DIVISION 8 - DOORS AND WINDOWS

Section 08000 - General Discussion

Introduction

This General Discussion Section contains material which is critical to successful door and window installations, in new construction and renovation, but which is not the sole responsibility of any individual trade. In many cases, the issues involved are fundamental to the basic design of the project, and the success or failure of this element of the project is determined at the very outset of the design process.

The Consultant is expressly responsible for incorporating these overall requirements into the project, and for ensuring that all subconsultants are aware of the requirements and incorporate them into their designs as well.

Reliance on "after-the-fact" material selections to compensate for a problematic design decision is unacceptable.

The use of wired fire rated safety glass has been determined an undesirable safety risk and is no longer allowed. Consequently glazed openings in fire rated doors and windows will require the use of fire rated glass.

Major Entrances

Generally, major building entrances will utilize some sort of monumental storefront system. All other exterior doors and frames should be steel.

Multiple Doors, Pairs of Doors, Banks of Doors

Exit widths in excess of 3'-0" are often required in major facilities. In such instances, the University prefers to use banks of single leaf doors, rather than double doors with center mullions. This requirement includes the following situations:

major building entrances
assembly occupancy entrance/exits (both interior and exterior)

In such situations which also require large widths for passage of equipment, use wider door leaves.

Preferably, use overhead doors as the primary means for passage of equipment.

Since the University does not use vertical rod exit devices, pairs of doors will necessarily have center mullions. In situations where use of center mullions is unavoidable and which also require large widths, the mullions must be removable. Specify these mullions in Section 08710 - Hardware.

Do not specify center mullions for double-egress doors in corridors.

Large Interior Doors

Where interior spaces require large doors for the passage of equipment (e.g. general laboratories, shared equipment laboratories, etc.), specify 3'-6" or 4'-0" single leaf doors (with appropriate adjustments in frame gauge and hardware requirements) rather than pairs of 3'-0" + 1-0" doors.

Coordination and Preparation

Make specific references to ensure that requirements for coordination of doors, frames, and hardware, is clearly included in the Contractor's scope of work. This often involves the steel door and frame supplier, the wood door supplier, the hardware supplier, and the installers of these materials. While this type of coordination is implicit in the Contractor's scope, a specific reference provides an additional level of comfort.
A common example of the lack of this coordination is an interior wood door in a steel frame with a smoke gasket. If even one of the trades involved fails to properly coordinate, it is likely the door will not close and latch properly against the gasket.

The Consultant should also ensure during submittal review that such issues are clearly identified in the submittals of all the trades involved.

End of Section 08000
DIVISION 8 - DOORS AND WINDOWS

Section 08110 - Steel Doors and Frames

Introduction

This is a section where the consultant should use a "performance specification". Do not specify proprietary manufacturer's names or materials, and do not restrict vendors to a limited list.

Do not specify knock-down or so-called "drywall" metal door frames.

Part 1 - General

- Require that all steel doors and frames comply with the requirements of:
  - National Association of Architectural Metal Manufacturers Standard HMMA 861
  - Building Hardware Manufacturer's Association (BHMA)
  - Underwriter's Laboratories (UL) rated and labeled where required

- Require submittal of:
  - manufacturer's literature
  - shop drawings
  - Complete door and frame schedule covering every opening

Part 2 - Products

- Specify doors and frames in the following gauges:
  - exterior frames: 14 gauge
  - interior frames > 4'-0": 14 gauge
  - interior frames < 4'-0": 16 gauge
  - doors: 18 gauge

- Specify doors and frames with factory-applied primer, ready for field finishing.

- Specify and detail door frames with:
  - fully mitered, welded, and ground corners
  - double rabbeted profiles, with equal-sized rabbets
  - 2" rails and head, and always equal-size
  - exterior sidelights and transoms for interior glazing only
  - lights which extend to the floor with 4" bottom rails
  - mortar boxes for all hardware
  - ASA strikes for full mortise locks
  - 4 wall anchors plus 1 floor anchor per jamb
    - corrugated 14 gauge T-type for masonry walls
    - welded to frame for stud walls
    - use dimpled anchors only for openings in existing walls.

