
SECTION 08 34 73.13 - METAL SOUND CONTROL DOOR ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Side-hinged, steel sound control door assemblies.

B. Related Requirements:

1. Section 08473.16 "Wood Sound Control Door Assemblies" for sound control assemblies with wood doors in hollow metal frames.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at **[Project site]<Insert location>**.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Include information indicating compliance with assembly performance requirements, construction details, material descriptions, and finishes.

B. Shop Drawings:

1. Elevations of each type and style of door; details of doors, frames, anchorages, wall-opening conditions, sound control seals, door bottoms, and thresholds; and locations of reinforcements and preparations for hardware.
2. **<Insert requirements>**.

- C. Samples for Initial Selection: For units with factory-applied finishes, manufacturer's standard finish sheets, showing full range of available finishes.

- D. Samples for Verification: For each type of exposed finish not less than **3 by 5 inches**.

1. Doors and Frames: Samples approximately **12 by 12 inches**.

- a. Doors: Include section of vertical-edge, top, and bottom construction; automatic door bottom or gasket; core construction; **[glazing;]** and hinge and other applied hardware reinforcement.
- b. Frames: Include profile, corner joint, anchors, and seals.

- E. Product Schedule: For sound control door assemblies. Use same designations indicated on Drawings.

F. Sustainable Design Submittals:

1. Third-Party Certifications: For each product.
2. Third-Party Certified Life Cycle Assessment: For each product.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each sound control door assembly, for tests performed by [**a qualified testing agency**][or][**manufacturer and witnessed by a qualified testing agency**].
- B. Field Quality-Control Reports: For sound control door assemblies.
- C. Qualification Statements: For [**manufacturer**][**Installer**][and][**field testing and inspecting agency**]<Insert entity or specialist>.
- D. Sample Warranties: For sound control door assemblies.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sound control door assemblies.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer capable of fabricating sound control door assemblies that meet or exceed assembly performance requirements indicated and of documenting this performance by test reports and calculations.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- C. Acoustical Testing Agency Qualifications: An independent agency accredited as an acoustical laboratory in accordance with NIST's National Voluntary Laboratory Accreditation Program.
- D. Fire-Rated Door Inspector Qualifications: Documented as complying with requirements in NFPA 80 [**and having Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAl) certification**]<Insert requirements>.
- E. Egress Door Inspector Qualifications: Documented as complying with requirements in NFPA 101 [**and having Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAl) certification**]<Insert requirements>.

1.7 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of sound control door assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Failure of product materials and workmanship.
 - b. Failures of assemblies to have NIC ratings within 5 dB of laboratory STC ratings specified when tested in accordance with ASTM E336, with results calculated in accordance with ASTM E413.
 - c. Faulty operation of sound seals.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal use or weathering.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Acoustic Performance: Provide sound control door assemblies with minimum STC **[ratings indicated on Drawings][ratings indicated in schedules]<Insert STC rating>** for the entire assembly, calculated in accordance with ASTM E413 when tested in an operable condition in accordance with ASTM E90.
- B. Fire-Rated Assemblies: Complying with requirements in NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated **[on Drawings][in schedules]**, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 1. Temperature-Rise Limit: Where indicated **[on Drawings][in schedules]**, provide doors that have a maximum transmitted temperature end point of not more than **450 deg F** above ambient after 30 minutes of standard fire-test exposure.
- C. Smoke- and Draft-Control Assemblies: Listed and labeled for smoke and draft control based on testing in accordance with UL 1784 by a qualified testing agency acceptable to authorities having jurisdiction.

2.2 SIDE-HINGED, STEEL SOUND CONTROL DOOR ASSEMBLIES

- A. Assemblies: Comply with requirements in NAAMM-HMMA 865 unless otherwise specified or indicated on Drawings. Provide complete assemblies with steel doors, hollow-metal frames, sound seals, and specified hardware and accessories.
 1. Manufacturer's Nameplate: Affix permanent nameplate to assembly indicating manufacturer's name and STC rating.
- B. Steel Doors:
 1. Face Design: **[As indicated in door schedule]<Insert requirements>**.
 2. Thickness: **[1-3/4 inches][2 inches][2-1/4 inches][As required to comply with assembly performance requirements][As indicated in door schedule]<Insert requirements>**.

