

Division 8 – Openings

- 08.1. General
- a. Doors and hardware are to be coordinated with the requirements of the **SECURITY SECTION IN CHAPTER THREE** of these standards and **APPENDIX T-ELECTRONIC ACCESS CONTROL & CONDUIT DIAGRAMS**.
 - b. The A/E shall specify all hardware in a separate hardware section. Storefront door hardware shall be included in this hardware section and not in the storefront specification.
- 08.2. Exterior Building Entry Doors
- a. The A/E shall consider wind direction, microclimate conditions and wind pressures when designing building entrances. Entry doors in the north and east facades of buildings are subject to high winds. Consider ways to provide windscreens for all exterior doors, but especially the north and east.
 - b. All exterior building entries shall be arranged using a vestibule or "airlock" to avoid excessive exchange of conditioned indoor and unconditioned outdoor air.
- 08.3. Interior Doors
- a. Clear glazed vision panels shall be used in all classroom and stair doors.
 - b. When double doors are necessary at card access locations, provide a removable mullion.
- 08.4. Hollow Metal Doors and Frames
- a. All non-entrance exterior doors shall be steel or fiberglass.
 - b. Mechanical Room doors must be 42" wide single leaf or 60" pair.
 - c. All hollow metal exterior doors shall not be less than 16 gauge galvanized steel (prior to the addition of coatings) fully insulated doors with the top channel turned 'web up' to eliminate dirt pockets. Doors shall carry a lifetime manufacturer's guarantee.
 - d. Other interior hollow metal doors shall be minimum 0.42 in, 1. mm, 18 ga. face sheets, prior to the addition of coatings. Solid grout head and jambs in high traffic or abuse locations. All steel frames shall be reinforced for scheduled hardware.
 - e. Hollow metal door frames shall be one piece fully welded assemblies of not less than 16 gauge metal. Hollow metal knock down frames are allowed for interior renovations only - if approved by the university. Frames in interior walls of up to 8" thick shall be the full thickness of wall.
 - f. Exterior metal frames shall be fully grouted. Specify shop-applied asphaltic frame undercoating for surfaces of frames that will be in contact with grout
 - g. A preference of an A-60 (ZF 180) metallic coated steel sheet with factory primed finish after fabrication for standard exterior door frames and A-40 (ZF 120) for standard interior door frames. Typical primed frames do not offer enough corrosion resistance for the intended life span of a building and an A-60 coating is better capable of withstanding the local environment.
 - h. All exterior doors shall be provided with automatically engaging door bottom weather-strip devices.
 - i. Spliced frames are not acceptable.
- 08.5. Flush Wood Doors
- a. In all facilities discuss with the users any potential oversized equipment and or furniture that may need to be maneuvered within the building such as mass spectrometers or athletic equipment. Coordinate door width and heights to accommodate these, whether installed at the opening of a building or planned for the future.
 - b. Wood doors shall be five plies, solid core with a minimum thickness of one and three-fourths inch (1 $\frac{3}{4}$ "), and a lifetime warranty.

