

DIVISION 08 – DOORS AND WINDOWS

08 1000 –DOORS AND FRAMES

- A. Select materials, products, and design assemblies to withstand abuse, high frequency use, and minimal maintenance.
- B. Number all new doors and existing doors when modified in the project scope.
- C. Coordinate with UND Facilities Management Space Manager to verify room numbering as early in the design as possible.
- D. If remodeling an existing building, consult with UND Facilities Management to obtain existing room and door numbers.
- E. Provide vision panels or sidelights in doors of high security and high traffic areas: review preferences with the UND Building Committee and UND Facilities Management. Vision panels shall be no more than 43 inches above the floor to be usable by persons with disabilities in wheelchairs and those of short stature: this height will also allow panic devices to be mounted at approximately 40 inches above the floor. Vision panel size and installation shall conform to current Code at the time of design.
 - 1. To ensure durability, avoid full height vision panels on high frequency use doors unless constructed of aluminum or steel.
 - 2. Provide wide openings for dock areas, laboratories, and any spaces that may need to accommodate moving of oversize equipment or supplies. Wide openings may be accomplished by:
- F. High traffic delivery areas shall use a single door to maximum width of 4'-0" wide. Use of a single door is preferred versus a pair of doors in high traffic delivery areas, which must be approved by UND Facilities Management. Use of a single continuous hinge is required on any high traffic use door at or over 3'-6" width.
- G. Low traffic areas shall use either a pair of doors with minimum 3'-0" wide active leaf and minimum 1'-0" wide inactive leaf. Discuss required hardware with Facilities Management and Code Officials. Specify fire rated or non-fire rated doors without astragals to avoid using coordinators: consult with Facilities Management on other hardware options.
- H. Low traffic areas can also use a pair of doors with 3'-0" active leaves and incorporate a keyed removable mullion. Keyed mullion must use a cylinder that accepts BEST 7-pin small format interchangeable cores.
- I. Use of overhead sectional, rolling door shall be reviewed with UND Facilities Management.
 - 1. Provide labeled doors and frames where required by current Code.
- J. The use of pocket doors shall not be used.
- K. Doors and frames for specific special storage or hazardous areas shall be steel.
- L. Provide doors usable by persons with disabilities. Comply with current IBC and Americans with Disabilities Act Accessibility Guidelines to provide proper hardware, adequate approach, and maneuvering space for those in wheelchairs.

University of North Dakota

- M. Consult with UND Facilities Management before selecting fire shutters, folding doors, coiling doors, storm and/or screen doors, access doors, roof hatches, cold storage doors, sound isolations doors, power opened doors or other special use doors.
- N. Specify submissions of shop drawings for doors and frames with the associated hardware schedule.
- O. The use of fire-rated ceramic glazing with the associated frames shall be limited: review with UND Facilities Management. The installation is very costly and difficult to maintain.
 - 1. Specify that doors and/or frames that are not manufactured to specified size and planar tolerances shall be removed from the site and replaced without charge to UND Facilities Management or the project fund on the owner's behalf.
 - 2. Specify that frames that are not installed plumb, level and to specified planar tolerances shall be removed from the site and replaced without charge to UND Facilities Management or the project fund on the owners behalf.
 - 3. Hinge doors on windward jamb whenever possible to minimize damage by wind when compatible with other design concerns.
 - 4. Exterior doors shall have full insulation, closers, and weather-stripping: where no overhang exists, provide drips at head.
- P. Provide exterior overhead doors with motorized operators, full insulation and weatherstrip.
- Q. Provide penthouse doors and roof hatches with insulation and weather-stripping.
- R. At primary entries to Academic and large Residential Life buildings, use electrically operated sliding or swinging automatic entrance doors: Horton, KM, and Record are preferred manufacturers. Sliding doors shall be considered where the wind exposure is severe. Entries shall have electronic latches, monitoring and security card access. The Architect shall coordinate and clearly indicate all electrical and other interfaces required for the door operation. Review applications and locations with UND Facilities Management.
- S. Provide door and frame reinforcing at all hardware installation locations.
- T. Wood doors and frames are recommended for remodeling projects to match existing construction or design. In historic projects, special care and detailing shall be maintained. Review with UND Facilities Management.
- U. On pairs of doors, avoid vision panels and hardware visible on face of inactive leaves.
- V. In renovation projects, electrical operators shall be considered when the required accessibility clearances cause extensive remodel work. Record is the preferred manufacturer.
- W. On Special Use Doors, acoustic rated, elevator smoke enclosure, etc., specify door/frame systems when possible.
- X. The use of folding partitions shall be limited. Although requested for flexibility, sound isolation is inadequate. Review with UND Facilities Management on requested locations for folding partition.

