

SECTION 08 11 13
HOLLOW METAL (HM) DOORS AND FRAMES

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- A. Hollow Door and Frame Standards:
 - 1. ANSI/SDI-A250.4 for Physical Performance.
 - 2. ANSI/SDI-A250.8 for Level, Model, and overall requirements.
- B. Standards for Oversize Openings:
 - 1. ANSI/NAAMM-HMMA 861 for door leaves in excess of 48 IN wide or 96 IN high.
- C. Fire rated doors and frames:
 - 1. Provide doors which are identical in materials and construction to units in door and frame assemblies tested in accordance NFPA 252, NFPA 80, and UL10C (Positive Pressure).
 - 2. Provide doors which are labeled and listed for ratings indicated by ITS – Warnock Hersey, UL or other testing and inspection agency acceptable to authorities having jurisdiction.
 - 3. Physical label or approved marking shall be affixed to fire door or fire door frame, at an authorized facility as evidence of compliance with procedures of labeling agency.
 - 4. Positive Pressure:
 - a. Comply with Positive Pressure Requirements UL 10C, Category A.
 - b. Provide "S" labels where required.
- D. Installation Quality Control:
 - 1. Completion of work in this section requires purchase of a tool called "PLS Frame Set", which shall be used to insure frames are kept plumb, level and square through out course of construction.
 - 2. At end of construction "PLS Frame Set" device shall become property of BNL.
 - 3. Refer to Part 3 this specification for entire protocol.

1.2 SUBMITTALS

- A. Shop Drawings:
 - 1. Door and frame schedule.
- B. Project Information:
 - 1. Manufacturer's Certificate of UL construction for oversized fire rated doors and frames.
- C. LEED Information:
 - 1. LEED Credits MR 4.1 and 4.2, Recycled Content: Product data indicating percentages by weight of post-consumer and post-industrial recycled content for products having recycled content; include statement indicating costs for each product having recycled content.
 - 2. LEED Credits MR 5.1 and 5.2, Regional Materials: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
 - 3. LEED Credit EQ 4.2, Low Emitting Materials – Paints and Coatings: Manufacturers data indicating VOC content of products specified.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. General:
 - 1. Deliver materials cartoned or crated.
 - 2. Inspect upon delivery for damage.

3. Store units in upright position under cover.
 4. Place units on wood sills at least 4 IN off floors, and in manner that will prevent rust and damage.
 5. Cover only with “breathable” sheet good.
 6. Provide a 1/4 IN air space between the doors to promote air circulation.
- B. Storage of Doors:
1. If the cardboard wrapper on door becomes wet, or moisture appears, remove wrapper immediately.
- C. Storage of Frames:
1. Assembled frames shall be stored in vertical position and no more than five units per stack.
- D. Repair minor damage provided finish is acceptable to Architect; otherwise, remove and replace.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Acceptable manufacturers:
1. Hollow Metal Doors and Frames:
 - a. Base:
 - 1) Steelcraft Manufacturing (Ingersoll-Rand).
 - b. Optional:
 - 1) Curries (ASSA ABLOY).
 - 2) Ceco Door Products (ASSA ABLOY).
 - 3) Republic Doors and Frames.
 2. Hollow Metal Doors for Recessed CVR Exit Devices.
 - a. Base:
 - 1) Steelcraft Manufacturing (Ingersoll-Rand).
 - b. Optional:
 - 1) Other manufactures, listed as Optional in previous paragraph which can comply with label requirements.
 3. Oversize Hollow Metal Doors and Frames:
 - a. Base:
 - 1) Fleming Steel Doors and Frames.

2.2 GENERAL MATERIALS

- A. Steel sheet and strip:
1. Typical: ASTM-A568.
- B. Corrosion-resistant coating:
1. Standard:
 - a. Hot-dip Galvannealed: A60 per ASTM-A653.
 - b. Minimum zinc-iron alloy coating: 0.6 OZ/FT².
 2. Application: Provide above corrosion-resistant coating at all door and frame components where used at exterior and interior wet and humid locations as defined by following:
 - a. Exterior openings:
 - 1) Openings located in an exterior wall.
 - 2) Openings that are exposed to weather even if protected by overhead canopy.
 - 3) Openings used to form either side of an entrance vestibule (a.k.a. air lock vestibule) between exterior and conditioned spaces.
 - 4) Openings used for roof access.
 - 5) Openings to and from loading docks, trash collection and compacting areas.
 - b. Interior openings in “wet and humid” areas:
 - 1) Openings to and from loading docks, trash collection and compacting areas.

