STEEL DOORS AND FRAMES

Part 1 – General

1.01 Work Included
A. The work under this section shall include the furnishing of all items shown on the drawings and as specified, including, but not limited to, the following.
   1. Steel Doors
   2. Steel Door Frames
   3. Steel Sidelight, Borrowed lite & transom frames
   4. Louvers Installed in Steel Doors

1.02 Related Sections
A. Section 04000: Masonry mortar
B. Section 05500: Steel lintels
C. Section 06200: Finish carpentry
D. Section 08200: Wood Doors and Frames
E. Section 08700: Finish Hardware
F. Section 08800: Glass and Glazing
G. Section 09900: Painting of steel doors and frames

1.03 References
A. Steel Doors and Frames in this section must meet all standards as established by the following listing.
   1. Door and Hardware Preparation ANSI 115.1.
   4. Steel Door Institute ANSI/SDI-100 (Latest edition)
   5. UL 10 B Fire test of Door Assemblies and UL10C Standard for Positive Pressure Fire Tests of Door Assemblies

1.04 Submittal
A. Coordinate approved shop drawings with all other trades and manufacturers whose products are used in conjunction with the Steel Doors and Frames under section 08100.
B. Finish hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
C. Each floor of the building is to be detailed separately.
D. The steel door and frame supplier will furnish to the architect (4) complete copies of the proposed steel door and frames schedule and/or shop drawings. Using the same reference number for details and openings as those on the contract drawings. After receipt of the approved door schedule the steel door and frame supplier will make any corrections submit to the architect (6) sets of corrected schedules, for file and field use.
E. All door openings including wood, aluminum, overhead etc. must be listed on the steel door schedule. Include details on the following list of items:

- Frame elevations
- Door design elevations
- Frame sections
- Details of construction
- Anchorage
- Opening conditions
- Joints and connections
- Hardware locations

If any opening is not by the steel door manufacturer only the door opening number should be shown along with the type of material (alum, wood etc.).

F. Upon request of the architect or for any substitution to this specification, (4) copies of the door manufacturers catalog cut sheets are to be submitted to the architect before any material is placed on the job site.

1.05 Quality Assurance

A. Provide Steel Doors and Frames complying with the Steel Door Institute recommended specifications for Standard Steel Doors and Frames ANSI/SDI 100 (Latest edition).

B. Steel Doors and frames shall be manufactured to high quality standards in manufacturing facilities with annual certified conformance to ISO9001.

1.06 Delivery, Storage and Handling

A. All steel doors and frames must be properly marked with door opening mark number to correspond with the schedule.

B. Deliver all steel doors with corrugated edge protection and palletized to provide protection during transit and job storage.

C. Inspect doors and frames upon delivery for damage. Minor damage is to be repaired, provided they are equal in all respects to new work and acceptable to the architect.

D. Store doors and frames at the building site under cover. Place units on wood sills or on the floor in a manner that will prevent rust and damage. Avoid the use of non-vented plastic or canvas shelters, which could create a humidity chamber. If the wrapper on the door becomes wet, remove the carton immediately. Provide a 1/4 inch space between stacked doors to promote air circulation.

Part 2 – Products

2.01 Acceptable Manufacturers - As long as they meet the following specifications

A. Ceco Door Products
B. Curries Company
C. Other SDI members that conform to the requirements of this specification.

2.02 Hardware Locations and General Reinforcements

A. Locate hardware on doors and frames in accordance with the manufacturer’s standard location.

B. Steel frames for use with wood doors the hardware preparation on the doors is governed by its location on the frames. If the doors are factory mortised, the door supplier is responsible for coordinating hardware locations.

