

**SECTION 08110  
CUSTOM METAL PRODUCTS DOORS AND FRAMES**

**PART 1 – GENERAL**

1.01 SUMMARY

This Section includes hollow metal products as specified and as shown in the contract drawings.

1.02 QUALITY

A. Manufacturer's Qualifications

1. Manufacturer shall provide evidence of having personnel and plant equipment capable of fabricating hollow metal door and frame assemblies of the type specified herein.

B. Quality Criteria

1. Fire labeled doors and frames shall be provided for those openings requiring fire protection ratings as determined and scheduled by the Architect. Such doors and frames shall be constructed as tested in accordance with UP 10b (ASTM E 152) and approved by Underwriters Laboratories or other recognized testing agency having a factory inspection service.
2. If any door or frame specified to be fire rated cannot qualify for appropriate labeling because of its design, hardware or any other reason, the Architect shall be so advised before fabricating work on that item is started.
3. Fabrication methods and product quality shall meet the standards set by the Hollow Metal Manufacturers Association (HMMA) a division of the National Association of Architectural Manufacturers (NAAMM) as set forth in these specifications.

1.03 WARRANTY

All hollow metal work shall be warranted from defects in workmanship and quality for a period of one (1) year from shipment.

**PART 2 – PRODUCTS**

2.01 HOLLOW METAL DOORS

A. Materials

1. Doors shall be made of commercial quality, level, cold-rolled steel conforming to ASTM A 366 or hot-rolled, pickled and oiled steel conforming to ASTM A 569 and free of scale, pitting or surface defects.
2. Interior Doors: Face sheets shall be not less than 18 gauge.
3. Exterior Doors: Face sheets shall be not less than 18 gauge and shall have a zinc coating applied by the hot-dip process conforming to ASTM A 526 (A60 or G60) with a coating weight of not less than 0.60 ounces per square foot (0.30 ounces per square foot per side).



## B. Construction

1. All doors shall be of the types and sizes shown on approved submittal drawings and shall be constructed in accordance with the specifications.
2. Door face sheets shall be joined at their vertical edges with no visible seams on their faces. Minimum door thickness shall be 1-3/4".
3. Face sheets shall be stiffened by polystyrene core or 22gauge steel stiffeners welded in place no more than 6 inches apart with the void between the stiffeners filled with fiberglass insulation.
4. Door edges to be constructed in one of the following methods:
  - a. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door. All such welds to be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.
  - b. Door edges shall be joined by an interlocking seam the full height of the door (lock seam) with at least four (4) thicknesses of metal. Edge seam shall be welded at top and bottom of door and may also be tack welded above and below each hardware cutout. There shall be a vertical visible seam at both edges of door.
  - c. Door edges shall be joined by projection welding no more than 3" on center extending the full height of the door. There shall be a vertical visible seam at both edges of the door.
  - d. Door edges shall be joined by tack welds no more than 6" on center extending the full height of the door. The tack welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.
5. Top and bottom edges of all doors shall be closed with continuous steel channels not less than 16 gauge, spot welded to both faces.
6. All hardware furnished by the hardware contractor for single-acting doors shall be designed for beveled edges as specified herein.
7. Hardware reinforcements:
  - a. Doors shall be mortised, reinforced at the factory for fully templated mortised hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier. Where surface mounted or non-templated hardware is to be applied, doors shall have reinforcing plates only; all drilling and tapping shall be done by others.
  - b. Minimum gauges for hardware reinforcing plates shall be as follows:
    - Full mortise hinges and pivots – 7 gauge.
    - Reinforcements for lock face, flush bolts – 14 gauge.
    - Reinforcements for all other surface mounted hardware – 16 gauge.
8. Glass moldings and stops:
  - a. Where specified or scheduled, doors shall be provided with hollow metal moldings to secure glazing by others in accordance with glass opening sizes shown on approved shop drawings.
  - b. Fixed moldings shall be securely welded to the door on the security side.
  - c. Loose stops shall be not less than 20 gauge, with [butt] corner joints, [secured to the frame opening by cadmium or zinc coated counter-sunk screws].



9. Louvers shall be of the welded blade type of construction. Louver inserts may be provided.
10. Finish: After fabrication, all tool marks and surface blemishes shall be filled and sanded as required to make both faces and both vertical edges smooth and free from irregularities. After appropriate preparation, all exposed surfaces shall receive a rust inhibitive primer which meets or exceeds ASTM B 117 salt spray for 150 hours and ASTM D 1735 water fog test for organic coatings for 200 hours and which is fully cured prior to shipment.

## 2.02 HOLLOW METAL FRAMES

### A. Materials

1. Interior Openings: Frames shall be either commercial grade cold-rolled steel conforming to ASTM A 366 or commercial grade hot-rolled and pickled steel conforming to ASTM A 569. Metal thickness shall be not less than [16 gauge for frames that receive hollow metal doors] [18 gauge for frames that receive hollow core wood doors].
2. Exterior Openings: Frames shall be made of commercial grade cold-rolled steel conforming to ASTM A 366 or hot-rolled, pickled and oiled steel conforming to ASTM A 569 not less than 16 gauge and shall have a zinc coating supplied by the hot-dip process conforming to ASTM A 526 (A60 or G60) with a coating weight of not less than 0.60 ounces per square foot (0.30 ounces per square foot per side).