- C. Primer:
 1. Doors and frames shall be cleaned, phosphatized and finished as standard with one coat of baked-on rust inhibiting primer paint in accordance with ANSI A250.10.
 2. Primer shall be suitable and compatible as base for specified finish paints.
- D. Zinc-rich primer for repair of galvanized/galvannealed items: "Galvilite" by ZRC Worldwide.

2.3 GENERAL REQUIREMENTS – HOLLOW METAL (HM) DOORS

- A. General:
 1. Comply with ANSI/SDI A250.8.
- B. Determination of performance level for each door:
 1. In accordance with following schedule, use indicated level of HM door indicated for its location, size and other listed criteria.
 - a. Note: Not all items below may apply to subject project.

Schedule of HM Door Levels			
Location	Additional Criteria	Use ANSI Level:	Miscellaneous
Exterior Doors ¹ (flush)	Openings where each leaf is less than 47 IN	Level 3 (Extra Heavy-duty)	Galvanized / galvannealed, Thermally Insulated
	Openings where one or more of the leaves exceeds 47 IN	Level 4 (Maximum-duty)	
Exterior Doors ¹ (stile and rail)	All	Level 3 (Extra Heavy-duty)	Galvanized / galvannealed, Thermally Insulated
Interior Doors	Non-fire rated	Level 3 (Extra Heavy-duty)	--
	Fire rated	Level 3 (Extra Heavy-duty)	Labeled as indicated (w/out astragal wherever possible)
	Wet / Humid Areas ²	Level 3 (Extra Heavy-duty)	Galvanized / galvannealed; Moisture-resistant core - Fire-resistant were required

General Notes:

Refer to Door Schedule for indication of the Door Type (i.e. Width, Fire Rating, Flush vs. Stile & Rail, etc)
 Refer to Plans for door location (Exterior vs. Interior)
 Where Hurricane or Tornado-resistant openings are specified: Refer "ADDITIONAL REQUIREMENTS" for appropriate door/frame construction.

Footnotes:

1. Refer to Part 2.2 for definition of "Exterior" locations.
2. Refer to Part 2.2 for definition of "Wet/Humid" locations.

- C. Construction - Hollow Metal (HM) Doors:
 1. Door Thickness:
 - a. 1-3/4 IN.
 2. HM Door Level, per ANSI-A250.8:
 - a. Level 2, Heavy-duty, physical performance Level B.
 - 1) Face Sheet Thickness: 18 GA (0.042 IN).
 - b. Level 3, Extra Heavy-duty, physical performance Level A.
 - 1) Face Sheet Thickness: 16 GA (0.053 IN).
 - c. Level 4, Maximum-duty, physical performance Level A.
 - 1) Face Sheet Thickness: 14 GA (0.067 IN).
 3. Typical Model, per ANSI-A250.8:
 - a. Model 2, Seamless.
 4. End channels at top and bottom of door:
 - a. Minimum Sheet thickness of channels: 16 GA (0.053 IN).
 - b. Bottom channel: "Flush".
 - c. Top channel:
 - 1) "Flush".

5. Cores:
 - a. Steel stiffeners where structurally required.
 - b. Exterior Doors:
 - 1) Thermally insulated cores.
 - 2) Minimum R-value: 4.0 DegF x H x FT²/BTU when tested according to ASTM-C1363.
 - 3) Exception: Fire resistant core where rating is indicated for Exterior doors.
 - c. Interior doors:
 - 1) Non-rated doors: Kraft Honeycomb laminated to face sheets.
 - 2) Rated doors: Fire resistant core as required by label.
 - 3) Wet/Humid Areas: Moisture-resistant materials, fire resistant where applicable.
 - d. Specific materials used for above listed core types: At Manufacturer's discretion.
 - e. Reinforce for Hardware.
 6. Vertical Door Edges:
 - a. Lock Stile Edges: Beveled 1/8 IN per 2 IN.
 - 1) Exception for Inactive Leaves: Fabricate "inactive leaves" with a square edge at the lock stile edge. (Active leaves to be beveled per above.)
 - b. Hinge Stiles Edge: Beveled 1/8 IN per 2 IN.
 - c. Exceptions for Double-Acting Doors: Provide convex, radiused edges at lock stiles and hinge stiles.
- D. Hardware Reinforcement:
1. Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as door face sheets.
 2. Minimum thickness: As prescribed in ANSI/SDI A250.6; Upgrade as necessary for conditions such as door weight, size, frequency, etc. and as follows:
 - a. Butt Hinges: 7 GA (0.17 IN).
 - b. Continuous hinges: Reinforce with 14 GA (0.067 IN) x1-1/4 IN strapping extending full height and welded to hinge edge of door.
 - c. Closers and Overhead Stops: 14 GA (0.067 IN).
- E. Lites:
1. Provide light kits which are labeled for intended opening.
 2. Fixed Stop:
 - a. Locate at exterior face.
 - b. Integral to door/frame.
 3. Removable Stop:
 - a. Locate on interior face.
 - b. Screw-less snap-in stops or stops secured with countersunk Phillips head machine screws.
- F. Overlapping Astragals:
1. Provide approved overlapping astragals where required by label but not provided in Section 08 71 00 / Hardware.
 2. Weatherstripping: Specified in Section 08 71 00.

