

<b>AMTRAK ENGINEERING PRACTICES</b> <b>Structures Department</b> <b>Standard Design Practices (SDP)</b>	<b>Section 3 – Minimum Technical Requirements</b>	<b>EP4000</b>
	<b>Chapter 8 – Openings</b>	<b>SDP: 3.08</b>
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## Openings

### I. Doors and Frames

#### A. General

1. Doors and all related components and clearances must be ADA-compliant, durable, easy to maintain, and exterior doors shall be able to withstand deicing chemicals.
2. All doors and frames shall be commercial or heavy-duty grade.
3. Glass surfaces shall receive application of anti-graffiti protective film as determined necessary by the Amtrak Project Manager.

#### B. Exterior doors

1. Exterior doors shall be one of the following:
  - a. Metal and glass curtain wall or storefront entry systems
    - i. All metal and glass doors shall be wide stile doors with ADA-compliant bottom rails.
  - b. Hollow metal
    - i. Exterior doors shall be not less than 16-gauge steel.
    - ii. The top channel of each metal door shall be solid without pockets that collect dirt and water.
    - iii. All exterior doors shall be galvanized, primed, and painted or stainless steel.
2. Exterior Wood Doors
  - i. Exterior wood doors shall not be used unless historic requirements govern and require their usage.

#### C. Interior Doors

1. Interior doors shall be one of the following:
  - a. Metal and glass curtain wall or storefront entry systems
    - i. All metal and glass doors shall be wide stile doors with ADA-compliant bottom rails.
  - b. Hollow Metal
    - i. Interior doors shall be not less than 18-gauge steel.
  - c. Wood
    - i. Wood doors shall be solid core, either mineral core where a fire rating is required, or high-density particle board core, or wood stave core.
    - ii. Wood doors which are to receive clear or stained finish shall be factory finished and pre-machined for hardware. Door edges shall be fabricated of matching wood to the faces.

#### D. Frames

1. Metal curtain wall or storefront entry framing
  - a. Door frames in metal and glass curtain wall or storefront entry systems shall be an integral part of the main framing system and shall not be secondary members or sub frames installed within the main framing members.

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**2. Hollow Metal Frames**

- a. Hollow metal door frames shall be 16 gauge.
- b. Knock-down frames are prohibited unless specifically approved by the Amtrak Project Manager
- c. Exterior hollow metal frames shall be galvanized, primed, and painted.

**3. Wood frames**

- a. shall not be used unless historic requirements govern and require their usage.

**II. Access Doors and Frames**

**A. General**

- 1. Access doors and frames at toilet rooms, janitor’s closets, mechanical rooms, and all unconditioned spaces shall be stainless steel.
- 2. Provide lockable access doors when required by the project.
- 3. Where required by code, provide fire-rated access doors and frames.

**III. Windows**

**A. General**

- 1. All windows and related accessories shall be heavy commercial grade (HC).

**B. Exterior Windows**

- 1. Exterior windows shall be one of the following:
  - a. Metal and glass curtain wall or storefront systems
  - b. Individual metal framed windows
- 2. Wood Windows
  - a. Wood windows shall not be used unless historic requirements govern and require their usage.
    - i. Specify compliance with AWI and WDMA “Premium Grade” quality standards for the fabrication, reproduction, repair, and installation of wood windows.
  - b. For wood repair of existing historic window installations, specify epoxy based structural filler (no “Bondo” or similar body filler products shall be employed)
  - c. Use epoxy consolidates to repair deep damage in wood substrates prior to applying structural filler.
- 3. Plastic or fiberglass framed windows
  - a. Plastic or fiberglass framed windows will not be accepted.

**C. Interior Windows**

- 1. Interior windows shall be one of the following:
  - a. Fixed glass in aluminum storefront or hollow metal frames
  - b. Sliding glass windows as described in the ticket window section of 06 40 23 Interior Architectural Woodwork

**D. Screens**

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1. Insect screens shall be installed at all operable exterior windows.
  - a. Where possible, insect screens shall be mounted at the interior of the window.
  - b. Aluminum-framed window screens and hardware shall comply with ANSI/SMA 1004, "Specifications for Aluminum Tubular Frame Screens for Windows," Architectural C-24 class.

#### **IV. Unit Skylights**

##### **A. General**

1. Skylights should only be considered where required to provide daylight to interior spaces that cannot be provided with windows in the exterior walls or where required for passive solar heating.
2. Before specifying a skylight, the Design Contractor shall consider the following:
  - a. How to reduce heat gain from direct sunlight during cooling periods.
  - b. How to reduce visual glare from direct sunlight.
  - c. How to reduce heat loss during heating periods.
  - d. Security and safety.

##### **B. Materials**

1. Skylights shall be commercial grade metal framed units with all framing, glass, flashings, and all other accessories supplied by a single source.

##### **C. Installation**

1. Install all skylights and roof windows in strict accordance with skylight and roofing manufacturer's written instructions.

##### **D. Warranty**

1. The manufacturer shall warranty all materials and workmanship for at least 5 years from the date of Substantial Completion.

