" x 4-1/2" QC-12	US26D	MK
2 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-C1500P		MK
2 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electric Latch Retraction Exit SG NB 8706 J x 706 ETL x Device (Type 2/03)	US32D CMK x 24VDC	16 43 56 72 SA	
1 Fail Secure Electric Latch Retraction Exit SG NB 8710 J x 710 ETL x Device (Type 2/02)	US32D CMK x 24VDC	16 43 56 72 SA	
2 ElectroLynx Harness *(Install between electric hinge and electric latch retraction exit device)*	QC-CXXX x required length		MK

3 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Automatic Door Operator	6060 x 24VDC	689	NO
1 Touchless Wall Switch	697 x 125VAC		NO
2 Armor Plate (J101)	K1050 30" x 1" LDW 4BE CSK	US32D	RO
2 Heavy Duty Door Stop	463	US26D	RO
1 Card Reader	Furnished and installed by security contractor	00	
2 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door manufacturer

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to retract the latch of the electric latch retraction exit devices and then activate the automatic door operators

Storage side wall switch to retract the latch of the electric latch retraction exit devices and then activate the automatic door operators

Push bar of electric latch retraction exit devices always free for immediate egress

Set: PH2-3 – Corridor Office

Doors: GE115A

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Office Lockset (F04)	72 SG 8255 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH2-4 – Stair

Doors: GE117

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA

1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
3 Silencer (L03011)	608		RO

Set: PH2-5 – Utility

Doors: GE121B

3 Spring Hinge *(For active leaf of pair only)*	1502 4-1/2" x 4-1/2"	USP	MK
3 Hinge (A8112)	TA2714 4-1/2" x 4-1/2" NRP	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Flush Bolt (L04251)	555 x 12"	US26D	RO
2 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door manufacturer

Set: PH2-6 – Mechanical Room

Doors: GE121C

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA
1 Mounting Bracket	770SPB		ZE

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH2-7 – Staging Decon

Doors: GE125C

4 Hinge (A8111)	T4A3786 5" x 4-1/2"	US26D	MK
2 Electric Hinge (A8111) *(Install at midlle hinge-both leaves)*	T4A3786 5" x 4-1/2" QC-12	US26D	MK
2 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-C1500P		MK
2 Mortar Box	MG-16	US2C	MK
2 Fail Secure Electric Latch Retraction Exit		16 43 56 72	
SG NB 8715 J x 715-8 ETL x Device (Type 2/14)	US32D CMK x 24VDC	SA	
2 ElectroLynx Harness *(Install between electric hinge and electric latch retraction exit device)*	QC-CXXX x required length		MK
2 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Mounting Bracket	770SPB		ZE
2 Automatic Door Operator	6010 x 24VDC	689	NO
1 Touchless Wall Switch	697 x 125VAC		NO

2 Armor Plate (J101)	K1050 30" x 1" LDW 4BE CSK	US32D	RO
2 Wall Stop (L02101)	406	US32D	RO
2 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
4 Mounting Bracket	770SPB		ZE
1 Card Reader	Furnished and installed by security contractor	00	
2 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door manufacturer
This opening to interlocked with opening GE125A.1 in Hardware Set PH3-9
Electromagnetic locks to be tied into the building fire alarm system
Upon activation of the building fire alarm system power to be terminated to the electromagnetic locks deactivating the units
Card reader to be used by authorized persons to gain entry from the corridor side of the opening
Card reader to be used to deactivate the electromagnetic locks, retract the latch of the electric latch retraction exit devices and then activate the automatic door operators
Staging decon side wall switch to deactivate the electromagnetic lock, retract the latch of the electric latch retraction exit devices and then activate the automatic door operators
Card reader and wall switch to be deactivated when GE125A.1 is in the open position

Set: PH2-8 – Water Treatment

Doors: GE125E

1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Heavy Duty Door Stop	463	US26D	RO

STC rated opening-cam lift hinges, threshold, sound seal and automatic door bottom furnished by door manufacturer

PHASE 2A

Set: PH2A-1 – Lockers

Doors: GE126, GE127

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set (F01)	SG 8215 LNL	US26D	SA
1 Closer (C02211)	421 CTB	EN	SA

1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Mop Plate (J103)	K1050 4" x 1" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH2A-2 – Toilet

Doors: GE126A, GE127A

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Privacy Set (F02)	49 SG 8265 LNL	US26D	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Mop Plate (J103)	K1050 4" x 1" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH2A-3 – Lift Equipment

Doors: GE130C

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	USP	MK
1 Storeroom Lock (F07)	72 76 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Door Stop (L02131)	481	US26D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH2A-4 – Utility

Doors: GE133A

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02021)	351 P10	EN	SA
1 Mounting Bracket	770SPB		ZE
1 Wall Stop (L02101)	406	US32D	RO
3 Silencer (L03011)	608		RO

PHASE 3

Set: PH3-1 – Vendor Consign

Doors: GE116.1

3 Hinge (A8111)	T4A3786 5" x 4-1/2" NRP	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 ElectroLynx Harness *(Install between electric strike and junction box)*	QC-C1500P		MK
1 Automatic Door Operator	6010 x 24VDC	689	NO
1 Touchless Wall Switch	697 x 125VAC		NO
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Card Reader contractor	Furnished and installed by security	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

This opening to be interlocked with opening GE116.2 in Hardware Set PH3-1.1

Electromagnetic lock to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock
deactivating the unit

Electromagnetic lock to be activated only when opening GE116.2 is in the open position

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to activate the electric strike and then the automatic door operator

Consign side wall switch to activate the electric strike and then the automatic door operator

Card reader and wall switch to be deactivated when opening GE112.2 is in the opening position

Set: PH3-1.1 – Vendor Consign

Doors: GE116.2

3 Hinge (A8111)	T4A3786 5" x 4-1/2"	US26D	MK
1 Passage Set (F01)	SG 8215 LNL	US26D	SA
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 Electric Strike Faceplate	KM	630	HS
1 ElectroLynx Harness *(Install between electric strike and junction box)*	QC-C1500P		MK
1 Automatic Door Operator	6010 x 24VDC	689	NO
2 Touchless Wall Switch	697 x 125VAC		NO
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

This opening to be interlocked with opening GE116.1 in Hardware Set PH3-1

Electromagnetic lock to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock deactivating the unit

Electromagnetic lock to be activated only when opening GE116.1 is in the open position

Wall switches to activate the electric strike and then the automatic door operator

Wall switches to be deactivated when opening GE112.1 is in the opening position

Set: PH3-2 – Records

Doors: GE116A.1, GE116A.2

6 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Flush Bolt (L04251)	555 x 12"	US26D	RO
1 Dust Proof Strike (L04021)	570	US26D	RO
1 Closer/Stop (C02021 PT 4G) *(For active leaf of pair only)*	351 CPS	EN	SA
2 Kickplate (J102)	K1050 10" x 1" LDW 4BE CSK	US32D	RO
1 Overhead Stop (C02541) *(For inactive leaf of pair only)*	59XS x 90 deg	US26D	SA
2 Silencer (L03011)	608		RO

Flat metal astragal furnished by door manufacturer

Set: PH3-3 – Storage

Doors: GE120B.1

3 Hinge (A2111)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA

1 Heavy Duty Door Stop	463	US26D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH3-4 – Prep

Doors: GE120B.2

2 Hinge (A2111)	T4A3386 4-1/2" x 4-1/2" NRP	US32D	MK
1 Electric Hinge (A2111)	T4A3386 4-1/2" x 4-1/2" QC-12	US32D	MK
(Install at middle hinge)			
1 ElectroLynx Harness	QC-C1500P		MK
(Install between electric hinge and junction box)			
1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness	QC-CXXX x required length		MK
(Install between electric hinge and electrified lockset)			
1 Closer (C02021)	351 P10	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer
This opening to be interlocked with opening GE137E in Hardware Set PH3-4.1
Electromagnetic lock to be tied into the building fire alarm system
Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock
deactivating the unit
Electromagnetic lock to be activated only when opening GE1137E is in the open position
Card reader to be used to by authorized persons to gain entry from the ante room side of the opening
Card reader to be used to unlock the ante room side lever of the electrified lockset
Prep side lever of the electrified lockset always free for immediate egress
Card reader to be deactivated when opening GE137E is in the open position