2.4 GENERAL REQUIREMENTS – HOLLOW METAL (HM) FRAMES

- A. General:
1. Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
 2. Fabricate frames with mitered or coped corners.
 3. Fastenings: Fully concealed.
 4. Touch-up galvanized/galvannealed frames with zinc-rich primer.
- B. Fabricate frames as face-welded.
1. Continuously weld face and return flanges.
 2. Fill and finish exposed sides to be free of visible seams.
 3. Split type frames and "knock-down" type frames are not acceptable.

4. Intersections of Rabbets, Stops and Soffit Joints:
 - a. Spot-weld on concealed-side.
- C. Determination of steel gauge for each frame:
 1. Per following schedule, use the indicated minimum steel gauge as indicated for its location, size and other listed criteria.
 2. Note: Some of the items below may not apply to subject project.

Schedule of HM Frames			
Location	Criteria	Minimum Gauge	Miscellaneous
Exterior Frames ¹	Where overall width of frame is less than 47 IN	14 GA	Galvanized / galvanized
	Where overall width of frame is greater than 47 IN	12 GA	
Interior Frames ¹	Non-fire rated	16 GA	---
	Fire rated	16 GA	---
	Wet / Humid Areas ²	16 GA	Galvanized / galvanized

General Notes:

Gauge of frame listed is "minimum". Use heavier gauge as required due to size, physical configuration or if required to meet fire label requirements.

Refer to Door Schedule for indication of the Frame Type (i.e. Width, Single vs. Pair; Fire Rating, etc)

Refer to Plans for door location (Exterior vs. Interior)

Where Hurricane or Tornado-resistant openings are specified: Refer "ADDITIONAL REQUIREMENTS" for appropriate door/frame construction.

Footnotes:

1. Refer to Part 2.2 for definition of "Exterior" locations.
2. Refer to Part 2.2 for definition of "Wet/Humid" locations.

- D. Lites:
 1. Provide light kits labeled for intended opening.
 2. Fixed Stop:
 - a. Locate at exterior face.
 - b. Integral to door/frame.
 3. Removable Stop:
 - a. Locate on interior face.
 - b. Screw-less snap-in stops or stops secured with countersunk Philips head machine screws.
- E. Silencers:
 1. Specified in Section 08 71 00.
 2. Quantity:
 - a. 3 on strike jamb of single frames.
 - b. 2 per door for pair doors. Locate at head.
 3. Space per manufacturer's recommendations.
 4. Use plastic plugs to keep holes clear during construction.
- F. Hardware Reinforcement:
 1. Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames.
 2. Minimum thickness: As prescribed in ANSI/SDI A250.6; upgrade as necessary for conditions such as door weight, size, frequency, etc. and as follows:
 - a. Butt Hinges: 7 GA (0.17 IN).
 - b. Continuous hinges: Reinforce with 14 GA (0.067 IN) x1-1/4 IN strapping extending full height and welded to hinge jamb door rabbet of frame.
 - c. Closers and Overhead Stops: 12 GA (0.093 IN) IN thick x 12 IN-long strapping welded to vertical flange of frame.