C. Hardware reinforcements are to be in accordance with the minimum standard gages as listed in SDI-100.

D. Doors shall be mortised, reinforced and function holes provided at the factory in accordance with the hardware schedule and templates provided by the hardware supplier. Through bolt holes, attachment holes, or drilling and tapping for surface hardware, shall be done by others.
2.03 Steel Doors

A. Material - Exterior doors and as indicated on the schedule

1. Face Sheets to be made of commercial quality hot dipped zinc coated steel that complies with ASTM A924 A60.

2. Vertical edges are to have the face sheets joined by a continuous weld extending the full height of the door. Welds are to be ground, filled and dress smooth to make them invisible and provide a smooth flush surface.

3. Hinge reinforcement shall be not less than 7 gage (3/16") plate 1-1/4" x 9".

4. Reinforce tops and bottoms of all doors with a continuous steel channel not less than 16 gage, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel shall have a steel closure channel welded in place so the web of the channel is flush with the face sheets of the door. Plastic fillers are not acceptable.

5. Door Cores - doors shall have 20 gage vertical steel stiffeners spanning the full thickness of the interior space between door faces. Stiffeners to be spaced not more than 6” apart, and attached by spot welds spaced not more than 5” on centers. Spaces between stiffeners shall be filled with fiberglass insulation (minimum density 0.8#/cubic ft.)

6. Acceptable Manufacturers
   b. Curries Company - 747T, flush top closure, 12 gage hinge channel.

B. Materials - Interior doors as indicated on the schedule

1. Face sheets are to be made of commercial quality cold rolled steel that complies with ASTM A366 or 620.

2. Vertical edges shall join the face sheets by a continuous weld extending the full height of the door. Welds are to be ground, filled and dress smooth to make them invisible.

3. Hinge reinforcement shall be not less than 7 gage (3/16") plate 1-1/4" x 9".

4. Reinforce tops and bottoms of all doors with a continuous steel channel not less than 16 gage, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel shall have a steel closure channel screwed in place so that the web of the channel is flush with the face sheets of the door.

5. Door Cores –
   a. Doors will have 20 gage vertical steel stiffeners spanning the full thickness of the interior space between door faces. Stiffeners to be spaced not more than 6” apart, and attached to face sheets by spot welds spaced not more than 5” on centers. Spaces between the stiffeners to be filled with fiberglass insulation (minimum density 0.8#/cubic ft.)
   b. Doors shall have a one piece honeycomb core securely bonded to both face sheets.
   c. Or doors are to be fully filled with a one piece polystyrene core securely bonded to both face sheets.

6. Acceptable Manufacturers:
   a. Ceco Door Products - Medallion (steel stiffened) Regent (honeycomb) or Legion (polystyrene)
   b. Curries Company - 747T or 707T with flush top closure and 12 gage hinge reinforcement.
2.04 **Steel Frames**

A. Materials - exterior and as indicated on the schedule.
1. Are to be hot dipped zinc coated steel that complies with ASTM designations A924 A60.
2. All frames except slip on drywall type are to be assembled so that the face miter seam is "closed and tight". Weld the face seam and the full web of the frame corner or intersection. Grind and dress smooth the weld area. Apply a zinc rich primer over the grinding area, and finish with a matching prime paint.
3. Acceptable Manufacturers:
   a. Ceco Door Products - Series SQ
   b. Curries Company - Series M

B. Materials all other frames as indicated on the schedule.
1. Will comply with ASTM A366-68 or ASTM A569-66T
2. All Frames except slip on drywall are to be assembled so that the face miter seam is "closed and tight". Weld the face miter seam. Grind and dress smooth the weld, finish with a matching prime paint.
3. Acceptable Manufacturers:
   a. Ceco Door Products - Series SQ or DQ
   b. Curries Company - Series M or C

C. Fabrication
1. General design and construction
   a. Provide steel frames for doors, transoms, sidelights, borrowed lites, and other openings to the size and design as shown on the architectural drawings.
   b. All finished work to be strong and rigid, neat in appearance square, true and free of defects.
   c. Jamb depths, trim, profile and backbends to be as scheduled and shown on approved shop drawings.
   d. When shipping limitations so dictate, frames for large openings shall be fabricated in sections designed for splicing or splining in the field by others.
   e. Hardware reinforcements are to be in accordance with the minimum standard gages as listed in SDI-100.
   f. Frames shall be mortised, reinforced, drilled and tapped at the factory for template mortised hardware only, in accordance with approved hardware schedule and template 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.
   g. Hinge reinforcements, to be 7 gage steel.

