Jefferson County School District, R-1
Support Services

TECHNICAL GUIDELINES

DIVISION 08 – OPENINGS
November 1, 2006

DIVISION 08 – OPENINGS
08 11 00 Metal Doors and Frames – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Standard types and sizes are preferred.
  1. Leaf width: 36 inches minimum, 48 inches maximum
  2. Height: 7'-0" preferred; as required for retrofit applications.
- Glazed openings in and around doors
  1. Solid door without lite is preferred to the greatest extent possible
  2. Flush door with sidelite is the preferred configuration at classroom doors
  3. Door vision panel maximum dimensions: Width = 24 inches; Height = 60 inches
  4. High security openings should be narrow (3 inches or less) or use security glazing or be located at hinge side.
- In the absence of other information, standards of the following organizations apply:
  1. NFPA 80, Standard for Fire Doors and Fire Windows
  2. Steel Door Institute (SDI)
  3. National Association of Architectural Metal Manufacturers (NAAMM)
- Submittals
  1. Product Data: Required
  2. Shop Drawing: Required
  3. Door Schedule: Required; including label/fire rating, frame anchorage
  4. Closeout: Submittals listed above, updated to record status.
- Restrictions
  1. KD frames: Permitted for limited retrofit applications only.
  2. Mixing of frames and doors of different metals is prohibited.
  3. Aluminum doors and frames are prohibited. See Section 08 41 00.
  4. Provide architectural protection for exterior doors to prevent wind damage, especially at north and west exposures.
- Steel Frames
  1. Minimum Gauge: 14 exterior, 16 interior
  2. Construction: Continuous electric-welded mitered corners; spot welded elsewhere
  3. Factory reinforced and prepared for attachment of:
     a. Hinge: 3/16 inch x 12 inch steel plate
     b. Strike: 14-gauge steel
     c. Closer: 12-gauge steel
     d. Head over 42-inch width: 14-gauge frame or 12-gauge angle or channel stiffener.
  4. Removable center mullion is required for paired door frames; interior and exterior
  5. Electrostatic applied epoxy ester shop primer

- Frame anchors
  1. Concrete & Masonry: 14 ga. adjustable strip anchors at least 2 ½ inches x 10 inches; T-strap, wire, or corrugated/perforated stirrup and strap configuration welded to frame
     a. Quantity per SDI
     b. Galvanized and epoxy primed and exterior and wet locations
  2. Metal Stud Framing: 16 gauge anchors welded to frame
  3. Masonry retrofit: Countersunk drilled U.L. type masonry anchor
  4. Fixed or adjustable floor anchors are mandatory
- Slush fill HM frame with grout at masonry and concrete construction
- Steel Doors:
  1. Materials
     a. ANSI/SDI-A250 Level 3 Heavy Duty; 16 gauge face except as itemized below.
     b. ANSI/SDI-A250 Level 4 Extra Heavy Duty; 14 gauge face and internal stiffeners are required at the following locations:
        (1) Exterior main entrances
        (2) Gymnasium, Locker Room, Athletic area exterior doors
        (3) Cafeteria, commons exterior doors
        (4) Other exterior high traffic/abuse/security locations identified by Jefferson County School District, R-1
     c. ANSI/SDI-A250 Level 1 Standard Duty; 18-gauge face is permitted for in-room closets.
  2. Construction
     a. Plain flush with edge seams, seamless, or stile and rail construction
     b. 1 3/4 inch overall thickness
     c. 18 gauge top channel
     d. 18 gauge recessed or concave bottom channel.
     e. Mitered, fully welded construction
     f. Factory reinforced and prepared for attachment of:
        (1) Hinge: 3/16 inch steel plate
        (2) Lock: 16-gauge steel
        (3) Closer: 12 gauge steel
     g. Core: honeycomb, grid, or vertical steel rib
        (1) Polystyrene and polyurethane cores are prohibited.
     h. Insulation:
        (1) 3-lb. mineral or glass wool; Loose or blown fill is prohibited.
     i. Finish: Factory applied air dried or baked rust inhibiting primer
- Installed Clearances:
  1. Head & Jamb: 3/32 inch preferred, 1/8 inch maximum
  2. Meeting stile: 1/8 inch maximum
  3. Bottom at threshold: 1/8 inch preferred, 1/4 inch maximum
  4. Bottom to floor: 1/2 inch maximum
- Field modification or machining of labeled doors is prohibited except as permitted by NFPA 80.
- Glazing stops: 18 gauge mitered & welded steel channel. Screw attachment only.

