

Section 087100 - Finish Hardware

Finish hardware materials must conform to the following standards. Subject to compliance with these design requirements, manufacturers offering products that may be incorporated in the work are included in the following section by product category.

1.0 Butt Hinges

- A. All hinges on interior and exterior doors are to be of five-knuckle, ball bearing, heavy duty design, and 0.180" hinge leaf thickness.
- B. All hinges to have anti-friction concealed bearings.
- C. All hinges to exceed ANSI/BHMA Grade I standards for vertical and lateral wear by a minimum of fifty per cent.
- D. Follow manufacturer's published recommendations for quantity, type, weight, and size of hinges to be specified.
- E. Specify stainless steel hinges with stainless steel pins for exterior applications, high moisture and/or chemical exposure. (Pump rooms, research labs, etc.)
- F. Specify non-removable pins (NRP) on out swinging lockable doors where hinges are exposed on the locked side of a door.
- G. Exterior lockable doors shall have NRP and Safety Stud Feature (SSF) hinges.
- H. Specify steel-based hinges at all other applications.
- I. Specification of pivot hinges of any type shall be considered unacceptable.
- J. Use on all non - heavy interior wood doors, interior and exterior hollow metal doors.
- K. Width of hinges shall be sufficient to clear trim and wall conditions.
- L. Approved manufacturers:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Butt Hinges	Stanley	FBB199/FBB168	Hager (BB1168, BB1199)	McKinney (MPB99, MPB68)

2.0 Continuous Hinges

- A. Use continuous hinges on Fiberglass Reinforced Polyester (FRP) doors.
- B. Use continuous hinges when retrofitting new doors in existing frames and frame hinge preparations are compromised.
- C. Do not use continuous hinges on new door and frame installations. If continuous hinges are necessary, obtain approval from University Engineering before proceeding.
- D. Manufacturers shall be, and/or.

Item Description	Preferred Manufacturer	Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Continuous Hinges	Hager	McKinney	Markar

3.0 Pivot Sets

- A. Pivots may be used for Interior and exterior aluminum doors and high traffic interior doors with panic hardware that are subject to high use and abuse.
- B. Provide (1) intermediate pivot for every additional 30" of door height over 60".
- C. Owner to determine pivot locations

D. Approved Manufacturers:

Item Description	Preferred Manufacturer	Acceptable Alternative Manufacturers
Pivot Sets	Rixson	None

E. When scheduling doors with weights near or over 250 pounds, consult the Rixson factory for application consulting.

4.0 Flush Bolts

- A. Avoid using automatic flush bolts in public or high use areas. Automatic flush bolts cause extra wear to both the doors and unlock both doors each time the active door is opened and over time causes problems. Added to this is the extra pressure needed to latch the active door often a problem were air pressure is needed in many buildings.
- B. All manual flush bolts to meet or exceed requirements of ANSI/BHMA A115.16
- C. Where UL listings allow, bottom bolts of automatic and constant latching flush bolts are to be eliminated and replaced by an auxiliary fire latch that does not require penetration into the floor or threshold.
- D. Top bolts of automatic flush bolt sets to be manufactured where no spring pressure is required to be overcome in order to extend bolt.
- E. All automatic and constant latching flush bolts to have a triangular, non-handed actuator. Handed, cam-lift type actuation is not acceptable.
- F. Avoid specifying coordinators if at all possible. However, if coordinators are required, they shall be of the same manufacturer as the bolts.
- G. Semi-automatic flush bolts that trip when door contacts frame is preferred over automatic flush bolts when needed to save on constant wear and failing over time.
- H. For situations where the main reason for the second door is give a wider opening so equipment can be moved through then manual or semi-automatic flush bolts should be used. This way the inactive door can still be opened when needed but the rest of the time remains secure.
- I. At pairs of fire rated doors enclosing areas not meant for human occupancy, specify only one door closer for active door, and manual flush bolts for inactive door.
- J. Specify dust-proof strikes at all required areas of floor or threshold penetration. (DP2)
- K. Avoid use of bottom bolts unless required by fire rating or security concerns.
- L. On pairs of fire rated doors in storage-receiving areas, use exit devices.
- M. Approved manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Flush Bolts	Ives (FB 300/400 Series)	Rockwood (555 Series)	Trimco (3913/3915)