Set: PH3-4.1 – Ante Room

Doors: GE137E

2 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" NRP	US26D	MK
1 Electric Hinge (A8111)	T4A3786 4-1/2" x 4-1/2" QC-12	US26D	MK
(Install at middle hinge)			
1 ElectroLynx Harness	QC-C1500P		MK

(Install between electric hinge and junction box)

1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness	QC-CXXX x required length		MK
(Install between electric hinge and electrified lockset)			
1 Closer (C02021)	351 P10	EN	SA
1 Mounting Bracket	770SPB		ZE
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

This opening to be interlocked with opening GE120B.2 in Hardware Set PH3-4

Electromagnetic lock to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock deactivating the unit

Electromagnetic lock to be activated only when opening GE120B.2 is in the open position

Card reader to be used to by authorized persons to gain entry from the ante room side of the opening

Card reader to be used to unlock the ante room side lever of the electrified lockset

Prep side lever of the electrified lockset always free for immediate egress

Card reader to be deactivated when opening GE120B.2 is in the open position

Set: PH3-5 – Disinfection

Doors: GE120B.3

3 Hinge (A2111)	T4A3386 4-1/2" x 4-1/2" NRP	US32D	MK
1 Office Lockset (F04)	72 SG 8255 LNL x CMK	US26D	SA
1 Permanent Core (E09241)	To match existing key system x MK		626 BE
1 Closer/Stop (C02021 PT 4G)	351 CPS	EN	SA
1 Mounting Bracket	770SPB		ZE

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH3-6 – Prep

Doors: GE120B.4

5 Hinge (A8111)	T4A3786 5" x 4-1/2"	US26D	MK
1 Electric Hinge (A8111)	T4A3786 5" x 4-1/2" QC-12	US26D	MK
(Install at middle hinge)			

1 ElectroLynx Harness	QC-C1500P		MK
(Install between electric hinge and junction box)			
1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness	QC-CXXX x required length		MK
(Install between electric hinge and junction box)			
1 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Flush Bolt (L04251)	555 x 12"	US26D	RO
1 Closer (C02011)	351 O	EN	SA
(For active leaf of pair only)			
2 Kickplate (J102)	K1050 10" x 1" LDW 4BE CSK	US32D	RO
2 Overhead Stop (C01541)	69XS x 90 deg	US26D	SA
1 Card Reader contractor	Furnished and installed by security	00	
2 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door manufacturer

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to unlock the corridor side lever of the electrified lockset

Prep side lever of the electrified lockset always free for immediate egress

Set: PH3-7 – Sterilization

Doors: GE120D.1, GE120D.2, GE120D.3, GE120D.4

3 Hinge (A2112)	TA2314 4-1/2" x 4-1/2" NRP	US32D	MK
1 Storeroom Lockset (F07)	3 72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Overhead Stop (C02541)	59XS x 90 deg x CPC	US26D	SA
1 Threshold (J35100)	181 AT x DOW x MS & ES25		PE
1 Set of Gasketing (R0Y155)	S88 BL x DOW x DOH		PE
1 Drip Strip	346 C x DOW + 4"		PE

Set: PH3-8 – Ante Room

Doors: GE125

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 ElectroLynx Harness	QC-C1500P		MK
(Install between electric strike and junction box)			
1 Automatic Door Operator	6060 x 24VDC	689	NO
1 Touchless Wall Switch	697 x 125VAC		NO

1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer
This opening to be interlocked with opening GE125A.2 in Hardware Set PH3-8.1
Electromagnetic lock to be tied into the building fire alarm system
Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock
deactivating the unit
Electromagnetic lock to be activated only when opening GE125A.2 is in the open position
Card reader to be used by authorized persons to gain entry from the corridor side of the opening
Card reader to be used to activate the electric strike and then activate the automatic door operator
Ante room side wall switch to activate the electric strike and then the automatic door operator
Card reader and wall switch to be deactivated when opening GE125A.2 is in the open position

Set: PH3-8.1 – Ante Room

Doors: GE125A.2

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set (F01)	SG 8215 LNL	US26D	SA
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 ElectroLynx Harness	QC-C1500P		MK
(Install between electric strike and junction box)			
1 Electric Strike Faceplate	KM	630	HS
1 Automatic Door Operator	6060 x 24VDC	689	NO
2 Touchless Wall Switch	697 x 125VAC		NO
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer
This opening to be integrated with opening GE125 in Hardware Set PH3-8
Electromagnetic lock to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock deactivating the unit

Electromagnetic lock to be activated only when opening GE125 is in the open position

Wall switches to activate the electric strike and then the automatic door operator

Wall switches to be deactivated when opening GE125 is in the open position

Wall switches to be deactivated when opening GE125 is in the open position

Set: PH3-9 – Staging Decon

Doors: GE125A.1

4 Hinge (A8111)	T4A3786 5" x 4-1/2"	US26D	MK
2 Electric Hinge (A8111)	T4A3786 5" x 4-1/2" QC-12	US26D	MK
(Install at middle hinge-both leaves)			
2 ElectroLynx Harness	QC-C1500P		MK
(Install between electric hinge and junction box)			
2 Mortar Box	MG-16	US2C	MK
2 Fail Secure Electric Latch Retraction Exit		16 43 56 72	
SG NB 8715 J x 715-8 ETL x Device (Type 2/14)	US32D CMK x 24VDC	SA	
2 ElectroLynx Harness	QC-CXXX x required length		MK
(Install between electric hinge and electric latch retraction exit device)			
2 Permanent Core (E09241) BE	To match existing key system x MK		626
2 Mounting Bracket	770SPB		ZE
2 Automatic Door Operator	6010 x 24VDC	689	NO
2 Touchless Wall Switch	697 x 125VAC		NO
2 Armor Plate (J101)	K1050 30" x 1" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Overhead Stop (C01541)	69XS x 90 deg	US26D	SA
2 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
4 Mounting Bracket	770SPB		ZE
2 Door Position Switch	DPS-M-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal, automatic door bottoms and astragal furnished by door manufacturer

This opening to be interlocked with opening GE125C in Hardware Set PH2-7

Electromagnetic locks to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic locks deactivating the units

Electromagnetic locks to be activated only when opening GE125C is in the open position
Wall switches to retract the latch of the electric latch retraction exit devices and then activate the automatic door operators
Wall switches to be deactivated when opening GE125C is in the open position

Set: PH3-10 – Utility

Doors: GE125D

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	USP	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA
1 Door Stop (L02131)	481	US26D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH3-11 – Ante Room

Doors: GE133.1

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set (F01)	SG 8215 LNL	US26D	SA
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 ElectroLynx Harness *(Install between electric strike and junction box)*	QC-C1500P		MK
1 Automatic Door Operator	6010 x 24VDC	689	NO
2 Touchless Wall Switch	697 x 125VAC		NO
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer
This opening to be interlocked with opening GE135 in Hardware Set PH3-11.1
Electromagnetic lock to be tied into the building fire alarm system
Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock deactivating the unit
Electromagnetic lock to be activated only when opening GE135 is in the open position

Wall switches to activate the electric strike and then the automatic door operator
Wall switches to be deactivated when opening GE135 is in the open position

Set: PH3-11.1 – Ante Room

Doors: GE135

3 Hinge (A8111)	T4A3786 5" x 4-1/2" NRP	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 ElectroLynx Harness *(Install between electric strike and junction box)*	QC-C1500P		MK
1 Automatic Door Operator	6060 x 24VDC	689	NO
1 Touchless Wall Switch	697 x 125VAC		NO
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Door Stop (L02131)	481	US26D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer
This opening to be integrated with opening GE133.1 in Hardware Set PH3-11
Electromagnetic lock to be tied into the building fire alarm system
Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock
deactivating the unit
Electromagnetic lock to be activate only when opening GE133.1 is in the open position
Card reader to be used by authorized persons to gain entry from the corridor side of the opening
Card reader to be used to activate the electric strike and then the automatic door operator
Ante room side wall switch to activate the electric strike and then the automatic door operator
Card reader and wall switch to be deactivated when opening GE133.1 is in the open position

Set: PH3-12 – Storage

Doors: GE133.2

3 Hinge (A2111)	T4A3386 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Closer (C02011)	351 O	EN	SA
1 Wall Stop (L02101)	406	US32D	RO

1 Electromagnetic Lock (E08531) *(Pull side mount)*	M62-B x ZA-62CL x 24VDC		SU
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