- c. Wood doors shall be solid core and shall be reinforced for all hardware including closers; prime or seal all hardware cut outs and top and bottom of door. All doors shall be pre-finished with face veneers book-matched. Coordinate door veneers with adjacent existing doors, if any. Verify door veneer selection with the university.
 - d. Bi-fold or bi-passing doors are prohibited.
 - e. Exterior wood doors are prohibited.
 - f. Guarantee shall be a lifetime guarantee.
 - g. Interior paint grade, painted wood doors are prohibited, unless approved due to an existing condition, such as a renovation project.
- 08.6. Thermally Fused Laminate Doors
- a. Thermally fused doors are an acceptable alternative to interior wood doors.
- 08.7. Access Doors and Frames
- a. All access panels shall be fiberglass or metal. Provide access doors to attics, roofs, crawl spaces, valves, switches, concealed devices, tunnels and/or other similar areas where university personnel require access for maintenance or repair activities. Access panels shall be shown on reflected ceiling plans for layout and coordination. If there appears to be too many access panels in a hard ceiling, an accessible ceiling is desired. Provide key locks on all access openings that are exposed to the public. In Residence Halls, provided key locks or tamper proof screws at all access panels located in student rooms in addition to those located in public spaces.
- 08.8. Overhead Coiling Doors | Sectional Doors
- a. Metal curtain rolling counter doors: Finish – Clear Anodized aluminum slats. Extruded aluminum guides. Aluminum hood, stainless guides and aluminum bottom bar. Cylinder lock with removable core. Interlocking flat profile slats with endlocks.
 - b. Exterior insulated heavy duty rolling service doors: 24 gauge galvanized steel front and back, interlocking flat profile slats with endlocks. Hood is 24 gauge galvanized steel. Provide chain hoist operation or electric. Weather-stripping on the exterior and interior side of the guides, on the bottom bar and the hood lintel. Provide a zinc enriched powder coat finish.
 - c. Multiple control locations may be required for operators. Include wall penetrations, pathways, stubs, pavement penetrations and exterior conduit for exterior controls. Controls shall be up/down/stop.
 - d. Outside key switch or card swipe shall be coordinated with security requirements.
- 08.9. Aluminum-Framed Entrances and Storefronts
- a. Aluminum doors shall be medium stile, thermal break construction with 10" bottom rail to accommodate wheelchairs.
 - b. Standard finish colors are clear anodized, powder coated silver, white or steel gray (College of Education). Custom Colors are to be approved by the university.
 - c. When designing exit vestibules, consider where pull stations are mounted to meet code.
- 08.10. Glazed Aluminum Curtain Walls
- a. Where curtain walls are used, they shall be NFRC rated to provide a minimum total thermal resistance of at least R-6, including the frame and the glass.
 - b. When specifying curtain wall system consider thermal properties for heat gain and cold conditions, insulating properties and subsequent mechanical load impact.
- 08.11. Aluminum Windows

- a. In general window frames shall be thermally broken 2" x 4-1/2" heavy commercial aluminum windows, flush dry glazed from the interior.
- b. In residence halls, if fiberglass windows are being considered as a design option, discuss with the Department of Design and Construction during schematic design.
- c. Prior to acceptance by the University, proposed manufacturers must provide to the ODU Project Manager copies of test reports by an independent laboratory which certify the proposed window unit's performance standard baseline. The test reports will identify the standards used and provide documentation of those standards.
- d. Written guarantee shall state that all components will meet specified performance requirements for a period of 2 years following acceptance and that defects will be repaired during the term of the guarantee at no cost to the University
- e. Weather stripping shall be guaranteed for a period of 5 years.
- f. Standard finish colors are clear anodized, powder coated silver, white or steel gray (College of Education). Custom Colors are to be approved by the university.
- g. All pre-finished windows shall have protective coverings during construction, until units are installed.
- h. Window selection shall consider the window styles of surrounding buildings and visually adjacent windows.
- i. In residence halls, all operable windows on the first floor shall have security screens.

08.12. Sun Shades

- a. The design shall incorporate sun shade devices as appropriate for the sun angles on each specific elevation. Sun shade devices should not be added to windows on elevations where the impact is minimal. Consider vertical shading devices on east and west facades. Provide a sun study of the building exterior during schematic design demonstrating the impact of the shading devices on the glass, estimate the percentage area of glass shaded by these devices for June and December at 8 a.m., noon and 5 p.m.

08.13. Metal Framed Skylights

- a. Skylights shall not be used in any occupiable spaces, including corridors.
- b. Solar tubes are acceptable.

