SECTION 08110

STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Flush Steel Doors.

B. Temperature Rise Doors

C. Steel Frames.

1.2 RELATED SECTIONS

A. Section 08710 - Door Hardware.

B. Section 08800 - Glazing.

C. Section 09900 - Paints and Coatings.

D. Section 13710 - Intrusion Detection: Security system.

E. Section 13800 - Building Automation and Control: Building monitoring system.

1.3 REFERENCES

A. ANSI/NFPA 80 - Standard for Fire Doors and Windows.

B. ANSI/DHI A 115.IG - Installation Guide for Doors and Hardware.

C. ANSI/BHMA A 156.115- Specifications for Hardware Preparations in Standard Steel Doors and Frames.

D. ANSI/BHMA A156.7 - Hinge Template Dimensions.

E. ANSI A 250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcing.

F. ANSI/SDI A 250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames.

G. ANSI A 250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

H. ANSI A 250.11 - Recommended Erection Instructions for Steel Frames.

I. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

J. ASTM A 924 - Specification for General Requirements for Steel Sheet, Metallic Coated by the Hot Dip Process.

K. ASTM A 1008/1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

L. ASTM E 152 - Standard Methods of Fire Tests of Door Assemblies.

M. SDI-111 - Recommended Standard Details for Steel Doors & Frames.

N. NAAMM/HHMA-820 TN01 - Grouting Hollow Metal Frames

O. NAAMM/HHMA-820 TN03 - Guidelines for Glazing of Hollow Metal Transom, Sidelight and Windows

P. NAAMM/HMMA-840 - Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

Q. ANSI/UL 10C - Standard for Safety for Positive Pressure Fire Tests of Door Assemblies.

R. NFPA 252 - Standard Method of Fire Tests of Door Assembly

S. UL - Building Materials Directory; Underwriters Laboratories Inc.

T. WH - Certification Listings; Warnock Hersey International Inc.

1.4 SUBMITTAL

A. Product Data: Manufacturer's standard details and catalog data indicating compliance with referenced standards, and manufacturer's installation instructions.

B. Certificates:
1. Manufacturer's certification that products comply with referenced standards.
2. Evidence of manufacturer's membership in the Steel Door Institute.

C. Shop Drawings: Door, frame, and hardware schedule in accordance with SDI 111D. Show types, quantities, dimensions, specified performance, and design criteria, materials and similar data for each opening required.
1. Indicate frame configuration, anchor types and spacing, location of cutouts for hardware, reinforcement, to ensure doors and frames are properly prepared and coordinated to receive hardware.
2. Indicate door elevations, internal reinforcement, closure method, and cutouts for glass lights and louvers.

D. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
3. List of proposed materials demonstrating that each material was extracted, harvested or recovered, as well as manufactured within 500 miles of the project site.

E. Samples: 18 by 24 inches cut away sample door with provisions for lockset, hinge and corner section of frame.

1.5 QUALITY ASSURANCE

A. Supplier: A documented Quality Assurance Program for continuous quality monitoring and inspections.

B. Fire Rated Doors and Frames: Underwriters' Laboratories and Warnock Hersey, labeled fire doors and frames:
   1. Label fire doors and frames in accordance with Underwriters Laboratories standard UL10C, and Positive Pressure Fire Tests of Door Assemblies.
   2. Construct and install doors and frames to comply with current issue of ANSI/NFPA 80.
   3. Manufacture Underwriters' Laboratories labeled doors and frames under the UL factory inspection program and in strict compliance to UL procedures, and provide the degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
   4. Manufacture Intertek Testing Services / Warnock Hersey labeled doors and frames under the ITS/WH factory inspection program and in strict compliance to ITS/WH procedures, and provide the degree of fire protection capability indicated by the opening class.
   5. Affix a physical label or approved marking to each fire door or fire door frame, at an authorized facility as evidence of compliance with procedures of the labeling agency. Alternate labeling with embossment permitted
   6. Conform to applicable codes for fire ratings. It is the intent of this specification that hardware and its application comply or exceed the standards for labeled openings. In case of conflict between types required for fire protection, furnish type required by NFPA and UL.
   7. Fire door assemblies in exit enclosures and exit passageways; maximum transmitted temperature end point rating of not more than 250 degrees F (121 degrees C) above ambient at the end of 30 minutes of the standard fire test exposure.

