

**SECTION 08 17 10  
INTEGRATED DOOR ASSEMBLIES**

SPEC WRITER NOTE: Delete text between // // not applicable to project. Edit remaining text to suit project. Note that this spec is limited to cross-corridor locations ONLY and must be coordinated with Sections 08 71 00 DOOR HARDWARE and 08 71 13 AUTOMATIC DOOR OPERATORS.

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Integrated door assemblies including metal door frame, door, and hardware, unless specified in another Section, installed at cross-corridor locations.
- B. Smoke and draft control seals, unless specified in another Section.

**1.2 RELATED WORK**

SPEC WRITER NOTE: Update and retain references only when specified elsewhere in this section.

- A. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS: Non-Flooring Adhesives and Sealants and Paints and Coatings VOC Limits.
- B. Section 08 71 00, DOOR HARDWARE: Lock Cylinders.
- C. Section 08 71 13, AUTOMATIC DOOR OPERATORS: Automatic Door Operators.
- D. Section 09 06 00, SCHEDULE FOR FINISHES: Door and Frame Color:.
- E. DIVISION 26, ELECTRICAL: Electrical Power.

**1.3 APPLICABLE PUBLICATIONS**

- A. Comply with references to extent specified in this section.
- B. Builders Hardware Manufacturers Association (BHMA):
  - A156.3-14.....Exit Devices.
  - A156.26-06.....Continuous Hinges.
  - A156.32-14.....Integrated Door Opening Assemblies.
- C. ASTM International (ASTM):
  - A1011/A1011M-18a.....Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
  - E2180-18.....Determining the Activity of Incorporated Antimicrobial Agents in Polymeric or Hydrophobic Materials.

D. Door and Hardware Institute (DHI):

- 1. Recommended Locations for Architectural Hardware for Standard Doors & Frames (2004).
- 2. Recommended Locations for Builders' Hardware Custom Steel Doors & Frames (1996).

E. National Fire Protection Association (NFPA):

- 105-16.....Smoke Door Assemblies and Other Opening Protectives.
- 252-12.....Fire Tests of Door Assemblies.

F. Steel Door Institute (SDI):

- A250.3-11.....Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames.
- A250.8-14.....Specifications for Standard Steel Doors and Frames.
- A250.10-11.....Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

G. UL LLC (UL):

- 10C-09.....Positive Pressure Fire Tests of Door Assemblies.
- 1784-15.....Air Leakage Tests of Door Assemblies and Other Opening Protectives.

**1.4 PREINSTALLATION MEETINGS**

- A. Conduct preinstallation meeting // at project site // minimum 30 days before beginning Work of this section.

SPEC WRITER NOTE: Edit participant list to ensure entities influencing outcome attend.

1. Required Participants:

- a. Contracting Officer's Representative.
- b. // Architect/Engineer. //
- c. Contractor.
- d. Installer.
- e. Other installers responsible for adjacent and intersecting work, including electrical.

SPEC WRITER NOTE: Edit meeting agenda to incorporate project specific topics.

2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.
  - a. Installation schedule.
  - b. Installation sequence.
  - c. Preparatory work.
  - d. Protection before, during, and after installation.
  - e. Installation.
  - f. Transitions and connections to other work.
  - g. Other items affecting successful completion.
3. Document and distribute meeting minutes to participants to record decisions affecting installation.

**1.5 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  1. Show size, configuration, and fabrication and installation details.
  2. For each opening, list finish hardware items included in assembly, finish, degree of opening, and electrical rough-in requirements according to Door Schedule.
  3. Submit templates to door and frame manufacturers to ensure proper size and location of hardware.
- C. Manufacturer's Literature and Data:
  1. Description of each product.
  2. Installation instructions.
- D. Sustainable Construction Submittals:

SPEC WRITER NOTE: Retain sustainable construction submittals appropriate to product.

  1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
  2. Low Pollutant-Emitting Materials:
    - a. Show volatile organic compound types and quantities.
- E. Certificates: Indicate integrated door assemblies comply with specifications.
  1. Show fire rated integrated door assembly is UL Listed for specified application.
- F. Qualifications: Substantiate qualifications comply with specifications.
  1. Installer.

G. Operation and Maintenance Data:

1. Care instructions for each exposed finish product.
2. Maintenance and adjustment instructions for integrated door assemblies.

