

SECTION 08 11 00
STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for steel doors and frames as indicated on drawings and specified herein.

1.02 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware.
- B. Section 08 73 00 - Thresholds, Weatherstripping and Seals

1.03 SUSTAINABILITY REQUIREMENTS

- A. Sustainability requirements included in the Section are as follows:
- B. Documentation of material costs.
- C. The Contractor shall implement practices and procedures to meet the Project's sustainable requirements. The Contractor shall ensure that the requirements related to these goals, as defined in Specification Section S01352, Sustainability Requirements, and as specified in this Section, are implemented to the fullest extent. Substitutions or other changes to the work shall not be proposed by the Contractor or their sub-contractors if such changes compromise the stated Sustainable Design Performance Criteria.

1.04 ABBREVIATIONS AND ACRONYMS

- A. American Society of Testing and Materials (ASTM)
- B. HMMA - Hollow Metal Manufacturers Association.
- C. Intertek.
- D. NFPA - National Fire Protection Association.
- E. SDI - Steel Door Institute.
- F. UL - Underwriters Laboratories.

1.05 REFERENCE STANDARDS

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1.06 SUBMITTALS

- A. Product Data
 - 1. Manufacturer's catalog sheets, specifications, and installation instructions.
- B. Shop Drawings:
 - 1. Show details of each frame type, elevation and construction for each door type, conditions at openings, location for each door type, location and installation requirements for finish hardware (including cutouts and reinforcements), details of connections, and anchorage and accessory items.
 - 2. Include a schedule of doors and frames using the same reference numbers for details and openings as those on the Contract Drawings.
 - 3. For sound rated assemblies, provide drawings indicating interface of sound rated doors and frames with adjacent construction. Include details of each frame type, cam hinge (when used), sound seals, door bottom, threshold, and door. Indicate location and installation requirements of door and frame hardware and reinforcements. Indicate glazing materials and details for glazed assemblies.
- C. Samples

1. Frames: Corner sample of each type, 18" x 18" with mortises and reinforcements, shop primed.
 2. Doors: Corner sample of each type showing construction, 18" x 18", with mortises and reinforcements, shop primed.
 3. Louver panel.
- D. Quality Control Submittals
1. Include approval data and acceptance by a New York City Building Department approved testing agency for all fire-rated assemblies.
 2. Provide certification glazing meets safety impact requirements of CPSC 16 CFR 1201.
 3. Provide certification for oversized assemblies as described in Quality Assurance.
 4. Thermal certification: Letter from manufacturer certifying that exterior opaque doors are insulated to achieve a "U" Factor no greater than 0.60 when tested in accordance with ASTM C1363.
 5. Air infiltration rate report: Manufacturer's statement that the opaque door when subjected to air infiltration test in accordance with NFRC 400, the air infiltration did not exceed 0.20 cubic feet per minute per square foot of door.
- E. Warranties
1. Provide manufacturer/installer warranty.
- F. Sustainability Submittals
1. Submit Contractor's Sustainable Materials Form for steel doors and frames with complete materials cost information in accordance with Section S01352, Sustainability Requirements.

1.07 QUALITY ASSURANCE

- A. Provide doors and frames complying with ANSI/SDI A250.8 and as herein specified.
1. Fire Rated Assemblies
 - a. Wherever fire resistance classification is shown or scheduled for steel doors and frames, provide fire rated units that have been tested as fire door assemblies and comply with National Fire Protection Association (NFPA) Standard No. 80, are tested in accordance with NFPA 252 or UL 10B/UL 10C and UL 1784 as required by the NYC Building Code and comply with these Specifications. Identify each door and frame with metal UL, or Warnock Hersey labels indicating applicable fire class of the unit. Rivet or weld labels on the hinge edge of door and jamb rabbet of frame.
 - b. Oversize Assemblies: Whenever fire rated assemblies are larger than size limitations established by NFPA, provide manufacturer's certification that they have been constructed with materials and methods equivalent to requirements for labeled construction.
 - c. See Door Schedule in the Drawings for Label Requirements (Class) for respective openings.
 2. Regulatory Requirements
 - a. Notwithstanding the requirements for fire-rated assemblies noted above, all fire-rated doors and frames shall be approved for use in New York City.
 - b. Provide evidence of acceptance by an approved testing agency. Provide permanent labels on doors and frames as required by the New York City Building Code. Labels shall be applied at the factory or where fabrication and assembly are performed.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Store doors and frames on raised platforms in vertical position with blocking between units to allow air circulation.
- B. During delivery, storage and handling, protect doors and frames from water damage.
- C. Provide delivery, storage and handling in such manner to prevent damage to products.

