

**SECTION 081710  
INTEGRATED DOOR ASSEMBLIES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. Work in this section includes integrated door opening systems including metal frame, integrated doors, hanging device, latching mechanism and associated finish hardware, unless specified elsewhere.
- B. Smoke and draft control seals shall be included in this section, unless specifically listed elsewhere.
- C. All glass and glazing are not covered in this section.

**1.2 RELATED WORK**

- A. Blocking for Hardware: Section 061000, ROUGH CARPENTRY.
- B. Key Cylinders: Section 087100, DOOR HARDWARE
- C. Painting: Section 099100, PAINTING.
- D. Card Readers: Section 281300, PHYSICAL ACCESS CONTROL SYSTEMS.
- E. Electrical: Division 26, ELECTRICAL.
- F. Fire Detection: Section 283100, FIRE DETECTION AND ALARM.

**1.3 QUALITY ASSURANCE**

- A. Hardware shall be installed by people knowledgeable and skilled in the application, installation and adjustment of commercial grade doors and door hardware. Doors and Frames must be installed plumb, square and level.
- B. Doors frames must be properly prepared and reinforced to install hardware per the manufacturer's template and installation instructions. Install door frames in accordance with ANSI/SDI A250.11 - "Recommended Erection Instructions for Steel Frames."
- C. Contractor shall provide and furnish screws, bolts, expansions shields or other fasteners to facilitate the proper installation of products, not furnished as part of the Integrated Door Assembly.

**1.4 WARRANTY**

- A. Provide manufacturer's standard five-year limited warranty against defects in material and workmanship unless noted otherwise.
  - 1. Door Closers: 10 years
  - 2. Steel Pinned Continuous Hinges: 10 years

**1.5 SUBMITTALS**

- A. Submit shop drawings with proposed Integrated Door Assembly system, product and hardware options, in a timely manner to obtain the approval from architect in time to meet construction schedule of other trades.
- B. Provide for each door an frame location; frame type, profile, and installation details, items of finish hardware accessories, finishes, degree of opening and electrical rough-in requirements. Submit required

templates to door and frame manufacturers to enable proper and accurate sizing and locations of hardware.

- C. Samples: Provide physical samples as required by Section 013323.
- D. Provide Owner Manual, instruction sheets and installation.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. Integrated Door Assembly systems shall be delivered to the general contractor at the job site complete with necessary screws, miscellaneous parts, instructions, and installation templates. Each package shall be legibly and properly labeled to correspond to the approved door schedule.
- B. Deliver Integrated Door Assembly system to project site. Contractor will jointly check in hardware with representatives of the supplier to verify shipment is correct and / or note and rectify discrepancies promptly.
- C. Furnish door assemblies with flush operating hardware flush with door skin, using protective wrappings and protective spacers between projecting hardware. Maintain and protect door assemblies using cardboard spacers and protective edge guards along the door edges, to reduce exposure to marring or damage during storage.
- D. Store door assemblies in a dry and secure area. Storage area shall be void of any excess humidity that can cause damage to the product.

#### 1.7 APPLICABLE PUBLICATIONS

- A. The following references established standards for architectural hardware as specified in this section.
- B. American National Standards Institute (ANSI)
  - 1. ICC/ANSI A117.1-2003 Accessible and Usable Buildings and Facilities
  - 2. ANSI/BHMA A156.1-2006 Butts and Hinges
  - 3. ANSI/BHMA A156.3-2008 Exit Devices
  - 4. ANSI/BHMA A156.4-2008 Door Controls - Closers
  - 5. ANSI/BHMA A156.5-2001 Auxiliary Locks and Associated Products
  - 6. ANSI/BHMA A156.6-2005 Architectural Door Trim
  - 7. ANSI/BHMA A156.7-2009 Template Hinge Dimensions
  - 8. ANSI/BHMA A156.8-2005 Door Controls - Overhead Holders
  - 9. ANSI/BHMA A156.10-2005 Power Operated Pedestrian Doors
  - 10. ANSI/BHMA A156.13-2002 Mortise Locks and Latches
  - 11. ANSI/BHMA A156.15-2006 Closer Holder Release Devices
  - 12. ANSI/BHMA A156.16-2008 Auxiliary Hardware
  - 13. ANSI/BHMA A156.18-2006 Materials and Finishes
  - 14. ANSI/BHMA A156.19-2007 Power Assist and Low Energy Power Operated Doors
  - 15. ANSI/BHMA A156.21-2009 Thresholds
  - 16. ANSI/BHMA A156.22-2005 Door Gasketing Systems
  - 17. ANSI/BHMA A156.23-2004 Electromagnetic Locks