08.14. Door Hardware

- a. Pre-wire / pre-drill all potential card access doors.
- b. All doors and frames shall be prepped by the manufacturer for all hardware to be provided by the University.
- c. Provide at least one key override on an exterior door in each building. Provide rim cylinder only with night latch trim, pull handles.
- d. During the working drawing phase, the A/E shall meet with the ODU Project Manager, the FM lock shop supervisor and ITS access control to review the program needs for locks and hardware in the proposed project, using the security and access plan developed during schematic design as the discussion guide.
- e. A first pass of the door hardware schedule and hardware specifications is required at 60% Working Drawings Progress review. The ODU Project Manager will set up a separate hardware meeting with the Lock Shop Supervisor, representatives of the building users along with ITS and Public Safety/Campus Security to review the hardware design. As stated previously in these standards, but reinforced here,

- building room numbers are to have been finalized and approved by the University Space Manager, prior to this meeting.
- f. The A/E shall specify all required hardware for each opening. One manufacturer shall be scheduled with two other acceptable manufacturers listed. All hardware shall be approved by the University. A complete hardware schedule and full set of specifications is required at the owner review working drawing submission, which is prior to BCOM Working Drawing submission.
 - g. Prior to shop drawing submission, a hardware coordination meeting is to be scheduled by the general contractor to include the ODU project manager, the A/E, user groups, ITS and the Facilities lock shop to discuss project specific issues related to lock functions, coordination and delivery. The Contractor shall prepare the final keying schedule based on this meeting that clearly indicates how the University's final instructions on keying of locks has been fulfilled and submit it as part of the hardware submittal process.
 - h. The General Contractor shall procure all cylinders and cores and install same. Construction cores may be installed by the contractor during construction, but shall be removed prior to beneficial occupancy.
 - i. Furnish three (3) keys per lockset or as directed by the ODU Project Manager.
 - j. Single Source Responsibility: Obtain each type of hardware latch and locksets, hinges, closers, etc. from a single manufacturer.
 - i. Hardware Finishes:
 1. The designations used to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
 - a. Continuous Hinges: 628 (US28) Clear Anodized Aluminum
 - b. Door Closers: 689 Powder Coat Aluminum
 - c. Door Stops: 626 (US26D) Satin Chrome Plated Brass/Bronze
 - d. Exit Devices: 626 (US26D) Satin Chrome Plated
 - e. Flush Bolts: 626 (US26D) Satin Chrome Plated Brass/Bronze
 - f. Hinges (Exterior): 630 (US32D) Satin Stainless Steel
 - g. Hinges (Interior): 626 (US26D) Satin Chrome Plated Steel
 - h. Locks: 630 (US32D) Satin Stainless Steel
 - i. Overhead Holders: 630 Satin Stainless Steel
 - j. Protective Plates: 630 (US32D) Satin Stainless Steel
 - k. Pull Plates: 630 (US32D) Satin Stainless Steel
 - ii. Heavy Weight and Standard Weight Hinges:
 - iii. Concealed Bearing 5 Knuckle Full Mortise Hinges.
 - iv. Lifespan Bearing System
 - ~~v. Painted Hinges are not acceptable.~~
 - ~~vi.v.~~ Non-removable pins (NRP) – All locations
 - ~~vii.vi.~~ Concealed Electric Hinges
 1. Heavy Weight
 2. Concealed Bearing 5 Knuckle Full Mortise Hinge
 3. Concealed wires
 4. Concealed switches
 5. Shop weld junction box before frame is set

~~viii-vii.~~ Painted Hinges are not acceptable.

~~ix-viii.~~ Aluminum Continuous Geared Hinges

1. Provide heavy duty continuous hinges at all exterior entrance doors, including interior vestibule doors.
2. Provide heavy duty continuous hinges at all rated wood doors (due to weight).
3. Prep for electrical power transfer unit.
4. Quick connect wire harness.
5. Concealed Electric

~~x-ix.~~ Heavy Duty Mortise Locks

1. BHMA Grade 1 Operation and Strength, Grade 2 Security
2. Lever to match Best 40H Series Lever 14
3. Rose to match Best 40H Series Rose H

~~xi-x.~~ Mortise Cylinder

1. 3 Year manufacturer Warranty
2. BEST 1E series
3. BEST 1CP (premium) Core
4. 7 Pin Core
5. Finish: 626 satin chromium plated (brass base material)

Key box – reference Owens House

~~xii-xi.~~ Rim Exit Devices

1. Acceptable manufacturers

a. Von Duprin

b.

c.