C. Manufacturer Qualifications: Member of the Steel Door Institute.

D. Installer: Minimum five years documented experience installing products specified this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handle, store and protect products in accordance with the manufacturers printed instructions and ANSI/SDI A250.10 and NAAMM/HMMA 840.

B. Store doors vertically in a dry area, under a proper vented cover. Place on 4 inch (102 mm) high wood sills to prevent rust or damage. Provide 1/4-inch (6 mm) space between doors to promote air circulation.

C. Store frames in an upright position with heads uppermost under cover. Place on 4 inch (102 mm) high wood sills to prevent rust and damage. Store assembled frames five units maximum in a stack with 2 inch (51 mm) space between frames to promote air circulation.

D. Do not use non-vented plastic or canvas shelters to prevent rust or damage.

E. Should wrappers become wet, remove immediately.

1.7 COORDINATION

A. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal cutouts and reinforcement for door hardware, electric devices and recessed items.

B. Coordinate Work with frame opening construction, door and hardware installation.

C. Sequence installation to accommodate required door hardware.

D. Verify field dimensions for factory assembled frames prior to fabrication.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Pioneer Industries, 111 Kero Road, Carlstadt, NJ 07072. Tel: Kamal Sheikh; (201) 933 1900 skamal@pioneerindustries.com; www.pioneerindustries.com

B. Substitutions: Manufacturers recognized as “SDI CERTIFIED”

C. Provide all steel doors and frames from a single manufacturer.

2.2 DOORS

A. General: Construct exterior/interior doors to the following designs and gages:
   1. Exterior Doors: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A40:
      a. Thickness:
         1) 18 gage (1 mm).
         2) 16 gage (1.3 mm).
         3) 14 gage (1.7 mm).
      b. Close tops of exterior swing-out doors to eliminate moisture penetration. Galvannealed steel top caps are permitted.
   2. Interior Doors: Cold-rolled steel, ASTM A 1008/A 1008M
      a. Thickness:
         1) 18 gage (1 mm).
         2) 16 gage (1.3 mm).
         3) 14 gage (1.7 mm)
   3. Interior Doors: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A40:
      a. Thickness:
         1) 18 gage (1 mm).
         2) 16 gage (1.3 mm).
   4. Prime Finish Doors: Clean and factory prime painted doors indicated on Door Schedule as HM.
   5. Glass moldings and stops- :
      a. Fabricate from 18 gage (1 mm) steel conforming to:
         1) Interior openings ASTM designation A 1008 cold rolled steel.

2) Exterior openings ASTM designation A653 and A 924 Zinc-Iron Alloy-Coated galvannealed steel with a zinc coating of 0.04 ounces per square foot (A40) for exterior opening

6. Hardware Reinforcements:
   a. Hinge reinforcements for full mortise hinges: minimum 7 gage (4.7 mm).
   b. Lock reinforcements: minimum 16 gage (1.3 mm).
   c. Closer reinforcements: minimum 14 gage (1.7 mm) steel, 20-inch (508 mm) long.
   d. Projection welded hinge and lock reinforcements to the edge of the door.
   e. Provided adequate reinforcements for other hardware as required.