3. Exterior Doors Faces: Metallic-coated steel sheet in thickness required to comply with assembly performance requirements but not less than minimum **[0.064-inch]<Insert dimension>** nominal thickness.
 4. Interior Doors Faces:
 - a. Commercial-Quality Steel Sheet: **[Hot][Cold]** rolled, in thickness required to comply with assembly performance requirements but not less than **[0.048-inch]<Insert dimension>** nominal thickness.
 - b. Metallic-Coated Steel Sheet: In thickness required to comply with assembly performance requirements but not less than **[0.052-inch]<Insert dimension>** nominal thickness.
 5. Core: **[Manufacturer's standard sound control core as required to comply with assembly performance requirements]<Insert requirements>**.
 6. Loose Stops for Glazed Lites in Doors: Same material as face sheets, prepared for countersunk **[tamper-resistant]** flat- or oval-head machine screws.
 7. Top and Bottom Channels: Closed with continuous channels of same material as face sheets, spot welded to face sheets not more than **6 inches** o.c.
 8. Hardware Reinforcement: Comply with requirements in BHMA A156.115 for preparing doors for hardware.
- C. Hollow-Metal Frames: **[NAAMM-HMMA 820, continuously welded][Two-piece slip-on][Manufacturer's standard]** frames with corners mitered and reinforced.
1. Exterior Frames: Fabricated from metallic-coated steel sheet in thickness required to support door and comply with assembly performance requirements but not less than **[0.079-inch]<Insert requirements>** nominal thickness.
 2. Interior Frames: Provide **[straight][back bend, gypsum board]** returns.
 - a. Commercial-Quality Steel Sheet: **[Hot][Cold]** rolled, in thickness required to support door and comply with assembly performance requirements but not less than **[0.075-inch]<Insert dimension>** nominal thickness.
 - b. Metallic-Coated Steel Sheet: In thickness required to support door and comply with assembly performance requirements but not less than **[0.079-inch]<Insert dimension>** nominal thickness.
 3. Hardware Reinforcement: Comply with requirements in BHMA A156.115 for preparing frames for hardware.
 4. Grouted-Frame Head Reinforcement for Welded Frames: Metallic-coated steel channel or angle stiffener, not less than **0.108-inch** nominal thickness.
 5. Grout Guards for Welded Frames: Metallic-coated steel sheet, not less than **0.026 inch** thick.
- D. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls in accordance with ASTM A153/A153M, Class B.
1. Jamb Anchors: Anchors of minimum size and type required by wall construction and assembly performance requirements.
 - a. Postinstalled Expansion Anchors: Minimum **3/8-inch-** diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

2. Floor Anchors for Welded Frames: Metallic-coated steel in thickness matching frame but not less than **[0.079-inch]<Insert dimension>** nominal thickness.
 - a. Monolithic Concrete Slabs: Provide clip-type anchors, with two holes to receive fasteners.
 - b. Separate Topping Concrete Slabs: Provide adjustable-type anchors with extension clips, allowing not less than **2-inch** height adjustment. Terminate bottom of frames at finish floor surface.
3. Ceiling Struts: Not less than **3/8-inch-thick by 2-inch-** wide uncoated steel unless otherwise indicated **[on Drawings][in schedules]**.
- E. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized in accordance with ASTM A153/A153M or ASTM F2329/F2329M.
- F. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching frames of type indicated.
- G. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers.
- H. Materials:
 1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
 2. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
 3. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B metallic coated by the hot-dip process.
 - a. Exterior-Door and Frame Coating: **[A40 zinc-iron alloy (galvannealed)][G60 zinc (galvanized) or A60 zinc-iron alloy (galvannealed)][G60 zinc (galvanized)]<Insert requirements>**.
 - b. Interior-Door and Frame Coating: **[A25 zinc-iron alloy (galvannealed)][A40 zinc-iron alloy (galvannealed)][G60 zinc (galvanized) or A60 zinc-iron alloy (galvannealed)][G60 zinc (galvanized)]<Insert requirements>**.
- I. Finishes:
 1. Prime Finish: Apply manufacturer's standard rust-inhibitive primer immediately after cleaning and pretreating metal.
 - a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with requirements in SDI A250.10 for acceptance criteria; recommended in writing by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
 2. Factory-Applied Paint Finish: Manufacturer's standard primer and finish coats, complying with requirements in SDI A250.3 for performance and acceptance

criteria.