2. Provide QEL (Quiet Latch Retraction).
3. Provide quick connect plugs at rim exit devices, mullions and electrified hinges.
4. Motorized Latch Retraction w/ power supply, Precision is preferred.
5. Electrical Power Transfer – preinstalled 12 wire harness w/ quick connect plug-in connectors
6. Hex key dogging or less dogging, cylinder dogging is acceptable.
7. Door Position Monitoring Switch provided by the hardware manufacturer.
8. Trim – Rectangular trim with “wire” pull. (APEX 1700C “C” Grip)
9. Vandal Resistant Trim (Apex 4900D “D” Grip)
10. Single doors secure better than double doors. Use of single doors is preferred unless double doors are needed for moving equipment in and out of the building.
11. When double doors are required, the A/E should consider the design and use of doors on a hold open. **instead of a series of single doors, provide a keyed removable mullion.**

~~xiii-xii.~~ Surface or Concealed Vertical Rod Exit Devices

1. BHMA ANSI 156.3 Grade 1
2. Avoid concealed or surface mounted vertical rod exit device
3. Avoid cross bar exit device

~~xiv-xiii.~~ Swinging Door Hardware

1. Deadbolt - ANSI/BHMA Type E8211 (Grade 1)
 - i. Steel case with corrosion-resistant plating

- ii. 5/8" x 1-3/8" x 2-7/8" bolt with a 1-3/8" throw made of eight ply laminated stainless steel.
Center ply to be an alumina-ceramic core to defeat hacksaw attack.

xv-xiv. Door Closer

1. Acceptable Manufacturers
 - a. Closers at light weight doors, offices and Residence Hall student room doors.
 - i. Yale
 - ii. Falcon
 - iii. LCN
 - b. Exterior, heavy doors, classrooms, project rooms, residence hall community rooms.
 - i. LCN
 - ii. Falcon
 - iii. Stanley
2. R-14 die cast Aluminum Alloy Cylinder Body – institutional grade
3. Fully Hydraulic Checking
4. All season fluid
5. Back-checking start at 45 degrees
6. Heavy duty forged arms
7. Separate adjustments for backcheck, general and latch speeds
8. All door closers shall be heavy-duty cast iron or die cast aluminum alloy with a minimum 10-year warranty.
9. Closers shall be thru-bolted to doors at a minimum height of 80" A.F.F.
10. All interior door closers shall be provided with automatic hold-open devices.
11. Where cross corridors doors are desired to remain in the open position, provide magnetic hold open devices.

xvi-xv. Concealed Mount, Heavy Duty Overhead Closers

1. Non-handed
2. 85 to 110 degrees of opening in 5 degree increments
3. Shock absorbing spring with 3 to 5 degrees of cushion before dead-stop

xvii-xvi. Flush Bolts, Strikes

1. Avoid flush bolts whenever possible. Use keyed mullions and rim exit devices instead.
2. Provide dust proof floor strikes
3. Adjustable height for carpeted areas

xviii-xvii. Electric Strikes

1. Acceptable manufacturers
 - a. HES
 - b. Von Duprin
 - c. ?

xix-xviii. Automatic Operators

1. Acceptable manufacturers
 - a. Beasm
 - b. Stanley
 - c. LCN

2. If there are a series of doors, both doors in the series must have automatic openers. Each door shall open independently.
3. Automatic Door Operators and switch shall be hard-wired into the emergency circuit and be provided with battery backup.
4. Field adjustable
5. Adjustable Spring Force
6. Non Handed
7. Full or low energy
8. Acts as a mechanical closer for manual operation in the event power is off.
9. Controller configuration via Bluetooth Technology
10. Header height = 6"
11. Automatic Reset
12. Provide wave actuators instead of push pads to operate doors.