### B. Design and Construction

1. All frames shall be [welded] [knock down] [slip on] units with integral trim, of the sizes and shapes shown on approved shop drawings.
2. All finished work shall be strong and rigid, neat in appearance, square, true and free of defects, warp or buckle. Molded members shall be clean cut, straight and of uniform profile through their lengths.
3. Jamb, head, mullion and sill profiles shall be in accordance with the frame schedule and as shown on the approved submittal drawings.
4. Corner joints at welded corners shall have all contact edges closed tight, with trim faces mitered and continuously welded, and stops [mitered] [butted].
5. At drywall partitions, knocked down frames may be furnished. Knocked down frames shall be the pressure fit type that is installed after the partition is in place. Frames are to be anchored at the bottom of each jamb. Additional pressure fit type anchors are to be furnished at the mitered corners.
6. Minimum depth of stop shall be 5/8".
7. Frames for multiple or special openings shall have mullion and/or rail members which are closed tubular shapes having no visible seams or joints. All joints between faces of abutting members shall be securely welded and finished smooth.
8. When shipping limitations so dictate, frames for large openings shall be fabricated in sections designed for assembly in the field by others. Alignment plates or angles shall be installed at each joint. Such components shall be the same gauge thickness as the frame. Field joints shall be made in accordance with approved submittal drawings and shall be welded by others.



9. Hardware reinforcements:
  - a. Frames shall be mortised, reinforced, drilled and tapped at the factory for fully templated mortised hardware only, in accordance with approved hardware schedule and templates provided by the hardware contractor. Where surface mounted hardware is to be applied, frames shall have reinforcing plates only; all drilling and tapping shall be done by others.
  - b. Minimum thickness of hardware reinforcing plates shall be as follows:
 

◦ Hinge	7 gauge x 1-1/4" x 10" minimum size
◦ Strike reinforcement	[12] [16] gauge
◦ Flush bolt reinforcements	12 gauge
◦ Closer reinforcements	12 gauge
◦ Reinforcements	12 gauge
10. Floor anchors:
  - a. Floor anchors shall be securely welded inside each jamb or floor anchorage.
  - b. Minimum thickness of floor anchors shall be 18 gauge.
  - c. Floor anchors may be omitted at frames designed for existing wall conditions. An additional frame anchor shall be provided in lieu of a floor anchor.
11. Jamb anchors:
  - a. Frames for installation in masonry walls shall be provided with adjustable jamb anchors of the [T-strap] [stirrup] [wire] type. Anchors shall be not less than 16 gauge steel or 0.156" diameter steel wire. Stirrup straps shall not be less than 2" x 10" in size, corrugated and/or perforated.
  - b. Welded frames for installation in stud partitions shall be provided with steel anchors of suitable design, not less than 18 gauge thickness secured inside each jamb.
12. Plaster guards made from no less than 26 gauge thick steel shall be welded in place at all hardware mortises on frames to be set in masonry or concrete openings.
13. All welded frames shall be provided with a temporary steel spreader welded to the feet of jambs to serve as bracing during shipping and handling. The steel spreader shall not be used for installation purposes.
14. Loose Glazing Stops:
  - a. Removable glass channel stops shall be cold-rolled steel, no less than 20 gauge, butted at corner joints and secured to the frame using [cadmium] [zinc] plated #6 countersunk sheet metal screws.
15. Finish: After fabrication, all tool marks and surface imperfections shall be removed, and exposed faces of all welded joints shall be dressed smooth. Frames shall be treated to insure maximum paint adhesion and shall be coated on all accessible surfaces with a rust inhibitive primer which meets or exceeds ASTM B 117 salt spray for 150 hours and ASTM D 1735 water fog test for organic coatings for 200 hours and which is fully cured prior to shipment.



## 2.03 CLEARANCES AND TOLERANCES

- A. Edge clearances shall not exceed the following:
1. Between doors and frames at head and jams 3/16"
  2. Between the edges of pairs of doors 3/16"
- B. Manufacturing tolerance shall be maintained within the following limits:
1. Frames for single door or pair of doors  
Width: (measured between rabbets at the head): Nominal opening width + 1/16", - 1/32"  
Height (total length of jab rabbet): Nominal opening height ±3/64"  
Cross sectional profile dimensions:
    - a. Face ± 1/32"
    - b. Stop ± 1/32"
    - c. Rabbet ± 1/32"
    - d. Depth ± 1/32"
    - e. Throat ± 1/16"Frames overlapping walls to have throat dimension 1/8" greater than dimensioned the wall thickness to accommodate irregularities in wall construction.
  2. Doors
    - a. Width ± 3/64"
    - b. Height ± 3/64"
    - c. Thickness ± 1/16"
    - d. Hardware cutout dimensions    Template dimensions + 0.015' 0"
    - e. Hardware location ± 1/32"

## PART 3 – EXECUTION

### 3.01 SITE STORAGE AND PROTECTION OF MATERIALS

- A. The contractor responsible for installation shall remove wraps or covers from doors and frames upon delivery at the building site. The contractor responsible for installation shall see that any scratches or disfigurement caused by shipping or handling are promptly cleaned and touched up with a rust inhibitive primer.
- B. The contractor responsible for installation shall see that materials are properly stored on planks in a dry location. Doors shall be stored in a vertical position spaced by blocking. Materials shall be covered to protect them from damage but in such a manner as to permit air circulation.

### 3.02 INSTALLATION

- A. Install frames in accordance with manufacturer's instructions and approved shop drawings.
- B. Installation of wood casings is specified in Section 06200.
- C. Installation of door hardware is specified in Section 08710.
- D. Field finishing of factory-primed doors and frames is specified in Section 09900.