- silencers on all frames

- Specify and detail doors with:
• seamless faces
• edge seams welded and ground
• rigid polystyrene core fully bonded to the steel face sheets
• closed watertight top
• inverted bottom closure channel
• minimum 6" head rail, 6" stiles, and 12" bottom rail, at all lights and louvers
• provide pockets for full mortise lock

• Specifically require that doors and frames be prepared and internally reinforced at the factory for installation of butts, closers, locksets, exit devices, and all other scheduled hardware. Specifically prohibit field preparation of steel doors and frames.

• Make specific reference that the rabbet of door frames be sized, and that factory preparation for butts in both doors and frames must make allowance, for silencers or smoke gaskets.

Part 3 - Execution

• Specifically require that all doors and frames be installed in conformance with HMMA, BHMA, and UL requirements.

• Require that all doors be completely hung, with all hardware installed, tested, and adjusted for perfect fit, prior to field finishing. Require that doors be dismounted and hardware removed, and re-hung after finishing is complete.

End of Section 08110
DIVISION 8 - DOORS AND WINDOWS

Section 08210 - Wood Doors

Introduction

This is a section where the consultant should use a "performance specification". Do not specify doors by proprietary manufacturer's names or model numbers, and do not restrict vendors to a limited list.

Do not specify wood doors for exterior applications.

Part 1 - General

- Reference the following standards as applicable and coordinate specifications to comply without conflicts.  
  - Window & Door Manufacturers Association (WDMA), ANSI/WDMA I.S 1-A-97 Wood Flush Doors  
  - NFPA 80 – Fire Doors and Windows  
  - NFPA 252 – Fire Test for Door Assemblies  
  - ASTM E152 – Fire Tests of Door Assemblies  
  - UL 10B – Fire Tests of Door Assemblies

- Require these associations' stamps and labels to be affixed to the doors.

- Require submittal of manufacturer's literature, and 6"x6" corner samples.

- Require doors to be wrapped in plastic. Individual cartoning is not required.

- Specify full lifetime guarantee for interior wood doors. Include defective materials and fabrication, delamination, warping, telegraphing. Include replacement, reinstallation, and refinishing of the door.

Part 2 - Products

- Specify only 1-3/4" thick solid core doors for all interior applications.

- Specify doors complying with AWI "premium grade", PC7 ME or PC5 ME with select white birch veneer faces, rotary cut, book matched grain, balance matched assembly, for transparent finish. For new buildings, alternative veneers require project manager approval.

- Specify particle board cores, with stiles and rails glued to core and sanded before laminating, for general non-rated applications, and for 20-minute fire-rated applications.

- Specify mineral cores of appropriate ratings, with stiles and rails glued to core and sanded before laminating, where 3/4-hour or longer fire-rated doors are required.

- Require solid wood blocks in fire-rated doors as support for installation of mortise and/or cylinder type locksets (2-3/4" backset), and of closers.

- Require rails and stiles of solid hardwood (not laminated or veneered), 1-1/8" minimum for rails, 1-3/8" minimum for stiles.

- Require surrounds for lite and louver openings for non-rated doors of solid hardwood (not laminated or veneered), 6" minimum.

- Specify glazing stops of same hardwood as door facing.
• Require rated metal surrounds and glazing for lites at rated doors. Require profile of rated surround to match profile of specified wood surrounds of non-rated doors.

• Specify pair matched, set matched and continuous matched transoms, where applicable.

• Specify only Type I adhesives for all applications.

• Specify minimum STC 35 sound rating for single leaf doors for most applications. Discuss requirements for higher STC ratings with the Project Manager.

Part 3 - Execution

• Specify installation using the following criteria:

  • bevel doors on 3 sides.
  • trim doors to provide 1/8" reveal on 3 sides.
  • if beveling or trimming is required, seal all surfaces to prevent swelling.
  • machine, trim, and mount doors to receive all specified items of hardware (especially smoke gaskets and weatherstrips), and to latch without binding.

End of Section 08210
DIVISION 8 - DOORS AND WINDOWS

Section 08305 - Access Doors

Introduction

Provide access doors to attics, roofs, crawl spaces, tunnels, elevator equipment rooms, overhead areas, mechanical equipment rooms, and similar spaces where University personnel must have access for maintenance or repair.