END SECTION 08 11 00

08 14 00 Wood Doors – November 1, 2006

- Work in this section is restricted to specific manufacturers that have been previously approved by Jefferson County School District, R-1 Facilities Services Department.
  1. Algoma Hardwood, Inc.
  2. Eggers Industries
  3. Fenestra America
  4. Ideal Architecture
  5. Marshfield Door Systems, Inc.
  6. Oshkosh Architectural Door Co.
  7. Western Oregon Door
- Source quality control
  1. Product support: Full-time individual or firm based or branched in Colorado
- Standard types and sizes are preferred.
  1. Leaf width: 36 inches minimum, 48 inches maximum
  2. Height: 7’-0” preferred except for retrofit applications.
- Openings in and around doors
  1. Solid flush door without lite is preferred to the greatest extent possible.
  2. Door vision panel maximum dimensions: Width = 6 inches; Height = 30 inches
  3. Flush door with sidelite is the preferred configuration at classroom doors
  4. Openings in and near high security doors should be narrow (3 inches or less) or security glazing.
- In the absence of other information, standards of the following organizations apply:
  1. Window and Door Manufacturer’s Association (WDMA) “Industry Standard for Architectural Wood Flush Doors”
  2. National Fire Protection Association (NFPA) 80, Standard for Fire Doors and Fire Windows; current edition.
- Submittals
  1. Product Data: Required
  2. Shop Drawing: Required
  3. Samples: Face veneer for transparent finish; 36 inches wide x 24 inches high or longer for final approval.
  4. Other: Door and Hardware schedule, including label, fire, positive pressure, and ‘S’ rating, and frame anchorage
  5. Manufacturer's extended warranty for complete replacement of doors that exhibit any of the following defects within the life of the door:
     a. Delamination in any degree
     b. Bow, cup, warp, or twist of 1/4 inch or more
     c. Telegraphing of any part of core through to face in excess of 0.01-inch per 3 s.f.
     d. Deviation from Reference Standards tolerances
     e. Any door condition which impairs performance of the door
  6. Closeout: Submittals listed above, updated to record status
- Restrictions
  1. Wood doors are categorically prohibited for exterior applications.

- Fabrication
  1. Premium or extra heavy duty grade per WDMA
  2. 5 or 7 ply fully bonded construction
  3. Thickness: 1 ¾ inches
  4. Core:
     a. Structural composite lumber (SCL): Preferred
     b. Type I –LD-2 density particle board (PB): Not recommended
     c. Stave lumber core (SLC): Prohibited
     d. Gypsum or mineral: Prohibited. Use hollow metal door
  5. Stile, rail, and crossband: Structural composite lumber (SCL) or hardwood
  6. Face Veneer:
     a. Grade: A (WDMA)
     b. Cut: Plain
     c. Grain: Vertical
     d. Pattern: Slip or balance match
     e. Species: White birch or Red oak or Maple
     f. Thickness: 1/50 inches (0.5mm) minimum.
  7. Edge Band: Hardwood laminated to core
  8. Finish: Factory applied UV catalyzed polyurethane (TR/OP6); No substitutions.
     a. Include edges, cutouts, mortises
     b. Field finishing and touch up are prohibited.
  9. Factory installed blocking and preparation to accommodate scheduled hardware.
     a. Field modification is prohibited
     b. Pre-drill for hinge screws.
  10. Manufacturer label identifying all of the above
- Condition wood door to ambient humidity for at least 48 hours before hanging.
- Installed Clearances:
  1. Head & Jamb: 3/32 inch preferred, 1/8 inch maximum
  2. Meeting stile: 1/8 inch maximum
  3. Bottom at threshold: 1/8 inch preferred, 1/4 inch maximum
  4. Bottom to floor: 1/2 inch maximum (measured from floor finish)
- Field modification or machining of labeled doors is prohibited except as permitted by NFPA 80.

