

## DIVISION 8 – DOORS & WINDOWS

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## **GENERAL INFORMATION**

Doors and door hardware are to be installed only by qualified persons and all work must meet appropriate codes. No exceptions will be made to the hardware listed below for use in any University construction without prior testing, evaluation and approval by appropriate departments within Facility Services.

All doors, hardware, openers, etc. shall be specified as institutional grade throughout.

Final acceptance of any hardware installations shall be subject to approval by the Facility Services Lockshop. All hardware submittals shall be routed through the Facility Services Lockshop for review and approval prior to purchase.

## **08100 HOLLOW METAL DOORS AND FRAMES**

### General

This section applies to both interior and exterior applications. In general, hollow metal doors should be designed and specified for areas of heavy use and potential abuse. Commercial heavy duty hollow metal frames should be utilized regardless of whether the door be hollow metal, glass, or wood.

### **08110 Steel Doors and Frames**

#### General

Doors and frames shall be specified as commercial heavy duty quality. Minimum door thickness shall be 1-3/4" thick. Interior doors shall comply with SD1-100, Grade II, heavy duty, minimum 16 gauge faces. Exterior doors shall comply with SD1-100 Grade III extra heavy duty, minimum 16 gauge faces.

All exterior doors shall have thresholds, closures, weatherstripping, and padded stops.

Designs calling for exterior glazed openings in steel doors shall use 1" insulated wire glass. Openings shall be limited to less than 60% glass area (code permitting).

At least one section of an exterior door assembly (main ingress and egress) shall have an electric automatic door opener, button activated at the swing side, interior and exterior Kickplates are required of all doors that are subject to high traffic.

#### Door Frames

In new construction all frames shall be specified as welded. Knock-downs may be acceptable in building renovation work, pending Lockshop approval of submittals and final installation. An inspection of anchoring method must be made prior to drywall or closing up of walls.

Frames shall have wall anchors a maximum of 16" o.c. per jamb. All door frames will be steel. Exterior door frames will be 14 gauge and protected from rust, internal frames may be no lighter than 14 gauge steel.

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Door frames shall be factory pre-assembled with mitered fully welded joints ground smooth and delivered to the job site with spreaders. If knock-down and two-piece frames are unavoidable, specification must require quality standards for securing and finishing these frames. Shop priming is required.

All frames shall be delivered prior to masonry construction. All frames in masonry walls shall be grouted full with Portland cement grout. Gypsum grout is not permitted.

Specify seamless end channel closure pieces at door heads.

Doors

All external doors will be 16 gauge steel with vertical steel rib stiffeners and reinforced for all door hardware. Internal doors shall be 16 gauge, or may be solid core wood.

Where doors are to be used as part of an acoustical barrier assembly, they shall be rated a minimum of STC 33.

Doors used as a normal means of ingress and egress shall have either vision panels or adjacent sidelights (where allowable by fire ratings).

Doors shall have a minimum of 3 heavy duty industrial type hinges per door. (see 08700)

Doors and frames shall have a spray applied finish.

A/E shall specify door stops on all installations, closures if doors open into a rated space.

**08200**

**WOOD AND PLASTIC DOORS**

General

This section applies to interior applications. Endangered or limited tree species are not allowable for wood door veneers. Doors receiving painted finishes should be limited to low cost species (birch, maple, etc.). Welded hollow metal frames should be utilized.

Wooden doors are acceptable only for interior usage, must be solid core, and have adhesives that are 100% waterproof. Existing hollow core doors shall not be specified to be re-used.

All doors shall be solid core flush with veneer faces, commercial heavy duty minimum grade, 1-3/4" thick. Minimum width to be 3'-0". Maximum height to be 7'-0". **3'0" x 7'0" doors are the standard.**

**Exceptions must be approved by the President's Management Team.**

Doors for renovation work shall be drilled to match existing handle-set elevations.

All doors should be specified from a single manufacturer.

Specify formaldehyde off-gassing rates to be less than .03 milligrams per square foot of surface/hr in accordance with ASTM D5116-90.