B. Full Flush Doors:
   1. Acceptable Product: Pioneer's H, HP, LW and HT Series.
      a. Performance:
         1) Physical performance: 1 million cycles per ANSI A250.4.
         2) Sound attenuation (panels):
            a) Honeycomb core, 32 STC.
            b) Polystyrene core, 26 STC.
            c) Polyurethane Core, 31 STC
            d) Steel Stiffened Core, STC 46

         3) Thermal performance (as panel), ASTM C1199-09.
            a) Honeycomb core, 0.55 U-factor.
            b) Polystyrene core, 0.37 U-factor.
            c) Polyurethane core, 0.34 U-factor.
   2. Acceptable Product: Pioneer's C Series.
      a. Performance:
         1) Physical performance: 3 million cycles, ANSI A250.4
         2) Sound attenuation (panel), up to 46 STC
         3) Thermal performance (panel): 0.59 U-factor
   3. Door Thickness: 1-3/4 inches (45 mm).
   4. Door faces reinforced and sound deadened as follows:
      a. Honeycomb Core: Reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels using heat and pressure cured water based adhesive applied to both sides of honeycomb core.
      b. Polystyrene Core: Full 1-3/4 inches (45 mm) thick rigid polystyrene, adhered to inside of door faces and polystyrene core with polyurethane adhesive for bond strength.
      c. Polyurethane Core: Full 1-3/4 inches (45 mm) thick rigid polyurethane, adhered to inside of door faces and polyurethane core with polyurethane adhesive for bond strength.
      d. Steel Stiffened Core: Vertical stiffeners, hat-shaped, minimum 24 gage (0.6mm) cold rolled steel, spaced 6 inches (150 mm) max. apart and welded to inside of face sheets 4 inches (127 mm) on center; ½ Pound glass fiber insulation between stiffeners.
   5. Vertical edge seams: Provide doors with continuous vertical mechanical inter-locking joints at lock and hinge edges. Finish edges as follows:
      a. Visible Interlocked Edge (H series-Lockseam): Continuous vertical mechanical interlocking joints with visible edge seams and continuous bead of structural epoxy in internal vertical connection

b. Filled Vertical Edges (HF-series –Filled edge): Continuous vertical mechanical interlocking joints are tack welded 12' O.C ; edge seams filled and ground smooth.
c. Welded Vertical Edges (C series (Seam Weld): Continuous vertical mechanical interlocking joints; edge seams butted and welded, filled, and ground smooth.

6. Optional Bevel hinge and lock door edges 1/8 inch (3 mm) in 2 inches (50 mm). Square edges on hinge and/or lock stiles are standard.
7. Reinforce top and bottom of doors with 16 gage (1.3 mm), welded to both panels.
8. Glass Kits: Standard Low Profile Kits primed to match the Doors..
9. Fire Rating: Supply door units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.

C. Temperature Rise Doors:
1. Acceptable Product: Pioneer's HR and CHR -Series Doors.
2. Door Thickness: 1-3/4 inches (45 mm).
3. Mineral Fiber Core: Full 1-3/4 inches (45 mm) mineral fiber core material designed to comply with the 250 degrees F (121 degrees C) maximum temperature rise rating.
4. Vertical edge seams: Provide doors with continuous vertical mechanical inter-locking joints at lock and hinge edges. Finish edges as follows:
a. Visible Interlocked Edge (HR-Lockseam): Continuous vertical mechanical interlocking joints with visible edge seams and continuous bead of Polyurethane adhesive in internal vertical connection
b. Filled Vertical Edges (HRF-Filled edge): Continuous vertical mechanical interlocking joints with tack welds 12" O.C; edge seams filled and ground smooth.
c. Welded Vertical Edges (CHR Series-Seamweld): Continuous vertical interlocking joints; edge seams welded, filled, and ground smooth.
5. Optional Bevel hinge and lock door edges 1/8 inch (3 mm) in 2 inches (50 mm). Square edges on hinge and/or lock stiles are standard..
6. Reinforce top and bottom of doors with 16gage (1.3 mm), welded to both panels.
7. Fire Rating: Supply door units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.

2.3 DOOR FRAMES

D. General: Construct exterior/interior metal door frames to the following designs and gages;
1. Exterior Frames: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60:
a. Thickness:
1) 16 gage (1.3 mm).
2) 14 gage (1.7 mm).
2. Interior Frames in Masonry: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60, galvannealed steel.
a. Thickness:
1) 16 gage (1.3 mm).
2) 14 gage (1.7 mm).
3. Interior Frames in stud wall construction: cold rolled steel, ASTM A 1008/A 1008M.
a. Thickness:

1) 16 gage (1.3 mm).

