

General Opening specification information to be considered by Consultants:

1. *In all new major construction, all public entrances to the building will be accessible to persons with disabilities. The main entrance will be provided with one door, or set of doors, that is power operated.*
2. *In major renovations to existing structures a minimum of one entrance will be power operated. The power operated entrance will be either the main entrance or entrance closest to parking designated for persons with disabilities. In existing structures, any design for construction in the vicinity of an entrance should evaluate the potential of making that entrance power operated.*
3. *Wall and ceiling access doors*
 - *Access will be supplied for all concealed valves or other equipment that may require operation or adjustment.*
 - *Access doors will have a minimum size of 24" x 24".*
 - *Both mechanical and architectural drawings will note the need for access doors, number of doors needed, and general locations. Design should require access doors be located to allow access to valves or other equipment.*

DOORS

1. Sound coefficient rating on door assembly shall be considered.
2. Standard opening size should be 3'-0" x 7'-0".
3. Kawneer 350 (500 for wide stile) Tuffline should be used as a standard of quality. Aluminum entrances and storefronts will have thermal break construction and comply with American Architectural Metal Association (AAMA) standards. Framing will also be thermally broken from any interior construction. Aluminum doors and frames shall be made of aluminum construction. Exterior units should be insulated and include weatherstripping. Wide stile doors shall have a center rail. All material shall have a minimum thickness of 3/16" and shall be reinforced at hardware locations. Stile doors shall be 2" thick with a minimum stile width of 3-1/2". All bottom rails shall be a minimum of 10" in height. All doors should have a center-locking rail. It is preferred that exterior pairs of doors have a center mullion (need for a fixed or removable mullion should be evaluated on a case by case basis), as approved by PM. If a center mullion is not used, a stop type threshold (similar to Pemko 2005) is required.

(UMSL)-St. Louis; Add mullion stabilizers to all doors with a center mullion; Von Duprin 154 Mullion Stabilize or Design Hardware MS1-Mullion Stabilizers).

Option 1, require steel mullions in lieu of adding stabilizers, Option 2, require mullion stabilizers on all aluminum mullions. The brand of stabilizers should match the exit device (panic device).

Aluminum Storefront Hardware: All cylinders, locks, closers, exit devices, and electromechanical hardware for aluminum storefronts shall match the manufacturers and types listed in the hardware standards section.

4. Low-usage or non-public doors (mechanical areas, etc.) may be steel doors with steel frames. All steel will be minimum 16 gauge and 1 3/4" thick, galvanized, shop-primed, and painted with an epoxy or comparable paint. All steel doors and frames will be of welded construction with reinforcement at hardware locations. For interior renovation projects knockdown frames (SDI-132-Steel Door Institute) may be used with prior approval of PM.

All exterior steel doors will have a top channel cap, secured in place and sealed. The backside of exterior frames shall be primed and painted with an epoxy or comparable paint.

- Exterior Doors.
 - SDI (Steel Door Institute) Level 3 minimum-fully welded. 16 gauge minimum, polyurethane core, A60 minimal zinc coating. SDI Model 2 fully welded seamless edge.
 - Residential Life Facilities require 14 gauge minimum in lieu of 16 gauge.
- Interior doors.
 - SDI Level 3 minimum-fully welded. 16 gauge. May use manufacturer's standard one piece honeycomb or polystyrene core.
 - SDI Model 2 fully welded seamless edge at high abuse doors.
- Exterior Frames
 - SDI Level 4. 14 gauge zinc coated A60
 - All frames shall have welded face seam that is ground and dress smooth.
- Interior Frames
 - SDI Level 3. 16 gauge
 - All frames shall have welded face seam that is ground and dress smooth.
- Fire rated doors shall comply with the same SDI levels as non-rated doors.
- Acceptable Manufacturers:
 - Ceco Door Products