- G. Head Stiffeners for Double-egress Frames:
1. Purpose: To compensate for loss of stiffness at midspan due to discontinuity of head stops.
 2. Configuration: 12 IN long strapping welded to each vertical flange of frame.
 3. Minimum Thickness: 12 GA (0.093 IN) IN.
 4. Position stiffeners at mid-span of frame opening.
- H. Cover Boxes:
1. Material: 16 GA (0.053 IN) sheet steel.
 2. Size and shape: As required by hardware device.
 3. Include knock-out to receive 1/2 IN conduit.
 4. Locate Cover Boxes in all frames scheduled to receive electrified Security or Door Hardware devices or both.
 - a. Devices including, but not limited to: Electric Strikes, Maglocks, Door Position Switches, Current-conducting hinges, etc.
- I. Jamb Anchors:
1. General:
 - a. Material: ASTM-A591 Commercial Steel, 40Z coating; mill phosphatized.
 - 1) Exception for frames built into exterior walls: Steel sheet complying with ASTM-A1008 or ASTM-A1011, hot-dip galvanized according to ASTM-A153, Class B.
 - b. Provide anchors in accordance with manufacturer's recommendations on fire rated doors.
 - c. Provide minimum number as indicated on following Table:

Jamb Anchors Minimum Quantity Required (per Jamb)	
Nominal Frame Height	Minimum Quantity per Jamb
Up to 60 IN	2
Between 60 IN and 90 IN	3
Between 90 IN and 120 IN	4
Between 120 IN and 150 IN	5
Taller than 150 IN	Add 1 additional for each 30 IN increase in height thereafter

2. Jamb Anchors for Stud-Framed walls:
 - a. Z-shaped clips, welded to inside of frames; not less than 0.042 IN thick.
 - b. Attach anchors to studs with screws.
 3. Jamb Anchors for Masonry walls:
 - a. Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 IN thick, with corrugated or perforated straps not less than 2 IN wide by 10 IN long; or wire anchors not less than 0.177 IN thick.
 - b. Embed long leg into masonry wall as it is laid.
 4. Post-installed Expansion Type for In-Place Concrete (or Masonry):
 - a. Minimum 3/8 IN countersunk, flat-head expansion bolts with expansion shields or inserts.
 - b. Include pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
 - c. Minimum embedment length: 1-3/4 IN.
- J. Floor Anchors:
1. Material: Same for Jamb Anchors but not less than 0.053 IN (12 GA) thick.
 - a. For anchors built into exterior walls, steel sheet complying with ASTM-A1008 or ASTM-A1011, hot-dip galvanized according to ASTM-A153, Class B.
 2. Application:
 - a. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

- b. Topped Slabs: Adjustable-type anchors with extension clips, allowing not less than 2 IN height adjustment. Terminate bottom of frames at finish floor surface.
 - 3. Include concealed fasteners.
 - 4. Provide anchors in accordance with manufacturer's recommendations on fire rated doors.
- K. Additional Head Anchors for Double Egress Frames:
 - 1. Provide 2 frame anchors for Double Egress frames.
 - 2. Locate at 1/3 rd points of span.
- L. Spreaders:
 - 1. Provide removable spreaders at bottom of door frames.
- M. Inserts, bolts and fasteners:
 - 1. Manufacturer's standard units.
 - 2. Galvanize items to be built into exterior walls ASTM-A153, Class C or D as applicable.
- N. Grout:
 - 1. Portland cement-based grout mixture: Specified in Section 04 05 13.
 - 2. Grout mixtures shall NOT contain gypsum.