5.0 Electric Power Transfers

A. Use Electric Power Transfer device on all electrified openings to transfer power from frame to door.

B. Approved manufacturers:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Electric Power Transfer Devices	Von Duprin	EPT-2; 10 x ER	None

6.1 Cylinders and Keying - Note—*this section is provided for informational purposes only. Keying and cylinder needs will be coordinated and/or provided by the University's Lock Shop.*

A. ONLY SMALL FORMAT INTERCHANAGABLE CORES (SFIC), systems and hardware will be accepted.

- B. Requirements for lock keying to be determined by the University. Tie all keyed locks into the established University master key system.
- C. Biting list to be developed by the manufacturer.
- D. Complete, fully progressed biting list shall be provided to the University Lock Shop.
- E. Final cores shall be installed by the University Lock Shop.
- F. Control keys shall be provided to the University Lock Shop only. No other entities shall be provided with control keys.
- G. Master keys shall only to be delivered to University Lock Shop or project manager for distribution to the end user. No other entity shall be provided with master keys unless they are provided by the University Lock Shop or end user.
- H. Approved manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers
Lock Cylinders	SFIC	Matched to lock manufacturer but must be SFIC

- 6.2 1.0 Cores and Keys *this section is provided for informational purposes only. Keying and Cores needs will be coordinated and/or provided by the University’s Lock Shop.***
- A. 3 brands have been approved for university use BEST, Medeco and Schlage**
 - **Only BEST and Medeco are being expanded at this time.**
 - B. What brand is dependent on the school and biased on the university campus wide keying plan.**
 - C. The LOCKSHOP will provide the information on the brand to use per job.**
 - D. All new construction is being moved to patented cores. (Unless specifically requested to remain conventional)**

7.0 Locks and Latches

- A. In academic buildings, locking hardware is only to be used on single toilet or unisex bathrooms. Push/pull plates are to be specified for bathrooms with more than one toilet/urinal.
- B. If locking hardware is wanted by the school/center (owner) on a multi-toilet bathroom, the only acceptable function is a classroom function deadbolt.
- C. Mortise locks
 - 1. Mortise locks shall be used as standard of quality for all projects. Cylindrical locks maybe used when existing door is to remain and upgrading existing lock to lever handle and key system is necessary.
 - 2. Install custom strikes to match existing frame preparations when new lock is scheduled to be installed in existing frame. Existing frames may be modified to accept new custom strikes.
 - 3. Specify mortise type lock and latch sets for all doors not requiring panic or fireexit devices, or push / pull operation.
 - 4. All locks must have 2 part anti friction latches
 - 5. Dummy trim shall not be specified for inactive door leaves unless approved by the University Architect. Appearance alone shall not be considered to be a compelling reason.
 - 6. Specify lock functions that do not require the use of thumb turn units (except for dormrooms). This includes Classroom, Storeroom, and Passage functions.
 - 7. For doors with electric strikes, function shall be Storeroom (F07) function.
 - 8. Mortise locks shall meet the following standards and criteria:
 - a. ANSI A156.13, 2005, Grade 1.
 - b. ANSI/ASTM F476-84 Grade 30 UL Listed.
 - c. Chassis: cold-rolled steel, handing field-changeable without disassembly.
 - d. Latch-bolts: 3/4 inch throw, stainless steel anti-friction type.
 - e. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers

- as scheduled. Filled hollow tube design unacceptable.
- f. Spindles: security design independent break-away. Breakage of outside lever does not allow access to inside lever's hub-works to gain wrongful entry.
 - g. Thumb-turns: accessible design not requiring pinching or twisting motions to operate.
 - h. Deadbolts: stainless steel 1-inch throw.
 - i. Strikes: Specify standard ANSI 4 7/8 x 1 ¼ curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.

9. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Mortise Locks and Latches	Mortise Locksets	Corbin Russwin ML2000 Series	Schlage L Series
	Bathroom	ML2030	L9440
	Classroom	ML2055	L9070
	Passage	ML2010	L9010
	Storeroom	ML2057	L9080
	Dormitory	ML2065	L9456
	Office	ML2051	L9050

B. Cylindrical locks may be used when existing door is to remain and upgrading existing lock to lever handle and key system is necessary.