All access doors shall be specified in this section. Coordinate with work in other divisions (i.e., electrical and mechanical). On architectural drawings show all access doors on ceiling plans and on wall elevations.

Part 1 - General

• Minimum size shall be 16” x 16” for walls and 24” x 24” for ceilings. Size may be larger if required for replacement of materials/equipment.

• Access doors shall be fire rated where required. Locations should be noted on plans.

• All access doors shall be metal.

• Provide key locks only on doors to elevator equipment areas

Part 2 - Products

• Access doors shall have continuous hinges and a minimum of two (2) cam type latches.

Part 3 - Execution

• Access doors shall be painted in the open position.

End of Section 08305
DIVISION 8 - DOORS AND WINDOWS

Section 08330 - Overhead Coiling Doors

Introduction

Provide Overhead coiling doors where necessary for service or access. Avoid the use of pairs of swing type doors for service access

Avoid these type doors as part of fire rated wall opening

Avoid the use of security grilles

Where egress is required, provide adjacent (not integral) personnel exit door assembly.

Where an insulated door is required, sectional type shall be provided.

Part 1 - General

- Use manual push up type except where crank, chain or motor operation is appropriate due to size.

Part 2 - Products

- Provide cylinder locking method in bottom bars.

Part 3 - Execution

- Insure that fusible link, if applicable, is accessible on doors used as a fire rated curtain.

End of Section 08330
DIVISION 8 - DOORS AND WINDOWS

Section 08400 - Entrances and Storefronts

Introduction

Evaluate if future reglazing can be accomplished easily from the exterior.

Part 1 - General

- Consultant shall establish the minimum level of quality. System shall be “engineered”.
- Generally, these systems shall not incorporate operable windows.
- System shall accommodate the hardware components specified in Section 08710 - Finish Hardware. Substitutions of manufacturers standard hardware is not permitted.

Part 2 - Products

- Finishes shall be noted. If anodized or powder coated give class #.
- Determine if window washing hooks are necessary.
- Require design to provide for a simple re-glazing system.
- Specify the framing system. System shall provide positive drainage to the exterior.
- Entrance doors shall be minimum “wide style” type. Equivalent to Kawneer 500 series or approved equal.

Part 3 - Execution

- There are no unique University requirements.

End of Section 08400
DIVISION 8 - DOORS AND WINDOWS

Section 08500 - Metal Windows

Introduction

Finishes, maintenance and heat loss or gain are important considerations. Double glazing is required on all exterior windows.

Operable sash for emergency exit from dormitory rooms to meet code requirements must be considered as well as operable sash in air conditioned buildings where the equipment may fail for some reason.

Institutional quality construction and superior coatings and finishes should be considered if the budget will permit.

Interior glazing is preferred, for glass replacement, above the ground floor level.

Part 1 - General

- Require test results for water and air infiltration.
- Require certification that window meets requirements of Steel Window Institute or Aluminum Window Institute.
- Detailing shall provide for drainage, weepage, flashing, etc. for a weather tight installation.

Part 2 - Products

- Require protective coverings if materials are prefinished.

Part 3 - Execution

- There are no unique University requirements.

End of Section 08500
DIVISION 8 - DOORS AND WINDOWS

Section 08610 - Wood Windows

Introduction

Wood windows are to be used only in restoration work on historical buildings.

Part 1 - General

• There are no unique University requirements.

• Part 2 - Products

• There are no unique University requirements.

• Part 3 - Execution

• There are no unique University requirements.

End of Section 08610
DIVISION 8 - DOORS AND WINDOWS

Section 08710 - Finish Hardware

Introduction

The University of Arizona has determined that, based on its experience with the performance and durability of the products described in this Section, and based on the benefits of limiting the range of repair parts which must be maintained in inventory, a proprietary specification is in the best interest of the University.

Specify all hardware required for a fully functioning, secure, weatherproof installation for all swinging, sliding, and folding doors.
   - Include unique door or frame dependent hardware in those sections.
   - Include cabinet hardware in the appropriate Division 6 section.

In renovation projects, specify hardware which matches the existing hardware type for function, appearance, trim, and finish, except where other overriding considerations such as handicapped accessibility require deviations. The Consultant must determine the existing conditions and specify materials which match those conditions. Requiring the Contractor to "match existing as required" is unacceptable.