END SECTION 08 14 00

08 31 00 Access Doors and Panels – May 25, 2007

- Work in this section is open to any product or material.
- Submittals
  1. Product Data: Required
  2. Shop Drawing: Required
  3. Closeout: Submittals listed above, updated to record status.

- Access doors are mandatory in:
  1. Gridless ceiling systems over 2000 square feet (in order to provide mechanical and electrical system service access).
  2. Utility chases
- Access doors and panels retrofitted into the building egress system require a Building Permit.
- Fabrication
  1. 24 inches minimum net opening dimension, in each direction; 30 inches preferred
  2. 18 gauge flush steel panel in 16 gauge steel frame
  3. Continuous hinge with stainless steel pin.
  4. U.L. listed for fire rating compatible with wall or ceiling assembly
  5. Lock
     a. Manufacturer's standard key-operated cylinder cam lock.
     b. 12-gauge stainless steel hasp is permitted for out-of-view non-public locations.
     c. Key all locking specialty doors to building master key.

END SECTION 08 31 00

08 33 00 Coiling Doors and Grilles – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Submittals
  1. Product Data: Required
  2. Shop Drawing: Required
  3. Closeout:
     a. Submittals listed above, updated to record status.
     b. Operation and Maintenance Manual
- Coiling doors: Kitchen serving line, student store, ticket booth, cashier.
- Coiling grilles: After hours corridor security
- Coiling grilles are prohibited at kitchen serving line.
- Placement of coiling doors and grilles may not jeopardize safe building egress as defined by code.
- Coiling Doors and Counter Curtains
  1. Motorized operation and pushbutton reset. Manual awning type crank is permitted for backup operation only.
  2. Ratchet device to control descent rate to less than 12 inches per second.
  3. Separate timing circuits for alarm condition (10 sec.) and power failure (30 sec).
  4. Construction: Slatted curtain of stainless steel, steel, or aluminum.
- Coiling grilles:
  1. Overhead type only.
  2. Open lattice of stainless steel, steel, or aluminum.

- Overhead Doors
  1. Design wind load: 70 m.p.h. minimum.
  2. Pass door: not recommended
  3. Aluminum or galvanized steel is preferred; composite is acceptable; fiberglass is not recommended; wood is prohibited.
  4. Drawbar or Jackshaft 110V motor operator
  5. Failsafe electric eye bottom safety protection feature
- Key all locking specialty doors to building master key.

END SECTION 08 33 00

08 41 00 Entrances and Storefronts – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Submittals
  1. Product Data: Required
  2. Shop Drawing: Required
  3. Closeout: Submittals listed above, updated to record status.
- In the absence of other information the standards of the American Architectural Manufacturer's Association (AAMA) apply.
- Metal-Framed Storefronts
  1. 3/16 inch (0.188 inch) minimum gauge 6063-T5 or T6 aluminum frame.
  2. Reinforcement is mandatory at hardware mounting locations
  3. 2 inch minimum stile thickness
     a. Narrow stile design is prohibited
     b. Top rail dimension adequate to mount closer
  4. Corner construction: Concealed welded reinforcement bracket.
  5. Finish: Anodized aluminum
  6. Center mullion is mandatory at double doors
  7. Provide architectural protection for doors to prevent wind damage, especially at north and west exposures.
  8. Prohibited:
     a. Compression-fit with cap
     b. Plastic clip
     c. Adhered spandrel panels
     d. Details that permit unauthorized removal of glazing from exterior
     e. Unitized hardware that does not comply with Section 08 71 00
     f. Removable mullions

END SECTION 08 41 00

08 44 00 Curtain Wall and Glazed Assemblies – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Submittals

1. Product Data: Required
2. Shop Drawing: Required
3. Samples: Preferred
4. Closeout: Submittals listed above, updated to record status.