18. ANSI/BHMA A156.24-2003 Delayed Egress Locking Systems
  19. ANSI/BHMA A156.25-2007 Electrified Locking Devices
  20. ANSI/BHMA A156.26-2006 Continuous Hinges
  21. ANSI/BHMA A156.28-2007 Master Keying Systems
  22. ANSI/BHMA A156.29-2007 Exit Locks and Alarms
  23. ANSI/BHMA A156.30-2003 High Security Cylinders
  24. ANSI/BHMA A156.31-2007 Electric Strikes and Frame Mounted Actuators
  25. ANSI/BHMA A156.32-2008 Integrated Door Opening Assemblies
  26. ANSI/SDI A250.4-2001 Test Procedure and Acceptance Criteria for Physical Evidence for Steel Doors, Frames, Frame Anchors and Reinforcings
  27. ANSI/SDI A250.8-2003 Recommended Specifications for Standard Steel Doors and Frames
  28. ANSI/SDI A250.11-2001 Recommended Erection Instructions for Steel Frames
  29. UL10C-2009 Positive Pressure Fire Tests of Door Assemblies
- C. American Society for Testing and Materials (ASTM)
1. ASTM E2074 (2000): Standard Test Method for Fire Tests of Door Assemblies
  2. ASTM E2180 (2007): Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) In Polymeric or Hydrophobic Materials
  3. ASTM F476 (2002): Standard Test Method for Security of Swinging Door Assemblies
- D. Door and Hardware Institute (DHI)
1. Recommended Locations for Builder's Hardware for Standard Doors and Frames (2004)
  2. Recommended Locations for Builder's Hardware for Custom Steel Doors and Frames (1996)
- E. Metal Door and Frame Associations
1. Hollow Metal Manufacturing Association (HMMA)
    - a. National Association of Architectural Metal Manufacturers (NAAMM)
  2. Steel Door Institute (SDI)
- F. Approved Testing Laboratories
1. Underwriter's Laboratories, Inc. (UL)
    - a. UL305 (2007): Panic Hardware
    - b. UL1784 (2004): Air Leakage Tests of Door Assemblies
  2. ITS / Intertek Testing Services / Warnock Hersey Inc.
- G. National Fire Protection Association (NFPA)
1. NFPA 70-2008: National Electrical Code
  2. NFPA 80-2010: Standard for Fire Doors and Other Opening Protectives
  3. NFPA 101-2009: Life Safety Code

4. NFPA 105-2010: Standard for Installation of Smoke Door Assemblies and Other Opening Protectives
  5. NFPA 252-2008: Standard Methods of Fire Tests of Door Assemblies
- H. Building Codes [Applicable Building Code]
1. 2009 International Building Code
  2. All hardware shall comply with UFAS, (Uniform Federal Accessible Standards - 1998) unless specified otherwise