xx-xix. Overhead Door Holder and Stop

1. Heavy-Duty
2. Stop function to be Warnock Hersey Listed
3. Non-handed/reversible
4. Single point hold-open in increments of 5" from 85" to 110"
5. Hold open know can be disengaged to act as stop only
6. 5" to 7" shock compression following hold-open point

xxi-xx. Push Pull Plates

1. Push Plates: 4" x 16" square corners
2. Pull Plates: 4" x 16" with Wire Pull Grip or Wire Pull Offset Grip

xxii-xxi. Kick Plates

1. Provide stainless steel 6" high kick plates on all janitorial/custodial rooms – both sides of door.
2. Doors subject to abuse by the frequent moving of equipment or based on function shall have kick plates.

xxiii-xxii. Door Stops

1. Door Stops that would allow a door to be propped open shall not be specified or used in any space on campus. Door stops that are found in buildings, post occupancy will be removed and disposed of, due to potential fire safety concerns.
2. Door or Floor mounted stops shall not be used.
3. Use Heavy Duty Stops in most areas except for private offices
4. Use Wall Stops with convex bumper, concealed mounting with back plate. Provide solid blocking at all locations.

xxiv-xxiii. Silencers

1. Provide BHMA LO3011 silencers in all metal frames

xxv-xxiv. Weather Seals

1. Provide neoprene door sweeps on all active exterior doors and service doors
2. Provide Silicone Bulb seals on all exterior doors
3. Heavy Duty Mortise Automatic Door Bottoms at exterior entry doors.

- ~~xxvi-xxv.~~ Gaskets
 - 1. All classroom doors shall receive screw on sound gaskets (no self-adhesive)
- ~~xxvii-xxvi.~~ Automatic Door Bottoms
 - 1. Are acceptable
- ~~xxviii-xxvii.~~ Rain Drip guards
 - 1. Provide 1 ½" high x 2 ½" deep (min) rain drip guard in clear anodized at all exterior doors that are installed in a flush application (i.e. without any building overhang).
- ~~xxix-xxviii.~~ Electromagnetic Door Holders
 - 1. Recessed wall mount or surface wall mount depending on application.
 - 2. Reinforce Door at hold open.
- ~~xxx-xxix.~~ Long Door Pulls
 - 1. Provide a contrasting finish in the grip zone.
 - 2. 1" Diameter
 - 3. Offset Pulls with round ends
- ~~xxxi-xxx.~~ Networked Hardwired electronic Locks
 - 1. Refer to **APPENDIX Q – ELECTRONIC ACCESS CONTROL**
- ~~xxxii-xxxi.~~ Door Viewers
 - 1. Provide door viewers at standard height at each student entry door in residence halls.
 - 2. Provide ADA height viewer, in addition to standard height viewer in all accessible student rooms and staff apartment entry doors in residence halls.
- ~~xxxiii-xxxii.~~ Key Cabinets
 - 1. One key cabinet shall be provided in all buildings. FM shall provide location.
 - 2. In **Residence Halls** provide a key box at the lobby front desk.
- ~~xxxiv-xxxiii.~~ Privacy Locks
 - 1. In Residence Halls, provide occupancy indicator locks on BOTH sides of bathroom doors when accessed from two bedrooms.
- 08.15. Glazing
 - a. Plastics shall not be used in lieu of glass.
 - b. All required safety glazing shall be laminated glass.
 - c. Interior single glazed windows shall be a minimum of ¼" thick glass.
 - d. Glazing tint color shall coordinate with existing campus aesthetic.
 - e. Interior glazing film is acceptable. Design shall be approved by the University Architect.
- 08.16. Louvers and Vents
 - a. Architectural and Mechanical louvers and vents shall be clearly identified on Mechanical drawings and shown on the architectural exterior elevations and specified by the architect. ~~Louver finish shall be powder coated with final color selections approved by the University Architect. All exterior louvers shall include ½" x ½" bird screen on the interior face.~~
 - a.b. Architect AND Engineer must coordinate the louver selection and specification. Refer to Division 23 – HVAC section 23.12 for detailed requirements.