1. Cylindrical locks shall meet the following standards and criteria:

- a. ANSI A156.2, 2003, Grade 1 or Grade 2 for portion doors for preassembles office wall sections (cubicles)
 - b. ANSI/ASTM F476-84 Grade 30 UL Listed.
 - c. Cylindrical locksets and latchsets: as scheduled.
 - d. Strikes: Specify standard ANSI 4 7/8 x 1 1/4 steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and prevent accidental catching on clothing.
 - e. Curved-lipped strikes shall be provided.
2. Specify lock and latch sets for all doors not requiring panic or fire exit devices, or push / pull operation.
 3. Dummy trim shall not be specified for inactive door leaves unless approved by the University. Appearance alone shall not be considered to be a compelling reason.
 4. For doors with electric strikes function should be Storeroom (F86) function.
 5. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Cylindrical Locks and Latches	Cylindrical Locksets	Best 93K x 15 trim design	Schlage
	Bathroom	93K0L14DS3	ND40SSPA (F76)
	Classroom	93K7R14DS3	ND70BDSPA (F84)
	Entry	93K7AB14DS3	ND53BDSPA (F109)
	Passage	93K0N14DS3	ND10SSPA (F75)
	Storeroom	93K7D14DS3	ND80BDSPA (F86)

C. Electromechanical Locksets – Stand Alone

1. Electronic lockset shall meet ANSI A156.25 Grade 1 and A156.13 standards.
2. Power to units shall be provided by the use of common batteries. Electromechanical locksets requiring special battery packs or connections shall be deemed unacceptable.
3. Units shall have mechanical key over ride capable of being tied into the University's existing master key system.
4. Electronic locksets shall be capable of being computer managed by Schlage SMS access control management software.

5. If lock is to ever be integrated with University access control system the Department of Public Safety (DPS) standard for access doors should be followed. End users should be made aware that support and repairs will be made by DPS contractor and not University Lock Shop.
6. Install electromechanical locksets where school/center requires keyless entry.
7. Convenience shall not be the sole criteria for installation.
8. Preference shall be given to mechanical locksets to secure doors.
9. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Electromechanical locksets	Schlage	AD200-MS/MD-BD	No Substitution

D. Push Button Mechanical Locksets

1. Push Button Mechanical lockset shall meet ANSI A156.2 Grade 1 and A156.13 standards.
2. Units shall have mechanical key over ride capable of being tied into the University's existing master key system.
3. Install where school/center requires keyless entry AND location is remote or in a hazardous area, such as BSL3.
4. Convenience shall not be the sole criteria for installation.
5. Preference shall be given to mechanical locksets to secure doors.
6. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Push Button Mechanical Locksets	KABA-Ilco	Simplex 1000L	No Substitution

E. Strikes

1. Mechanical Strikes
 - a. Provide handed-type strike plates with curved lip; flat (non-handed) strikes are not permitted.
 - b. Provide strike plates with extended lips where required to protect door frame and trim from being marred by latchbolt. Provide strike plates that project not more than 1/8 inch beyond door frame trim at single doors; and flush with face of doors at double (pair) door applications.
 - c. Provide custom-fabricated strike plates at existing door frames if required for compatibility with new lockset or latchset units. Fabricate units of base metal and finish specified.
2. Electric Strikes
 - a. All electric strikes shall meet ANSI A156.5 standards.
 - b. Electrical voltage shall be field selectable. (12 VDC or 24 VDC)
 - c. Electric strike for mortise lockset applications shall install into standard ANSI 4 7/8" strike plate cutout.
 - d. Specify electric strikes when other electrified hardware is not installed.
 - e. Verify fail safe/fail secure requirements.
 - f. When electric strikes are installed as part of the University's online access control system, separate power supplies are not need since access system control boards provide power to the strikes. Doors requiring on-line access control require complete engineer prepared line drawings illustrating location of components, all wiring including: power, system, and operation at opening.

g. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Electric Strikes	Von Duprin	6000 Series – Extra Heavy Duty	No Substitution
Power Supplies	Von Duprin	PS861 Series	No Substitution

F. Exit Devices

1. All exit device models shall have been independently tested to exceed ANSI/BHMAA156.3 Grade 1 cycle test standards.
2. All exit devices shall be specified to have roller type strikes, poly-coated latch bolts, and deadlocking latches to promote security and longevity.
3. All exit device end caps shall mount flush with the main body of the device to promote durability and impact resistance.
4. All exit device mechanism cases shall be constructed from extruded aluminum to promote impact resistance and durability.
5. All exit devices shall be specified to be of the modern push-pad type, with a “T” shaped push-pad to discourage the pinching of body parts. Drop bar style devices shall be considered unacceptable.
6. All touch-pad trim shall be manufactured from stainless steel.
7. All doors receiving an exit device shall be either reinforced with steel or contain solid wood blocking at all hardware attachment points. This is to eliminate unsightly hex bolt heads and their inferior holding capabilities. Designer will ensure proper specification of and verification of the presence of such blocking and reinforcement by any means necessary including, but not limited to, selective destructive inspection, should it be suspected that doors do not meet this criterion.
8. All exit device pull side trim shall be of the lever type with a heavy, forged escutcheon. Lever shall be of the true breakaway type.
9. Lever design on exit device trim shall match design chosen under the “Mortise Lock and Latch Sets” section of this document.
10. All exit devices to be specified must have a published minimum three year warranty.
11. At door pairs, specify only rim type devices and removable mullions. Verify that all door manufacturers listed in other sections of the specifications can label pairs of doors with two rim devices and a removable mullion to an opening size of 8’x10’.
12. Specify only rim type devices at single doors.
13. All locking devices applied to doors in an egress path shall be listed by Underwriter’s Laboratory as Panic Hardware or Fire Exit Hardware as required by code.
14. Specify only lever actuated trim at all exit devices. Rigid levers are acceptable for openings where a night latch function is indicated. Absence of trim is acceptable for doors where re-entry is not desired.
15. Specify only devices designed for wide stile doors. Coordinate door elevations and designs to ensure that wide stile devices can be properly applied without conflict of any type.
16. Verify inclusion of appropriate power supply and power transfer when electric latch retraction exit devices are specified.
17. At door pairs that are electrified, electrify one (1) leaf only. Verify that electrified leaf will meet code requirements for width of opening.
18. Rim Exit Devices:
 - a. Single doors: Use rim exit device.
 - b. Pairs of doors: Use rim exit devices with keyed steel removable mullion.

- i. Where pairs of doors are used, the University will not consider the use of concealed or surface vertical rod exit devices acceptable. Rim exit devices with key-removable mullions are to be specified at these locations.
- ii. Rim cylinder exit devices are more durable and easier to maintain. The University is willing to sacrifice the “grand opening” concept for increased security and ease of maintenance.
- iii. This does not preclude the application and inclusion of “grand openings” which must remain for historic purposes or to meet building design criteria in which event they will be evaluated by the University Architect and the University Lock Shop on a case by case basis.
- c. When surface vertical rods are applied to a flush wood fire door, all hardware, including rod guides, are to be thru-bolted.
- d. Doors entering public occupied rooms off corridors: Use double cylinder exit devices on mortise and rim types. Outside trim can be locked from inside room. Exit device on inside allows free egress, but outside trim remains locked.

19. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Exit Devices	Von Duprin	98/99 Series	Advantex
Exit Devices for historic buildings	Von Duprin	88 Series – requires University approval	No Substitution
Power Supplies	Von Duprin	EL device -PS 873-2 (2-zone option)	
Power Transfers	Von Duprin	EL99 device - EPT-2; 10 x ER	

D. Removable Mullions

- 1. Types: Lockable, steel, key removable. Key is not required to reinstall the mullion. Specify mortise cylinder separately
- 2. Preferred method of securing exterior pairs of doors when using rim exit devices.
- 3. Provide one (1) extra set of mullion fittings per mullion to mount nearby to secure mullion when out of the opening.
- 4. Removable mullions at fire labeled doors to be listed by Underwriter’s Laboratory for application to openings up to and including 8’x10’, and to a maximum hourly rating of three hours.
- 5. All removable mullions shall be provided by the same manufacturer as that of the exit devices.

6. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers
Removable Mullions	Von Duprin	KR series (steel)	No Substitution

9.0 Door Closers

- A. Closers shall have non-ferrous covers, heavy duty forged steel arms, and separate valves for adjusting backcheck, delayed action, closing and latching cycles and adjustable spring to provide sizes 1 through 6.
- B. Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.
- C. Provide drop plates, brackets, or adapters for arms as required to suit details.

- D. Closer Locations:
 - a. Mount closers on room side of corridor doors and inside of exterior doors.
 - b. Install closers on door for optimum aesthetics.
 - c. Install closers at all exterior, fire rated, and/or other appropriate openings.
 - d. Closers shall be mounted on the least public side of the door.
- E. Provide forged heavy duty parallel arms. Non-hold open types unless determine byowner and architect for specific locations.
- F. Each door closers is to be adjusted to meet requirements of opening after installation, including back check cushion, closing and latching speeds, and opening force.
- G. Closers shall exceed ANSI/BHMA A156.4 Grade 1 cycle test standards.
- H. All closers specified shall contain hydraulic fluid of a type requiring no seasonal adjustments for temperatures ranging from 120 degrees F to -30 degrees F.
- I. Specify all closers to have forged steel main arms. On high-traffic applications, all parallel arm mounted closers to have forged steel main arms and forearms with extra heavy dutyknuckles incorporating concealed bronze bushings.
- J. Specify all closers to have full complement, high efficiency, and low friction pinion bearings.
- K. All manual closers to have delayed action, dead stop, spring-assisted deceleration, track mounting, and extra duty arm options available throughout product line.
- L. All manual closers shall have a minimum of a ten-year warranty.
- M. Separate each application (e.g. regular arm, parallel arm, dead stop, etc.) into individual hardware sets to ensure that closers are mounted properly on the least public side of opening. Tri-style closer packaging is unacceptable.
- N. Specify (in the hardware sets) any required accessory items and/or special templating that may be necessary for a particular application.
- O. Coordinate door elevations and designs to ensure that closers may be mounted without conflict of any type.
- P. Specify extra duty arms at all parallel arm mounted closers on high-traffic applications.
- Q. Specify delayed action closers at any location where it might reasonably be expected that movement of materials may occur through an opening.
- R. Specify closers with dead stops incorporated into parallel arms where doors cannot swing to strike a parallel wall without obstruction, or where a wall or floor stop is not desirable. Add spring deceleration feature if it can be reasonably assumed that rapid or abusive opening of door may occur.
- S. Degree of opening shall be listed for each opening scheduled to receive a closer on hardware supplier’s submittal. Submittal will be rejected in the absence of this information.
- T. Approved Manufacturers and Catalog Series:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers
Door Closers	LCN 4110 Series (Exterior/High Use)	Arrow DC500
	LCN 4030 Series (Interior)	Arrow DC500

10.0 Door Operators

A. Low Energy Operators

- 1. Automatic operators shall be handed. Non-handed units shall not be used.
- 2. Hard wire all new construction. Use radio frequency operators for retrofit applications.

3. Low energy door operators must satisfy all code requirements set forth in ANSI/BHMA standard A156.19 and meet UL10C standards for use on fire doors. Units must be door closer based, and function as a typical self-closing door when the units are not activated.
4. Units must have adjustments for door closing force and back check, motor assist from 0 to 30 seconds, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay up to 30 seconds.
5. Automatic door operators to be adjusted to ANSI/BHMA standard A156.19 and checked for correct operation by AAADM certified personnel. Detailed inspection report to be provided certifying completion of Field Adjust / Inspection work.
6. Approved Manufacturers:

Item Description	Approved Manufacturers
Low Energy Operators	LCN
	Horton
	Besam

11.0 Stops and Holders

A. Overhead

1. Give preference to wall stops or holders. Install overhead stops ONLY where conditions limit the use of wall stops and floor stops would be a tripping hazard.
2. Specify overhead stops or holders for doors equipped with regular arm mounted closers that would, without overhead stop, swing more than 120 degrees
3. Specify overhead stops or holders at high-traffic openings (e.g. building entries, vestibule doors, etc.) when degree of opening cannot be controlled by door closer components.
4. Specify overhead stops or holders wherever a floor or wall stop would be undesirable or where floor or wall stops cannot sufficiently protect furniture or other equipment.
5. All overhead stops and holders shall be specified for a single degree of opening without option to adjust degree after installation.
6. Specify (in the hardware sets) all accessory items and special templating required for proper application and coordination for each particular situation.
7. All overhead holders and stops to meet ANSI/BHMA A156.8 Grade 1 criterion.
8. All overhead stops and holders to be specified to be constructed of steel or stainless steel without moving or shock absorbing plastic parts of any nature or function.
9. Use special template closers to allow offset arms for surface applied stops.
10. Specify Grade 1 (heavy duty) of overhead stop or holder per manufacturer's recommendation.
11. When parallel arms are used, give priority to controlling maximum opening of doors through the use manufacturer door closer arm options
12. Approved Manufacturers:

Item Description	Approved Manufacturers
Overhead Stops / Holders	Rixson
	Glynn Johnson

A. Floor and Wall

1. All floor and wall stops/holders shall meet ANSI/BHMA A156.16
2. All floor and wall stops/holders shall be of cast construction.
3. Every active door leaf shall have a stop of some type.
4. Do not specifying floor stops in public corridors.
5. Do not specify floor stops where they must be applied more than 6" from latch edge of door.
6. Give preference to wall stops over floor stops where possible.
7. Specify automatic holders when needed. Confirm code requirements or AHJ variance.

8. Specify and detail solid wood blocking at all wall stop locations.
9. Be aware of future obstructions, furniture layout, chalk and marker board rails, cabinetry before specifying wall or floor stops. Specify overhead controls if indicated.
10. When parallel arms are used, give priority to controlling maximum opening of doors through the use manufacturer door closer arm options.
11. Approved Manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Wall Stop	Ives - WS401/402 Series	Rockwood 410	Trimco 1270
Floor Stop	Ives - FS436/438 Series	Rockwood 441/443	Trimco 1211

13.0 Electromechanical Door Holders

- A. All Magnetic Door Holders shall be UL listed for smoke barrier and labeled fire doors.
- B. Holders shall be certified ANSI Standard A156.15.
- C. Holders shall have standard powder coated finish.
- D. Provide armature extensions as needed depending upon the specific application.
- E. Install holders to bring the door as close as possible to the wall. Provide mounting boxes and brackets as required.
- F. Approved Manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers
Electromechanical Door Holders	LCN SEM-7800	Rixson

14.0 THRESHOLDS AND SEALS

- A. All thresholds specified shall comply with ANSI/BHMA A156.21 and CABO/ANSI A117.1.
- B. All seals specified shall comply with ANSI/BHMA A156.22. Smoke seals shall comply with ANSI/NFPA 105, UL1784, and UL10C.
- C. All thresholds shall have a textured surface to prevent accidental slipping.
- D. All sealing materials shall be extruded or sponge silicone or nylon brush.
- E. The finish of all seals and thresholds shall be clear anodized aluminum where available.
- F. Heavy duty weather stripping designed to be installed under the parallel arm closer bracket must be retemplated and properly installed. Notched weather stripping shall not be used. This performance criterion also applies to determining the proper mounting clearances for the doors and frames in this category.
- G. Seal all exterior doors at all points of entry for either water or air.
- H. Specify smoke seals for all fire rated doors per the requirements of NFPA80 and NFPA-105.
- I. Provide fire-stop carpet dividers wherever combustible flooring extends through a fire rated opening of greater than 20-minute rating.
- J. If automatic door bottoms are specified, use only concealed models. Do not specify automatic door bottoms on doors having concealed vertical rod exit devices.
- K. Specify thresholds at openings to receive automatic door bottoms unless hard surface flooring extends through opening.
- L. Specify seals in a manner to eliminate the need to cut any portion of theseal to install closers, rim exit devices, etc. Specify 1/4" thick seals of solid aluminum and silicone for this purpose. Coordinate mounting position changes that this extra dimension will require.
- M. Specify drip caps at top and bottom of openings exposed to falling or blowing rain.

