

DIVISION 8

OPENINGS

SECTION 08 1100

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY:

- A. Related work specified elsewhere:
 - 1. Door hardware.
 - 2. Painting and coating.

1.2 SUBMITTALS:

- A. Shop drawings: Indicate door and frame elevations and sections, materials, gauges and finishes, fabrication and erection details, location of finish hardware by dimension and locations, and fire rating requirements.
- B. Samples: Submit as follows:
 - 1. Door: 1'-0" by 1'-0" corner section showing door construction.
 - 2. Welded frame: 1'-0" by 1'-0" head and jamb corner section showing welded corner construction.
 - 3. Anchors: One of each type.
- C. Product data: Indicate that hollow metal doors and frames comply with specified requirements, including performance criteria.

1.3 QUALITY ASSURANCE:

- A. Applicable standards; standards of the following, as referenced herein:
 - 1. American National Standards Institute, Inc. (ANSI).
 - 2. ASTM International (ASTM).
 - 3. Steel Door Institute (SDI).
 - 4. National Fire Protection Association (NFPA), National Fire Codes.
 - 5. Underwriters Laboratories, Inc. (UL).
- B. Performance criteria:
 - 1. Physical endurance: Comply with performance level for specified level classification in accord with ANSI A250.8-98 and ANSI A250.4-01 for doors and hardware reinforcing, ANSI A250.4-01 for doors, frames, frame anchors and hardware reinforcing.
 - 2. Finish: Comply with standard performance criteria of ANSI A250.10-98 for primed steel surfaces.
 - 3. Thermal performance: Minimum aged value of $U = 0.10$ ($R = 10.2$) or better, apparent thermal performance in accord with SDI-113-01.

1.4 DELIVERY, STORAGE AND HANDLING:

- A. Deliver hollow metal doors and frames cartoned for protection. Mark each hollow metal door and frame at top hinge and on outside of carton with destination door mark indicated on door schedule.
- B. Inspect work upon delivery for damage. Reject damaged items.

- C. Store materials under cover, on raised platforms.
 - 1. Stack a maximum of five assembled frame units and doors vertically with minimum 1/4" spacers between units.
 - 2. Protect from moisture but provide for cross ventilation. Remove units from wet containers if wetting occurs.

PART 2 - PRODUCTS

2.1 DOORS AND FRAMES:

- A. Fabrication standard: Except for more stringent requirements specified, comply with ANSI A250.8-98 including performance levels as referenced.
- B. Steel: Fabricate of commercial quality, hot dip galvanized or galvanized steel sheet meeting ASTM A653-02a Designation A60 or G60; wipe coat not acceptable.
- C. Finish: Prime painted steel surfaces shall comply with requirements for acceptance stated in ANSI A250.3-99. One coat of manufacturer's standard rust-inhibitive primer after chemical treatment of galvanized surfaces for paint adhesion.
- D. Door classification, insulated composite metal doors: Level II, 18 ga. Heavy Duty, Model Two seamless, 1-3/4" thickness, with polyurethane core.
- E. Door characteristics:
 - 1. Edge bevel: Vertical edges beveled 1/8" in 2"; double-acting doors rounded on 2-1/8" radius. Non-handed door blanks with filler plates are not acceptable.
 - 2. Top and bottom edges: Flush, welded, minimum 18 ga. steel. Provide weep holes in bottom edge of exterior doors.
 - 3. Join door edges by projection welding no more than 3" on center extending the full height of door. Fill and finish vertical seam smooth.
 - 4. Astragals: Mortised, 12 ga. material.
- F. Frame construction:
 - 1. Welded steel frames: 16 ga., with backbend returns.
 - a. Setup spot welded and full-face welded, with joints dressed and ground smooth; mechanical interlocking on interior of frame only.
 - b. Provide welded frames with temporary spreaders during shipping, storage and erection. Spreader shall span both rabbets of frame and be located at bottom and at middle of frame.
 - 2. Machine door frames for hardware scheduled for installation on that frame. Filler plates installed at unused openings will not be acceptable.
 - 3. Joints:
 - a. Dress welded joints and ground smooth, indistinguishable in completed work.
 - b. Make non-welded connections with tight fitting, closed joints.
 - c. Make joints with aligned faces and arrises.
- G. Panels: Same construction as doors, attached with concealed fasteners.