1.09 FIELD EXAMINATION

- A. At the Site, before door installation, the Authority reserves the right to select at random one or more doors for examination by cutting a portion of such size to reveal the construction of the particular door.
 - 1. If the examination finds that the doors examined do not comply with requirements of the Specifications, all doors shall be removed from the Site and new doors shall be provided. Costs of examination and replacement of rejected doors shall be borne by Contractor.
 - 2. If the examination finds that the doors do comply with the requirements of the Specifications, the cost of the examination and the cost of the replacement of the examined doors will be borne by the Authority.

1.10 GAUGE STANDARDS

- A. Gauges specified are based on U.S Standard Gauge for hot rolled and cold rolled steel sheets.
- B. The allowable tolerances for steel sheet thicknesses shall be in accordance with HMMA Standards.

1.11 WARRANTY

- A. Submit warranty signed by manufacturer and installer, agreeing to replace assemblies which fail in materials, performance or workmanship within the specified warranty period.
 - 1. Warranty Period: 1 year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. General Fireproof Door Corp., Bronx, NY 10474
- B. Acme & Dorf Door Corp., Clifton NJ 07011
- C. Ceco Door Products Div., Milan, TN 38358
- D. Curries Company, Mason City, IA 50401
- E. Metalline Fire Door Co., Bronx, NY 10457
- F. Long Island Fireproof Door, Port Washington, NY 11050
- G. Michbi Doors Inc. Brentwood, NY 11717
- H. Materials
 - 1. Hot-Rolled Steel Sheets and Strip
 - a. Commercial quality carbon steel, pickled and oiled, complying with ASTM A1011 and ASTM A568.
 - 2. Cold-Rolled Steel Sheets
 - a. Commercial Quality carbon steel complying with
 - b. ASTM A1008 and ASTM A568.
 - 3. Galvannealed Steel Sheets
 - a. Carbon steel sheets of commercial quality complying with ASTM A653 Doors and frames shall have A60 zinc-iron coating, mill phosphatized, complying with
 - b. ASTM A653
 - 4. Anchors and Supports
 - a. Fabricate of gages indicated on and of not less than 16 gage sheet steel, unless otherwise indicated, on the drawings
 - b. Galvanized Units: Galvanized anchors and supports used with galvanized frames, complying with
 - 1) ASTM A153, Class B.
 - 5. Anchorage Devices, Bolts, and other Fasteners
 - a. Manufacturer's standard units unless otherwise indicated on the Drawings.
 - b. Galvanized Units: Galvanized items used with galvanized frames complying with ASTM A153, Class C or D as applicable.

- I. Fabrication
 1. Fabricate hollow metal work accurately and assemble neatly to ensure work smooth and free from dents, tool marks, visible waves, warp, buckles and conspicuous joints.
 2. Align lines straight and true with arises and angles as sharp as practicable. Miter corners in true alignment and join similar abutting profiles accurately.
 3. Assemble all joints to form imperceptible intersections when finished.
 4. Form each member, such as jamb and head, from a single piece of metal, unless otherwise shown or approved.
 5. Fasten all members together to provide rigid construction in assembled work. Weld all connections except those for removable members such as glazing beads.
 6. Weld, dress smooth and flush joints on exposed faces.
 7. Clearances
 - a. Fabricate doors for their respective frames within the following clearances:
 - 1) Jambs and Head: 3/32" to 1/8".
 - 2) Meeting Edges of Pairs: 1/8" to 3/16".
 - 3) Bottom (no threshold or carpet): 3/8", maximum.
 - 4) Bottom (at threshold or carpet): 1/4", maximum.
 8. Work showing defects or blemishes will be rejected, and rejected work shall be replaced with satisfactory work.

2.02 DOORS

- A. General
 1. Provide steel doors of types and styles indicated on drawings or schedules. Comply with ANSI/SDI A250.8 requirements unless more restrictive requirements are specified herein.
 2. Design and Thickness: Flush design doors, seamless vertical edges, hollow construction,
 3. 1 3/4" thick unless specifically noted otherwise.
 4. Sound Deadening (ASTM E90): Minimum Sound Transmission Class (STC) of 30.
 5. Door Edges: Bevel lock stile edge of single acting hinged doors 1/8" in 2". Double acting doors shall have rounded edges, approximately
 6. 2¼" radius. Meeting stiles of pairs of single acting doors shall be "V" beveled or rounded as detailed on the Drawings or required.
 7. Glazing Stops and Beads: Fixed steel stops, formed integral with door unless otherwise approved by the Authority, on the outside of exterior doors and on the secure side of interior doors. Removable steel beads, of tubular steel of gage indicated on the Drawings or solid bar stock, on the other side of doors secured with machine screws. Form corners with butted hairline joints. Coordinate width of rabbet between fixed stop and removable bead and depth of rabbet with type of glass and glazing required.
 8. Astragals: Steel, spot-welded to inactive door for exterior doors, as indicated on the Drawings.
- B. Glazing:
- C. Non-rated doors - 1/4" thick minimum laminated glass meeting safety impact requirements of CPSC 16 CFR 1201.
- D. Fire-rated doors - Fire Protection rated glazing meeting safety impact requirements of CPSC 16 CFR 1201.
 1. Fire-protection-rated glazing in excess of 100 square inches shall be permitted in fire door assemblies when tested as components of the door assemblies and not as glass lights per Section BC 715.4.4 the 2014 NYC Building code.
 - a. Glazing in transom or sidelights of a rated door assembly shall be tested as an assembly in accordance with ASTM E119 or UL 263 per Section BC 715.4.5.
- E. Size and location of vision panels shall be as indicated on the drawings.
- F. Exterior Doors
 1. Fabricate exterior doors with two (2) outer stretcher-leveled, galvanized steel sheets of 14 gage unless indicated otherwise on the Drawings. Construct doors with smooth, flush