This opening to be integrated with opening GE137 in Hardware Set PH3-12.1

Electromagnetic lock to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock deactivating the unit

Electromagnetic lock to be activated only when opening GE137 is in the open position

Set: PH3-12.1 – Ante Room

Doors: GE137

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lockset (F07)	72 SG 8204 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Electric Strike (E09321)	1006 x 1000-KM x 2004 x 24VDC	630	HS
1 ElectroLynx Harness *(Install between electric strike and junction box)*	QC-C1500P		MK
1 Automatic Door Operator	6010 x 24VDC	689	NO
1 Touchless Wall Switch	697 x 125VAC		NO
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Electromagnetic Lock (E08501)	M62-B x 24VDC		SU
2 Mounting Bracket	770SPB		ZE
1 Card Reader contractor	Furnished and installed by security	00	
1 Door Position Switch	DPS-M-BK		SU
1 Power Supply	BPS-24-1		SU
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

This opening to be integrated with opening GE133.2 in Hardware Set PH3-12

Electromagnetic lock to be tied into the building fire alarm system

Upon activation of the building fire alarm system power to be terminated to the electromagnetic lock deactivating the unit

Electromagnetic lock to be activated only when opening GE133.2 is in the open position

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to activate the electric strike and then the automatic door operator

Ante room side wall switch to activate the electric strike then the automatic door operator

Card reader and wall switch to be deactivated when opening GE133.2 is in the open position

Set: PH3-13 – Sliding Door

Doors: GE133B

All hardware furnished by door manufacturer

Set: PH3-14 – Lockers

Doors: GE137A, GE137D

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Passage Set (F01)	SG 8215 LNL	US26D	SA
1 Closer (C02211)	421 CTB	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Mop Plate (J103)	K1050 4" x 1" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH3-15 – Toilet

Doors: GE137B, GE137C

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Privacy Set (F02)	49 SG 8265 LNL	US26D	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Mop Plate (J103)	K1050 4" x 1" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Door Stop (L02131) *(For door GE137C only)*	481	US26D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH3-16 – Multipurpose Room

Doors: GE138

2 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Electric Hinge (A8111) *(Install at middle hinge)*	T4A3786 4-1/2" x 4-1/2" QC-12	US26D	MK
1 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-C1500P		MK
1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-CXXX x required length		MK
1 Permanent Core (E09241) BE	To match existing key system x MK		626

1 Closer/Holder (C02051)	351 H	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-W-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to unlock the corridor side lever of the electrified lockset

Multipurpose room side lever of the electrified lockset always free for immediate egress

Set: PH3-17 – Administration

Doors: GE139.1

2 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Electric Hinge (A8111) *(Install at middle hinge)*	T4A3786 4-1/2" x 4-1/2" QC-12	USP	MK
1 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-C1500P		MK
1 Mortar Box	MG-16	US2C	MK
1 Fail Secure Electrified Lockset	72 SG 8271 LNL x CMK x 24VDC	US26D	SA
1 ElectroLynx Harness *(Install between electric hinge and junction box)*	QC-CXXX x required length		MK
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Closer (C02011)	351 O	EN	SA
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Door Stop (L02131)	481	US26D	RO
1 Card Reader	Furnished and installed by security contractor	00	
1 Door Position Switch	DPS-W-BK		SU
1 Power Supply	3520		SA
1 Wiring Diagram	WD-SYSPK		SA

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Card reader to be used by authorized persons to gain entry from the corridor side of the opening

Card reader to be used to unlock the corridor side lever of the electrified lockset

Administration side lever of the electrified lockset always free for immediate egress

Set: PH3-18 – Administration

Doors: GE139.2

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Office Lockset (F04)	72 SG 8255 LNL x CMK	US26D	SA
1 Permanent Core (E09241) BE	To match existing key system x MK		626
1 Kickplate (J102)	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

Set: PH3-19 – Office

Doors: GE139A, GE139B

3 Hinge (A8111)	T4A3786 4-1/2" x 4-1/2"	US26D	MK
1 Office Lockset (F04)	72 SG 8255 LNL x CMK	US26D	SA
1 Wall Stop (L02101)	406	US32D	RO

STC rated opening-threshold, sound seal and automatic door bottom furnished by door manufacturer

END OF SECTION 087100

SECTION 08 71 13
AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies equipment, controls and accessories for automatic operation of swing and sliding doors.

1.2 RELATED WORK

A. Aluminum frames entrance work; Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.

B. Door hardware; Section 08 71 00, DOOR HARDWARE.

C. Section 28 13 00, ACCESS CONTROL.

D. Glass and glazing of doors and frames; Section 08 80 00, GLAZING.

E. Electric general wiring, connections and equipment requirements; Division 26, ELECTRICAL.

F. Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 QUALITY ASSURANCE

A. Automatic door operators, controls and other equipment shall be products of a manufacturer regularly engaged in manufacturing such equipment for a minimum of three years.

B. One type of automatic door equipment shall be used throughout the building.

C. Equipment installer shall have specialized experience and shall be approved by the manufacturer.

1.4 WARRANTY

A. Automatic door operators shall be subject to the terms of the "Warranty of Construction", FAR clause 52.246-21, except that the Warranty period shall be two years in lieu of one year.

1.5 MAINTENANCE MANUALS

A. In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS", furnish maintenance manuals and instructions on automatic door operators.

1.6 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's literature and data describing operators, power units, controls, door hardware and safety devices.

C. Shop Drawings:
   1. Showing location of controls and safety devices in relationship to each automatically operated door.
   2. Showing layout, profiles, product components, including anchorage, accessories, as applicable.
   3. Submit templates, wiring diagrams, fabrication details and other information to coordinate the proper installation of the automatic door operators.
D. Submit in writing to COR that items listed in Article 1.3 are in compliance.

1.7 DESIGN CRITERIA

A. As a minimum automatic door equipment shall comply with the requirements of BHMA 156.10. Except as otherwise noted on drawings, provide operators which will move the doors from the fully closed to fully opened position in five seconds maximum time interval, when speed adjustment is at maximum setting.
B. Equipment: Conforming to UL 325. Provide key operated power disconnect wall switch for each door installation.

C. Electrical Wiring, Connections and Equipment: Provide all motor, starter, controls, associated devices, and interconnecting wiring required for the installation. Equipment and wiring shall be as specified in Division 26, ELECTRICAL.

1.8 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
B. Builders Hardware Manufacturers Association, Inc. (BHMA):
   A156.10-05.....Power Operated Pedestrian Doors (BHMA 1601)
C. National Fire Protection Association (NFPA):
   101-09.....Life Safety Code
D. Underwriters Laboratory (UL):
   325-10.....Door, Drapery, Gate, Louver, and Window Operators and Systems

1.9 DELIVERY AND STORAGE

A. Delivery shall be in factory’s original, unopened, undamaged container with identification labels attached.

PART 2 - PRODUCTS

2.1 SWING DOOR OPERATORS

A. General: Swing door operators shall be of institutional type, door panel size 600 mm to 1250 mm (2'-0" to 5'-0") width, weight not to exceed 300 kg (600 pounds), electric operated for overhead mounting within the header or transom. Furnish metal mounting supports, brackets and other accessories necessary for the installation of operators at the head of the door frames. The motor on automatic door operator shall be provided with an interlock so that the motor will not operate when doors are electrically locked from opening.

B. Operators shall have checking mechanism providing cushioning action at last part of door travel, in both opening and closing cycle. Operators shall be capable of recycling doors instantaneously to full open position from any point in the closing cycle when control switch is activated. Operators shall, when automatic power is interrupted or shut-off, permit doors to easily open manually without damage to automatic operator system.

C. Operator, enclosed in housing, shall open door by energizing motor and shall stop by electrically reducing voltage and stalling motor against mechanical stop. Door shall close by means of spring energy, and close force shall be controlled by gear system and motor being used as dynamic break without power, or controlled by hydraulic closer in electro-hydraulic operators. System shall operate as manual door control in event of power failure. Opening and closing speeds shall be adjustable:

1. Operator Housing: Housing shall be a minimum of 112 mm (4-1/2 inches) wide by 140 mm (5.5 inches) high aluminum extrusions with enclosed end caps for application to 100 mm (4 inches) and larger frame systems. All structural sections shall have a minimum thickness of 3.2 mm (0.125 inch) and be fabricated of a minimum of 6063-T5 aluminum alloy.