08 1113 – HOLLOW METAL DOORS AND FRAMES

- The same manufacturer shall be used for all hollow metal doors and frames throughout the project.

October 15, 2023

- Preferred sizes for exterior doors are: 3'-0" x 7'-0" for academic and 3'-0" x 6'-8" for residential. Use 1-3/4" thick unless approve otherwise by UND Facilities Management.
- All joints shall be welded and ground smooth. Minimize use of knock down frames. Knock down frames shall only be used when approved by UND Facilities Management.
- Where grouted into masonry construction, coat interior of frames with bituminous coating approved by manufacturer.
- Factory installed reinforcing and preparation for all door hardware shall be installed by the manufacturer.
- All removable mullions shall be key operated accepting BEST 7-pin small format interchangeable cores.
- Factory corrosion resistant standard primer and galvanized finish in moist areas shall be manufacturer applied.
- Doors and frames can be field painted with alkyd enamel.
- Coordinate with UND Facilities Management for requirements on vision panels and / or sidelights. Sidelights shall have a rail at latch height of the door.
- For glazed doors use 6" minimum stile, head and center rail depth; 10" minimum bottom rail depth; 7" minimum head rail required when using parallel mount closers.
- For historic project or to match a specific door within a remodel project consult with UND Facilities Management on stile, rail, and head depths.

A. Minimum door gauge and reinforcing.

1. Steel frames.

a. Minimum 14-gauge G60 galvanized hot dipped, or factory primed. Require letter from manufacturer that frames are galvanized as specified.

b. Steel Doors.

1) Exterior Door

a) 6-gauge G60 galvanized hot dipped, or factory primed. Require letter from manufacturer where galvanized frames are used.

b) Bottom provided with weep holes or equivalent.

2) Exterior Door Reinforcing

a) Minimum 10-gauge steel or equivalent thread depth for hinges.

b) Minimum 12-gauge steel for lock front, closers, and overhead hold open/stop arms.

c) Minimum 14-gauge steel for other hardware.

d) Special reinforcing shall be used on panic hardware.

- 3) Interior Steel Doors
 - a) 18-gauge minimum.
 - b) 16-gauge and reinforced as required for doors and 3'-0" x 7'-0" with high frequency use or subject to occasional impact.
- 4) Interior Door Reinforcing
 - a) Minimum 7-gauge steel or equivalent thread depth for hinges.
 - b) Minimum 12-gauge steel for closets and overhead hold open/stop arms.
 - c) Minimum 14-gauge steel strikes and other hardware.

08 1116 – ALUMINUM DOORS AND FRAMES

- A. The same manufacturer shall be used for all aluminum doors and frames throughout the project.
 1. Frame Assembly:
 - a. Frames shall be 1³/₄" x 6" with a minimum wall thickness of 0.125" extruded aluminum. The corner brackets shall be extruded aluminum with fully welded corners and fastened with stainless steel screws.
 - b. Hinge side of the frame shall be reinforced with a full-length 1¹/₂" x 1¹/₂" x 3/16" steel angle; butts are to be tapped directly into steel angle.
 - c. Frame finishes shall be clear anodized, dark bronze anodized, black anodized or other, final finish color to be approved by UND Facilities Management.
 - d. Brush style weather stripping shall be installed where door meets frame.
 - e. Exterior sidelights and transoms shall be glazed with 1" tempered insulated low-E glazing minimum to reduce energy loss.
 - f. Interior sidelights & transoms are to be glazed with 1/4" minimum laminated or tempered glazing.
 2. Aluminum Doors:
 - a. Aluminum Door material shall be extruded aluminum with a minimum wall thickness of 0.125". The corner brackets shall be extruded aluminum with fully welded corners and fastened with stainless steel screws.
 - b. Hinge style of door shall be reinforced with a full length 3/16" x 1¹/₂" flat steel bar. The butts are to be tapped directly into the steel bar.
 - c. Doors are to have a minimum 8" top rail, 6" mid rail, 10" bottom rail and a 4¹/₂" stile. Provide a minimum of 8" stile on doors with panic devices.
 - d. Door finishes shall be clear anodized, dark bronze anodized, black anodized or other, final finish color to be approved by UND Facilities Management.