- Curries Company
 - Steelcraft
 - Republic
 - Pioneer
 - Or approved equal
5. Wood doors will be solid core complying with the Wood Door Manufacturers Association (WDMA) standards.
- 1-3/4” thick, interior flush, bonded core.
 - Duty Level: Extra Heavy Duty unless noted otherwise.
 - Facing: Veneer species, cut, (AA, A) Grade, (Center) balance, (Slip / Book) flitch orientation will be determined by the Owner’s Rep. for each project.
 - (UMSL)- St. Louis requires A Grade, Center balance, Book Flitch orientation with the PM reserving the right to upgrade.
 - (MU)-Columbia Residential Life requires select white birch, grade A center balanced, book match.
 - Matching: All pairs of doors shall have matching veneer. Set matching shall be under the direction of the PM.
 - Vertical Edges: Hardwood to match face.
 - Finishing: Factory finished.
 - Fire rated doors shall comply with the same WDMA duty levels as non-rated doors.
 - (UMSL)-St. Louis all Fire rated doors should be category A.
 - Acceptable Manufacturers:
 - Algoma Hardwoods, Inc. Algoma, Wisconsin
 - Eggers Industries, Architectural Door Div., Neenah, Wisconsin
 - Graham Manufacturing Corp., Mason City, Iowa
 - Marshfield Company, Marshfield, Wisconsin
 - VT industries, Holstein, Iowa
 - Oshkosh Door Company
 - Or approved equal

WINDOWS

1. Aluminum windows will have thermal break construction and will comply with American Architectural Metal Association (AAMA) standards. Framing will be thermally broken from any interior construction. All windows shall comply with ASHRAE 90.1.

- In Educational, General, and Administration Facilities there is a preference to have non-operable windows.
2. All operable windows will be capable of being cleaned from the interior of the building and will be supplied with a positive locking device. All operating mechanisms will be heavy-duty, institutional grade construction. All operable windows should include screens, and sash limits. To be approved by PM.
 3. In specifying windows, consideration will be given to replacement of broken glazing. It is preferred that replacement be possible from interior of the building. Other types of replacement require PM approval.
 4. All window units should have a minimum u-value as defined by current energy code.
 5. All window units should have a minimum (CRF) Condensation Resistance Factor as defined by current energy code, and as evaluated by consultant.
 6. Window units will comply with ASTM E283 (air leakage test).
 7. Window units will comply with ASTM E331 (resistance to water penetration test), and E547 (field test for water penetration). The Owner may retain the services of a testing company to perform field testing on installed window units chosen at random by the Owner. Contractor will be responsible for retesting units that fail test.
 8. (UMSL)- St. Louis; Finish will be clear anodized, or Kynar 500, and selected by the PM.
 9. *(MU)- Door and window frames installed in buildings on the "white campus" will be medium bronze color. Door and window frames installed in buildings on the "red campus" will be cream color. Doors installed in buildings on the "red campus" will be red color. Doors and windows installed in other areas of the campus will be one of the above colors. In existing structures, the color will match the color of the existing windows and/or doors if that color is one of the above. If the color is something other than one of the above colors, the PM will decide which color to install.*

GLASS AND GLAZING

1. Exterior windows, exterior glazed doors, and storefronts shall be 1” double-pane insulated glass certified by the Insulating Glass Certification Council (IGCC), and comply with ASTM E 2190 (seal durability & gas content compliance). All glazing shall be of the low-E type unless approved by PM.
2. All glazing in new windows, doors, storefronts, etc. will carry a minimum ten year warranty on replacement of defective material.
3. Color or coatings should be verified with the PM.

FINISHED HARDWARE

1. All door hardware will be extra heavy duty institutional grade, conforming to ANSI Series 4000 requirements.
2. All locksets must be keyed, unless exempted by PM.
3. Locks for gates and switches need to be tied to building master (or card access system). Verify with PM.
4. All non-public areas (mechanical, custodian, serving, etc.) will be served by knurled handle locksets. Door Hardware is to meet same functional requirements as public areas.

UMSL- St. Louis; (Knurled handle locksets are not required at UMSL) All non-public areas (mechanical, custodian, serving, etc.) will be served by lever-handle grade 1 cylindrical locksets, similar in construction and design quality to Best 93K series- 14D lever.

5. Mortise locksets will be used only in those areas requiring special security, or replacement/renovation functions (match existing). In all other areas cylindrical style locksets are preferred.
 - Mortise Locks- Acceptable manufacturers and respective catalog numbers:
 - Best 40H Series
 - Corbin Russwin ML2000 Series
 - Sargent 8200 Series
 - Schlage L9000 Series

6. *Grade 1 Cylindrical Locks*
 - All locksets shall accept Best 7 pin SFIC cores. Other type locksets (electric, card access, combination, and panic devices) must have a key override function.
 - All areas will be served by lever-handle grade 1 cylindrical locksets, similar in construction and design quality to Best 93K series- 14D lever.
 - *UMSL-St. Louis; IN (Intruder) model at entry to suites, offices not in a suite, and classrooms.*
 - Grade 1 Cylindrical Locks- Acceptable manufacturers and respective catalog numbers:
 - Best 93K Series
 - Corbin Russwin CL3300 Series
 - Sargent 10 Line
 - Schlage ND Series
 - Yale 5400LN Series

7. Cylinders and Keying:
 - Rim and mortise cylinders shall match the same manufacturer of the lock whenever possible.
 - All rim and mortise cylinders shall accept the Best 7-pin SFIC core.
 - Furnish selected cylinders/locks with construction keying for use during the construction period as directed by PM.