- H. Frame anchors:
1. Wall anchors for frame attachment to masonry construction: Adjustable, flat, minimum 18 ga. corrugated or perforated, T-shaped steel anchors with leg not less than 2" wide by 10" long. Provide one anchor per jamb for each 2'-0" of height or fraction thereof. Anchors for fire-rated frames shall be labeled type.
 2. Floor anchors: Provide frames with minimum 18 ga. anchors for attachment to floor.
 - a. For wall conditions that do not allow for the use of a floor anchor, provide an additional jamb anchor.
 - b. Anchors for fire-rated frames shall be labeled type.
 3. In-place masonry or concrete: 3/8" countersunk, flat head, stove bolts in expansion shields, spaced 6" maximum from top and bottom of frame and at 2'-0" o. c., maximum, between. Anchors for fire-rated frames shall be labeled type.
 4. Head struts: For frames over 7'-0" high and not anchored to masonry or concrete construction, provide 1/4" by 2" steel struts spot welded to jambs, each side, extending to building structure. Attach to structure. For frames over 4'-0" in width, provide center strut at head.
- I. Louvers:
1. Inverted "Y" type: Sightproof, 20 ga. blades, welded in 18 ga. frame; providing not less than 30 percent free air movement.
 2. Insect screen: 18 by 14 stainless steel wire mesh in removable, rewirable, hot dip galvanized steel frame.
- J. Bituminous coating for inside of fully grouted frames: Cold-applied, asphalt mastic meeting SSPC-Paint 12-82, minimum 30 mils thickness. Comply with coating requirements of ANSI A250.11-01.
- K. Preparation for hardware and anchors:
1. Reinforcement: Reinforce components for hardware installation in accord with ANSI A250.8-98.
 2. Punch single leaf frames to receive three silencers; double leaf frames to receive two silencers per leaf, at head.
 3. Factory-prepared hardware locations shall be in accord with ANSI A250.8-98 and ANSI A250.6-97.
 4. Provide grout shields where frames in masonry walls are cut or drilled.
 5. Install hardware reinforcement and anchors without distortions or blemishes on exposed surfaces.

PART 3 - EXECUTION

3.1 FRAME INSTALLATION:

- A. General:
1. Install hollow metal frames in accord with ANSI A250.8-98, ANSI A250.11-01, SDI-122-99, manufacturer's product data and approved shop drawings.
 2. Frames in masonry and concrete walls and fire-rated frames shall be tightly butted to walls. For other frames, clearance between frame and interfacing wall surfaces shall be 1/16" maximum.
 3. Shimming of door hinges is not an acceptable correction of door frames installed out of erection tolerance.

- B. Welded frames:
1. Set welded frames in position prior to beginning partition work. Brace frames until permanent anchors are set.
 2. Set anchors for frames as work progresses. Install anchors at hinge and strike levels. Install rubber bumpers and silencers in frames prior to grouting. Grout frames in masonry walls as specified in Concrete Unit Masonry section.
 3. Remove temporary braces and spreaders after wall construction is complete.
 4. Install welded frames in prepared openings in concrete and masonry walls using countersunk bolts and expansion shields.
 5. Weld field splices in borrowed lite frames and grind smooth.

3.2 DOOR INSTALLATION:

- A. General:
1. Install doors in accord with SDI-122-99, ANSI A250.8-98, manufacturer's product data and approved shop drawings.
 2. Install hollow metal doors in frames, using hardware specified in Door Hardware section.
 3. Shimming of door hinges is not an acceptable repair of warped doors or door frames out of erection tolerances.
- B. Edge clearances at doors:
1. Between door and frame, at head and jambs: 1/8".
 2. At meeting edges of pairs of doors and at mullions: 1/8" to 1/4" (1/8" for fire rated doors).
 3. At transom panels, without transom bars: 1/8".
 4. At sills without thresholds: 3/8" maximum above finish floor.
 5. At sills with thresholds: 3/8" maximum above top of threshold.
 6. Between face of door and door stop: 1/16".

3.3 SITE TOLERANCES:

- A. Allowable erection tolerances:
1. Variation from specified clearances: +1/32".
 2. Variation in face alignment, pairs of doors: +1/16".
 3. Variation in face alignment between door and frame: 1/8" maximum.

3.4 CLEANING AND PROTECTION:

- A. Protect hollow metal doors and frames from damage and staining until Date of Substantial Completion. Replace or repair damaged or stained components.
- B. Replace components which exhibit warp, buckle or broken welds.

End of Section

SECTION 08 3100

ACCESS DOORS AND PANELS

PART 1 - GENERAL

1.1 SUBMITTALS:

- A. Product data: Indicate material types, finishes and sizes, fabrication and installation details and requirements.

1.2 QUALITY ASSURANCE:

- A. Applicable standards; standards of the following, as referenced herein: ASTM International (ASTM).

1.3 DELIVERY, STORAGE AND HANDLING:

- A. Deliver access doors in protective packaging.
- B. Store in packaging to prevent soiling and physical damage.
- C. Handle to prevent damage to finished surfaces and operating mechanisms.