- e. Exterior door light kit glazing shall be 1" tempered insulated low-E glazing minimum to reduce energy loss.
- f. Brush style weather stripping shall be installed at the base of all exterior doors.

08 1119 – STAINLESS STEEL DOORS AND FRAMES

- A. Stainless steel doors and frames shall be used by exception only. Possible areas of use would include infectious control, environmental rooms, cage wash areas, and rack wash areas.

08 1213 – HOLLOW METAL FRAMES

- See section 081113 Hollow Metal Doors and Frames for frame information.

08 1400 – WOOD DOORS

- A. Recommended for interior doors where 20-minute fire rating is required.
 - 1. Use 7'-0" maximum height x 4'-0" maximum width, 6'-8" height for residential and 7'-0" height for academic are preferred. All doors over 3'-6" width must use a single continuous hinge.
 - 2. Use 1-3/4" minimum thickness for all academic, administrative, and residential installations. There may be limited residential situations where 1-3/8" thick doors are acceptable; review with UND Facilities Management.
 - 3. Hollow core doors shall be limited to residential applications only
 - 4. Use hollow core doors only when approved by UND Facilities Management.
- B. Gypsum core doors are **NOT ACCEPTABLE**.

08 1416 – FLUSH WOOD DOORS

- A. Flush door with standard lockset and vision panel require minimum 11" from edge of door to glazing to maintain warranty per the door manufacturer.
- B. Normally, used in interior and residential buildings. Consult with UND Facilities Management.
 - 1. Specify cut to exact size, prepared for hardware and all surfaces sealed.
 - 2. Specify lifetime warranty.
 - 3. Five ply hardwood veneer faced with hardwood edges and transparent finished is preferred. Review wood species selection with UND Facilities Management.
 - 4. Plastic laminate faced doors are not acceptable, unless approved by UND Facilities Management.
 - 5. Gypsum core doors are **NOT ACCEPTABLE**.
- A. Closet doors in residential applications
 - 1. Swinging doors are preferred.

2. If swinging doors will not meet design requirements then a quality, top hung bi-fold door shall be used over bi-pass doors.
3. Specify heavy-duty hardware.

08 1433 – STYLE AND RAIL WOOD DOORS

- A. 7" minimum stile, head and center rail depth, 11" minimum bottom rail depth for panel doors.
- B. Five ply particle board core construction equal to: (a) Algoma Super Novodor, or (b) Eggers Master Flush Particle with 6" stiles and rails, or Weyerhaeuser DFP with 6" stiles and rails. There may be historic and residential project where other door styles are more appropriate, review with UND Facilities Management.
- C. Five ply - wood stave core construction also acceptable.
- D. Use when a wood finish is desired. Factory or field applied finish is acceptable.
- E. Normally hardwood with transparent finish.
- F. Normally for non-fire rated openings, but are available shop prefabricated for 20-minute label, Review with UND Facilities Management.

08 1613 – FIBERGLASS DOORS

- A. Not to be used without prior approval from UND Facilities Management.

08 3100 – ACCESS DOORS AND PANELS

- A. Access panel locations shall be verified with UND Facilities Management.
 1. Where access panels are to be used only a keyed locking panel may be used that shall accept a BEST 7-pin small format interchangeable core.

08 3200 – SLIDING GLASS DOORS

- A. Not to be used without prior approval from UND Facilities Management.

08 3323 – OVERHEAD COILING DOORS

- A. Steel, aluminum, or wood construction may be used if installed in non-fire rated UL certified wall assembly. Avoid use in fire rated construction. Consult with UND Facilities Management for alternative solutions.
- B. Where used in fire rated construction, doors must be steel and have the following features:
 1. Smoke and draft gaskets.
 2. Labeled door and frame.
 3. Release mechanism controlled by smoke detection system that releases door when in alarm; use delayed release when acceptable to the Code and Manufacturer.

- a. Signage must be included that outlines the door will be released upon activation of the smoke or heat detection system.
- C. Easily tested and reset by maintenance personnel.
- D. Counterbalanced manual operation preferred for small sizes and with easy access to the door.
- E. Power or crank operation preferred for larger sizes or with difficult access to the door.
- F. Acoustic rated doors shall be specified as opening assemblies and are required to be field tested.
- G. Automatic Entrances
 - 1. Use at primary entries to the larger Academic and Residential Life buildings.
 - 2. May be appropriate for handicapped accessibility in remodel projects with clearances difficulties due to existing construction.

08 3613 – SECTIONAL DOORS

- A. Consult with UND Facilities Management when specifying sectional doors.