**1.6 QUALITY ASSURANCE**

A. Installer Qualifications:

1. Regularly installs specified products.
2. Installed specified products with satisfactory service on five similar installations for minimum five years.
  - a. Provide contact names and addresses for completed projects when requested by Contracting Officer's Representative.

**1.7 DELIVERY**

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

**1.8 STORAGE AND HANDLING**

- A. Store products indoors in dry, weathertight facility.
- B. Protect products from damage during handling and construction operations.

**1.9 FIELD CONDITIONS**

- A. Field Measurements: Verify field conditions affecting integrated door assembly fabrication and installation. Show field measurements on Submittal Drawings.
  1. Coordinate field measurement and fabrication schedule to avoid delay.
  2. Coordinate electrical work for electrified hardware installation.

**1.10 WARRANTY**

SPEC WRITER NOTE: Always retain construction warranty. FAR includes Contractor's one year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

SPEC WRITER NOTE: Specify extended manufacturer's warranties for materials only.

- B. Manufacturer's Warranty: Warrant door closers and hinges against material and manufacturing defects.

SPEC WRITER NOTE: Specify customarily available warranty period for specified products.

1. Warranty Periods:
  - a. Door Closers: 10 years.
  - b. Steel Pinned Continuous Hinges: 10 years.

## **PART 2 - PRODUCTS**

### **2.1 SYSTEM PERFORMANCE**

- A. Design integrated door assemblies complying with specified performance:
  1. BHMA A156.32: Grade 1: 1,000,000 cycles.
- B. Fire Rated Doors:
  1. Fire Resistance Rating: As shown in Door Schedule.
  2. Label: Comply with NFPA 252, UL 10C, and labeled by qualified testing and inspection agency showing fire resistance rating.
- C. Smoke Rated Doors:
  1. Smoke Resistance Rating: As shown in Door Schedule.
  2. Label: Comply with NFPA 105, UL 1784, and labeled by qualified testing and inspection agency showing smoke resistance rating.

### **2.2 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide each integrated door assembly from one manufacturer.
- C. Sustainable Construction Requirements:

SPEC WRITER NOTES:

1. Specify products containing greatest recycled content practicable to maximize material recovery. See EPA Comprehensive Procurement Guidelines (CPG) for guidance about individual products and available recycled content. Section 01 81 13 sets overall project recycled content requirements.
  2. Steel recycled content depends upon furnace type. AISC reports industry wide 32 percent for basic oxygen furnace and 93 percent for electric arc furnace.
1. Steel Recycled Content: 30 percent total recycled content, minimum.

SPEC WRITER NOTE:

1. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS includes comprehensive product list setting VOC limits for low-emitting materials.
2. Retain subparagraphs applicable to products specified in this section.

2. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS for the following products:
  - a. Non-flooring adhesives and sealants.
  - b. Paints and coatings.

### 2.3 INTEGRATED DOOR ASSEMBLY

SPEC WRITER NOTE: Doors can be metal with primed or factory finish or clad with wood veneer or plastic laminate.

- A. Metal Doors: SDI A250.8; Level 2 and Physical Performance Level B, heavy duty; Model 2 seamless.
  1. Face: ASTM A1011/A1011M; cold rolled steel, 1.0 mm (0.04 inches) thick, minimum.
    - a. // Cladding: // Wood veneer // Plastic laminate //.
  2. Core: Kraft paper honeycomb or polystyrene.
  3. Thickness: 44 mm (1-3/4 inch).
  4. Reinforce door for hardware installation.
- B. Metal Frames: SDI A250.8 Level 2.
  1. Metal: ASTM A1011/A1011M; cold rolled steel, 1.3 mm (0.05 inches) thick, minimum.
  2. Construction: Continuously welded.
  3. Reinforce frame for hardware.
    - a. Continuous Hinges: 2.3 mm (0.09 inches) thick.
    - b. Other Hardware: Comply with SDI A250.8.
  4. Frame Anchors: Provide adjustable type anchors coordinated with wall construction, minimum 4 per jamb.
- C. Integrated Hardware:
  1. Exit Device: BHMA A156.3; Grade 1, passage function, inset in door face, clean and unobtrusive in design.
    - a. Push Bar End Caps: Metal, plated satin nickel (BHMA 619) finish.
    - b. Exit Device Trim: Lever matching door hardware specified in Section 08 71 00, DOOR HARDWARE.
  2. Continuous Hinges: BHMA A156.26.
    - a. Plastic Laminate Clad Doors: Wrap-around style hinge guards and provide stainless steel wrap-around edge guards at strike edge of door.
  3. Other Hardware: As scheduled in this section.