- a. Color and Gloss: **[As indicated by manufacturer's designations][Match Architect's sample][As selected by Architect from manufacturer's full range]<Insert requirements>.**

2.3 SOUND CONTROL ACCESSORIES

- A. Glass and Glazing: **[Manufacturer's glazing system complying with assembly performance requirements.][Comply with requirements in Section 08 80 00 "Glazing."][Comply with requirements in Section 08 88 13 "Fire-Rated Glazing."><Insert glazing requirements.>**
 1. Glass: **[ASTM C1036, Type 1, q3, safety glass complying with testing requirements in 16 CFR 1201 for category based on lite size]<Insert requirements>.**
- B. Grout: ASTM C476, with a slump of not more than **4 inches** as measured in accordance with ASTM C143/C143M.
- C. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for **15-mil** dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.4 FABRICATION

- A. Fabrication Standard: Comply with requirements in NAAMM-HMMA 865 unless otherwise specified or indicated on Drawings.
- B. Hardware Preparation: Factory prepare frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping.
 1. Reinforce doors and frames to receive nontemplated mortised and surface-mounted hardware.
 2. Locate hardware as indicated **[on Drawings][in accordance with NAAMM-HMMA 831]<Insert requirements>.**
- C. Steel Doors: Fabricate to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal.
 1. Seamless Edge Construction: Fabricate doors with faces joined at vertical edges by welding; grind, fill, and dress welds to make them invisible and to provide a smooth, flush surface.
 2. Exterior Doors: Close top edges flush and seal joints against water penetration. Provide weep-hole openings in bottom of exterior doors to permit moisture to escape.
 3. Glazed Lites: Factory install glazed lites in accordance with requirements of tested assembly and to comply with assembly performance requirements. Provide fixed stops and moldings welded on secure side of door.

- D. Hollow-Metal Frames: Fabricate to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal.
1. Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 2. Where welded frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated from same thickness metal as frames. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
 3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners or provide plug buttons to conceal fasteners.
 4. Floor Anchors for Welded Frames: Weld anchors to bottom of jambs and fixed mullions with at least four spot welds per anchor.
 5. Masonry Jamb Anchors for Welded Frames: Locate anchors not more than **18 inches** from top and bottom of frame. Space anchors not more than **32 inches** o.c. and provide minimum quantity as follows:
 - a. Two anchors per jamb up to **60 inches** in height.
 - b. Three anchors per jamb from **60 to 90 inches** in height.
 - c. Four anchors per jamb from **90 to 96 inches** in height.
 - d. Four anchors per jamb plus one additional anchor per jamb for each **24 inches**, or fraction thereof, more than **96 inches** in height.
 6. In-Place Masonry or Concrete Jamb Anchors for Welded Frames: Locate anchors installed using postinstalled expansion anchors not more than **6 inches** from top and bottom of frame. Space anchors not more than **26 inches** o.c. and provide minimum quantity as follows:
 - a. Three anchors per jamb up to **60 inches** in height.
 - b. Four anchors per jamb from **60 to 90 inches** in height.
 - c. Five anchors per jamb from **90 to 96 inches** in height.
 - d. Five anchors per jamb plus one additional anchor per jamb for each **24 inches**, or fraction thereof, more than **96 inches** in height.
 7. Stud-Wall Jamb Anchors for Welded Frames: Locate anchors not more than **18 inches** from top and bottom of frame. Space anchors not more than **32 inches** o.c. and provide minimum quantity as follows:
 - a. Three anchors per jamb up to **60 inches** in height.
 - b. Four anchors per jamb from **60 to 90 inches** in height.
 - c. Five anchors per jamb from **90 to 96 inches** in height.
 - d. Five anchors per jamb plus one additional anchor per jamb for each **24 inches**, or fraction thereof, more than **96 inches** in height.
 - e. Two anchors per head for frames more than **42 inches** wide and mounted in metal-stud partitions.
 8. Jamb Anchors for Two-Piece Slip-On Frames: Locate as required to transfer loads to adjoining construction, but not more than **8 inches** from top and bottom of frame and spaced not more than **12 inches** o.c.
 9. Grouted-Frame Head Reinforcement for Welded Frames: For grouted frames

- more than **48 inches** wide, weld continuous head reinforcement to back of frame at head full for the width of opening.
10. Grout Guards for Welded Frames: Weld guards to frame at back of hardware cutouts, sound control seal preparations, and as required to close off other interior of openings in frames to be grouted.