08 4113 – ALUMINUM - FRAMED ENTRANCES AND STOREFRONTS

- A. Recommended for main building entries and limited use elsewhere.
- B. Aluminum Entry Doors
 - 1. 4-1/2" minimum stile, head and center rail depth; 6-1/2" minimum bottom rail depth.
 - 2. 3'-0" x 7'-0" maximum size.
 - 3. 1-3/4" thickness.
 - 4. Anodized or high-performance paint coating, final finish color to be approved by UND Facilities Management.
 - 5. Use a thermal-break system with insulated glazing on exterior installations.
 - 6. The use of a storefront system shall be based on the require performance characteristics of the specific application. The documents shall clearly distinguish storefront from curtain wall.
 - 7. The Architect shall design storefront within reasonable limits of the manufacture's recommendations for live loads and performance. Use reasonable glass sizes.
- C. Aluminum Frames
 - 1. Generally, use 2" minimum face x 4" minimum depth.
 - 2. Provide internal steel reinforcement around door openings and for hardware installation locations.

3. Use anodized or high-performance painted coating, final finish color to be approved by UND Facilities Management.
4. Thermal break on exterior installations.

08 4413– GLAZED ALUMINUM CURTAIN WALL

- A. Curtain wall systems shall be used when the Project design requires a structural grade glazed wall system and shall be specifically identified on the Drawings and in the Specifications.
- B. Specify structural calculation to be provided with the Shop Drawings.
- C. Provide glazing appropriate for the sun and wind exposure. Fritted glazing may be used to control difficult sun exposures.
- D. Provide reasonable and adequate structural members to provide attachment points for the framing system.
- E. Butt-glazing systems are discouraged, review alternatives with UND Facilities Management prior to selection.
- F. The Architect shall design curtain wall systems within reasonable limits of the manufacture's recommendations for live loads and performance. Use reasonable glazing sizes.

08 4500 – TRANSLUCENT WALL AND ROOF ASSEMBLIES

- A. Consult with UND Facilities Management prior to proposing in design.

08 5000 – WINDOWS

- A. Require shop drawings to be submitted with full size sections and glazing details.
- B. Specify window supplier to provide all required hardware.
- C. Specify windows to have factory-installed weatherstrip. Factory installed glazing is preferred versus field installed glazing.
- D. Operable units in most locations are preferred. Consult with UND Facilities Management for each project specific requirement.
- E. Where possible, provide pivoted sash to enable cleaning of both sides of glass from inside of building. Provide hardware operable only by maintenance personnel.
- F. Provide windows with commercial grade or monumental sections except in residential or utility buildings, review selection with UND Facilities Management.
- G. Design to permit easy access for maintenance and repair.
- H. The Architect shall specify the performance criteria and the manufacturer shall provide all engineering and installation information.
- I. The Architect shall design operable sash sizes to be within reasonable limits of the manufacturer's recommendation for live loads and performance. Do maximize the sash size and select a window series compatible with the design, as approved by UND Facilities Management.

08 5113 – ALUMINUM WINDOWS

- A. Aluminum window finish shall be anodized or high-performance coating, final finish color to be approved by UND Facilities Management.
- B. Use thermal break aluminum windows for exterior applications.
- C. Insect screens with aluminum fabric shall be provided on all operable windows.

08 5200 – WOOD WINDOWS

- A. Wood window construction
 - 1. Aluminum is preferred over steel or primed wood. Primed and finished wood shall only be used when approved by UND Facilities Management.
 - 2. Aluminum clad wood windows with a high-performance coating are preferred over vinyl clad wood windows. Final finish including color to be approved by UND Facilities Management.

08 5313 – VINYL WINDOWS

- A. Shall only be used by prior approval from UND Facilities Management.

08 5413 – FIBERGLASS WINDOWS

- A. Shall only be used by prior approval from UND Facilities Management.

08 6150 – CLERESTORY WINDOWS

- A. Clerestory windows are preferred over skylights. Consult with UND Facilities Management during the design phase if skylights are being proposed for a project.
- B. Avoid curved glazing.
- C. Avoid plastic or fiber reinforced sandwich style glazing or panels.
- D. Design to permit easy access for maintenance, repair, and cleaning.

08 6200 – UNIT SKYLIGHTS

- A. Skylights shall be limited and shall only be approved by UND Facilities Management.

08 6223 – TUBULAR SKYLIGHTS

- A. Shall only be used by prior approval from UND Facilities Management.

08 6300 – METAL-FRAMED SKYLIGHTS

- A. Shall only be used by prior approval from UND Facilities Management.