2. Power Operator: Completely assembled and sealed unit which shall include gear drive transmission, mechanical spring and bearings, all located in aluminum case and filled with special lubricant for extreme temperature conditions. Complete unit shall be rubber mounted with provisions for easy maintenance and replacement, without removing door from pivots or frame.

3. Connecting hardware shall have drive arm attached to door with a pin linkage rotating in a self-lubricating bearing. Door shall not pivot on shaft of operator.
4. Electrical Control: Operator shall have a self contained electrical control unit, including necessary transformers, relays, rectifiers, and other electronic components for proper operation and switching of power operator. All connecting harnesses shall have interlocking plugs.

2.2 MICROPRCESSOR CONTROLS

A. The system shall include a multi-function microprocessor control providing adjustable hold open time (1–30 seconds), LED indications for sensor input signals and operator status and power assist close options. Control shall be capable of receiving activation signals from any device with normally open dry contact output. All activation modes shall provide fully adjustable opening speed:

B. The door shall be held open by low voltage applied to the continuous duty motor. The control shall include an adjustable safety circuit that monitors door operation and stops the opening direction of the door if an obstruction is sensed. The motor shall include a recycle feature that reopens the door if an obstruction is sensed at any point during the closing cycle. The control shall include a standard three position key switch with functions for ON, OFF, and HOLD OPEN, mounted on operator enclosure, door frame, or wall, as indicated in the architectural drawings.

2.3 SLIDING DOOR OPERATORS

A. General: Sliding doors shall have electric operators, conforming to BHMA A156.10 and the following requirements as applicable. Assembly shall be single or bi-parting sliding doors as shown on drawings.

B. Door Operation: Doors shall be opened by electric motor pulling door from closed to open position and shall stop door by electrically reducing voltage and stalling door against mechanical stop. System shall permit manual control of door in event of power failure. Opening and closing speeds shall be adjustable. In compliance with NFPA-101, all door panels shall allow "breakout" to the full open position to provide instant egress at any point in the door’s movement.

C. Operators: Completely assembled and sealed electromechanical operating unit, all located in cast aluminum housing and filled with special lubricant for extreme conditions. Attached to transmission system shall

be a minimum 1/8 Hp "DC" shunt-wound permanent magnet motor with sealed ball bearings. Complete unit shall be rubber mounted with provisions for easy maintenance and replacement. Operators shall have adjustable opening and closing cycle. Housing shall be minimum 6063T-5 alloy aluminum not less than .005 mm (125 inch) minimum thickness, 150 mm by 200 mm (6 inch wide by 8 inch high).

D. Sliding Door Hardware Guide Rollers, Door Carrier: Top door carriers shall ride on steel or delrin rollers incorporating sealed bearings with each door having two support rollers and one anti-rise roller. Each roller shall have a minimum of 9 mm (3/8-inch) of vertical adjustment with positive mechanical locks. Each door shall also include two urethane covered oil impregnated bearing bottom rollers attached with 5 mm (3/16-inch) thick formed steel guide brackets. Each door carrier supporting a door leaf shall include a vertical steel reinforcing member to prevent sagging when door is swung under breakaway conditions. All carbon steel brackets and fittings shall be plated for corrosion resistance.

E. Locking Hardware: Do not provide any locking hardware at interior doors not requiring physical security. Provide doors with flush concealed vertical rod panic hardware integrated into the doors where physical security is required and free egress is required at all times. Provide doors with manufacturers’ standard hookbolt lock (keyed both sides) where physical security is required and free egress is not required at all times. At doors with access control devices (card readers, etc.), provide doors with electronic deadbolt locking to prevent the doors from manually sliding open.

F. Door Closers: Provide all breakout or swing-out panels with door closers concealed in the top rail of the door.

2.4 POWER UNITS

Each power unit shall be self-contained, electric operated and independent of the door operator. Capacity and size of power circuits shall be in accordance with automatic door operator manufacturer's specifications and Division 26 – ELECTRICAL.

2.5 DOOR CONTROLS

A. Opening and closing actions of doors shall be actuated by controls and safety devices specified, and conform to ANSI 156.10. Controls shall cause doors to open instantly when control device is actuated; hold

doors in open positions; then, cause doors to close, unless safety device or reactivated control interrupts operation.

B. Manual Controls:

1. Push Plate Wall Switch: Recess type, stainless steel push plate minimum 100 mm by 100 mm (four-inch by four-inch), with 13 mm (l/2-inch) high letters "To Operate Door--Push" engraved on face of plate.

2.6 SAFETY DEVICES

A. General: Area over which doors swing or slide shall be a safety section and anyone standing in path of door's movement shall be protected by a safety device.

B. At sliding doors, provide two photoelectric beams mounted at heights of 600 mm (24 inches) and 1200 mm (48 inches) in the door frame on sliding doors. Provide overhead safety presence sensors at door head on each side of the opening. Beams shall parallel door openings to prevent doors from closing when anyone is in the center of the door or doors. When beams are activated, doors shall recycle to full open position. Actuation shall include a motion detector mounted on each side of the door for detection of traffic in each direction.

C. Each swing door shall have installed on the pull side a presence sensor to detect any person standing in the door swing path and prevent the door from opening.

D. Time delay switches shall be adjustable between 3 to 60 seconds and shall control closing cycle of doors.

E. Decals with sign "In" or "Do Not Enter" shall be installed on both faces of each door where shown.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate installation of equipment with other related work. Manual controls and power disconnect switches shall be recessed or semi-flush mounted in partitions. Secure operator components to adjacent construction with suitable fastenings. Conceal conduits, piping, and electric equipment, in finish work.

B. Install power units in locations shown. Where units are to be mounted on walls, provide metal supports or shelves for the units. All equipment, including time delay switches, shall be accessible for maintenance and adjustment.

C. Operators shall be adjusted and must function properly for the type o£ traffic (pedestrians, carts, stretchers and wheelchairs) expected to pass through doors. Each door leaf of pairs of doors shall open and close in synchronization. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.

D. Install controls at positions shown and make them convenient for particular traffic expected to pass through openings. Maximum height of push plate wall switches from finished floors shall be 40 inches unless otherwise approved by the COR.

3.2 INSTRUCTIONS

A. Following the installation and final adjustments of the door operators, the installer shall fully instruct VA personnel for 4 hours on the operating, servicing and safety requirements for the swing and sliding automatic door operators.

B. Coordinate instruction to VA personnel with VA COR.

- - - E N D - - -

SECTION 08 71 13.11
LOW ENERGY POWER ASSIST DOOR OPERATORS

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies low energy power assisted automatic operation of swing doors. The door operator system shall be complete including operator, controls, door arm and operator enclosure (header and cover).

1.2 RELATED WORK

A. Sealants; Section 07 92 00, JOINT SEALANTS.

B. Steel doors; Section 08 11 13, HOLLOW METAL DOORS AND FRAMES.

C. Aluminum frames entrance work; Section 08 41 13, ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS.

D. Door hardware; Section 08 71 00, DOOR HARDWARE.

E. Glass and glazing of doors and frames; Section 08 80 00, GLAZING.

F. Finish Color, Section 09 06 00, SCHEDULE FOR FINISHES.

G. Smoke detectors for control of fire/smoke doors to be wired per Section 28 31 00, FIRE DETECTION AND ALARM.

H. Electric general wiring, connections and equipment requirements; Division 26, ELECTRICAL.

1.3 MANUFACTURER'S QUALIFICATIONS

A. Power assisted door operators, controls and other equipment shall be products of a manufacturer regularly engaged in manufacturing such equipment for a minimum of three years.

B. One manufacturer of automatic door equipment shall be used throughout the building project.

1.4 WARRANTY

Power assisted door operators, controls and other related equipment shall be subject to the terms of the "Warranty of Construction", FAR clause 52.246-21, except that the warranty period shall be two years in lieu of one year.

1.5 MAINTENANCE MANUALS

In accordance with Section 01 00 00, GENERAL REQUIREMENTS Article titled "INSTRUCTIONS," furnish three copies of maintenance manuals and instructions on automatic door operators.

1.6 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's literature and data describing operators, power units, controls, door hardware and safety devices.

C. Shop Drawings:
Showing location of controls and safety devices in relationship to each automatically operated door. This includes templates, wiring diagrams, fabrication details, anchorage, and other information to providers of related work to coordinate the proper installation of the door operators.