surfaces without visible joints or seams on exposed faces and stile edges, except around glass and louver panels. On mortise face of door, vertical joints shall be continuously welded and ground smooth and coated with zinc-rich primer.

2. Provide reinforcement for surface sheet, edge, hardware, stops, and other provisions, of size and gage as detailed on Drawings.
3. Provide 14 GA bottom channel and top channel and closure, as detailed on Drawings.
4. Insulate opaque portions of doors to achieve a "U" Factor of no greater than 0.60 when tested in accordance with ASTM C1363.
5. Fit exterior doors at the bottom of exterior side with extruded aluminum rain drips as No. 11-A manufactured by Zero. Provide PVC tape or approved equal dielectric separation between face of door and drip.
6. Doors must meet air filtration requirements of NYC Energy Code. The door shall be subjected to air infiltration test in accordance with NFRC 400. When tested at a pressure of 1.57 psf air infiltration shall not exceed 0.20 cubic feet per minute per square foot of door.

G. Interior Doors

1. Fabricate interior doors with 2 outer stretcher-leveled, steel sheets of 16 gage unless indicated otherwise on the Drawings. Construct doors with smooth, flush surfaces without visible joints or seams on exposed faces and stile edges, except around glass and louver panels. On mortise face of door, vertical joints shall be welded, filled and ground smooth.
2. Provide surface sheet reinforcement for surface sheet, edge, hardware, stops and other provisions, of size and gage as detailed on Drawings.
3. Provide 16 GA top and bottom channels and closures as detailed on the Drawings.
4. For Dutch doors, provide metal shelf as detailed on Drawings.
5. **For mechanical room, food service area doors and other doors indicated on the door schedule, all outer sheets of the door shall be galvanized and welds shall be coated with zinc rich primer.**

H. Screen Doors

1. Doors:
 - a. As described for exterior doors above.
2. Wire cloth:
 - a. Shall be type 304 stainless steel, 16 by 16 mesh 0.018 diameter in accordance with requirements of ANSI/SMA 6001. Screening shall cover full openings in door. Secure screens to frames with stainless steel fasteners.
 - b. Screen Frame:
 - 1) Provide members of sufficient size and thickness to obtain sturdy, rigid frame. Roll formed or tubular lock form type formed from not less than 25 gage hot-dipped galvanized steel. Provide braces and division bars where required to provide sufficient strength to meet performance requirements of ANSI/SMA 6001.
 - c. Bottom of Door
 - 1) Provide bottom expander door sweep of non-hardening rubber or extruded vinyl plastic, full length of door. Minimum wall thickness .055", adjustable to 5/8".

I. Louvered Panels for Doors

1. Provide steel louvers for doors where indicated on Drawings and as specified herein. Cold rolled steel with mitered and welded corners and factory-applied baked enamel primer finish. Spanner head security fasteners, countersunk.
2. Fixed Blade Design - Anemostat Door Products model AFDL or approved equal, modified to have 16 gage frame and 16 gage vision-proof louver blades.
3. Fire Rated Design - Anemostat Door Products model FLDL-UL or approved equal, 16 gage frame and blades, fusible link release mechanism. Comply with requirements of NYC Building Code. The assembly shall be acceptable by a New York City Building Department approved testing agency.

2.03 SECURITY DOORS FOR COMPUTER ROOM

- A. Provide metal door and frame as scheduled.
 - 1. Provide security lock in addition to other locksets. Refer to 08710 - Finish Hardware.
 - 2. Glazing: 5" wide x 20" high unless otherwise indicated, located 8" from hinged side of door. 1/4" thick minimum laminated glass meeting safety impact requirements of CPSC 16 CFR 1201 for non-rated doors. Fire protection rated glass meeting safety impact requirements of CPSC 16 CFR 1201 for fire-rated doors.
- B. Security Door for Vault Room
 - 1. Provide metal door and frame. Gauges and construction shall be the same as specified herein for exterior doors.
 - a. Provide security lock in addition to other locksets. Refer to 08710 - Finish Hardware.