08 7100 – DOOR HARDWARE

- A. General

University of North Dakota

1. Determine requirements of door of hardware and keying with building committee and UND Facilities Management during the Design Development phase.
 2. Specify submission of complete hardware schedule to be reviewed by UND Facilities Management at Design Development phase, Construction Documents and Shop Drawings.
 3. Hardware must be included in the base bid, not as an allowance.
 4. Specify that hardware supplier provides templates to door and frame suppliers.
 5. Specify the Contractor shall provide skilled and experienced installers. Installation shall be in accordance with the manufacturer's recommendations.
 6. Specify that UND Facilities Management shall inspect the entire hardware installation on the project and the Contractor shall repair all defects before final acceptance will be issued.
 7. All door hardware items shall match primary door finish, if door is to be painted a US26D finish shall be used. Other finishes shall be by approval of UND Facilities Management.
 8. Handles, pulls, latches, locks, and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides. Hardware required for accessible door passage shall be mounted no higher than 48 inches above finished floor.
- B. Hinges – General
1. Specify heavy weight concealed bearing for high frequency use and standard weight concealed bearing for medium and low frequency use.
 2. Specify flat style pins that are non-removable for exterior and interior doors that swing out; otherwise specify non-rising pins.
 3. Specify hinge to require no maintenance or lubrication.
 4. Specify hinge guaranteed for life of building if installed per manufacturer's recommendations.
 5. Specify Stanley CB 168 series, five knuckle hinges; US26D (brushed chrome or silver) primary finish or other finish to match new or existing conditions as approved by UND Facilities Management. An example would be a re-window / door project in which we are using Dark Bronze finish.
- C. Panic Devices – General
1. Von Duprin 98/99 series and 33/35a series, US26D or other approved by UND Facilities Management. Use style 17 lever.
 2. Specify lock cylinders that will accept a BEST 7-pin small format interchangeable core as required for locking panic devices and associated keyed switches.
 3. Do not use thumb piece operation.

University of North Dakota

4. Avoid coordinators and automatic flush bolts wherever possible. Consult with UND Facilities Management if use is required.
5. Rim devices and mullions are preferred over vertical rod devices.
6. Removable mullions shall use BEST 7-pin small format interchangeable cores to be keyed and removable.
7. Surface rod devices are preferred over concealed rod devices.
8. Avoid use of vertical rod devices wherever possible. Vertical rod usage must be approved by UND Facilities Management if required by design.
9. Specify that vertical rod hardware be checked and adjusted by a qualified manufacturing field representative:
 - a. During hardware installation.
 - b. Before final acceptance and turnover of the space.
 - c. Six months after building occupancy.

D. Locksets – General

1. Provide lever handles (ADA compliant) to all spaces BEST 9k series lever handle 14D.
2. Specify BEST 7-pin small format interchangeable core compatible lock cylinders and curved lip strikes for all Stanley/BEST locksets.
3. All interior and exterior doors shall latch regardless of hardware.
 - a. New construction:
 - 1) Cylinder lockset: Are the preferred method for all doors, the use of mortise locksets shall only be used when absolutely necessary and will need approval by UND Facilities Management.
 - a) Standard door backset shall be 2 ¾”.
 - b) BEST series 9k or Schlage ND
 - c) Lever & Trim: BEST 14D or Schlage Sparta (SPA)
 - 2) Mortise lockset – by prior approval from UND Facilities Management.
 - a) BEST series 45H or Schlage L Series
 - b) Lever & Trim: BEST 14H or 17N
 - 3) At aluminum entry doors, locksets latching to the floor are not acceptable.
 - 4) On aluminum entry doors, the manufacture’s “standard” hardware shall not be used. Specify BEST.
 - 5) Cylinders: Ability to accept BEST 7-pin small format interchangeable cores. **NO SUBSTITUTIONS**

- b. Remodel of existing academic administration and large residential buildings.
 - 1) Match existing series and finish where possible.
 - 2) Use lever handles.
- c. Lock Functions:
 - 1) Use F86 (Storeroom) function for custodial closets and mechanical/electrical/data/ telephone spaces.
 - 2) Use F81 (Dormitory or Storeroom w/ thumb turn) functions for all offices, research laboratories, classrooms, and classroom laboratories.
 - 3) Use F90 (Dormitory) function or F54 function for dormitory rooms. Verify function with UND Facilities Management.
 - 4) Use F87 (Communicating) function for all roof access areas.
 - 5) Other functions may be used for special conditions by approval from UND Facilities Management.
 - 6) Design consultant to verify desired hardware functions and keying requirements with building committee. Provide the preliminary and final hardware schedule to UND Facilities Management for review and approval.
- d. Remodel of existing small residential buildings.
 - 1) Cylinder lockset; BEST 9k series lever & Trim: BEST 14D