1.7 DESIGN CRITERIA

A. Power assisted automatic door equipment shall accommodate normal traffic as well as the weight of the doors.

B. Equipment: UL approved and comply with applicable codes. Motors shall be rated minimum one-quarter horsepower and shall be single phase and 115 volts.

C. Electrical Wiring; Provide wiring so that only a single power supply is required. Equipment and wiring shall be as specified in Division 26, ELECTRICAL.

1.8 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standards Institute (ANSI):
ICC/ANSI A117.1-03.....Guideline for Accessible and Usable Buildings and Facilities-Providing Accessibility and Usability for Physically Handicapped People

B. Builders Hardware Manufacturers Association, Inc. (BHMA):
156.19-07.....Power Assist and Low Energy Power Operated Doors

PART 2 - PRODUCTS

2.1 OPERATORS

A. Automatic door operators shall be for commercial doors and shall be electromechanical and surface mounted above the door to the header or transom bar. The opening force shall be generated by a permanent magnet DC motor driving a combination spiral bevel/spur gear reducer and transmitted to the door through an arm linkage. Opening speed shall be adjustable and feature dual backcheck control allowing adjustment of backcheck speed and position. Closing shall be by spring force

generated by a metal compression spring. The spring shall reduce manual opening force to not more than 67 N (15 lbf). The minimum diameter of spring wire shall be .007mm (172 in.). Under the specified design load of the door, the spring shall be capable of performing 2,000,000 cycles before fracture. Adjustable closing speed and fixed latch speed shall control the door in the closing cycle. The doors shall be operated manually at any time without damage to the operator or components.

B. All operators shall have checking mechanism providing cushioning action at last part of door travel, in both opening and closing cycle. Operators shall recycle doors instantaneously to full open position from any point in closing cycle when control switch is reactivated.

C. Operator shall be swinging type enclosed in housing. Operator shall open door by energizing motor and shall stop by electrically reducing voltage and stalling motor against mechanical stop. Door shall close by means of spring energy, and close force shall be controlled by gear system and motor being used as dynamic break without power. System shall operate as manual door control in event of power failure. Opening and closing speeds shall be adjustable:

1. Swing Operator Housing: Housing shall be 140 mm (5-1/2 inches) wide by 150 mm (6 inches) high aluminum extrusions with enclosed end caps for application to 100 mm (4 inch) and larger frame systems. All structural sections shall have a minimum thickness of 3.7 mm (0.146 inch) and be fabricated of 6063-T5 aluminum alloy.
2. Swing Power Operator: Completely assembled and sealed unit which shall include helical gear drive transmission, mechanical spring and bearings, all located in cast aluminum case and filled with special lubricant for extreme temperature conditions. A "DC" shunt-wound permanent magnet motor with sealed ball bearings shall be attached to transmission system. Complete unit shall be rubber mounted with provisions for easy maintenance and replacement, without removing door from pivots or frame.
3. Connecting hardware for swing overhead concealed type power operator shall have drive arm attached to door with a pin linkage rotating in a self-lubricating bearing and adjustable slide block, traveling in an interconnected track and top pivot assembly. Top track and pivot assembly shall be fabricated of steel. Door shall not pivot on shaft of operator.

4. Electrical Control: Operator shall have a self contained electrical control unit, including necessary transformers, relays, rectifiers, and other electronic components for proper operation and switching of power operator. Relays shall be plug-in type for individual replacement and all connecting harnesses shall have interlocking plugs. Control shall also include time delay for normal cycle. Swing door control shall include safe-swing circuit with optional switching which automatically limits power and slows door when approached from the doors swing area.
5. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.

2.2 MICROPROCESSOR CONTROLS

A. The system shall include a multi-function microprocessor control providing adjustable hold open time (1 – 30 sec.), LED indications for actual position unknown, system status, open obstruction shutdown, activation signal, safety mat/sensor signal, Stop-and-Hold signal, and mode selector switches providing a means for easy field selection of the following functions: push-to-operate, latch assist and stack pressure. Control shall be capable of receiving activation signals from any device with normally open dry contact output.
   1. With push-to-operate function enabled, the control shall provide a means of initiating a self-start activation circuit by slightly pushing the door open at any point in the door swing.
   2. Latch Assist shall provide a two second impulse in the close direction to overcome restrictions with locking devices of pressure differentials, allowing the unit to operate in standard time delay mode, and permitting the door to close from the full open position after the hold time is satisfied. All activation modes shall provide fully adjustable opening speed.

B. The door shall be held open by low voltage applied to the continuous duty motor. The control shall include an adjustable safety circuit that monitors door operation and shuts the motor off if an open obstruction is sensed. The control shall include a recycle feature the reopens the door if an obstruction is sensed at any point during its closing cycle. The control shall include a standard three position toggle switch with functions for ON, OFF, and HOLD OPEN.

2.3 ENCLOSURE

Operator shall be completely self-contained within an extruded aluminum housing (alloy 6063-T6) to conceal operator mechanism and mounting brackets and with removable access cover with an overall maximum size of 140 mm (5-1/2 inches) wide by 150 mm (6 inches) deep. Header color shall be integral color anodized/painted to match adjacent storefront/frame finish.

2.4 ACTIVATION DEVICES

A. Automatic: Opening cycle shall be activated by pressing switches with international symbol of accessibility and "PRESS TO OPERATE DOOR" engraved on the faceplate. Switches shall be installed in a standard 2-gang electrical wall box and placed in a location in compliance with ANSI A117.1. Switches may be wall mounted or mounted on a free standing post or guard rail.

B. Manual: Push-to-operate; manually pushing the door shall activate the automatic opening cycle. Door shall automatically close after timer delay expires.

C. Opening and closing force, measured 25 mm (1 inch) out from the lock stile of the door, shall not exceed 67 N (15 lbf) to stop the door when operating in either direction or cycle.

D. Opening Time: Doors shall be field adjusted so that opening time to back check or 80 degrees, whichever occurs first, shall be 3 seconds or longer as required in Table 1. Backcheck shall not occur before 60 degrees opening.

Total opening time to fully open shall be as in Table II.

E. Closing Time:

Doors shall be field adjusted to close from 90 degrees to 10 degrees in 3 seconds or longer as required in Table 1.

1. Doors shall be field adjusted to close from 10 degrees to fully close position in not less than 1.5 seconds.
2. Doors shall be field adjusted to remain fully open for not less than 5 seconds.
3. Table 1 provides speed settings for various widths and weights of doors for obtaining results complying with this paragraph.

F. Cycle Tests:

1. Low Energy Power Operated, Low Energy Power Open and Power Assist Operators shall be cycle tested for 300,000 cycles.

2. Use the widest and heaviest door specified as a test specimen. Narrower or lighter doors of the same configurations shall then be considered to meet the cycle test requirements.

Table 1

Minimum Opening Time to Backcheck or 80 degrees, which ever occurs first and the Minimum Closing Time from 90 degrees to Latch Check or 10 degrees.

"D" Door Leaf Width- mm (inches)	"W" Door Weight in kg (pounds) Matrix Values are in seconds				
	(100) 45.4	(56.7) 125	(68.0) 150	(79.4) 175	(90.7) 200
(762) 30	3.0	3.0	3.0	3.0	3.5
(914) 36	3.0	3.5	3.5	4.0	4.0
(1067) 42	3.5	4.0	4.0	4.5	4.5

Doors of other weights and widths can be calculated using the formula;

T = DvW/133 in US units T = DvW/2260 in SI (metric) units

Where: T= Time, seconds

D= Door width, mm (inches)

W= Door weight, kg (lbs)

The values for "T" time have been rounded up to the nearest half second. These values are based on a kinetic energy of (1.25 lbf-ft).

Table II

Total Opening Time to Full Open Position

Backcheck at 60 degrees	Backcheck at 70 degrees	Backcheck at 80 degrees
Table 1 plus 2 seconds	Table 1 plus 1.5 seconds	Table 1 plus 1 second

Note: To determine maximum times from close to full open, the operator shall be adjusted as shown in the chart. Backcheck occurring at a point between positions in Table II shall use the lowest setting. For example, if the backcheck occurs at 75 degrees, the full open shall be the time shown in Table 1 plus 1.5 seconds.