## **PART 2 - PRODUCTS**

### **2.1 MATERIAL REQUIREMENTS**

- A. Integrated Door Assembly requirements:
1. Comply with ANSI/BHMA A156.32a: Grade 1:1,000,000
  2. Integrated Door Opening Assemblies shall provide a label for life safety or fire labels as required in door schedule.
  3. Integral vision lite provided with door assembly, or field installed lite kit, as required.
- B. Door Frame requirements:
1. Door Frames shall be 16 -gauge ASTM A366, cold roll steel and shall comply to ANSI/SDI A250.8 Level A - Grade III and / or HMMA/NAAMM - 850-99.
  2. Door frames shall be furnished with mitered corners, continuously welded, ground smooth on frame face.
  3. Prepare frames with 14 gauge reinforcements for applied hardware. Provide 12 gauge reinforcements for continuous hinges.
  4. Provide suitable adjustable type anchors, minimum 4 per jamb.
- C. Integrated Hardware Requirements:
1. Provide a complete Integrated Door Assembly including the installation and adjustment of the latching mechanism within the door construction. The exit device shall be inset in door, clean and unobtrusive in design. The push bar shall comply with ANSI/BHMA Grade 1 Standard for exit devices. End caps shall be metal, plated satin nickel (BHMA 619). The Push and Pull devices shall be clean and unobtrusive in design. Lever handles shall be clean and unobtrusive in design with and shall match style of other hardware furnished on project. Continuous hinges shall comply with ANSI/BHMA A156.26.
    - a. At doors with plastic laminate faces, provide hinges with wrap-around hinge guards and provide stainless steel wrap-around edge guards at the leading edge of the door. Hinges shall comply with ANSI/BHMA A156.26

### **2.2 FINISHES**

- A. Finish Symbols
- |            |                       |                           |
|------------|-----------------------|---------------------------|
| 1. US BHMA | DESCRIPTION OF FINISH |                           |
| 2. USP     | 600                   | Primed for field painting |
| 3. US26D   | 626/652               | Satin Chrome              |
| 4. US28    | 628                   | Satin Aluminum            |

- |          |     |                  |
|----------|-----|------------------|
| 5. US32  | 629 | Bright Stainless |
| 6. US32D | 630 | Satin Stainless  |
| 7. N/A   | 689 | Aluminum Painted |

B. Finish Requirements

1. Door Faces: [Prime] [Factory Pre-Finished] [Plastic Laminate]
2. Frames: [Prime] [Factory Pre-Finished]
3. Door Hardware:
  - a. Continuous Hinges: 630
  - b. Push Bar: 630 clad with 619 end caps
  - c. Lever Exit Device Trim: 630
  - d. Push/Pull Trim: 626
  - e. Door Closers: 689
  - f. Miscellaneous: To match other finishes
4. Anti-Microbial Coating: All hand-operated hardware (levers, pulls, push bars, push plates, paddles, and panic bars) shall be provided with an anti-microbial/anti-fungal coating that has passed ASTM E2180 tests. Coating to consist of ionic silver (AG+). Silver ions surround bacterial cells, inhibiting growth of bacteria, mold, and mildew by blockading food and respiration supplies.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Contractor is responsible for notification of any wall conditions or building structure that would prevent proper execution of the installation of products produced in accordance with approved hardware schedule.
- B. Note short or damaged deliveries on the bill of lading at the time of delivery.
- C. The fire label is a manufacturer's certification only. Proper installation of products and proper wall construction are requirements to meet fire label.
- D. Unless otherwise required in other sections of the contract specs, provide power supply as required per the manufacturer's installation instructions.
- E. Do not fabricate any product until receipt of approved submittal drawings.
- F. Beginning of installation means acceptance of existing conditions.

**3.2 INSTALLATION**

- A. Mount furnished hardware accessories at heights indicated in "Recommended Locations or Builder's Hardware" for Standard Doors and Frames, Custom Steel Doors and Frames, established by the Door and Hardware Institute (DHI), except if otherwise indicated or to comply with requirements of governing regulations, or if otherwise directed by the architect.
- B. Install furnished hardware accessories in compliance with the manufacturer's instructions, templates and recommendations. Comply with specified degree of opening for doors with automatic operators, overhead door closers, etc. Securely fasten all furnished parts. Make sure all

operating parts move freely and smoothly without binding, sticking and void of any excessive clearance.

- C. Coordinate installation and interface wiring with fire alarm and smoke detection systems. Provide all additional auxiliary contacts, relays, or interface for the fire alarm and security system
- D. Remove or protect furnished hardware accessories, prior to any painting or finishing that is to be completed after the installation of the hardware accessories.