E. Closers – General

- 1. Specify LCN 4040 XP / 4040 - 4041 series closures.
- 2. Closures shall be surface mounted, regular arm mount preferred. Closers shall not be mounted in hallways or highly visible areas. Provide an extra heavy-duty arm when closer is installed with a parallel arm mounting.
- 3. Closers used as doorstops are not acceptable.
- 4. Specify closers to meet opening resistance requirements by Americans with Disabilities Act Accessibility Guidelines, yet close door properly. Where manual closers prevent compliance, install slow opening power door operators.
- 5. Where fire doors are likely to be propped open by occupants for their convenience, magnetic hold-open devices shall be used, integral closer-holders and closers with swing-free arms, each of which permit closing of fire doors when the fire detection system is in alarm.
- 6. Wall mounted magnetic hold open devices are preferred over integral closer holders where possible.

University of North Dakota

7. LCN Sentronic single-point and multi-point integral closer holders shall be considered within budgetary concerns.
8. Attach closers to wooden or mineral core doors using through bolts.
9. Specify minimum 10-year warranty.

F. Power Door Openers – General

1. Standard Record 8100 Series shall be specified – Substitutions by approval of Facilities Management.
2. Consult with UND Facilities Management where power door operators must interface with security requirements to allow access of persons with disabilities when building is locked.
3. Where maximum durability is required for high frequency operation. Horton, Inc. new installations, horizontal sliding doors are preferred.
4. Power openers shall include a “soft close” function where possible air and wind pressure will interfere with door closing.

G. Kick Plates and Push Plates – General

1. Use on push side of doors, especially wood doors.
2. Provide non-rusting stainless steel or other by approval of UND Facilities Management to match other hardware finishes.
3. Specify metal kick-plates 16” high by width of door less 2 inches, mounted flush with bottom of door.
4. Hi traffic delivery areas such as loading docks, laboratories and any other space that has multiple deliveries or requires large items to be moved frequently shall have half height or 34” tall minimum stainless steel kick plates installed.
5. Double acting doors shall have kickplates on both sides of each door.
6. Bottom edge of all kickplates even with bottom of door.
7. Centered within width of door on push side.
8. Restrooms that are designed with doors that swing into the restroom shall use commercial restroom foot pulls – (StepNpull Silver Finish) provided and installed by contractor – avoid mounting flush with base of door to help prevent tolerance issues with flooring.
9. UND prefers door-less designs for restroom entry / exits the use of a push/pull style of doors are acceptable and doors are to swing out of restroom unless not feasible with design.

H. Flush Bolts – General

1. Avoid automatic flush bolts.

University of North Dakota

2. Acceptable vendors if flush bolts must be used: Ives, Door Controls, Glynn-Johnson. Flush bolts need prior approval from UND Facilities Management.
3. Where self-latching flush bolts must be used:
 - a. Verify with Facilities Management prior to specification.
 - 1) Specify Ives 356 for labeled wood doors.
 - 2) Specify Ives 357 for labeled metal doors.
 - b. Where manual flush bolts must be used, specify:
 - 1) Specify Ives 358 or approved equal for labeled wood doors.
 - 2) Specify Ives 458 or approved equal for labeled metal doors, and
 - 3) Specify Ives 262 or approved equal for non-labeled doors.

I. Door Stops – General

1. Acceptable vendors: Ives, Hager, Burns.
2. Wall bumper / stops are preferred over any other type of stops.
3. Solid convex style stops should be used versus hollow concave stops. Solid stops should be installed as not to interfere with push button thumb turns on door handles. The stop should interface with the handle and in no way touch the thumb turn to prevent accidental locking.
4. Provide solid anchor points and backup framing in hollow wall cavities for wall bumpers.
5. Do not use floor stops except as specifically required by manufacturer of magnetic hold opens, closer holders and overhead stops.
6. Consult with UND Facilities Management for alternative solutions.

J. Overhead Stops & Holder/Stops – General

1. Avoid concealed types.
2. Acceptable vendors: Glynn-Johnson (90 series), Rixson (9 series) and Sargent (590 series).
3. Specify type which slides in captive track.
4. When specifying a holder incorporate into closure hardware where possible.
5. Prefer Glynn-Johnson 90FS series or approved equal.
 - a. Suffix S-stop only.
 - b. Suffix F-friction Hold Open—Series 90S or 90F.