D. Anchors
1. Floor anchors shall be provided at each jamb.
2. Anchors for in masonry are to be of the wire type.
3. Anchors for stud partitions are to be steel of a suitable design, not less than 18 gauge thickness.
4. Dust boxes/mortar guards to be no less than 26 gage.
5. All frames that are to be welded to be provided with a steel spreader temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
6. Loose glazing stops are to be of 16 gage galvanized, butted at the corner joints and secured to the frame with countersunk cadmium or zinc-plated screws.
7. Except on weather-stripped frames, punch stop for 3 silencers on single door and 2 silencers for double door openings.
2.05 Labeled Doors and Frames  
A. Construct and install doors and frames to comply with current issue of National Fire Protection Association (NFPA) Standard Number 80, as herein specified.  
B. Doors and/or frames for labeled openings shall bear either a stamped or applied label from Warnock Hersey or Underwriters Laboratory.  
C. Provide 450 degree labels on stairways where required.  
D. All doors and frames are to have been tested in accordance with UL10C and UBC 7-2 Positive Pressure.

2.06 Prime finish:  
A. Doors and frames are to be cleaned, and chemically treated to insure maximum finish paint adhesion. All surfaces of the door and frame exposed to view shall receive a factory-applied coat of rust inhibiting primer. The finish shall meet the requirements for acceptance stated in ANSI A224.1 “Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces.” The prime finish is not intended to be the final layer of protection from the elements. Field painting using a good grade of paints are to be used in accordance with the recommendations of the door and frame manufacturer. For specialty types of finished coatings, the paint supplier should also be consulted.

Part 3 - Execution

3.01 Inspection  
A. It is the responsibility of the General Contractor to make sure that all dimensions for existing opening or existing frames (strike height, hinge spacing, hinge back set, etc.) given to the steel manufacturer are accurate.  
B. It is the responsibility of the General Contractor to see that any scratches or disfigurements caused in shipping or handling are properly cleaned and touched up with a rust inhibitive primer.

3.02 Installation  
A. Frames  
1. Prior to installation, all frames must be checked for rack, twist and out of square conditions.  
2. Place frames prior to enclosing walls and ceilings. Set frames accurately in position, plumbed and braced securely until permanent anchors are set.  
3. Fill frames in masonry walls with mortar.  
4. When temperature conditions necessitate an additive to be used in the plaster or mortar to prevent freezing, the contractor installing the frames will coat the inside of the frames, in the field, with a corrosion inhibiting bituminous material.  
5. SDI-105, "Recommended Erection Instructions for Steel Frames" and SDI-110 "Standard Steel Doors and Frames for Modular Masonry Construction" shall indicate the proper installation procedures.

B. Doors  
1. Install doors plumb and in true alignment in a prepared opening and fasten them to achieve the maximum operational effectiveness and appearance.  
2. Proper door clearance must be maintained in accordance with SDI -110.  
3. Where necessary, only metal hinge shims are acceptable to maintain clearances.  
4. "Installation Guide for Doors and Hardware" published by DHI is recommended for further details.  
C. Hardware must be applied in accordance with hardware manufacturer’s templates and instructions.
3.03 **Adjust and Clean**
   A. Check and re-adjust operating finish hardware items in hollow metal work just prior to final inspection. Leave work in complete and proper condition.
   B. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply to touch-up or compatible air-drying primer.

3.04 **Schedules**
   A. After installation, copies of the door schedules will be turned over to the owner when the building is accepted.