2.5 ADDITIONAL REQUIREMENTS – OVERSIZED HM DOORS & FRAMES

- A. General:
 - 1. Specification language in this sub-Part is applicable to:
 - a. Openings specifically indicated as “Oversize”.
 - b. Openings whose physical dimensions exceed those offered by makers of standard sized HM doors.
 - 2. Materials:
 - a. Galvannealed Steel.
 - 3. Size and Fire Rating as scheduled.
- B. Oversized HM Doors:
 - 1. Door types and configurations indicated.
 - 2. Door Thickness: 1-3/4 IN.
 - 3. Face Skins: 12 GA (0.093 IN) minimum.
 - a. Edges: Continuously welded.
 - 4. Interlocking steel stiffeners:
 - a. Minimum Thickness: 20 GA (0.032 IN).
 - b. Spot-welded to faces 6 IN centers.
 - c. Voids: Filled with fiberglass insulation.
 - 5. Extra deep end channels at the top and bottom.
 - 6. High frequency hinge reinforcing.
 - 7. Closer Reinforcing.
 - 8. Level 'A' grade in accordance with ANSI/SDI A250.4.
 - 9. Base Product: “H-Series Doors” by Fleming Steel Doors and Frames.
- C. Frames for Oversized HM Doors:
 - 1. Frame types and configurations indicated.
 - 2. Face Width: 2 IN.
 - 3. Steel Thickness: 12 GA (0.093 IN) minimum.
 - 4. Face Seams:
 - a. Continuously welded.
 - b. Ground smooth and flush for “seamless” appearance.
 - c. Touch-up galvanized/galvannealed frames with zinc-rich primer.
 - d. Split type frames and “knock-down” type frames are not acceptable.
 - 5. Joints at intersections of Rabbets, Stops and Soffit Joints:
 - a. Continuous weld on concealed-side.
 - b. Neatly fill corner seam with painter’s caulk (in field) prior to painting.
 - 6. Conceal fastenings.

7. Reinforce all corners and hardware cutouts per ANSI/DHI A115.
8. Reinforce frames where closers and overhead stops are scheduled with 3/16 IN thick x 12 IN-long strapping.
9. Steel boxes at back of hardware cut-outs, minimum 0.45mm 0.018 IN welded to frame
10. Base Product: "F-, DW-, or A-Series Frames" (as applicable for conditions) by Fleming Steel Doors and Frames.

2.6 FABRICATION

A. General:

1. Fabricate rigid, neat in appearance and free from defects.
2. Form to indicated sizes and profiles.
3. Fit and assemble in shop, wherever practical.
4. Mark work that cannot be fully assembled in shop, to assure proper assembly at site.
5. Door to Frame Clearances:

Door To Frame Clearances					
Rated / Non-rated	Location		Wood Doors	Hollow Metal Doors	
Rated Openings	Top Rail to Frame		3/32 to 1/8 IN	3/32 to 5/32 IN	
	Lock Stile to Jamb				
	Hinge Stile to Jamb				
	Meeting Stiles at Pair Doors		1/16 to 1/8 IN	1/16 to 1/8 IN	
	Face of door to face of Stop				
	Door Bottom to Floor / Flooring	Typical; all floor covering types		Up to 1/2 IN	Up to 1/2 IN
		At Non-combustible Sills		Up to 3/8 IN	Up to 3/8 IN
Bare floors; No flooring or sills		Up to 3/4 IN	Up to 3/4 IN		
Non-rated Openings	All Conditions		Comply with criteria listed for rated openings	Comply with criteria listed for rated openings	

- a. Comply also with additional requirements of the following where more stringent:
 - 1) ANSI A250.8.
 - 2) Fire-rated doors: NFPA 80.
 - 3) Smoke-Control Doors: NFPA 105.
 - 4) Locally adopted Building Code.

B. Hardware Preparation:

1. Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to Door Hardware Schedule and templates furnished as specified in Section 08 71 00.
2. Locate hardware indicated, or if not indicated, according to ANSI/SDI A250.8.
3. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
4. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
5. Coordinate locations of conduit and wiring boxes for electrical connections with Division 16 Sections.

C. Clean off mill scale and foreign materials, touch-up damaged galvanized or galvanized surfaces.

D. Prime:

1. Shop prime.

- E. Fire Labels:
 - 1. Affix permanent labels to fire rated units in accordance with testing agency requirements.
 - 2. At openings where continuous hinges, or other items when scheduled and installed would conceal fire label, locate labels on alternative locations as allowed by listing agency and local authorities.
- F. Prepare frames for Door Position Switches (DPS):
 - 1. Coordinate locations with Security System provider.
 - 2. Locate DPS frame head approximately 4 IN from latching door edge.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine structure, substrates, and conditions under which work is to be installed for conditions detrimental to correct and timely completion.
- B. Installation constitutes acceptance of responsibility for performance.

3.2 INSTALLATION QUALITY CONTROL

- A. Initially set frames plumb, level & square within allowable tolerances using "PLS Frame Set" device or approved equal.
- B. Re-check plumb, level and square after walls are set and make adjustments where required.
- C. Re-check plumb, level and square again just prior to hanging doors, making adjustments as required. Insure that door-to-frame clearances are also within specified tolerances.
- D. Punch List:
 - 1. Make "PLS Frame Set" device available to General Contractor or Construction Manager for preparation of Punch List.
 - 2. General Contractor or Construction Manager to utilize "PLS Frame Set" device in preparing Punch List.
 - 3. Re-check plumb, level and square after deficiencies identified in Punch List are corrected.
 - 4. Make "PLS Frame Set" device available to Architect for purpose of checking completion of Punch List items.
 - 5. Closeout: Turn "PLS Frame Set" device over to BNL.