N. Specify only saddle type thresholds unless sound sealing requirements dictate otherwise.

M. Approved Manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Thresholds	National Guard Products	Reese	Pemko
Thresholds at Exterior and Exposed Doors	700NA		2891APK
Smoke Seals at Vertical Separation and A- or B-label doors	9500-5050 CL		S88c
Smoke Gasket	5050CL		S88C
Door Bottom (sweep)	200NA		315_N

15.0 Protection Plates

A. All mop and kick plates shall meet ANSI/BHMA A156.6 standards.

B. Material: Metal .050 thick with countersunk holes. Edges beveled on four edges (B4E).

C. Sizes: Kick Plates - 10" high; Mop Plates – 6" high

D. All flat goods shall be installed with satin stainless steel sheet metal screws. Plated, painted, or any other fasteners are unacceptable.

E. Install kick plates on push side of door. Install mop plates on pull side of door.

F. Approved manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Protection Plates	Ives – 8400 Series x B4E	Rockwood – K1050	Trimco – K0050

16.0 Push/Pull Plates

A. All push/pull plated shall meet ANSI/BHMA A156.6 standards.

B. Conceal mounting methods whenever possible

C. Push plate size: 4" x 16" minimum.

D. Install push plates and pull plates with satin stainless steel fasteners, plated, painted or any other fasteners are unacceptable.

E. Install on doors that do not require locking hardware excluding door pairs installed strictly for the movement of furniture or mechanical equipment.

F. Approved manufacturers:

Item Description	Preferred Manufacturer and Catalog Series	Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Pull Plate	Ives – 8102	Rockwood – 110	Trimco – 1018
Push Plate	Ives - 8302	Rockwood – 71 Series	Trimco – 1001 Series

Summary of Door Hardware Approved Manufacturers

Item Description	Preferred Manufacturer and Catalog Series		Acceptable Alternative Manufacturers	Acceptable Alternative Manufacturers
Butt Hinges	Stanley	FBB199/FBB168	Hager	McKinney
Continuous Hinges	Hager		Markar	McKinney
Pivot Sets	Rixson		None	
Mortise Locksets	Corbin Russwin	M-Series		Schlage L series
Cylinders and Keying	SFIC	SFIC	None	
Exit Device	Von Duprin	98/99 Series x 996L x 06	Advantex	
Exit Device	Von Duprin	88 Series – trim as spec'd. For use in maintaining historic look where noted.	None	
Electrified Exit Device	Von Duprin	EL 98/99 Series x 996L x 06 98 Series x E996L x 06	None	
Key Removable Mullion	Von Duprin	KR Series	None	
Closer (Exterior/High use)	LCN	4110 Series	Arrow 500	
Closer (Interior)	LCN	4030 Series	None	
Overhead Stop/Holder	Glynn Johnson	90 Series	ABH	
Electromagnetic Door Holders	LCN	SEM-7800 Series	Rixson	
Wall Stop	Ives	WS401/402 Series	Rockwood	Trimco
Floor Stop	Ives	FS13/FS17	Rockwood	Trimco
Auto Stop/Holder	Ives	FS495/496 Series	None	
Threshold (Arch. Verify)	NGP	See Hardware Schedule	Reese	Pemko
Smoke Seal	NGP	9500-5050, 5050 - CL	Reese	Pemko
Head & Jamb Seals	NGP	700NA	Reese	Pemko
Sill Seals	NGP	200NA	Reese	Pemko
Protection Plates	Ives	8400 Series x B4E	Rockwood	Trimco
Push/Pull Plates	Ives	8102/8302 Series	Rockwood	Trimco
Flush Bolts	Ives	FB Series	Rockwood	Trimco
Auto Door Bottom	NGP	320S	Reese	Pemko
Electric Strikes	Von Duprin	6211 (Locksets) or 6111 (Exit Devices)	None	
Stand Alone Electromechanical Locksets	Schlage	AD200MS/MD-BD	None	
Push Button Mechanical Locksets	Simplex	1000L	None	