## 2.4 FINISHES

### A. Hardware Finish Symbols:

TABLE I - Hardware Finish Symbols

US	BHMA 156.18	Description
USP	600	Primed for field painting
US15	619	Dull Nickel Plated
US26D	626/652	Satin Chrome Plated
US28	628	Satin Aluminum
US32	629	Bright Stainless
US32D	630	Satin Stainless
N/A	689	Aluminum Painted

### B. Finish Requirements:

1. Door Faces: // Prime painted, SDI A250.10 // Factory Pre-Finished, SDI A250.3 // Plastic Laminate //.
2. Frames: // Prime painted, SDI A250.10 // Factory Pre-Finished, SDI A250.3 //.
3. Door Hardware:
  - a. Continuous Hinges: BHMA 630.
  - b. Push Bar: BHMA 630 clad with BHMA 619 end caps.
  - c. Exit Device Trim: BHMA 630.
  - d. Push/Pull Trim: BHMA 626.
  - e. Door Closers: BHMA 689.
  - f. Miscellaneous: To match other finishes.
4. Anti-Microbial Coating: ASTM E2180; ionic silver coating.
5. Apply coating to hand-operated hardware including levers, pulls, push bars, push plates, and paddles.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.

### 3.2 INSTALLATION - INTEGRATED DOOR ASSEMBLIES

- A. Install products according to manufacturer's instructions // and approved submittal drawings //.
- B. Install door hardware at locations indicated in DHI Recommended Locations for Architectural Hardware for Standard Steel Doors & Frames and DHI Recommended Locations for Builders' Hardware Custom Steel Doors & Frames, unless otherwise indicated, or to comply with requirements of

governing regulations, or if otherwise directed by Contracting Officer's Representative.

- C. Install door hardware in compliance with manufacturers' instructions, and templates. Comply with specified degree of opening for doors with automatic operators and overhead door closers. Securely fasten hardware. Confirm operating parts move freely and smoothly without binding, sticking, and excessive clearance.
- D. Coordinate installation and interface wiring with fire alarm and smoke detection systems. Provide auxiliary contacts, relays, and interface for fire alarm and security systems.
- E. Remove or protect door hardware, before painting and finishing performed after integrated door assembly installation.
- F. Adjust and check door assembly and each operating hardware item to ensure correct operation and function. Replace products which cannot be adjusted to operate as intended.
- G. Final Adjustment: Perform final hardware check and adjustment maximum one month before building acceptance or partial building occupancy.

**3.3 CLEANING**

- A. Clean exposed surfaces, including hardware. Do not use cleaners that will harm finishes.

**3.4 PROTECTION**

- A. Protect integrated door assemblies from construction operations.

**3.5 SCHEDULES**

- A. The following is a general listing of the Integrated Door Assembly requirements and is not intended for use as a final door submittal. Provide hardware items required by established standards and practices, and to meet IBC and NFPA 101 whether specified or not in the following listed groups.

SPEC WRITER NOTE: Hardware sets below are example only and should be coordinated with the project requirements and balance of the hardware in 08 71 00 for EACH ADO door.

HW-6D

Each [ADO] Integrated Door to Have:	RATED
1 Steel Frame	-
1 Integrated Door w/Exit Device	Q2131 x TYPE 8 ELECTRIC DEVICE (E04) x F08 LEVER
1 Continuous Transfer Hinge	A51031B x 8-THRUWIRE

Each [ADO] Integrated Door to Have:	RATED
	TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1 Armor Plate	J101 x 1.275 mm (0.050 inch) THICKNESS
1 Floor Stop	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

1. Each [ADO] Integrated Door to Have:
  - a. Power transfer shared by electric panic and re-activation sensor wiring (re-activation sensors provided by Section 08 71 13).
  - b. Lock cylinder by section 08 71 00, door hardware.
  - c. Auto door operator and controls by Section 08 71 13, AUTOMATIC DOOR OPERATORS.