2.5 POWER UNITS

Provide separate self-contained electric circuits for automatic operators located on each floor of the building. Interruption or

failure of power circuits for operators located on one floor of the building shall not interfere with continuous performance of automatic operated doors located on other floors. Capacity and size of power circuits shall be in accordance with automatic operator manufacturer's specifications.

2.6 SAFETY DEVICES

A. Time delay switches shall be adjustable between 5 to 60 seconds and shall control closing cycle of doors.

B. Decals with sign "In" or "Do Not Enter" shall be installed on both faces of each door where shown and shall conform to the requirements of ANSI/BHMA A156.19.

C. Each swing door shall have installed a motion sensor to detect any person standing in the door swing path and prevent the door from opening.

D. Motion sensors shall consist of detection modules, factory prepared to be attached to each side of the lock/strike stile, an armored flex link power cable and bracket assembly, factory prepared for attachment to the pivot stile; a logic board and a position encoder which shall mount to the operator. The detection modules shall contain transmitting and receiving diodes and sense multidimensional zones for detection of people and/or objects in the door area. Detection modules shall be high impact, shock resistant zinc castings with tinted lenses. The swing door sensor system shall provide complete operate and safety zone coverage. These zones shall be fully adjusted to meet specific jobsite conditions (sidewalls, adjacent panels, etc.) The system shall not be affected by ultrasonic, ambient light or radios frequencies within the vicinity of the swing door.

E. Each swing door shall have installed a re-activation sensor mounted on the push-side door face near the top detect any person standing in the door swing path and prevent the door from closing. Wiring for the re-activation sensor between the door and frame shall be concealed in a power transfer device, hinge or pivot provided under Section 08 71 00; wire chase in door provided under door section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate installation of equipment with other related work. Manual controls and power disconnect switches shall be recessed or semi-flush mounted in partitions. Secure operator components to adjacent

construction with suitable fastenings. Conceal conduits, piping, and electric equipment in finish work.

B. Install power units in locations shown. Where units are to be mounted on walls, provide metal supports or shelves for the units. All equipment, including time delay switches, shall be accessible for maintenance and adjustment.

C. Operators shall be adjusted and must function properly for the type o£ traffic (pedestrians) expected to pass through doors. Each door leaf of pairs of doors shall open and close in synchronization. On pairs of doors, operators shall allow either door to be opened manually without the other door opening.

D. Install controls at positions shown and make them convenient for particular traffic expected to pass through openings. Maximum height of push plate wall switches from finished floors shall be 40 inches unless otherwise approved by the COR or Project Manager.

---- END ----

SECTION 08 80 00
GLAZING

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies the following:
   1. Glass.
   2. Glazing materials and accessories for both factory and field glazed assemblies.

1.2 RELATED WORK:

B. Factory glazed by manufacturer in following units:
   1. Sound resistant doors: Section 08 11 13, HOLLOW METAL DOORS AND FRAMES, and Section 08 14 00, WOOD DOORS.
   2. Mirrors: Section 10 28 00, TOILET, BATH, AND LAUNDRY ACCESSORIES.

1.3 LABELS:

A. Temporary labels:
   1. Provide temporary label on each light of glass identifying manufacturer or brand and glass type, quality and nominal thickness.
   2. Label in accordance with NFRC label requirements.
   3. Temporary labels are to remain intact until glass is approved by Contracting Officer Representative (COR).

B. Permanent labels:
   1. Locate in corner for each pane.
   2. Label in accordance with ANSI Z97.1 and SGCC label requirements.
      a. Tempered glass.
      b. Laminated glass or have certificate for panes without permanent label.
   3. Fire rated glazing assemblies: Mark in accordance with IBC.

1.4 PERFORMANCE REQUIREMENTS:

A. General: Design glazing system consistent with guidance and practices presented in the GANA Glazing Manual, GANA Laminated Glazing Manual, and GANA Sealant Manual, as applicable to project. Installed glazing is to withstand applied loads, thermal stresses, thermal movements, building movements, permitted tolerances, and combinations of these conditions without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation;

failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; unsafe engagement of the framing system; deflections beyond specified limits; or other defects in construction.

B. Glazing Unit Design: Design glass, including engineering analysis meeting requirements of authorities having jurisdiction. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers.
   1. Design glass in accordance with ASTM E1300, and for conditions beyond the scope of ASTM E1300, by a properly substantiated structural analysis.

1.5 SUBMITTALS:

A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Certificates:
   1. Certificate stating that fire-protection and fire-resistive glazing units meet code requirements for fire-resistance-rated assembly and applicable safety glazing requirements.

C. Manufacturer Warranty.

D. Manufacturer's Literature and Data:
   1. Glass, each kind required.
   2. Insulating glass units.
   3. Glazing cushion.
   4. Sealing compound.

E. Samples:
   1. Size: 305 mm by 305 mm (12 inches by 12 inches).

F. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer’s test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

1.6 DELIVERY, STORAGE AND HANDLING:

A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.

B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.

C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.

1.7 PROJECT CONDITIONS:

Field Measurements: Field measure openings before ordering tempered glass products to assume for proper fit of field measured products.

1.8 WARRANTY:

A. Construction Warranty: Comply with the FAR clause 52.246-21 “Warranty of Construction”.

B. Manufacturer Warranty: Manufacturer shall warranty their glazing from the date of installation and final acceptance by the Government as follows. Submit manufacturer warranty.

1. Warrant electrochromic laminated products against lamination defects, such as edge separation or delamination, that materially obstruct vision through the glass for a period of five (5) years.
2. Warrant electrochromic controls against defects in material or workmanship for a period of five (5) years.

1.9 APPLICABLE PUBLICATIONS:

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Architectural Manufacturers Association (AAMA):

800.....Test Methods for Sealants

810.1-77.....Expanded Cellular Glazing Tape

C. American National Standards Institute (ANSI):

Z97.1-14.....Safety Glazing Material Used in Building - Safety Performance Specifications and Methods of Test

D. American Society of Civil Engineers (ASCE):

7-10.....Wind Load Provisions

E. ASTM International (ASTM):

C542-05(R2011).....Lock-Strip Gaskets

C716-06.....Installing Lock-Strip Gaskets and Infill Glazing Materials

C794-10.....Adhesion-in-Peel of Elastomeric Joint Sealants

C864-05(R2011).....Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers

C920-14a.....Elastomeric Joint Sealants

C964-07(R2012).....Standard Guide for Lock-Strip Gasket Glazing
C1036-11(R2012).....Flat Glass
C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
C1172-14.....Laminated Architectural Flat Glass
C1349-10.....Standard Specification for Architectural Flat Glass Clad Polycarbonate
C1376-10.....Pyrolytic and Vacuum Deposition Coatings on Flat Glass
D635-10.....Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastic in a Horizontal Position
D4802-10.....Poly (Methyl Methacrylate) Acrylic Plastic Sheet
E84-14.....Surface Burning Characteristics of Building Materials
E119-14.....Standard Test Methods for Fire Test of Building Construction and Material
E1300-12a.....Load Resistance of Glass in Buildings
E1886-13a.....Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials
E1996-14a.....Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
E2141-12.....Test Methods for Assessing the Durability of Absorptive Electrochromic Coatings on Sealed Insulating Glass Units
E2190-10.....Insulating Glass Unit
E2240-06.....Test Method for Assessing the Current-Voltage Cycling Stability at 90 Degree C (194 Degree F) of Absorptive Electrochromic Coatings on Sealed Insulating Glass Units
E2241-06.....Test Method for Assessing the Current-Voltage Cycling Stability at Room Temperature of

Absorptive Electrochromic Coatings on Sealed Insulating Glass Units

E2354-10.....Assessing the Durability of Absorptive Electrochromic Coatings within Sealed Insulating Glass Units

E2355-10.....Test Method for Measuring the Visible Light Transmission Uniformity of an Absorptive Electrochromic Coating on a Glazing Surface

F1233-08.....Standard Test Method for Security Glazing Materials and Systems

F1642-12.....Test Method for Glazing and Glazing Systems Subject to Airblast Loadings

E. Code of Federal Regulations (CFR):

16 CFR 1201-10.....Safety Standard for Architectural Glazing Materials

F. Glass Association of North America (GANA):

2010 Edition.....GANA Glazing Manual

2008 Edition.....GANA Sealant Manual

2009 Edition.....GANA Laminated Glazing Reference Manual

2010 Edition.....GANA Protective Glazing Reference Manual

G. International Code Council (ICC):

IBC.....International Building Code

H. Insulating Glass Certification Council (IGCC)

I. Insulating Glass Manufacturer Alliance (IGMA):

TB-3001-13.....Guidelines for Sloped Glazing

TM-3000.....North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use

J. Intertek Testing Services – Warnock Hersey (ITS-WHI)

K. National Fire Protection Association (NFPA):

80-13.....Fire Doors and Windows

252-12.....Fire Tests of Door Assemblies

257-12.....Standard on Fire Test for Window and Glass Block Assemblies

L. National Fenestration Rating Council (NFRC)

M. Safety Glazing Certification Council (SGCC) 2012:

Certified Products Directory (Issued Semi-Annually).