K. Coordinators – General

University of North Dakota

1. Avoid use of coordinators when possible. Consult with UND Facilities Management to discuss alternative solutions.
2. Where coordinators must be used, specify Ives 469 series or approved equal for doors requiring frequent operation of coordinator, or Ives 900 series or approved equal for doors rarely operated or magnetically held open.

L. Keying – General

1. Specify BEST 7 pin restricted.
2. Specify BEST to furnish cores and key blanks to the approved vendor for pinning of cores on projects over 50 doors. For projects under 50 doors, all cores and key blanks will be delivered directly to UND Facilities Management Lock Shop.
 - a. Facilities Management will provide keying instructions directly to the approved vendor for projects over 50 doors. For projects under 50 doors, all keying schedules will be completed by UND Facilities Management Lock Shop.
 - b. Contractor is to turn over all cores a minimum of 90 working days prior to move-in for projects not meeting the 50-door threshold. Those projects over 50 doors should be delivered 30 days prior to move in to UND Facilities Management Lock Shop or to the UND Facilities Management Project Manager for the project.
 - c. Specify as noted:
 - 1) Cylinders including all components of the cylinder to be installed by the project Contractor.
 - 2) Cores and key blanks (quantity to be determined during keying meeting) to be turned over to Facilities Management for project that contain less than 50 doors.
 - d. Keyway of new cores is chosen by UND Facilities Management during initial keying meetings based on current keyways utilized on campus. Keying meeting shall be scheduled during Design Development phase. All Custodial, Mechanical, Telecom, or Electrical to be BEST (TC) keyway. All exterior doors to be BEST (BA) Keyway.
3. Elevator key Switches:
 - a. Elevator manufacture to furnish pre-installed switches in elevator prior to delivery.
 - b. Contractor to forward keys to UND Facilities Management Lock Shop.
 - c. Keyed access switches not directly tied to elevator maintenance or fire operation shall accept BEST 7-pin small format interchangeable core compatible cylinders.

M. Hardware Installation Locations – General

1. General: Location of all hardware shall be indicated on the Construction Documents and shall conform to current Code requirements.
 - a. New Buildings
 - 1) Hinges:

- a) Top hinge: Manufacturer's standard range of 7" to 10" from frame head rabbet to centerline of hinge. Prefer 7-1/4". Not more than bottom hinge location dimension.
- b) Bottom hinge: Manufacturer's standard range of 9" to 13" from finished floor to centerline of hinge. Prefer 12-1/4". Not less than top hinge location dimension.
- c) Center hinge(s): Equal spaced between top and bottom hinges.
- 2) Latch/Locksets and Panic Bars:
 - a) Centerline of bolt for latch sets and lock sets: 40-5/16" above finish floor or as specified by manufacturer.
 - b) Centerline of panic device touch bars: 39-13/16" above finish floor or as specified by manufacturer (Von Duprin 98/99 series).
- 3) Deadbolts:
 - a) Centerline of bolt: 48" above finish floor.
 - b) Not to be used on any exit doors or locations not permitted by current code.
 - c) Double locking deadbolts shall not be used in any case.
 - d) Deadbolt Model: BEST HD 8T37K-STK-626
- 4) Pulls and Push Plates:
 - a) Centerline of pulls: 42" above finish floor and 1/2 Stile to centerline horizontally.
 - b) Centerline of push plates: 45" above finish floor.
 - c) Acceptable Vendors: Rockwood
- b. Remodeling Existing Buildings:
 - 1) Match existing locations except when current codes dictate otherwise.
 - 2) State specific locations of existing hardware, such as "... centerline 36 inches above finished floor", instead of using a general phrase such as "match existing".
- N. Exterior: All exterior doors shall latch.
 - 1. Hinges – Exterior
 - a. Acceptable vendors: Ives, Stanley, Hager, & McKinney.