PART 3 - EXECUTION

3.1 INSTALLATION OF SIDE-HINGED, STEEL SOUND CONTROL DOOR ASSEMBLIES

- A. General: Install sound control door assemblies plumb, rigid, properly aligned, and securely fastened in place; comply with manufacturer's written instructions.
 1. Fire-Rated Assemblies: Install in accordance with NFPA 80.
 2. Smoke- and Draft-Control Assemblies: Install in accordance with NFPA 105.
- B. Welded Frames: Set accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. Check squareness, twist, and plumbness of frames as walls are constructed. Shim as necessary to comply with installation tolerances. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 1. Frames Fabricated in Sections: Field splice by welding face joint continuously; grind, fill, and dress; make splice smooth, flush, and invisible on exposed faces.
 2. Corrosion-Resistant Coating: Apply corrosion-resistant coating to backs of frames to be filled with grout containing antifreezing agents.
 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 4. Grouted Frames in Masonry or Concrete Construction: Hand trowel grout to solidly fill space between frames and substrate. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
 5. Metal-Stud Partitions: Fully fill frames with mineral-fiber insulation.
 6. In-Place Masonry or Concrete Construction: Secure jambs with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 7. In-Place Gypsum Board Partitions: Secure jambs with countersunk anchors, and fill and make smooth, flush, and invisible on exposed faces.
 8. Ceiling Struts: Extend struts vertically from top of frame at each jamb to supporting construction above unless frame is anchored to structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable wedged or bolted anchorage to frame jamb members.
- C. Two-Piece Slip-On Frames: Set accurately in position; plumbed, and aligned in

accordance with manufacturers written instruction.

- D. Steel Doors: Fit doors accurately in frames in accordance with manufacturer's written instructions and to comply with assembly performance requirements.
- E. Sound Control Seals: Where seals have been factory prefit and preinstalled and subsequently removed for shipping, reinstall seals and adjust in accordance with manufacturer's written instructions.
- F. Cam-Lift Hinges: Install in accordance with manufacturer's written instructions.
- G. Thresholds: Set thresholds in full bed of sealant complying with requirements in Section 07 92 00 "Joint Sealants."
- H. Astragals for Double Doors: Install in accordance with manufacturer's written instructions.
- I. Glazing: Comply with installation requirements in [Section 08 80 00 "Glazing"] [Section 08 88 13 "Fire-Rated Glazing"] and with manufacturer's written instructions.
 - 1. Secure stops with [tamper-resistant] 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.
- J. Installation Tolerances:
 - 1. Opening Width: Plus **1/16 inch** or minus **1/32 inch**, measured from rabbet to rabbet at top, middle, and bottom of frame.
 - 2. Opening Height: Plus **1/16 inch** or minus **1/32 inch**, measured from head rabbet to top of floor or bottom of frame minus jamb extensions at each jamb and across head.
 - 3. Squareness: Plus or minus **1/16 inch**, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - 4. Alignment: Plus or minus **1/16 inch**, measured at jambs on a horizontal line parallel to plane of wall.
 - 5. Twist: Plus or minus **1/16 inch**, measured at opposite face corners of jambs on parallel lines and perpendicular to plane of wall.
 - 6. Plumbness: Plus or minus **1/16 inch**, measured at jambs on a perpendicular line from head to floor.

3.2 FIELD QUALITY CONTROL

- A. Testing Agency: [Owner will engage][Engage] a qualified testing agency to perform tests and inspections.
- B. Acoustical Testing: To verify assemblies comply with acoustical performance requirements.
 - 1. Testing Extent: [One sound control door assembly chosen at random][Every

- sound control door assembly]<Insert requirements>.**
2. Testing Method: ASTM E336, with NIC rating calculated in accordance with ASTM E413.
 3. Acceptable Results: NIC rating within 5 dB of laboratory STC rating.
- C. Fire-Rated Door Assembly Acceptance Testing: Test and inspect fire-rated sound control door assemblies in accordance with NFPA 80.
- D. Smoke- and Draft-Control Door Assembly Acceptance Testing: Test and inspect smoke- and draft-control door assemblies in accordance with NFPA 105.
- E. Egress Door Assembly Acceptance Testing: Test and inspect egress doors in accordance with NFPA 101.
- F. Repair or remove and replace installations where testing and inspections indicate that they do not comply with specified requirements.
- G. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
- H. Inspection Report: Prepared and submitted in writing to Architect and Contractor within 24 hours after testing.

END OF SECTION 08 34 73.13