**3.3 ADJUSTMENT AND CLEANING**

- A. Adjust and check door assembly and each operating item of hardware to ensure correct operation and function. Units which cannot be adjusted to operate as intended for the application made shall be replaced.
- B. Final Adjustment: Wherever hardware installation is made more than a month prior to building acceptance or occupancy of a space or area, the installer shall return to the work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items. Hardware Accessories shall be cleaned as necessary to restore correct operation, function, and finish. Do not use cleaners that will harm finish.

**3.4 PROTECTION**

- A. Whenever furnished hardware accessories are located in areas where it may be subject to damage during construction by handling, cleaning, etc., (e.g. painting, cleaning of bricks) it shall be protected and/or removed from its location until the hazardous condition is terminated.

**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. Any items of hardware required by established standards or practices, or to meet federal building codes shall be furnished whether or not specifically called out in the following listed groups.

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 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

EACH [ADO] INTEGRATED DOOR TO HAVE:  
 POWER TRANSFER SHARED BY ELECTRIC PANIC AND RE-ACTIVATION SENSOR WIRING  
 (RE-ACTIVATION SENSORS PROVIDED BY SECTION 087113).  
 KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.

HW-12A

RATED		RATED
1	Steel Frame	
	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
1	Self-Adhesive Astragal	R0Y_14
2	Closers	C02011/C02021 (PT4D, PT4H)
2	Magnetic Holders	C00011 TRI-VOLTAGE
1	Set Self-Adhesive Seals	R0E154

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.

HW-12B

Each [ADO] Pair Integrated Doors to Have:		RATED
1	Steel Frame	
	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

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.  
 POWER TRANSFER SHARED BY ELECTRIC PANIC AND RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 087113).  
 KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.  
 AUTO DOOR OPERATOR AND CONTROLS BY SECTION 087113, AUTOMATIC DOOR OPERATORS.

HW-12C

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

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	
Integrated Pair Doors w/Elec 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
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

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.  
 POWER TRANSFER SHARED BY ELECTRIC PANIC AND RE-ACTIVATION SENSOR WIRING (RE-ACTIVATION SENSORS PROVIDED BY SECTION 087113).  
 AUTO DOOR OPERATOR AND CONTROLS BY SECTION 087113, AUTOMATIC DOOR OPERATORS.

HW-SH-4

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

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
 CARD READER BY DIVISION 28.  
 KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.

HW-SH-4A

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

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
 AUTO DOOR OPERATOR AND CONTROLS BY SECTION 087113, AUTOMATIC DOOR OPERATORS.  
 CARD READER BY DIVISION 28.  
 POWER TRANSFER SHARED BY ELECTRIC PANIC AND RE-ACTIVATION SENSOR WIRING  
 (RE-ACTIVATION SENSORS PROVIDED BY SECTION 087113).  
 KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.

HW-SH-10

Each [AC, EL, REX, DPS] Pair Integrated Doors to Have	RATED
1 Steel Frame	
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 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

POWER, WIRING, AND CONDUIT BY DIVISION 26.  
 KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.

HW-SH-10A

Each [AC, ADO, EL, REX, DPS] Pair Integrated Doors to Have:	RATED
1 Steel Frame	
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

POWER, WIRING, CONDUIT, AND FIRE ALARM CONNECTION BY DIVISION 26.  
 POWER TRANSFER SHARED BY ELECTRIC PANIC AND RE-ACTIVATION SENSOR WIRING  
 (RE-ACTIVATION SENSORS PROVIDED BY SECTION 087113).  
 KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.  
 AUTO DOOR OPERATOR AND CONTROLS BY SECTION 087113, AUTOMATIC DOOR OPERATORS.

HW-SH-12

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

120VAC POWER, CONDUIT, AND WIRING BY DIVISION 26.  
CARD READER BY DIVISION 28.  
KEY CYLINDER BY SECTION 087100, DOOR HARDWARE.

- - - E N D - - -