8. All panic devices shall be extra heavy-duty institutional grade, “touch-bar” or “cross-bar” type and will have a dogging function where allowed by code. If dogging function is not allowed by code, the non-egress side of the door should be equipped with a lever handle. Type of dogging function should be approved by PM. (dogging function is not allowed on access control doors and fire rated doors). *At pairs of doors Rim latch type devices are preferred with a center mullion, if not allowed by code, then surface vertical rod devices are preferred.* In multiple door entries, only one doorway should be keyed from the exterior.
 - Exit Devices- Acceptable manufacturers and respective catalog numbers:
 - Corbin Russwin ED5000 Series
 - Precision APEX 2000 Series
 - Sargent 80 Series
 - Yale 7000 Series
 - VonDuprin 99 Series
 - Product notes and applications:
 - Single doors: Use rim exit device.

- Pairs of doors: If providing a rim exit device, provide a keyed removable mullion.
 - If vertical rod exit device must be used, less bottom rod is preferred where feasible.
 - *Fire rated door assemblies require top and bottom rod locations, unless approved by PM.*
 - If both top and bottom rods are required, surface rods are preferred.
 - Exception: UMKC prefers concealed rods.
 - If access control system is required, then reference requirements of access control system for correct door hardware configuration. *Coordinate with Electrical (division 16) and Electronic Controls (division 28).*
9. All closers shall be heavy-duty institutional grade. Surface mounted parallel arm closers, mounted on the interior side of the opening, are preferred. All doors and frames shall be reinforced at mounting locations. All screw and boltholes will be drilled and tapped. Wood doors should use thru-bolts. Floor mounted closers should not be allowed without PM approval.
- Door Closers- Acceptable manufacturers and respective catalog numbers:
 - Corbin Russwin DC8200 Series
 - LCN 4040XP Series
 - Norton 9500 Series
 - Sargent 281 (351) Series
 - Stanley D-4550 Series
10. All hinges shall be heavy-duty grade, ball-bearing type. All doors require a minimum of 1-1/2 pairs of hinges per door.
- Butt Hinges- Acceptable manufacturers:
 - Bommer
 - Hager
 - Ives
 - McKinney
 - Stanley
 - Continuous Heavy Duty Hinges- Acceptable manufacturers:
 - Pemko
 - Roton
 - Select
 - Stanley

11. Door hardware in new construction will have either US 10, US 26D, or US 32D finish, verify with Owner. In existing construction, hardware finish should match existing hardware finish, PM approval required.

(UMSL)- St. Louis; Door hardware in new construction will be verify with PM. In existing buildings/renovations, hardware color should match existing hardware color, PM approval required.

12. Early in the construction document phase, the architect should discuss the combining of the cores with the Owner. At that time it will be determined whether the Owner or the contractor will be responsible for the combining.
- At (MU) – Columbia (Educational & General use Buildings) final cylinder cores and key blanks are Owner provided and installed. The contractor will provide temporary construction cores as needed for security until the Owner installs final cores.
 - At (S&T) – Rolla final cylinder cores and key blanks are to be provided by contractor and installed by owner. The contractor will also provide all temporary construction cores as needed for security until final cores are installed.
 - At (UMKC)- Kansas City verify with PM for requirements of each project. The contractor will also provide all temporary construction cores as needed for security until final cores are installed.
 - At (UMSL)- St. Louis Early in the construction document phase, the Architect and/or Hardware Consultant will meet with the owner’s lock specialist and CPM and setup a key list.
Final cylinder cores and 2 (two) key blanks will be shipped to the Owner’s representative for combining and installation. The contractor will provide temporary construction cores as needed for security until the Owner installs final cores.
 - The following procedure applies if not specified by a campus:
 - If Owner is to do the combining, specifications will require the contractor to supply Best 7-pin cores with two key blanks (no substitutions allowed), as required, for each lock. Cylinder cores and key blanks will be shipped to the Owner for installation. The contractor will provide temporary construction cores as needed until the Owner installs permanent cores.
 - If contractor is responsible for combining, contractor is required to do all combining work per the key schedule supplied by the Owner. The contractor will supply Best 7-pin cores and two key blanks (no substitutions allowed) to fit each core, as required for each lock. Owner

will install the cores. The contractor will provide temporary construction cores as needed until the Owner installs permanent cores.

