SECTION 081113 – STEEL DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Steel Doors as needed as replacement of existing.
2. Steel Door Frames if needed

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 8 Section "Door Hardware" for door hardware and weatherstripping.
2. Division 8 Section "Glazing" for glass in steel frame relites and sidelights.

1.2 SUBMITTALS

A. Product Data: For each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles and finishes.

B. Shop Drawings: Indicate fabrication and installation of steel doors. Include elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

C. Door: Submit schedule of doors to be replaced using same reference numbers for details and openings as those on Contract Drawings.

1. Indicate coordination of glazing and stops with glass and glazing requirements.

1.3 DEFINITIONS

A. Steel Sheet Thicknesses: Thickness dimensions, including those referenced in ANSI A250.8, are minimums as defined in reference ASTM standards for both uncoated steel sheet and the uncoated base metal of metallic-coated steel sheets.

1.4 QUALITY ASSURANCE

A. Provide doors and frames complying with ANSI A250.8 unless more stringent requirements are specified.

B. Fire-Rated Door Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to

authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect; otherwise, remove and replace damaged items as directed.

C. Store doors and frames at building site under cover. Place units on minimum 4-inch high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work are limited to, the following:

1. Steel Doors and Frames:

a. Amweld Building Products, LLC.
b. Ceco Door Products; an Assa Abloy Group company.
c. Curries Company; an Assa Abloy Group company.
d. Kewanee Corporation.
e. Mesker Door Inc.
f. Pioneer Industries, Inc.
g. Steelcraft; an Ingersoll-Rand company.

2.2 MATERIALS

A. Hot-Rolled Steel Sheets and Strip: Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569 (ASTM A 569M).

B. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality, special killed.

C. Galvanized Steel Sheets: Zinc-coated carbon steel complying with ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G 60 (ASTM A 525M, with Z 180 or ZF 180) coating designation, mill phosphatized.

D. Supports and Anchors: Fabricated from not less than 0.0478-inch- (1.2-mm-) thick steel sheet; 0.0516-inch- (1.3-mm-) thick galvanized steel where used with galvanized steel frames.

E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

2.3 DOORS

A. General: Provide doors of sizes and designs indicated in 1-3/4 inch thickness.

B. Exterior Doors: ANSI A250.8/SDI-100, Level 3, Model 2 (Seamless Design). Passing ANSI A250.4 Acceptance Criteria, Level A (1 million cycles).

1. Face Sheets: 16 gauge steel.
2. Vertical Internal Stiffening. 20 gauge steel hat channels, space 6 inches on center, spot weld to skins.
3. Vertical Edge Reinforcement: One piece, continuously arc welded full length to face sheets.

a. Lock Channel: 14 gauge steel, beveled 1/8 inch in 2 inch.
b. Hinge Channel: 12 gauge steel, formed and tapped for hinges.

4. Top and Bottom Channel Reinforcement: 16 gauge steel.
5. Top Rail Closure Channel: 16 gauge steel with flush channel filler cap sealed against water penetration.

C. Interior Steel Doors: ANSI A250.8/SDI-100, Level 3, Model 2 (Flush Seamless Design). Passing ANSI A250.4 Acceptance Criteria, Level A (1 million cycles).

1. Face Sheets: 16 gauge steel.
2. Core Design: Polystyrene foam core or phenolic impregnated honeycomb paper core, adhesive laminated to both face sheets, except honeycomb core not accepted at doors exposed to moisture.
3. Vertical Edge Reinforcement: One piece, continuously arc welded full length to face sheets.

a. Lock Channel: 14 gauge steel, beveled 1/8 inch in 2 inch,
b. Hinge Channel: 12 gauge steel, formed and tapered for hinges,

4. Top and Bottom Channel Reinforcement: 16 gauge steel.
5. Door Grille for Entry Door: Anemostat BFL Door Grill. See Door Schedule for type.

2.4 FRAMES

A. General: if a door frame is damaged such that the Owner directs it to be replaced, the replacement door frame shall conform to the following standards and requirements:

B. Provide steel frames that comply with ANSI A250.8 and with details indicated for type, appropriate assembly rating, and profile. Conceal fastenings, unless otherwise indicated. Fabricate frames with mitered or coped and continuously welded corners.

C. Exterior Frames: Fabricated from metallic-coated steel sheet. All frames are to be thermally broken as detailed. Provide product equivalent to Curries Mercury Thermal-Break Steel Frame.