3.3 INSTALLATION

- A. General:
 - 1. Install steel doors, frames, and accessories in accordance with approved shop drawings, manufacturer's data, and as specified.
 - 2. Place frames prior to construction of enclosing walls and ceilings.
 - 3. Coordinate building in of anchors, and frame grouting with other trades.
- B. Placing Frames:
 - 1. General:
 - a. Comply with provisions in ANSI A250.11/ SDI 105, unless otherwise indicated.
 - b. Install fire-rated frames according to NFPA 80.
 - 2. Place frames before construction of adjacent walls.
 - a. Exception: Where adjacent walls are cast-in-place concrete: Set frames 'after' wall is constructed.
 - 3. Set frames accurately in position, plumbed, aligned, and braced securely.
 - 4. Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Plumbness: Plus or minus 1/16 IN, measured at jambs at floor.
 - b. Levelness: Plus or minus 1/16 IN per leaf, measured across width of header.

- c. Squareness: Plus or minus 1/16 IN, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - d. Alignment: Plus or minus 1/16 IN, measured at jambs on horizontal line parallel to plane of wall.
 - e. Twist: Plus or minus 1/16 IN, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
5. Do not remove spreaders until surrounding wall construction is complete.
 6. After surrounding walls have been constructed, verify that frames are still in proper alignment.
 - a. Re-check for level, plumb, square, twist and other problems that will prevent proper fitting of doors.
 - b. Correct deficiencies before surrounding construction is allowed to proceed.
 - c. Work with wallboard installer, if necessary, to correct misalignment problems.
 7. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 8. Prior to hanging doors: Verify all aspects of frame alignment, and correct deficiencies.
- C. Frame-to-Wall Anchors:
1. Utilize anchor type specified for wall condition.
 2. Align anchors at hinge centers on hinge jamb and at corresponding heights on strike jamb.
 3. Secure frame to wall per manufacturer's instructions.
- D. Grout all frames set into Cast-in-Place Concrete, CMU, and other masonry walls.
1. Do not grout frames set into metal stud-framed wall types.
- E. Grout all double egress frames, frames in masonry walls, and frames of doors swinging singly or in pairs 4 FT and wider.
1. Grout frames full at head and jambs.
- F. Door Installation:
1. Comply with ANSI A250.8.
 2. Fit hollow-metal doors accurately in frames, within clearances specified.
 3. Shim as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
- G. Prime-Coat Touchup:
1. Immediately after erection, sand smooth rusted or damaged areas of primer coat.
 2. Touch up primer coat with compatible air-drying primer.
 3. Leave surfaces smooth for finish painting.
 4. VOC content of prime coat for touch up shall not exceed 250 g/L.
- H. Field Painting of HM Frames and Doors:
1. Painting of Exterior openings: Specified in Section 09 91 13.
 2. Painting of Interior openings: Specified in Section 09 91 23.
 3. Do not paint factory pre-finished doors such as stained faux wood (embossed steel) doors.
- I. Install Sealants:
1. Sealant (specified elsewhere):
 - a. Exterior Sealants: Specified in Section 07 92 13.
 - b. Interior Sealants: Specified in Section 07 92 16.
 2. Seal frames to walls.
 3. Seal frames to floor slabs and hard floor finishes.
 4. Hairline gap at intersections of head and jamb frames (intersections of rabbets and stops):
 - a. Fill exposed seam with painter's caulk.
- J. Install silencers.

3.4 ADJUSTING AND CLEANING

- A. Alignment:

1. After surrounding walls have been constructed, verify frames are remain in proper alignment.
 2. Check for level, plumb, square, twist and other problems that will prevent proper fitting of doors.
 3. Correct deficiencies before surrounding construction is allowed to proceed.
- B. Protection Removal:
1. Immediately before final inspection, remove protective wrappings from doors and frames.
- C. Leave work complete and in proper operating condition.
- D. Remove and replace defective work.
- E. Ensure that all fire labels are intact, and readily visible.

END OF SECTION