## HW-8

Each [MHO] Pair Integrated Doors to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Auto Flush Bolts & Push/Pull Trim	Q2241 x TYPE 25 LESS BOTTOM BOLT AUTO FLUSH BOLT (INACTIVE LEAF) x ACTIVE CONCEALED VERTICAL LATCH (ACTIVE LEAF)
2 Continuous Hinges	A51031B x WIDE THROW AS REQUIRED TO ACHIEVE FULL DOOR SWING
1 Coordinator	TYPE 21A
1 Self-Adhesive Astragal	R0Y_14
2 Closers	C02011 (PT4D, PT4H) x 180° SWING
2 Magnetic Holders	C00011 TRI-VOLTAGE
1 Set Self-Adhesive Seals	R0E154

2. Power, wiring, conduit, and fire alarm connection by Division 26.

## HW-12A

Each [ADO] Integrated Door to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Exit Devices and Pull Trim	Q2231 x TYPE 8 EXIT DEVICES (F01/ACTIVE FLUSH PULL PASSAGE TRIM)
2 Continuous Hinges	A51031B

Each [ADO] Integrated Door to Have:	RATED
1 Self-Adhesive Astragal	R0Y_14
2 Closers	C02011/C02021 (PT4D, PT4H)
2 Magnetic Holders	C00011 TRI-VOLTAGE
1 Set Self-Adhesive Seals	R0E154

## 3. Power, wiring, conduit, and fire alarm connection by Division 26.

## HW-12B

Each [ADO] Pair Integrated Doors to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Elec Exit Devices	Q2231 x TYPE 8 (E04) ELECTRIC EXIT DEVICES (F01/F08)
2 Continuous Transfer Hinges	A51031B x 8-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1 Self-Adhesive Astragal	R0Y_14
2 Armor Plates	J101 x 1.275 mm (0.050 inch) THICKNESS
2 Floor Stops	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

## 4. Power, wiring, conduit, and fire alarm connection by Division 26.

- a. Power transfer shared by electric panic and re-activation sensor wiring (re-activation sensors provided by section 08 71 13).
- b. Lock cylinder by Section 08 71 00, door hardware.
- c. Auto door operator and controls by Section 08 71 13, AUTOMATIC DOOR OPERATORS.

## HW-12C

Each [ADO] Pair Integrated Double Egress Doors to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Exit Devices	Q2331 x TYPE 8 EXIT DEVICES (F01)
2 Continuous Hinges	A51031B
1 Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2 Closers	C02011/C02021 (PT4D, PT4H)
2 Magnetic Holders	C00011 TRI-VOLTAGE

Each [ADO] Pair Integrated Double Egress Doors to Have:	RATED
1 Set Self-Adhesive Seals	R0E154

5. Power, wiring, conduit, and fire alarm connection by Division 26.

HW-12D

Each [ADO] Pair Integrated Double Egress Doors to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Elec Exit Exit Devices	Q2331 x TYPE 8 (E04) ELECTRIC EXIT DEVICES (F01)
2 Continuous Transfer Hinges	A51031B x 8-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1 Overlapping Astragal with Self-Adhesive Seal	R5Y634 x R0E154 x THRU-BOLTS
2 Armor Plates	J101 x 1.275 mm (0.050 inch) THICKNESS
2 Floor Stops	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

6. Power, wiring, conduit, and fire alarm connection by Division 26.

- a. Power transfer shared by electric panic and re-activation sensor wiring (re-activation sensors provided by Section 08 71 13).
- b. Auto door operator and controls by Section 08 71 13, AUTOMATIC DOOR OPERATORS.

HW-SH-4

Each [AC, EL, REX, DPS] Integrated Door to Have:	RATED
1 Steel Frame	-
1 Integrated Door w/Elec. Exit Device	Q2131 x TYPE 8 ELECTRIC DEVICE (E01, E05/E06-VERIFY) x F13 LEVER
1 Continuous Transfer Hinge	A51031B x 4-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	REGULATED, FILTERED, 24VDC, AMPERAGE AS REQUIRED
1 Closer	C02021 (PT4D, PT4F, PT4H)
1 Armor Plate	J101 x 1.275 mm (0.050 inch) THICKNESS

Each [AC, EL, REX, DPS] Integrated Door to Have:	RATED
1 Floor Stop	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154
1 Alarm Contact	-