#### **V. Door Hardware**

##### **A. General**

1. Door hardware shall be Grade I certified per ANSI BHMA A156.1 and must be durable, easy to maintain, and be able to withstand deicing chemicals.
2. Hardware items selected from manufacturers shall be selected as a complete system and not as individual parts unless approved by the manufacturer.
3. At existing buildings, the hardware selected should match what is currently in use at that location, unless the existing hardware is not Code-compliant.
4. All hardware for doors in curtainwall, storefront and entry systems, except for cylinders, shall be furnished by the system manufacturer.
5. All fasteners for hardware shall attach to a solid substrate.
6. Specified hardware shall not contain any plastic components. The only exception to this rule may be the plastic bumper on door stops.

##### **B. Hardware**

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### 1. Hinges

- a. Provide a minimum of 3-barrel type hinges per door.
- b. Provide heavy duty continuous geared hinges at high traffic doors, including primary entry doors.
- c. All barrel hinges to be medium and large heavyweight Grade I certified per ANSI BHMA A156.1. Standard Grade I certified per ANSI BHMA A156.1 is only permitted on small shelter structures and only then with specific written permission from the Amtrak Project Manager.
- d. All exterior and security doors are to be fitted with non-removable pin hinges.
- e. All hinges must be comprised of solid material. No hollow material is to be permitted on any hinge product.

### 2. Door Handles and Locks and latch sets

- a. Provide Lever Handle lock and latch sets as indicated below:
  - i. Exterior Doors: Entrance function.
  - ii. Office Doors: Office Function.
  - iii. Closet Doors: Passage Function.
  - iv. Single Occupant Toilet room Doors: Privacy Function.
  - v. Baggage, Mechanical, Telecommunications and Storage rooms: Storage room function.
  - vi. Other Doors: Verify with Amtrak
- b. Provide Push/Pull hardware with no latch at all multiple occupant toilet room doors.

### 3. Deadbolts

- a. Deadbolts shall not be permitted at any doors that are a means of egress from any passenger occupied spaces.
- b. Use of deadbolts and their locations should be determined on a case-by-case basis.

### 4. Cylinders and Keys

- a. All cylindrical locksets shall be Grade I certified per ANSI/BHMA 152.2
- b. All mortise locksets shall be Grade I certified per ANSI BHMA 156.13.
- c. Verify all keying requirements with the station master who is required to operate the station.
  - i. A master key set shall be provided to the Stationmaster.
  - ii. Unless new keying system is proposed for project specifically, new keys should follow existing keying system. Coordinate this requirement with Amtrak Station Engineering.
  - iii. Restricted keyways: Amtrak Project Manager must be consulted if these are appropriate on the given project.

### 5. Closers

- a. 1 ½" piston diameter, rated for 5 million cycles preferred.
- b. Closer body must be solid aluminum or cast iron.
- c. Closers are not to be installed on:
  - i. Exterior side of building entry doors.

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ii. Public-facing or corridor side of door.

d. Provide closers at the following locations:

i. Toilet room doors.

ii. Exterior doors and doors between conditioned and unconditioned spaces.

iii. Interior vestibule doors.

iv. Storage and telecommunications room doors.

v. All doors required by code to have a closer.

#### **6. Floor/Wall Stops**

a. Floor Stops or Wall Stops must be installed at all locations with doors.

#### **7. Weather Seals**

a. Weather seals must be installed at all locations with doors.

b. Provide compressible neoprene or rubber weather seals at all exterior doors and at all doors between conditioned and unconditioned spaces.

c. Seals shall be continuous at full perimeter of doors.

#### **8. Thresholds**

a. Provide thermally broken aluminum thresholds at all exterior doors and at doors between conditioned and unconditioned spaces.

b. Set threshold in full bed of sealant.

#### **9. Other Hardware as required:**

a. Provide other hardware as required for fully functioning, weathertight, and code compliant doors.

#### **C. Finish**

1. Except where historic considerations may apply, or there is a requirement to match existing hardware, all hardware shall be satin stainless-steel finish or the nearest equivalent available from the hardware manufacturer.

### **VI. Automatic Door Operators**

#### **A. Existing Installations**

1. Automatic door operators shall only be installed at existing and historic buildings where it is not possible to achieve ADA requirements with manually operated hardware.

### **VII. Glass Glazing**

#### **A. Reglazing of existing windows or doors**

1. The glazing selected should match what is currently in use.

#### **B. Exterior Glass Glazing**

1. Unless otherwise required for passive solar heating, all exterior wall glazing shall be minimum 1" double pane argon filled insulated glass with low-E coating.

2. Provide tempered safety glass as required by Code.

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a. Where tempered safety glass is required in a curtainwall, storefront, or entry system, all glass units in that wall shall be tempered safety glass.

3. Provide laminated safety glass at skylights.

**C. Interior Glass Glazing**

1. Pre-glazed windows or millwork: Provide standard clear float glass as provided by the manufacturer.

2. Where manufacturer does not provide glass, provide 6 mm clear float glass.

3. Provide Tempered safety glass where indicated, or as required by Code.

**D. Glazing requirements of other types of Glass**

1. Requirements for other types of glass will be determined on a case-by-case basis.

**VIII. Louvers**

A. Louvers in exterior walls shall be storm-resistant type and rated to resist water infiltration for the location where they are to be installed. Louver blades shall be drainable type.