1. Fabricate frames with mitered or coped corners.
2. Fabricate frames as full profile welded unless otherwise indicated.
3. Frames for Level 3 Steel Doors: 0.067-inch thick steel sheet.

D. Interior Frames: Fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated.

1. Fabricate frames with mitered or coped corners.
2. Fabricate frames as full profile welded unless otherwise indicated.
3. Frames for Level 3 Steel Doors: 0.053-inch thick steel sheet.

E. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.

F. Plaster Guards: Provide minimum 0.016-inch thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

G. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 with reinforcement plates from same material as frames. Provide Steelcraft Auxiliary Hinge Reinforcement #30-825 or similar high frequency hinge reinforcement if test reports are equal to Steelcraft equal at each hinge location. If not Steelcraft reinforcement shall be arc-weld to frame a minimum of 3 places.

H. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A153/A 153M, Class C or D as applicable.

## 2.5 FABRICATION

A. General: Fabricate steel door units to comply with ANSI A250.8 and to be rigid, neat in appearance, and free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site.

B. Exterior Door Construction: For exterior locations and elsewhere as indicated, fabricate doors, panels and frames from metallic-coated steel sheet. Close top

and bottom edges of doors flush as an integral part of door construction or by addition of 0.053 inch thick, metallic-coated steel channels with channel webs placed even with top and bottom edges.

1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards:

    a. Resin-impregnated paper honeycomb.
    b. Rigid polyurethane conforming to ASTM C 591.
    c. Rigid polystyrene conforming to ASTM C 578.
    d. Unitized steel grid.
    e. Vertical steel stiffeners.
    f. Rigid mineral fiber with internal sound deadener on inside of face sheets.

2. Clearances: Not more than 1/8 inch at jambs and heads, except not more than 1/4 inch between non-fire-rated pairs of doors. Not more than 3/4 inch at bottom.

    a. Fire Doors: Provide clearances according to NFPA 80.

C. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel sheet.

D. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."

E. Fabricate concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold- or hot-rolled steel sheet.

F. Galvanized Steel Doors: For the following locations, fabricate doors, panels and frames from galvanized steel sheet according to SDI 112. Close top and bottom edges of doors flush as an integral part of door construction or by addition of minimum 0.0635-inch thick (16 gage) galvanized steel channels, with channel webs placed even with top and bottom edges. Seal joints in top edges of doors against water penetration at exterior locations.

G. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.

H. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C236 or ASTM C976 on fully operable door assemblies.

1. Unless otherwise indicated, provide thermal-rated assemblies with U-value of 0.15 Btu/sq. ft. x h x deg F or better.

I. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates

provided by hardware supplier. Comply with applicable requirements of ANSI A250.6 and ANSI A115 Series specifications for door and frame preparation for hardware.

1. For concealed overhead door closers, provide space, cutouts, reinforcing and provisions for fastening in top rail of doors or head of frames, as applicable.

J. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.

K. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

L. Provide welded frames with temporary spreader bars.

M. Provide terminated stops.

N. Glazing Stops: Minimum 0.032-inch thick steel sheet.

1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers and other panels in doors.
2. Provide screw-applied, removable, glazing beads on inside of glass, louvers and other panels in doors.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for steel sheet finishes.

C. Apply primers complying with ANSI A250.10 to doors and frames after fabrication.

2.7 GALVANIZED STEEL SHEET FINISHES

A. Surface Preparation: Clean surfaces with nonpetroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coating applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

B. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply air-dried primer specified below immediately after cleaning and pretreatment.

1. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.

2.8 STEEL SHEET FINISHES

A. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).

B. Pretreatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.

C. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify locations to receive replacement doors.

B. Examine doors and installed door frames before hanging doors.

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Verify size and layout of each door to be replaced.
3. Verify condition, size and layout of existing frames to receive new doors.
4. Reject new doors with defects.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install steel doors plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Steel Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.

d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

a. Smoke-Control Doors: Install doors according to requirements of the Local Building Department.

C. Glazing (as applicable to match existing): Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

D. Steel Frames: Install steel frames of size and profile indicated. Comply with ANSI/SDI A250.11.

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

a. At fire-protection-rated openings, install frames according to NFPA 80.

2. Field apply bituminous coating to backs of **all** frames.
3. Fill all hollow metal frames with polystyrene foam
4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
5. In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.

## 3.3 ADJUSTING AND CLEANING

A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

END OF SECTION 081113

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