In special cases, hardware different from those items described below may be required. In all such cases, secure specific permission of the Project Coordinator. These cases may include:
   - Alarmed exit devices
   - Electronic security access
   - Matching "period" hardware in historic buildings

Include on the drawings a schedule indicating which specific hardware group applies to each individual door. Pay particular attention to identifying the desired function of each door lockset.

Part 1 - General

- Require submittal of a complete hardware schedule describing each door and each hardware group, including technical data for each item.

- Require that the supplier of finish hardware have as a full-time employee a regular member of the American Society of Hardware Consultants, and that the hardware schedule be prepared by the AHC member.

- Require delivery to the Owner upon Substantial Completion all adjusting tools, keys, dogging keys, and other maintenance materials.

Part 2 - Products

- Butts
  - Pre-qualified manufacturers are:
    - Hager
    - Lawrence
    - McKinney
    - Stanley

  - Minimum 1-1/2 pair per door
  - Always ball bearing
  - Always non-removable pins

- Closers
  - Use only Rixson 27 floor closer, with top and intermediate pivots, at all public exterior doors.
• Use LCN 4041 or equivalent Sargent at all other applications.
  • Non-handed, adjustable size, 4-way mountable.
  • Cast iron body.
  • Take advantage of available arm options where appropriate for various situations. (Hold open, cushion stop, 180 degree, delayed action, etc.).
  • Require through-bolt installation at wood and metal doors and surface-applied installation at metal door frames. Preferred installation is on the door. If jamb mounting is necessary, all holes to be drilled and tapped.
  • 10 year warranty.
  • All closers must comply with ADA requirements. Closure speed adjusted to 7 seconds.
• Use only wall-mounted hold open devices where doors with closers are intended to be normally open.
• Exit Devices
  • Pre-qualified manufacturers are:
    • Sargent 8800 series
    • Von Duprin 99 series
  • Use the following functions and trim in the noted applications; use no other functions or trim (these designations are based on Sargent products; similar Von Duprin products are acceptable).
    • 04 exterior (key)  PTB entrance doors (with bar down capability), and emergency exit doors (without bar down capability)
    • 13 exterior (key)  stairwells w/ access by key only
    • 16 classroom (key)  PRK x L interior exit doors from assembly spaces (with bar down capability)
    • 10 exit only  none interior double-egress doors (without bar down capability)
    • 28 corridor fire door  electronic hold open
  • Use only rim devices.
  • Do not use exposed or concealed vertical rod devices.
  • All exit devices must comply with ADA requirements.
• Double Doors
  • Refer to Section 08000 for additional information.
  • Use removable mullions only where the "door bank" principle cannot be applied. U of A approval is required.
  • Restrict use of manual flush bolts to storage and mechanical rooms. Use dust-proof strikes.
  • Avoid use of automatic flush bolts.
  • Avoid use of coordinators; where unavoidable, use full width units in lieu of gravity arm.
  • Where required, use only T-type astragals notched around the strike.
• Locksets and Latches
  • Pre-qualified manufacturer is:
    • Sargent
• Use 8200 line labeled mortise locks at heavy duty applications such as:
  • Exterior ingress and egress doors
  • Classrooms
  • Stairwells
  • Use "L" rose and "L" lever for trim design selection

• Use 10 line cylindrical locks at all other general use applications.
  • Use "L" rose and "L" lever trim design selection.

• Generally use the following functions in the noted applications. Use of other functions may be required by User and U of A Lockshop.
  • 05 office (toggle) all "assigned" interior applications (offices, laboratories, etc.)
  • 37 classroom (key) all "shared" interior applications (classrooms, lecture halls, etc.)
  • 04 always locked restricted interior applications (animal quarters, bio-hazard labs, radio-hazard labs, etc.) and all interior and exterior service spaces (mechanical rooms, equipment rooms, telecomm rooms, always locked storage rooms, custodial closets, etc.) and ground level stairwell exit doors.
  • 15 passage interior closets, etc.
  • 65 privacy single person toilet rooms
  • 480 auxiliary lock corridor toilet rooms

• 2-3/4" backset
• Only "asa" type strikes with no filing or other modifications to make fit.
• In renovation applications, comply with these requirements regardless of the style of existing locks and latches unless directed otherwise by Project Manager.
• All knobs, handles and levers shall comply with ADA requirements.