2) 14 gage (1.7 mm).

4. Interior KD Drywall Frames (Slip-On construction): cold rolled steel, ASTM A 1008/A 1008M.
   a. Thickness
      1) 16 gage (1.3 mm).
      2) 14 gage (1.7 mm).

5. Electrical Requirements: Coordinate all electrical requirements for doors and frames. Make provisions for installation of electrical items so that wiring can be readily removed and replaced.
   a. Provide cutouts and reinforcements required for metal door frame to accept electric components.
   b. Frame with Electrical Hinges: Weld UL listed grout guard cover box welded over center hinge reinforcing. Top or bottom hinge locations are not permitted.
   c. Provide cutouts and reinforcements required to accept security system components.
   d. Coordinate with Section 08710 for electrified hardware items.

E. Flush Steel Frames:
1. Acceptable Product: Pioneer's F-Series.
   a. Performance:
      1) Physical performance: 1 million cycles minimum per ANSI A250.4
2. Construction: Three-piece knock-down frames; mitered joints, with locking tab at each head and jamb intersection. OR
3. Construction: Factory-welded three sided frames.
   a. Face welded: Weld miter joints between head and jamb faces completely along their length either internally or externally. The remaining elements of the frame profile (soffit/stop and rabbets) are not welded. Grind and finish face joints smooth.
   b. Full profile welded:
      1) Weld miter joints between head and jamb faces completely along their length either internally or externally.
      2) Internally weld perimeter profile joints full length of soffit and rabbets with hairline seams on external meeting surfaces. Grind and finish face joints smooth.
4. Profile:
   a. 2 inches (51 mm) face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
   b. Min 1 1/4 inch (32 mm) face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
   c. Custom special face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
5. Provide following reinforcement and accessories:
   a. Hinge Preparation for 4-1/2 inches (114 mm) high, Dual purpose (regular and heavy weight), full mortise hinges; with plaster guard.
   b. Hinge Preparation for 5 inch (127 mm) high, standard weight, or heavy weight, full mortise hinges; with plaster guard.
   c. Strike preparation (single doors) for 4-7/8 inch (123 mm) standard strike combo with integral plaster guard.
   d. Silencers. Prepare frames to receive silencers: 3 per Strike Jamb for single doors or 2 per head for pair doors..
6. Fire Rating: Supply frame units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.
7. Finish: Factory prime finish in accordance with ANSI A 250.10.

F. Steel Frames for Drywall:
1. Acceptable Product: Pioneer's DW Series.
2. Performance:
a. Physical performance: 1 million cycles minimum per ANSI A250.4
3. Construction: Three-piece knock-down frames; mitered joints, with locking tab at each head and jamb intersection.
4. Profile:
a. Profile: 2 inches (51 mm) face dimension, 17/32 inch (13.5 mm) backbend with 3/8 inch (9.5 mm) return, 5/8 inch (16 mm) high stop, types and throat dimensions indicated.
5. Provide following reinforcement and accessories:
a. Hinge preparation for 4-1/2 inches (114 mm) full mortise hinges, Dual purpose (regular and heavy weight)
b. Hinge preparation for 5 inches (127 mm) high full mortise hinges, 0.134 inch (3.4 mm) or 0.180 inch (4.6 mm) leaf thickness.
c. Strike preparation (single doors) for 4-7/8 inch (125 mm) standard strike with integral plaster guard.
d. Closer reinforcement: minimum 14 gage (1.7 mm)] steel.
e. Projection weld hinge and strike reinforcements to the door frame.
f. Provide metal plaster guards for all mortised cutouts.
g. Silencers. Prepare frames to receive inserted type door silencers, 3 per strike jamb on single doors, and 2 per head for pair of doors.
6. Anchors: Locate adjustable anchors in each jamb 4 inches (102 mm) from the top of the door opening to hold frame in rigid alignment..
a. Base Anchors for DW Series: weld in; sill clips
b. Base Anchors optional: Punch and Dimple face for screws.
7. Fire Rating: Supply frame units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.
8. Finish: Factory prime finish.