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	<p>Doors shall carry a life of installation warranty from the manufacturer. All doors that are warped, after installation, shall be replaced prior to substantial completion. Substantial completion can not be achieved if one hour rated corridors integrity is compromised by warped doors.</p> <p>Where doors are to be used as part of an acoustical barrier assembly, they shall be rated a minimum of STC 33.</p> <p>Door receiving a stained finish shall be specified as having premium quality face veneers, minimum thickness 1/16".</p> <p>Doors used as a normal means of ingress and egress shall have either vision panels or adjacent sidelights (where allowable by code) in metal frames.</p> <p>Doors shall have a minimum of 3 heavy duty type hinges per door.</p> <p>Doors and frames shall have a spray applied finish where specified.</p> <p>All doors subject to heavy traffic shall have kickplates both sides.</p>
08250	Door Opening Assemblies
	<p>Smoke and draft assemblies shall comply with UBC and UFC.</p>
<b>08300</b>	<b>SPECIAL DOORS</b>
08305	Access Doors
<b>08400</b>	<b>ENTRANCES AND STOREFRONTS</b>
08410	Aluminum Entrances and Storefronts
	<p>Aluminum entrances and storefronts shall pass water leak testing prior to substantial completion and prior to payment for materials and labor. Test area shall include perimeter caulk joint. All failed windows shall be retested until they pass. All retesting and associated costs shall be paid for by the contractor, via deduct change order.</p> <p>All window openings shall be thermal broke, sill flashed to exterior, and flashing end dammed. All exterior glass shall be insulating glass, except vestibule doors and windows.</p> <p>Bottom of window rough opening shall be a minimum of 12" above grade, slabs on grade, or other horizontal surfaces.</p> <p>Glass manufacturer shall provide a written warranty that shall guarantee insulating glass units for a period of ten years.</p> <p>Aluminum entrance section hardware shall meet all requirements in section 08700. Weatherstripping for exterior doors shall be continuous at head, jambs, and door bottoms.</p>

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08420	<p>Steel Entrances and Storefronts</p> <p>Steel entrances and storefronts shall pass water leak testing prior to substantial completion and prior to payment for materials and labor. Test area shall include perimeter caulk joint. All failed windows shall be retested until they pass. All retesting and associated costs shall be paid for by the contractor, via deduct change order.</p> <p>All window openings shall be thermal broke, sill flashed to exterior, and flashing end dammed. All exterior glass shall be insulating glass, except vestibule doors and windows.</p> <p>Glass manufacturer shall provide a written warranty that shall guarantee insulating glass units for a period of ten years.</p> <p>Steel entrance section hardware shall meet all requirements in section 08700. Weatherstripping for exterior doors shall be continuous at head, jambs, and door bottoms.</p>
08460	<p>Automatic Entrance Doors</p> <p><b>Automatic Entrance Doors must be approved by the NAU lockshop during design.</b></p> <p>Entrance doors shall pass water leak testing prior to substantial completion and prior to payment for materials and labor. Test area shall include perimeter caulk joint. All retesting and associated costs shall be paid for by the contractor, via deduct change order.</p> <p>Glass manufacturer shall provide a written warranty that shall guarantee insulating glass units for a period of ten years.</p> <p>Hardware shall meet all requirements in section 08700. Weatherstripping for exterior doors shall be continuous at head, jambs, and door bottoms.</p>
08500	<p><b>METAL WINDOWS</b></p> <p>Aluminum or any other type of metal sash windows shall have thermal breaks, sill flashed to the exterior, and flashing end dammed. All exterior glass shall be insulating glass.</p> <p>Glass manufacturer shall provide a written warranty that shall guarantee insulating glass units for a period of ten years.</p> <p>All windows shall pass water leak testing prior to substantial completion and prior to payment for materials and labor. Test area shall include perimeter caulk joint. All failed windows shall be retested until they pass. All retesting and associated costs shall be paid for by the contractor, via deduct change order.</p>
08600	<p><b>WOOD AND PLASTIC WINDOWS</b></p>

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Plastic Clad Wood Windows

Vinyl clad wooden windows are the preferred specified product. All exterior glass shall be insulating glass.

Glass manufacturer shall provide a written warranty that shall guarantee insulating glass units for a period of ten years.

All windows shall pass water leak testing prior to substantial completion and prior to payment for materials and labor. Test area shall include perimeter caulk joint. All failed windows shall be retested until they pass. All retesting and associated costs shall be paid for by the contractor, via deduct change order.

**08700      **HARDWARE****

### General

There is a University preference cylindrical locksets with lever handles. Best 9K series is approved with 93K being the predominant model. All new construction shall require lever handles. Brushed Chrome, 26D or 626, finish and full escutcheon plates are preferred. Lever designs shall be 15D or style to match existing locksets and must comply with all appropriate codes.

Hardware schedule shall be submitted to the architect and NAU lockshop for approval prior to ordering.

### Cylindrical Locksets

Cylindrical locks, Best 9K series are preferred for new construction and may be used in renovation projects. Rose design and finish should match the building's existing hardware. Heavy duty line shall be specified.

### Mortise Locksets

Mortise locksets may be specified when justified or to match surrounding installations. Approved model is Best 35H series or to match existing locksets.

### Electronic Locks

All electronic systems will be presented for review and approval prior to specifying. Same manufacturer shall be used for all parts to complete the system. Acceptable manufacturers:

Stand alone, electric access control (single door): Trilogy

Entire building systems: Hirsch or Keri

### Exit Devices

All exit devices will be rim type, installed with a mullion in double doors. Vertical rod systems will not be used unless necessary to make an existing doorway meet handicap code requirements for width. Finish to match other building door hardware.