• Digital Locksets

• Use only OMNILOCK digital locksets by OSI Security Systems, Inc. For all applications utilize OMNILOCK Cylindrical Lockset part number OM300-C-SR-626-STD-WX-P. This is a cylindrical lockset requiring a 2¼" diameter bore and a 2¾" backset.

• Cylinders and Keying

• Specify that all locks and latches be shipped without permanent cylinders unless required by the Contractor for temporary access and security.
  • The University will install all permanent cylinders and perform all keying.

• Require the Contractor to provide his own temporary construction, installation and “testing” cylinders.
  • On new buildings the University may provide temporary construction cylinders. Verify availability and quantities with Project Coordinator.
  • On all renovation projects the Contractor shall provide construction cylinders, keyed alike. Provide 2 keys per cylinder to the U of A.

• Interchangeable or removable core cylinders are not employed by the University system and are not acceptable.

• Miscellaneous Hardware
Specify all required miscellaneous hardware, including:
- Stops (wall-type are preferred)
- Kickplates on heavy traffic doors (classrooms, conference rooms, laboratories, etc.)
- Thresholds, door bottoms, and weatherstrips on all exterior doors.
- Interior smoke and door seals surface mounted or adhesive backed.

Finish
- BHMA 626 (US 26D), satin chrome plate, uncoated
- BHMA 630 (US 32D), satin stainless steel, uncoated

Hardware Schedule
- Include a specific hardware group schedule, with group designations to be used on the drawings.

Part 3 - Execution
- Coordinate with other trades (Division 6 and Division 9) location of backing required for surface applied hardware.
- Make sure that installation is specifically described, here or in the appropriate Division 6 section.
- Require that all hardware including temporary test cylinders be installed, and all doors tested and adjusted for proper operation, prior to Substantial Completion.
- All door closers shall be readjusted after the air balance is complete.
- Latches shall be centered in strikes. i.e. filing of strikes is strictly prohibited.

End of Section 08710
DIVISION 8 – DOORS AND WINDOWS

Section 08711 – Finish Hardware; Residence Life

Introduction

The University of Arizona Residence Life, has determined that, based on its experience with the performance and durability of the products described in this Section, and based on the benefits of limiting the range of repair parts which must be maintained in inventory, a proprietary specification is in the best interest of the University.

Also, to ensure compatibility of door hardware with the unique key system utilized within the University of Arizona Residence Life, specific door hardware must be used.

Specify all hardware for a fully functioning, secure, weatherproof installation for all swinging, sliding, and folding doors.

Include unique door or frame dependent hardware in those sections.
Include cabinet hardware in the appropriate Division 6 section.

In renovation projects, specify hardware which matches the existing hardware type for function, appearance, trim, and finish, except where other overriding considerations such as handicapped accessibility require deviations. The Consultant must determine the existing conditions and specify materials which match those conditions. Requiring the Contractor to “match existing as required” is unacceptable.

In special cases, hardware different from those items described below may be required. In such cases, secure specific permission of the Project Manager. These cases may include:

- Alarmed exit devices
- Electronic access control
- Matching “period” hardware in historic buildings

Include on the drawings a schedule indicating which specific hardware group applies to each individual door. Pay particular attention to identifying the desired function of each door lockset.

Part 1 – General

- Require submittal of a complete hardware schedule describing each door and each hardware group.
- Require that the supplier of finish hardware have as a full-time employee a regular member of the American Society of Hardware Consultants, and that the hardware schedule be prepared by the AHC member.
- Require delivery to the Owner upon Substantial Completion all adjusting tools, keys, dogging keys, and other maintenance materials.

Part 2 – Products

- Butts

- Pre-qualified manufacturers are:
  - Hager
  - Lawrence
  - McKinney
  - Stanley
  - Minimum 1 ½ pairs per door
  - Always ball bearing
  - Always non-removable pins
  - Full length continuous hinges are NOT to be used without prior approval of Project Manager.