2.4 HOLLOW METAL FRAMING SYSTEMS

A. Hollow Metal Framing Systems:
1. Acceptable Product: Pioneer's standard Stick materials.
2. Components: Construct architectural frame assemblies of standard frame components, fabricated as specified.
a. Interior Frames in stud wall construction: 16 gage (1.3 mm) cold rolled steel, ASTM A 1008/A 1008M steel.
b. Interior Frames in Masonry: Zinc-Iron Alloy-Coated galvannealed steel, ASTM A 653, Class A60, 16 gage 0.053 inch (1.3 mm) galvannealed steel.
c. Exterior Frame Material: Galvannealed steel, ASTM A 653, Class A60, 14 gage (1.7 mm) cold rolled frames.
3. Frame component requirements:
a. Prepare required sticks at door openings and frame assemblies for hardware as specified in Section 08710.
b. Fabricate frame assemblies from three basic components:
1) Open Sections (perimeter members) identical in configuration to standard frames.
2) Closed sections (intermediate members) with identical jamb depth, face dimensions, and stops as open sections.
3) Sill sections: Fabricated from CRS or galvannealed steel, flush with both faces of adjacent vertical members. Cut individual components to length and notched to assure square joints and corners.

c. Externally welded face joints at meeting mullions or between mullions and other frame members on the face surfaces only. Grind and finish face joints smooth.
d. Fabricate frame assemblies for shipment to the jobsite completely welded.
   1) Field joints permissible only when the size of the total assembly exceeds shipping limitations.
   2) Fabricate oversized frames in sections designated for splicing in the field.
   3) Provide frames with joint reinforcements 14 gage (1.7 mm), 8 inches (203 mm) long.
   4) Field weld joint reinforcement inside and tack weld outside joint at both faces, grind, and finish smooth and uniform in appearance, after installation.
e. Pierced and dimpled glazing beads for use with manufacturers' standard fasteners.
f. Provide necessary anchors for jambs, heads, and sills of assemblies.
g. Verify field dimensions as required. Do not begin fabrication until these dimensions have been verified, and approved.

4. Accessories:
   a. Glazing Bead: Formed steel sheet; screw-attached.
   b. Steel Panels:
      1) 5/8 inch (12.5 mm) thick and manufactured from 18 gage (1.0 mm), 16 gage (1.3 mm), thick galvannealed steel faces with special core for fire rated frames.
      2) 1-3/4 inches (45 mm) thick and manufactured from 18 gage (1.0 mm), 16 gage (1.3 mm) thick CRS for steel rib or galvannealed steel faces for Honeycomb or Polystyrene cores.
      3) Cores glued or welded to the inside faces of both panels.
5. Fire Rating: Provide factory assembled welded units bearing Labels for fire ratings indicated on the Drawings.
6. Finish: Factory prime finish in accordance with ANSI A 250.10.

2.5 ACCESSORIES

A. Anchors: Manufacturer's standard framing anchors, specified in manufacturer's printed installation instructions for project conditions.

B. Astragals for pairs of doors: Manufacturer's standard for labeled and non-labeled opening.

C. Plaster Guards: Weld in of minimum 24 gage (0.6 mm); provide for all strike boxes.

D. Silencers: Three per strike jamb for single openings and two per head for paired openings.

E. Glazing: Specified in Section 08800.

F. Door Louvers:
1. Inserted: 1 inch (25 mm) thick, inverted "Y" blade type, inserted into an opening prepared in the door faces. Blades are made from 18 gage steel and welded to a fabricated sub-frame. Louver is held in place by a retaining frame (shroud), supplied with louver.
   a. Free air space is 50 percent of louver area.
   b. Size: As indicated on the Drawings.

c. Frame: with tamper proof fasteners.