N. Underwriters Laboratories, Inc. (UL):

9-08(R2009).....Fire Tests of Window Assemblies
263-14.....Fire Tests of Building Construction and Materials
752-11.....Bullet-Resisting Equipment.

O. Unified Facilities Criteria (UFC):
4-010-01-03(R2007).....DOD Minimum Antiterrorism Standards for Buildings

P. U.S. Veterans Administration:
Physical Security Design Manual for VA Facilities (VAPSDG); Life Safety Protected
Physical Security Design Manual for VA Facilities (VAPSDG); Mission Critical Facilities
Architectural Design Manual for VA Facilities (VASDM)

Q. Environmental Protection Agency (EPA):
40 CFR 59(2014).....National Volatile Organic Compound Emission Standards for Consumer and Commercial Products

PART 2 - PRODUCT

2.1 GLASS:

A. Provide minimum thickness stated and as additionally required to meet performance requirements.
   1. Provide minimum 6 mm (1/4 inch) thick glass units unless otherwise indicated.

B. Obtain glass units from single source from single manufacturer for each glass type.

C. Clear Glass:
   1. ASTM C1036, Type I, Class 1, Quality q3.

D. Ultra-clear-Low-Iron Float Glass:
   1. ASTM C1036, Type I, Class 1, Quality q3 and with visible light transmission of not less than 90 percent.

E. Patterned and Wired Flat Glass:
   1. ASTM C1036, Type II, Class 1, Pattern Pl, Finish F1, Quality Q5, Q6, Mesh m1.

2.2 HEAT-TREATED GLASS:

A. Tempered Patterned Glass:
   1. ASTM C1048, Kind FT, Type II, Class 1, Form 3, finish, pattern and quality as indicated in construction documents.

2.3 GLAZING ACCESSORIES:

A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work are to have a finish that will not corrode or stain while in service. Fire rated glazing to be installed with glazing accessories in accordance with the manufacturer’s installation instructions.

B. Setting Blocks: ASTM C864:
   1. Silicone type.
   2. Channel shape; having 6 mm (1/4 inch) internal depth.
   3. Shore A hardness of 80 to 90 Durometer.
   4. Block lengths: 50 mm (2 inches) except 100 to 150 mm (4 to 6 inches) for insulating glass.
   5. Block width: Approximately 1.6 mm (1/16 inch) less than the full width of the rabbet.
   6. Block thickness: Minimum 4.8 mm (3/16 inch). Thickness sized for rabbet depth as required.

C. Spacers: ASTM C864:
   1. Channel shape having a 6 mm (1/4 inch) internal depth.
   2. Flanges not less 2.4 mm (3/32 inch) thick and web 3 mm (1/8 inch) thick.
   3. Lengths: 25 to 76 mm (1 to 3 inches).
   4. Shore a hardness of 40 to 50 Durometer.

D. Glazing Tapes:
   1. Semi-solid polymeric based closed cell material exhibiting pressure-sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.
   2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.
   3. Complying with AAMA 800 for the following types:
      a. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
      b. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

E. Spring Steel Spacer: Galvanized steel wire or strip designed to position glazing in channel or rabbeted sash with stops.

F. Glazing Clips: Galvanized steel spring wire designed to hold glass in position in rabbeted sash without stops.

G. Glazing Points (Sprigs): Pure zinc stock, thin, flat, triangular or diamond shaped pieces, 6 mm (1/4 inch) minimum size.

H. Glazing Gaskets: ASTM C864:
   1. Firm dense wedge shape for locking in sash.
   2. Soft, closed cell with locking key for sash key.
   3. Flanges may terminate above the glazing-beads or terminate flush with top of beads.

I. Lock-Strip Glazing Gaskets: ASTM C542, shape, size, and mounting as indicated.

J. Glazing Sealants: ASTM C920, silicone neutral cure:
   1. Type S.
   2. Class 25 or 50 as recommended by manufacturer for application.
   3. Grade NS.
   4. Shore A hardness of 25 to 30 Durometer.
   5. VOC Content: For sealants used inside the weatherproofing system, not more than 250 g/L or less when calculating according to 40 CFR 59, (EPA Method 24).

K. Structural Sealant: ASTM C920, silicone acetoxy cure:
   1. Type S.
   2. Class 25.
   3. Grade NS.
   4. Shore a hardness of 25 to 30 Durometer.

L. Neoprene, EPDM, or Vinyl Glazing Gasket: ASTM C864.
   1. Channel shape; flanges may terminate above the glazing channel or flush with the top of the channel.
   2. Designed for dry glazing.

M. Color:
   1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames to match color of the finished aluminum and be nonstaining.
   2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted are to be black, gray, or neutral color.

N. Smoke Removal Unit Targets: Adhesive targets affixed to glass to identify glass units intended for removal for smoke control. Comply with requirements of local Fire Department.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.
2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer is approved shop drawings.

B. Review for conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Verify that wash down of adjacent masonry is completed prior to erection of glass and glazing units.

3.2 PREPARATION:

A. For sealant glazing, prepare glazing surfaces in accordance with GANA Sealant Manual.

B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.

C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.

D. Verify that components used are compatible.

E. Clean and dry glazing surfaces.

F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

3.3 INSTALLATION – GENERAL:

A. Install in accordance with GANA Glazing Manual, GANA Sealant Manual, IGMA TB-3001, and IGMA TM-3000 unless specified otherwise.

B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.

C. Set glazing without bending, twisting, or forcing of units.

D. Do not allow glass to rest on or contact any framing member.

E. Glaze doors and operable sash, in a securely fixed or closed and locked position, until sealant, glazing compound, or putty has thoroughly set.

F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.

3.4 INSTALLATION - DRY METHOD (TAPE AND GASKET SPLINE GLAZING):

A. Cut glazing tape spline to length; install on glazing pane. Seal corners by butting and sealing junctions with butyl sealant.

B. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Trim protruding tape edge.

3.5 INSTALLATION - WET METHOD (SEALANT AND SEALANT):

A. Place setting blocks at 1/4 points and install glazing pane or unit.

B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.

C. Fill gaps between glazing and stops with sealant to depth of bite on glazing, but not more than 9 mm (3/8 inch) below sight line to ensure full contact with glazing and continue the air and vapor seal.

D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.6 INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT):

A. Cut glazing tape to length and install against permanent stops, projecting 1.6 mm (1/16 inch) above sight line.

B. Place setting blocks at 1/4 points with edge block no more than 150 mm (6 inches) from corners.

C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.

D. Install removable stops, spacer shims inserted between glazing and applied stops at 600 mm (24 inch) intervals, 6 mm (1/4 inch) below sight line.

E. Fill gaps between pane and applied stop with sealant to depth equal to bite on glazing, to uniform and level line. Sealant type is to be compatible with glazing tape.

F. Trim protruding tape edge.

3.7 INSTALLATION - INTERIOR WET METHOD (COMPOUND AND COMPOUND):

A. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 600 mm (24 inch) centers, kept 6 mm (1/4 inch) below sight line.

B. Locate and secure glazing pane using glazers' spring wire clips.

C. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.8 REPLACEMENT AND CLEANING:

A. Clean new glass surfaces removing temporary labels, paint spots, and defacement after approval by COR.

B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.

C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3.9 PROTECTION:

A. Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

- - - E N D - - -

SECTION 08 90 00
LOUVERS AND VENTS

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies fixed and operable wall louvers, door louvers and wall vents.