- Closers
• Use LCN 4040 series at all applications, unless prior approval of Project Manager.
• Non-handed, adjustable size, 4 way mountable.
• Cast iron body.
• Closers will be mounted for 180 degree opening unless configuration requires other mounting location.
• Require through-bolt installation at wood doors. Metal doors will be installed in reinforced areas. Preferred installation is on door. If jamb mounting is necessary, all holes to be drilled and tapped.
• Closers will have 10 year manufacturer warranty.
• All closers must comply with ADA requirements. ADA openings shall be equipped with DA (delay action) closers. Closure speed adjusted to 7 seconds (latching speed).
• Use only wall mounted hold open devices where doors with closers are intended to be normally open. (These units must be tied into existing fire alarm system if used).
• All closers will be readjusted upon project completion for environmental conditions in building.

• Exit Devices

• Pre-qualified manufacturers are:
  • Von Duprin 99 series.
  • Von Duprin 99-F for fire rated openings.
  • Von Duprin 33 Series for narrow stile.
  • Concealed vertical rod devices will NOT be used without prior approval of Project Manager.
  • On non-fire rated openings, key operated removable mullions will be used. (Von Duprin KR54 removable mullion).
• Use the following functions and trims in the noted applications; use no other functions or trim (these designations are based on Von Duprin products).

<table>
<thead>
<tr>
<th>ANSI Function</th>
<th>Trim</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>NL</td>
<td>Entrance/exit doors (non-fire rated) exterior</td>
</tr>
<tr>
<td>03</td>
<td>L-F</td>
<td>Stairwell doors requiring key access</td>
</tr>
<tr>
<td>08</td>
<td>L-F</td>
<td>Fire rated openings</td>
</tr>
<tr>
<td>08</td>
<td>L</td>
<td>Openings from/into conference rooms</td>
</tr>
</tbody>
</table>

• Use only rim devices.
• All exit devices must comply with ADA requirements.

• Double doors

• Refer to section 08000 for additional information.
• Use key operated mullions where ever applicable.
• Restrict use of manual flush bolts to storage and mechanical rooms. Use dust proof strikes.
• Avoid use of automatic flush bolts. Use requires prior approval of Project Manager.
• Avoid use of coordinators; where unavoidable, use full width units in lieu of gravity arm.
• Where required use only t-type astragals notched around the strike.

• Locks and latches

• Pre-qualified manufacturer is:

  • **Best (no substitute)**

• Use Best 93K series cylindrical locks at all general use applications.
  • Use C rose and 15 lever trim designation
  • **SFIC Interchangeable core function REQUIRED. Best specification code (7).**
• Generally use the following functions in the noted applications. Use of other functions may be required by User and Residence Life.

<table>
<thead>
<tr>
<th>ANSI Function</th>
<th>Best Function</th>
<th>Use</th>
</tr>
</thead>
</table>
• 2 ¾” backset.
• Only ANSI 4 7/8” strike (Best code S3) to be used.
• In renovation applications, comply with these requirements regardless of the style of existing locks and latches unless directed otherwise by Project Manager.
• All knobs, handles and levers shall comply with ADA requirements.

• **Cylinders and keying**
  - Specify that all locks and latches be shipped without permanent cylinders unless required by Contractor for temporary security.
  - Residence Life Access Control Systems will supply and install all permanent cylinders and perform all keying plans.
  - Require the Contractor to provide his own temporary construction, installation and testing cylinders.
  - Interchangeable SFIC format removable core cylinders are required.

• **Miscellaneous Hardware**
  - Specify all required miscellaneous hardware, including:
    - Stops (wall type preferred)
    - Kickplates on heavy traffic doors (conference rooms, corridor doors)
    - Thresholds, door bottoms, and weatherstrips on exterior doors.
    - Interior smoke seals (similar to Pemko 312, do not use adhesive application).

• **Finish**
  - BHMA 626 (US26D), satin chrome plate, uncoated
  - BHMA 630 (US32D), satin stainless steel, uncoated

• **Hardware Schedule**
  - Include specific hardware group schedule, with group designations to be used on the drawings.

**Part 3- Execution**

• Coordinate with other trades (Division 6 and Division 9) location of backing required for surface applied hardware.