B. 120VAC power, conduit, and wiring by Division 26.

1. Card reader by Division 28.
2. Lock cylinder by Section 08 71 00, DOOR HARDWARE.

HW-SH-4A

Each [ADO, AC, ELR, REX, DPS] Integrated Door to Have:	RATED
1 Steel Frame	-
1 Integrated Door w/Elec Exit Device	Q2131 x TYPE 8 ELECTRIC DEVICE (E01, E04) x F13 LEVER
1 Continuous Transfer Hinge	A51031B x 12-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1 Armor Plate	J101 x 1.275 mm (0.050 inch) THICKNESS
1 Floor Stop	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154
1 Alarm Contact	-

C. 120VAC power, conduit, and wiring by Division 26.

1. Auto door operator and controls by Section 08 71 13, AUTOMATIC DOOR OPERATORS.
2. Card reader by Division 28.
3. Power transfer shared by electric panic and re-activation sensor wiring (re-activation sensors provided by Section 08 71 13).
4. Lock cylinder by Section 08 71 00, DOOR HARDWARE.

HW-SH-10

Each [AC, EL, REX, DPS] Pair Integrated Doors to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Elec Exit Devices	Q2231 x TYPE 8 EXIT DEVICES (F01-E01/F13-E01, E05/E06-VERIFY)
2 Continuous Transfer Hinges	A51031B x 4-THRUWIRE TRANSFER x

Each [AC, EL, REX, DPS] Pair Integrated Doors to Have:	RATED
	IN-HINGE ACCESS PANEL
1 Power Supply	Regulated, Filtered, 24VDC, Amperage
1 Self-Adhesive Astragal	R0Y_14
2 Closers	C02021 (PT4D, PT4F, PT4H)
2 Armor Plates	J101 x 1.275 mm (0.050 inch) THICKNESS
2 Floor Stops	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

5. Power, wiring, and conduit by Division 26.

6. Lock cylinder by Section 08 71 00, DOOR HARDWARE.

HW-SH-10A

Each [AC, ADO, EL, REX, DPS] Pair Integrated Doors to Have:	RATED
1 Steel Frame	-
1 Integrated Pair Doors w/Elec. Exit Devices	Q2231 x TYPE 8 (E01, E04) ELECTRIC EXIT DEVICES (F01/F08)
2 Continuous Transfer Hinges	A51031B x 12-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1 Self-Adhesive Astragal	R0Y_14
2 Armor Plates	J101 x 1.275 mm (0.050 inch) THICKNESS
2 Floor Stops	L02121 x 3 FASTENERS
1 Set Self-Adhesive Seals	R0E154

D. Power, wiring, conduit, and fire alarm connection by Division 26.

1. Power transfer shared by electric panic and re-activation sensor wiring (re-activation sensors provided by Section 08 71 13).

2. Lock cylinder by Section 08 71 00, DOOR HARDWARE.

3. Auto door operator and controls by Section 08 71 13, AUTOMATIC DOOR OPERATORS.

HW-SH-12

Each [AC, ADO, EL, REX, DPS] Integrated Door to Have:	NON-RATED
1 Steel Frame	-

Each [AC, ADO, EL, REX, DPS] Integrated Door to Have:	NON-RATED
1 Integrated Door w/Elec. Exit Device	Q2131 x TYPE 8 ELECTRIC DEVICE (E01, E04) x F03 OUTSIDE CYLINDER ONLY
1 Continuous Transfer Hinge	A51031B x 12-THRUWIRE TRANSFER x IN-HINGE ACCESS PANEL
1 Power Supply	BY EXIT DEVICE MFR. FOR E04 FUNCTION
1 Offset Pull	J402 x 1" (25mm) DIAMETER x 12" (305mm) CTC
1 Closer	C02021 (PT4D, PT4F, PT4H)
1 Kick Plate	J102
1 Floor Stop	L02121 x 3 FASTENERS
1 Threshold	J35130 x SILICONE GASKET
1 Door Sweep	90100CNB (PEMKO), OR EQUAL
1 Set Frame Seals	2891AS X CSK SCREWS (PEMKO), OR EQUAL
1 Drip	R0Y976
1 Alarm Contact	-

E.

F. 120VAC power, conduit, and wiring by DIVISION 26.

1. Card reader by DIVISION 28.

2. Lock cylinder by Section 08 71 00, DOOR HARDWARE.

G. All hardware to be coordinated with and submitted by a/c certified consultant to provide a complete and workable system, including necessary components not specifically listed.

- - E N D - -