1.4 PROJECT/SITE CONDITIONS:

- A. Protection: Protect prefinished surfaces from damage or staining. Following installation, provide protective covering for duration of project.
- B. Coordinate installation of access doors required to be built into building structure. Secure templates or lay out to rough dimensions provided by specialty manufacturer.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND PANELS:

- A. Acceptable manufacturers; subject to compliance with specified requirements:
 - 1. J. L. Industries, Inc.
 - 2. Karp Associates, Inc.
 - 3. Wilkinson Co., Inc.
 - 4. Williams Brothers Corp.
- B. Characteristics:
 - 1. Size: As required to meet conditions.
 - 2. Types: As required by substrates.
 - 3. Construction: Minimum 14 ga. steel sheet for doors; 16 ga. for frames; prime painted.
 - 4. Hardware: Manufacturer's standard concealed hinges allowing 175 degree operation and cam lock.

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Install access doors in accord with manufacturer's product data, plumb, level and true to line and location.

- B. Install access doors with fasteners of type and spacing recommended by manufacturer's product data.
- C. Protect surfaces from damage or staining. Clean surfaces prior to Date of Substantial Completion.
- D. Test and adjust hardware for ease of operation.

End of Section

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUBMITTALS:

- A. Hardware schedule: Submit in vertical format. Indicate manufacturer's name, product description, finish and location of each item and complete keying schedule. Include manufacturer's cut sheets for each hardware item.
- B. Samples: Samples of hardware items may be requested for Architect's approval. Submit at same time as hardware schedule. Samples will be returned to supplier.
- C. Templates: Furnish templates and approved finish hardware schedule to door and frame manufacturers for use in fabrication.

1.2 QUALITY ASSURANCE:

- A. Supplier's qualifications: Provide services of an Architectural Hardware Consultant responsible for hardware scheduling, keying, coordinating with other trades, consulting with Architect and Owner, and on-site inspections.
- B. Applicable standards; standards of the following, as referenced herein:
 - 1. Americans with Disabilities Act (ADA).
 - 2. Door and Hardware Institute (DHI).
 - 3. Factory Mutual (FM).
 - 4. Window and Door Manufacturers' Association (WDMA).
 - 5. Steel Door Institute (SDI).
 - 6. Underwriters Laboratories, Inc., (UL).
- C. Hardware items of the same type shall be products of the same manufacturer.

1.3 DELIVERY, STORAGE AND HANDLING:

- A. Deliver finish hardware to project site in manufacturer's original packaging with hardware set number and door number marked on package. Include manufacturer's printed installation instructions, fasteners and installation tools.
- B. Store finish hardware in a clean, dry storage area.

1.4 WARRANTIES:

- A. Provide manufacturer's warranties against defects in materials or mechanisms for hardware for the following lengths of time, beginning at the Date of Substantial Completion:
 - 1. Closers: Ten years.
 - 2. All other hardware: One year.

PART 2 - PRODUCTS

2.1 DOOR HARDWARE:

- A. Door hardware types and finishes will be selected by Architect. Refer to schedule on drawings.

PART 3 - EXECUTION**3.1 HARDWARE INSTALLATION:**

- A. Install door hardware plumb, level and true to line, in accord with manufacturer's product data. Locations of hardware, where applicable, shall be in accord with the following:
 - 1. DHI "Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames".
 - 2. WDMA Industry Standard I.S.7, "Hardware Locations for Wood Doors".
 - 3. SDI 111, "Recommended Standard Details Steel Doors and Frames".
- B. Install door hardware to template. Cut and fit substrate to avoid substrate damage and weakening. Cover cut-outs with hardware item. Mortise work to correct location and size without gouging, splintering or causing irregularities in exposed finished work.
- C. Where cutting and fitting is required on substrates to be painted, install, fit and adjust hardware prior to finishing, then remove and place in original packaging. Reinstall hardware after finishing operation is completed.
- D. Attach thresholds to concrete surfaces using lead expansion shields and countersunk flat head bronze or stainless screws to match threshold color. Set thresholds in bed of sealant as specified in Joint Sealants section.

3.2 CLEANING AND ADJUSTMENT:

- A. At time of hardware installation, adjust each hardware item to perform function intended. Lubricate moving parts using lubricant acceptable to hardware manufacturer.
- B. Prior to Date of Substantial Completion, readjust and relubricate hardware. Repair or replace defective materials. Clean hardware as recommended by manufacturer's product data to remove dust and stains.
- C. Instruct Owner's designated personnel in adjustment and maintenance of hardware and finishes at the time of final hardware adjustment.

End of Section