• Make sure installation is specifically described, here or in appropriate Division 6 section.

• Require that all hardware including temporary test cylinders be installed, and all doors tested and adjusted for proper operation, prior to Substantial Completion.

• All door closers shall be readjusted after the air balance is complete.

• Latches shall be centered in strikes, i.e. filing of strikes is strictly prohibited.

**End of Section 08711**
DIVISION 08 - DOORS AND WINDOWS

Section 08720 - Automatic Door Operators

Introduction

The University of Arizona has determined that, based on its experience with the performance and durability of the products described in this Section, and based on the benefits of limiting the range of repair parts which must be maintained in inventory, a proprietary specification is in the best interest of the University.

Require automatic door operators on at least one door leaf at each entrance intended or expected to be available for general ingress/egress use. *Automatic door operator locations will be approved by the University of Arizona.*

Use sliding automatic door operators only with the specific permission of the Project Coordinator.

Do not use the following products:
- Motion detectors
- Pressure mats

Coordinate electrical requirements on the drawings.

Part 1 - General

- Require that the supplier(s) and installer(s) demonstrate 5 years of successful installations of similar systems.

Part 2 - Products

- Approved manufacturer and models are:
  - *Horton Series 7000 (medium duty) for interior doors, 3'-0" or smaller*
  - *Horton Series 4000 (heavy duty) for exterior doors and interior doors greater than 3'-0".*

- Generally, specify the following features:
  - Electro-mechanical, swing operation
  - Sealed transmission
  - All metal gears
  - Interior, push side, surface, top jamb, mounting
  - Key controlled power shut-off
  - 3-second "door stalled" safety feature
  - Automatic assist on manual operation
  - Remote battery operated radio frequency, square push plate control, wall mounted, 2 for each door
  - Power on/off switch accessible on surface of operator.

- Safety rails are required but need not necessarily be the door operator manufacturer's standard products. Rails may be specified to harmonize with the overall building design.

Part 3 - Execution

- There are no unique University requirements in this Section.

End of Section 08720
DIVISION 8 - DOORS AND WINDOWS

Section 08800 - Glazing

Introduction

Glass is a major maintenance issue for the University due to breakage from accidents and vandalism. The Consultant is encouraged to use light sizes which are easily replaced by the University, and carefully consider the use of any specialty glazing.

Part 1 – General

- Provide calculations for thermal stress, wind load, and structural requirements. Calculations for thermal stress should relate to partial, full and seasonal shading effects.
- Avoid the use of film applied to exposed surfaces of glass whenever possible.
- Wired (safety) glass is not allowed in any application
- Tinted/colored glass or spectrally selective glazing shall be reviewed and approved by the UA FDC Project Manager.

Part 2 - Products

- Exterior Window Openings
  - Standard Glazing: 1” insulating units with solar control low emissivity (low-e) coating
    - Use heat treated glass as required by thermal stress analysis
    - Use laminated glass for obscure or translucent glazing
  - Safety Glazing: 1” insulating glass units, where required by code, either fully tempered (FT) or laminated
  - Spandrel Glass
    - Use heat treated glass as required.
    - Space immediately behind Spandrel glass shall be adequately vented.

- Interior Window Openings
  - Standard Glazing: Annealed float or laminated
    - Use laminated glass for obscure or translucent glazing
  - Safety Glazing: where required by code, either fully tempered (FT) or laminated

- Fire-rated Glazing
  - Due to high cost of installation and replacement the use of fire rated glazing should be carefully considered during the design and approved by the UA FDC Project Manager.
    - Transparent ceramic (used as part of an insulating unit if exterior rated glazing is required).
    - Transparent wall units designed as a barrier wall (inert material turns to foam during a fire)

- Specialty Glazing
  - Coordinate approval of specialty glazing such as bullet resistant, acoustical, one way viewing, projection booths, etc. with UA FDC Project Manager to determine products that will meet specific needs.
  - Ceramic pattern may be used if reviewed and approved by UA FDC Project Manager.
Mirror Glass: shall be framed in stainless steel and shall have a backing sheet.

Part 3 - Execution

MIRRORS shall be set with theft-proof mounting.

End of Section 08800