1.2 RELATED WORK:

A. Color of finish: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 SUBMITTALS:

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings:

1. Each type, showing material, finish, size of members, method of assembly, and installation and anchorage details.

C. Manufacturer's Literature and Data:

1. Each type of louver and vent.

D. Color samples.

1.4 APPLICABLE PUBLICATIONS:

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. The Master Painters Institute (MPI):
Approved Product List – Updated Monthly

C. ASTM International (ASTM):

A240/A240M-14.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

A653/A653M-13.....Steel Sheet Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process

A1008/A1008M-13.....Steel, Sheet, Carbon, Cold Rolled, Structural, and High Strength Low-Alloy with Improved Formability

B209-14.....Aluminum and Aluminum Alloy, Sheet and Plate

B209M-14.....Aluminum and Aluminum Alloy, Sheet and Plate (Metric)

B221-14.....Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

B221M-13.....Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)

D1187/D1187M-97(R2011)..Asphalt-Base Emulsions for Use as Protective Coatings for Metal

D. National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500-06.....Metal Finishes Manual

E. National Fire Protection Association (NFPA):

90A-15.....Installation of Air Conditioning and Ventilating Systems

G. American Architectural Manufacturers Association (AAMA):

2605-13.....High Performance Organic Coatings on Architectural Extrusions and Panels

H. Air Movement and Control Association, Inc. (AMCA):

500-L-07.....Testing Louvers

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Aluminum, Extruded: ASTM B221M (B221).

B. Stainless Steel: ASTM A240/A240M, Type 302B.

C. Galvanized Steel Sheet: ASTM A653/A653M; G90 min.

D. Carbon Steel and Sheet: ASTM A1008/A1008M (interior use louvers only).

E. Aluminum, Plate and Sheet: ASTM B209M (B209); alloy 3003 or 5005 with temper as required for forming.

F. Fasteners: Fasteners for securing louvers and wall vents to adjoining construction, except as otherwise specified or indicated in construction documents, to be toggle or expansion bolts of size and type as required for each specific type of installation and service condition.

1. Where type, size, or spacing of fasteners is not shown or specified, submit shop drawings showing proposed fasteners, and method of installation.
2. Fasteners for louvers, louver frames, and wire guards to be of stainless steel or aluminum with same finish as louvers.
3. Fasteners for louvers, louver frames and wire guards within mental health areas to be non-removable/tamper-proof type.

G. Inorganic Zinc Primer: MPI No. 19.

H. Bituminous Coating: ASTM D1187/D1187M; cold applied asphalt mastic emulsion.

2.2 EXTERIOR WALL LOUVERS:

A. General:

1. Provide fixed type louvers of size and design shown.
2. Heads, sills and jamb sections are to have formed caulking slots or be designed to retain caulking. Head sections are to have exterior drip lip, and sill sections an integral water stop.
3. Furnish louvers with sill extension or separate sill as shown.
4. Frame is to be mechanically fastened or welded construction with welds dressed smooth and flush.

B. Performance Characteristics:

1. Louvers are to bear AMCA certified rating seals for air performance and water penetration ratings.

C. Aluminum Louvers:

1. General: Frames, blades, sills and mullions (sliding interlocking type); 2 mm (0.078-inch) thick extruded 6063-T5 or –T52 aluminum. Blades to be standard drainable type and have reinforcing bosses.
2. Louvers, fixed: Make frame sizes 13 mm (1/2-inch) smaller than openings. Single louvers frames are not to exceed 1676 mm (66 inches) wide. When openings exceed 1676 mm (66 inches), provide twin louvers separated by mullion members.
3. Louvers are to withstand the effects or gravity loads and the following wind loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors.
   a. Wind load acting inward or outward of not less than 1436 TBD Pa (30 TBD lb. per sq. ft.).

2.3 CLOSURE ANGLES AND CLOSURE PLATES:

A. Fabricate from 2 mm (0.078-inch) thick stainless steel or aluminum.

B. Provide continuous closure angles and closure plates on inside head, jambs and sill of exterior wall louvers.

C. Secure angles and plates to louver frames with screws, and to masonry or concrete with fasteners as indicated in construction documents.

2.4 WIRE GUARDS:

A. Provide wire guards on outside of all exterior louvers, except on exhaust air louvers.

B. Fabricate frames from 2 mm (0.078-inch) thick extruded or sheet aluminum designed to retain wire mesh.

C. Wire mesh to be woven from not less than 1.6 mm (0.063-inch) diameter aluminum wire in 13 mm (1/2-inch) square mesh.

D. Miter corners and join by concealed corner clips or locks extending not less than 57 mm (2-1/4 inches) into rails and stiles. Equip wire guards over 1219 mm (4 feet) in height with a mid-rail constructed as specified for frame components.

E. Fasten frames to outside of louvers with aluminum or stainless steel devices of same finish as louvers designed to allow removal and replacement without damage to the wire guard or the louver.

2.5 BLANK-OFF PANELS:

B. Insulated laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver with clips on screws and gasketed or sealant sealed perimeter. Panel finish is to be same finish applied to louvers same type of finish applied to louvers but black color.

1. Thickness: 25 mm (1 inch) 50 mm (2 inches).
2. Aluminum sheet for aluminum louver 0.81 mm (0.032 inch) minimum.
3. Insulating Core: Rigid, glass-fiber-board insulation extruded-polystyrene foam.

2.6 WALL VENTS:

A. Fabricate exterior wall vents from either 4.7 mm (0.185-inch) thick aluminum plate or 6 mm (1/4-inch) thick cast iron, perforated in diamond lattice pattern, with not over 19 mm (3/4-inch) openings.

B. Vents are to have aluminum screen frame with aluminum alloy insect screening mounted on back of vent by means of 19 mm x 5 mm (3/4-inch by 3/16-inch) top and bottom bars screwed to grille.

C. Vent Frames in Masonry: Fabricate of 45 mm x 30 mm x 5 mm (1-3/4 inch by 1-1/4 inch by 3/16-inch) steel angles bolted with 6 mm (1/4-inch) diameter expansion bolts at jambs.

2.7 AIR INTAKE VENTS:

A. Fabricate exterior louvered wall ventilators for fresh air intake for air conditioning units from extruded aluminum, ASTM B221M (B221). Form with integral horizontal louvers and frame, with drip extending beyond face of wall and integral water stops.

B. Provide aluminum closures where shown for inside face of dummy vents.

C. Provide 0.8 mm (0.032-inch) thick aluminum sleeves where indicated in construction documents.

2.8 FINISH:

A. In accordance with NAAMM Metal Finishes Manual: AMP 500-505

B. Aluminum Louvers, Air Intake Vents, Wire Guards, Blank Off Panels:

1. Anodized finish

a. AA-M1X, Mill finish, as fabricated.

C. Aluminum Wall Vents and Brick Vents: Sand blasted satin finish.

2.9 PROTECTION:

A. Provide protection for aluminum against galvanic action wherever dissimilar materials are in contact, by painting the contact surfaces of the dissimilar material with a heavy coat of bituminous coating (complete coverage), or by separating the contact surfaces with a performed synthetic rubber tape having pressure sensitive adhesive coating on one side.

B. Isolate the aluminum from plaster, concrete and masonry by coating aluminum with zinc-chromate primer.

C. Protect finished surfaces from damage during fabrication, erection, and after completion of the work. Strippable plastic coating on colored anodized organic finish is not approved.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Set work accurately, in alignment and where indicated in construction documents. Install plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.

B. Furnish setting drawings and instructions for installation of anchors and for the positioning of items having anchors to be built into masonry construction. Provide temporary bracing for such items until masonry is set.

C. Provide anchoring devices and fasteners as shown and as necessary for securing louvers and vents to building construction as specified. Power actuated drive pins may be used, except for removal items and where members would be deformed or substrate damaged by their use.

D. Set wall louvers and vents in masonry walls during progress of the work. If wall louvers and vents are not delivered to job in time for installation in prepared openings, make provision for later installation. Set in cast-in-place concrete in prepared openings.

3.2 CLEANING AND ADJUSTING:

A. After installation, all exposed prefinished and plated items and all items fabricated from stainless steel and aluminum are to be cleaned as

recommended by the manufacturer and protected from damage until completion of the project.

B. All movable parts, including hardware, are to be cleaned and adjusted to operate as designed without binding or deformation of the members, so as to be centered in the opening of frame, and where applicable, to have all contact surfaces fit tight and even without forcing or warping the components.

C. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Contracting Officer Representative (COR) damaged units and replace with new units.

- - - E N D - - -