Approved Model: Precision Hardware Inc., APEX Series

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### Door Closers

All door closers will have **extra heavy duty** arms and be mounted with thru bolts.  
Approved Model: LCN 4041, EDA, TB

### Door Hold Open Devices.

All hold open devices on self closing doors will release the doors automatically upon the detection of smoke or heat, max 165°.

### Cylinders and Cores

All new construction will match the University Best keying system. The Facility Services Lockshop will specify which system and the keyway to be used. **Only** original Best cylinders and interchangeable cores shall be used. Pinning and key cutting will be done by the Facility Services Lockshop. Key blanks and cylinders/cores will be provided by and paid for by the contractor and should be shipped directly to the Facility Services Lockshop

### Hinges

All doors will be mounted with three 4-1/2" x 4-1/2" full mortise hinges. Doors larger than 3'x7' will be mounted with four hinges that are the same size as above.

Approved Models:

- o Hager BB1168
- o McKinney TA2714
- o Stanley FBB168
- o Roton continuous hinge or equal continuous hinge for high traffic exterior doors

### Keying Systems

Facility Services will work with the user, the Professional Consultant, or the hardware consultant to establish the strategy for door functions. **For new facilities or major renovation the work will require a minimum of one on campus meeting involving the hardware consultant, Facility Services Lockshop, and a representative of the Building Committee.**

The hardware specification must require that locksets accommodate the "Best" core, The Contractor is to provide construction cores. The permanent cores are to be pre-paid by the Contractor and shipped directly to Facility Services Lockshop.

The Facility Services Lock Shop will remove the construction cores, install the permanent cores, and coordinate key distribution with the user following final acceptance of the project.

Construction cores will be available at the Facility Services Lock Shop for pickup by the General Contractor after change out.

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	In the event of Beneficial Occupancy prior to project completion, construction keying may be distributed to the use as an interim expedient.
08710	Finish Hardware
08720	Operators  Automatic Door Operators to allow for handicapped entrance shall be specified for at least one leaf of all building entrances. Approved Models: <ul style="list-style-type: none"><li>o Horton Easy Access, Series 7000</li><li>o LCN Auto Equalizer 4810/4820</li></ul>
08730	Weatherstripping and Seals  <u>Thresholds</u>  Thresholds shall meet ADA requirements. None shall be specified for interior doors. Preferred brand is Pemko. Thresholds shall be aluminum and rated for heavy duty traffic.
<b>08800</b>	<b>GLAZING</b>
08810	Glass  Dual pane 1" insulated glass at a minimum shall be specified on all exterior windows.  Side lights and/or door lights to be tempered float glass.  All glass within contact by pedestrian traffic to be tempered.  Individual windows or window assemblies shall be designed to easily accommodate washing of the exterior surface.  Exterior ledges of window openings shall be designed to allow proper drainage away from the window assembly, 1/2" per foot minimum.  All window assemblies shall be fully weatherstripped and gasketed.  All glass types shall be a local stock item to eliminated replacement delays.
<b>08900</b>	<b>CURTAIN WALLS/STOREFRONTS</b>  <u>General</u>  This section applies to exterior glazed curtain wall systems and storefronts (also used as fixed window systems). Curtain wall systems should be avoided on east and west exposures.



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Design Standard

The A/E shall specify that a fabricator/erector shall have a minimum of 5 years experience of similar size and scope in the fabrication and erection of systems specified in the project.

Curtain wall systems shall utilize 1", dual pane insulated glass, fully tempered.

Steel or hollow metal type system shall be specified. Aluminum alloy extrusions are not acceptable in areas that support or are directly adjacent to door openings.

"Kynar 500" or equal shall be specified for painted finishes, spray applied.

Water penetration shall not occur at a test pressure of 7.00 psf when tested in accordance to ASTM E 331.

Entrances and storefronts shall pass water leak testing prior to substantial completion and prior to payment for materials and labor. Test area shall include perimeter caulk joint. All failed windows shall be retested until they pass. All retesting and associated costs shall be paid for by the contractor, via deduct change order.

Bottom of window rough opening shall be a minimum of 12" above grade, slabs on grade, or other horizontal surfaces.

Glass manufacturer shall provide a written warranty that shall guarantee insulating glass units for a period of ten years.

Maximum air infiltration shall not exceed 0.05 cfm per gross square foot of exterior area, when tested in accordance with ASTM E 283, section 4.3.

Where doors are utilized in curtain wall assemblies, at least one section of an exterior door assembly (main ingress and egress) shall have an electric automatic door opener, button activated at the swing side, interior and exterior.

In areas where the interior clear height of curtain walls exceed 30' (possibly an atrium) an interior system(s) must be designed to facilitate window washing without the use of erected scaffolding or movable lifts. On buildings that exceed 3 stories or 40' from finish grade, an exterior window washing system shall be designed.

**\*\*\* END OF SECTION \*\*\***