2. Fusible Link: Louvers are 1 inch (25 mm) thick, steel "Z" blade type, containing a fusible link that will break at a prescribed temperature, releasing a closing mechanism. Free air space is 30% of louver area.
   a. UL /WHI Rated.
   b. Size: As indicated on the Drawings.
   c. Frame: with tamper proof fasteners.

2.6 FABRICATION

G. Steel Frames:
   1. Three-piece knock-down frames: Head and jamb intersecting corners die-cut, mitered at 45 degrees, with locking tabs for rigid connection when assembled.
   2. Factory-welded frames: Head and jamb intersecting corners mitered at 45 degrees, with back welded joints ground smooth.
      a. Continuous face weld the joint between the head and jamb faces along their length either internally or externally. Grind, prime paint, and finish smooth face joints with no visible face seams.
      b. Externally weld, grind, prime paint, and finish smooth face joints at meeting mullions or between mullions and other frame members.
      c. Provide temporary steel spreaders (welded to the jambs at each rabbet of door openings) on welded frames during shipment. Remove temporary steel spreaders prior to installation of the frame.
   3. Provide cutouts and reinforcements required for electrical and security components specified elsewhere in this specification.

2.7 FINISHES

H. Phosphatize Chemical Treatment: Treat steel surfaces to promote paint adhesion.

I. Factory Prime Finish: Meet requirements of ANSI A 250.10.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are acceptable before beginning installation of frames.
   1. Verify that completed openings to receive knock-down wrap-around frames are of correct size and thickness.
   2. Verify that completed concrete or masonry openings to receive butt type frames are of correct size.

B. Do not begin installation until conditions have been properly prepared.

C. Confirm that the frames are intended for the exact locations in handing, hardware preps and types of frames

3.2 INSTALLATION

A. Install doors and frames in accordance with manufacturer's printed installation instructions and with Steel Door Institute's recommended erection instructions for steel frames ANSI A250.11 and NAAMM/HMMA 840.

B. Fire Doors and Frames: Install in accordance with ANSI/NFPA 80.

C. Remove temporary steel spreaders prior to installation of frames.

D. Set frames accurately in position; plumb, align and brace until permanent anchors are set. After wall construction is complete, remove temporary wood spreaders.
   1. Field splice only at approved locations indicated on the shop drawings.
   2. Weld, grind, and finish as required the splicing on exposed faces.

E. Provide full height 3/8 inch (9.5 mm) to 1-1/2 inch (38 mm) thick strip of polystyrene foam blocking at frames requiring grouting where continuous hinges are specified. Apply the strip to the back of the frame, where the hinge is to be installed, to facilitate field drilling or tapping.

F. Grouting Hollow Metal Frames:
   1. Provide and install temporary bottom and intermediate wood spreaders to maintain proper width and avoid bowing or deforming of frame members. Refer to ANSI A250.11 and NAAMM/HMMA 840.
   2. Comply with ANSI/SDI Standard A250.8, paragraph 4.2.2, and HMMA 820 TN01 Grouting Hollow Metal Frames, whereby grout will be mixed to provide a 4 inch (102 mm) maximum slump consistency and hand troweled into place. Do not use grout mixed to a thinner consistency.
   3. Provide a vertical wood brace during grouting of frames to prevent sagging of frame header.

G. Glaze and seal exterior transom, sidelight and window frames in accordance with HMMA-820 TN03.

H. Apply hardware in accordance with hardware manufacturers' instructions and Section 08710 of these Specifications. Install hardware with only factory-provided fasteners. Install silencers. Adjust door installation to provide uniform clearance at head and jambs, to achieve maximum operational effectiveness and appearance.

3.3 ADJUST AND CLEAN

A. Adjust doors for proper operation, free from binding or other defects.

B. Clean and restore unclean surfaces. Remove scraps and debris and leave site in a clean condition.

C. Prime Coat damages:Touch-Up Immediately after erection, sand smooth rusted or damaged areas of prime coat, and apply touch-up of compatible DTM air-drying primer.

3.4 PROTECTION

A. Protect installed products and finished surfaces from damage during construction.

3.5 SCHEDULES

END OF SECTION