2.04 FRAMES

- A. General
 - 1. Provide steel frames for doors, transoms, sidelites, borrowed lites, and other openings where shown, of size and profile as indicated on Drawings.
 - 2. Construction: Full-welded unit construction, with corners mitered and continuously welded full depth and width of frame, unless otherwise indicated. Knock-down type frames will not be accepted.
 - a. Fixed Stops: Integral 5/8" stop unless otherwise indicated. Construct jambs and heads from one piece of metal each; rabbeted and flanged as required for the various types of openings, and neatly mitered or interlocked and welded together. Provide channel, angle and bent plate reinforcing as indicated on approved Shop Drawings or otherwise required. Provide reinforcing in the heads of frames where shown or required.
 - 3. Frame Material
 - a. Exterior Frames: 12 gage Galvannealed steel sheet unless indicated otherwise on Drawings.
 - b. Interior Frames: 14 gage Galvannealed steel sheet unless indicated otherwise on Drawings.
 - 4. Provide frames for masonry openings with adjustable Underwriter's type masonry anchors to suit conditions of installation, using not less than three (3) at each jamb, in addition to floor anchors.
 - 5. Provide frames with calking stops, filler pieces and trim where indicated on Drawings or required; integrally formed as part of the frame wherever possible. Applied calking stops, filler pieces, and other members as indicated, shall be neatly attached by spot welding. All welds at galvannealed frames shall be painted with zinc-rich primer.
 - 6. Equip sound-proof frames with adjustable door stops and continuous rubber seals. Fill frames solidly with sound-deadening material.
 - 7. At butts, cut back jamb the thickness of one leaf of butt.
 - 8. Drill and tap reinforcement to template.
 - 9. Spot weld 20 gage plaster guard to frame at latch cutouts, if applicable. Paint all welded areas with zinc-rich primer.
 - 10. Provide reinforcement for hardware as indicated on Drawings and as required for proper hardware installation. Refer to Section 08710 - Finish Hardware.
 - 11. Provide frames for other openings as indicated on the Drawings.
 - 12. Provide cutouts and reinforcing for security devices as required.

2.05 SHOP PAINTING

- A. All doors shall be delivered to the site with a full shop coat. Doors not fully shop coated shall not be accepted.
- B. Chemically wash, rinse, and dry exposed and concealed surfaces of fabricated units.
- C. Apply one coat of rust-inhibiting primer (Carboline "Carbozinc 11 HS" or approved equal) to all exposed surfaces of ungalvannealed doors and frames. Use the same paint to touch up all

welded areas of galvanized doors and frames. Apply primer per the manufacturer's recommendations

- D. Units shall pass the following tests:
 - 1. Salt Spray Test complying with ASTM B117 for 120 continuous hours.
 - 2. Water fog Test Complying with ASTM D1735 or ASTM D4585 for 240 continuous hours

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions
 - 1. Examine substrate and conditions, under which the frames are to be installed, for defects which will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install steel doors, frames, and accessories in accordance with the Drawing Details, approved Shop Drawings, and the manufacturer's printed instructions, except as otherwise indicated.
- B. Frame Installations
 - 1. Place frames accurately in position; plumb, align, and brace securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreader bars, leaving surfaces smooth and undamaged.
 - 2. At in-place concrete and in-place masonry construction, place frames and secure in place with anchorage devices. Set anchorage devices opposite each anchor location, in accordance with details on approved Shop Drawings and anchorage device manufacturer's instructions. Leave drilled holes rough, not reamed, and free from dust and debris.
 - a. Anchor frames as detailed on the Drawings.
 - 3. Place fire rated frames in accordance with NFPA Standard No. 80.
 - 4. Provide necessary field splices in frames as detailed on approved Shop Drawings, welded and finished to match factory fabrication.
 - 5. Extend jambs to structural floor slab and securely anchor in place.
- C. Door Installation
 - 1. Install doors accurately in their respective frames within the clearance specified in Part 2.
 - 2. Place fire rated doors with clearances as specified in NFPA standard No. 80.
- D. Drill and tap doors and frames to receive surface applied hardware.

3.03 ADJUSTING

- A. Prime Coat Touch-up
 - 1. Immediately after installation, sand smooth and clean rusted and damaged areas of shop prime coat and apply touch-up of original primer.
- B. Final Adjustments
 - 1. Check and adjust operating finish hardware items prior to final inspection. Leave work in complete and proper operating condition.

3.04 CLEANING

- A. Clean doors, frames, and accessories, leaving free of dirt and other foreign material after completion of installation.

END OF SECTION