13. Flushbolts, Push/Pulls, Kickplates, Stops (Flatgood items)- Acceptable manufacturers:
- Hager
 - Ives
 - McKinney
 - Rockwood
 - Trimco

Door pulls with an offset design should not be used, unless approved by PM.
Exception: To allow improved access to cylinder, offset design may be considered with thru bolt anchors (or back to back mounts)-heavy duty.

14. Overhead Stops / Holders- Acceptable manufacturers:
- Glynn Johnson
 - Rixson
 - Rockwood
 - Sargent

15. All Thresholds, regardless of door configuration, shall be heavy-duty grade, constructed of aluminum and meet ADA requirements.
- Weatherseals and Thresholds- Acceptable manufacturers:
 - Hager
 - McKinney
 - NGP
 - Pemko
 - Zero

POWER DOOR OPERATORS

1. Power door operator type of operation and equipment should be as follows:
- Door should be operated only on demand by activation of a touch pad device. In manual mode, operators will require no more than 15 lbs. force to set in motion and 10 lbs. force to continue motion and shall provide no power assist. Meet all current ADA requirements.
 - The preferred activating device for interior and exterior installations is a touchless switch mounted at 30" AFF. Switch shall have a 3"-14" range adjustment and 1-10 second time delay.

- If approved by PM a press plate switch mounted at 30" AFF can be used. Switch shall be specified around MS SEDCO #59H 4-1/2" square blue anodized plate engraved to read "Press to Operate Door". Use of other devices requires PM approval.
- UMKC-Kansas City uses press plate at all interior and exterior applications.
- Coordination is required with security access controls. Wireless controls are not allowed.
- UMC Residential Life prefers BEA10MS08U touch-less control switch Precision D-4990
- Door type should be a swinging door and must have a positive locking device for exterior and fire rated doors. Panic devices like other entry doors (supplemented with an electric strike) are preferred.
- Electric Strikes- Acceptable manufacturers:
 - HES 9400/9500/9600 shall be the basis of design for use at rim exit devices.
 - Folger Adam
 - VonDuprin 6000 series*(UMSL)- Prefer an electrified lock in lieu of electric strike.
Preferred lock w/handle is a Best 8KW & 9KW electrified.*
- Inner and outer doors of vestibules should operate independently.
- Only a single leaf of pairs of doors should have a power operator.
- Door controls should accept electric and card access locking devices for after hour access. (Including proximity sensor, FOB, etc.)
- Doors should be equipped with a keyed deactivation switch for power opener that is accessible from floor level (panic bar allows after hours egress).
- Doors will be equipped with manufacturer's standard signs as required by code.
- Door operating equipment will be rated for heavy-duty service and must be electrical actuated. All control wiring must be low voltage and compatible with building security system.
- Low Energy Auto Operators- Acceptable manufacturers:
 - Horton (7100 Series at UMKC)
 - LCN
 - Norton
 - Stanley Magic Access
Stanley Magic Access is not allowed at UMSL- St. Louis
 - Besam
 - Record (6100 Series at UMKC)
 - Detex (A019 Series is preferred at UMSL)

- UMC Residential Life prefers Stanley Magic Force
- Door operating equipment will have a two-year warranty.
- All exceptions to these criteria (fully automatic operation, sliding doors, combined vestibule operation, etc.) must be reviewed and approved by the PM.

ACCESS CONTROL IP LOCKS

- Locks shall use wifi wireless connectivity to communicate with existing campus access control software.
- Locks shall have a mag-stripe and iClass reader plus 12 digit keypad.
- Residential doors shall be mortise locks.
- Existing construction shall use standard battery power locks but hardwired powered wifi locks are preferred at new construction.
- Acceptable manufacturers:
 - Corbin Russwin Access700 PWI1
 - Sargent Passport 1000 P2
 - Stanley Best Wi-Q
- *UMSL-St. Louis; IP locks require PM approval, and will be specified by PM.*
- MU-Columbia; for sequence, operation, and remote locking, verify requirements with PM.

END OF SECTION