- b. Stainless Steel preferred or plated non-ferrous.
- 2. Panic Devices – Exterior
 - a. Von Duprin 98/99 series and 33/35a series, US26D or other approved by UND Facilities Management. Use style 17 lever.
- 3. Weather-strip – Exterior
 - a. Acceptable vendors: Pemoko, NGP, Reese & Zero.
 - b. Head and Jamb
 - 1) Prefer small, angled brush type with recessed screws. Reese 961D or approved equal.
 - 2) Second choice is high performance polyurethane bulb (jamb up) type with screws recessed to avoid snagging skin or clothing. Reese 769D or approved equal.
 - c. Sweeps and Astragals
 - 1) Prefer straight brush type.
 - 2) Specify Reese 964D or approved equal at astragal locations and Reese 967D or approved equal at sweep locations.
- 4. Thresholds – Exterior
 - a. Specify maximum 1/2 inch high with low slope ramps each side. Reese S206A or approved equal. Dimensions - 6" wide by 1/2" high (Continuous).
 - b. Lower thresholds preferred at weather protected entrances. Reese S406A or approved equal. Dimensions - 6" wide by 1/4" high (Continuous)
 - c. Finish - Clear aluminum or stainless steel.
- 5. Drips – Exterior—sweep with integral astragal.
 - a. Acceptable vendors: Reese series 354 or approved equal.
 - b. Specify at non-weather protected entrances.
 - c. Specify Reese R199D or approved equal at head frame locations.
 - d. Specify Reese R201D or approved equal at door sweep locations.
- O. Interior
 - 1. Hinges – Interior
 - a. Typically, plated steel.

- b. Non-ferrous or stainless steel in high humidity or wet locations.
- 2. Panic Devices – Interior – Specify only in rated assembly walls or as required by current code.
 - a. Specify fire rated devices.
 - b. Specify Von Duprin 98/99 series with panic hardware.
- 3. Smoke Seals – Interior
 - a. Prefer high performance polyurethane bulb (jamb up) type with screws recessed to avoid snagging skin or clothing. Reese 769D or approve equal.
- 4. Door Bottoms – Interior
 - a. Avoid automatic door bottoms except for very low frequency use doors.
 - b. Prefer alternative solution using low threshold and sweep where possible.
- 5. Closet Door Hardware – Interior
 - a. Swinging Doors:
 - 1) Prefer Sargent 6500 series.
 - b. Sliding/Bi-Fold Doors
 - 1) Where sliding or bi-fold doors must be used, specify heavy-duty hardware.

08 8000 – GLAZING

- A. Meet or exceed applicable Code requirements. Identify the glazing types and areas where to be used on the Construction Documents.
- B. Glazing selection is integral to the thermal performance of a building and shall be carefully selected and specified. This shall not be a budget or purely aesthetically driven selection. Any value engineering shall be only by approval from UND Facilities Management.
- C. Exterior glazing shall be in insulated glazing units with a warranty period of not less than ten years.
- D. Specify Low-E glass.
- E. Review, during the design process, high-performance glazing, exterior shading, and daylighting devices with UND Facilities Management to verify these devices fall within the design and budget constraints, these design features are desirable.
- F. Electrochromic glazing should be considered on large south facing facades if budget permits. Discuss with UND Facilities Management during design phases.
- G. Door Vision Panels
 - 1. Provide safety glass in non-fire rated doors.

2. Fire Rated doors shall maintain current code requirements for vision panels.

08 8300 – MIRRORS

- A. In restrooms, one large mirror is preferred over small individual mirrors over lavatories. If size of mirrors is too large, mirrors may be split in half; however, should still have no gap between mirror sections.
- B. Stainless steel welded frame mirrors are preferred.
- C. Specify vandal resistant concealed mounting.
- D. In residence type buildings, review the specific requirements with UND Facilities Management.
- E. For the installation, comply with all ADA Accessibility Guidelines.

08 8717 – SAFETY AND SECURITY GLAZING FILMS

- A. Multi-layered laminated glass offers different levels of fire-resistance but is costly. Ceramic glazing is generally discouraged because maintenance issue as well as cost. Size openings according to the tested application with the proper edge engagement and frame system. Fire-rated glazing shall be selected appropriate to the application and budget; review with UND Facilities Management.
- B. Prefer transoms to be safety glazed.
- C. Multi-layered laminated glass shall be used in high security area. Security glazing shall be selected appropriate to the application and shall be reviewed with UND Facilities Management.
- D. Heavy duty polyester type films may be acceptable for high security areas. By approval only of UND Facilities Management and the UND Office of Safety.

08 9100 - LOUVERS

- B. Louvers
 1. When louvers are design elements, Architectural grade products shall be specified.
 2. Provide bird screens mounted on the exterior face of louvers to avoid bird nesting.
- C. Screens
 1. Privacy screens shall be copper or aluminum.
 2. Except in residential type buildings, insect screens are not required.

END OF DIVISION 08