- Metal Framed Curtain Wall:
  1. Not applicable; not permitted
  2. Refer to entrances and storefronts (08 41 00)
- Sloped Glazing Assemblies:
  1. No requirements

END OF SECTION 08 44 00

08 45 00 Translucent Wall and Roof Assemblies – November 1, 2006

- Work in this section is restricted to specific manufacturers that have been previously approved by Jefferson County School District R-1 Facilities Services Department.
- Submittals
  1. Product Data: Required
  2. Samples: Required
  3. Test reports: Preferred
  4. Shop Drawings: Required
  5. Closeout: Submittals listed above, updated to record status
- Prefabricated flat or curved translucent glass fiber sandwich panel systems for walls or skylights.
  1. Kalwall or prior approved equal
- Translucent fiberglass panel faces
  1. Glass fiber reinforced thermoset resin specifically designed for architectural use
     a. Thermoplastic (e.g. polycarbonate, acrylic) is prohibited.
  2. Faces shall not deform, deflect, drip, or detach when subject to heat or flame.
  3. Strength: Exterior face sheet shall be impenetrable by hand-held pencil.
  4. Faces shall not discolor after extended exposure to sunlight.
- Source Quality Control
  1. Ten consecutive year minimum firm history of manufacturing Translucent Wall and Roof Assemblies
  2. Five consecutive year minimum history of completed Translucent Wall and Roof Assembly installations in commercial/institutional buildings in the western USA; with at least 5,000 square feet installed in Colorado or similar climate
  3. Product Support: Full time individual or firm based or branched in Colorado

END SECTION 08 45 00

08 50 00 Windows – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Submittals
  1. Product Data: Required
  2. Shop Drawings: Required
  3. Samples: Preferred
  4. Test Reports:
     a. Air infiltration test.
     b. Water resistance test.
     c. Wind load test.
     d. Thermal performance test.
  5. Certificates:
     a. Submit manufacturer certifications/proofs of compliance with requirements of this section.
  6. Field Sample is preferred for projects with more than 500 square feet of window
  7. Extended warranty:
     a. Underwritten by window manufacturer.
     b. 5 years minimum term from the date of project acceptance covering defects in materials and workmanship
     c. 5 years minimum term from the date of project acceptance covering specified performance standards.
     d. Monetary limits at any time in the warranty period shall not be restricted to any amount less than the original (sub)contract amount.
  8. Closeout: Submittals listed above, updated to record status.
- In the absence of other information standards of the following organizations apply.
  1. Window and Door Manufacturer's Association (WDMA)
  2. American Architectural Manufacturers Association (AAMA)
- Configuration
  1. Standard window types, sizes, and configurations are preferred over custom.
  2. Operable sash with insect screen is preferred for most exterior applications in assignable spaces.
  3. Fixed sash is required in areas where food may be prepared and preferred for public and circulation spaces**.**
  4. Projecting sash may not protrude into pedestrian or occupant traffic patterns.
  5. Steel Windows: Exterior Hollow Metal sill must be 1 foot minimum above grade.
  6. Operable sash steel windows are prohibited.
  7. Glazing stops must be removable. Screw attachment only

- Aluminum Windows: Preferred
  1. ANSI/AAMA Heavy Commercial (HC) class
  2. 6063 aluminum alloy tempered to T5 or better.
  3. 0.125 inch minimum extrusion wall thickness
  4. Finish: Standard anodized
  5. ANSI/AAMA AW-50 rating, or better
  6. Monumental grade type A3 assembly
  7. Non-magnetic stainless steel fasteners throughout
  8. Deburred cut edges
  9. Thermal-break design
  10. PVC materials in concealed locations only
  11. Fabricated to allow for thermal movement
  12. Corner Joints: Flush, mitered, rigid, weatherproof, hairline joints.
  13. Internal and external drainage to exterior.
  14. Reinforce frame at hardware locations.
- Wood Windows: Prohibited
- Hardware
  1. Institutional quality, vandal-resistant
     a. Solid white metal with a special coating finish
     b. Solid bronze with plated steel
     c. Brass/bronze operating bars and rods
- Weather-stripping
  1. Non-ferrous spring metal or vinyl gasket compression type.
  2. Woven pile wool, polypropylene, or nylon sliding type.
  3. Completely concealed in closed window.
- Fasteners:
  1. Wood members & units: Zinc-coated or non-ferrous nails and screws
  2. Hardware & accessories: Brass screws
  3. To steel frame: Zinc coated phillips head machine screw.
- Source Quality Control
  1. Ten consecutive year minimum firm history of manufacturing specified window assemblies.
  2. Protruding screws, sharp unfinished edges are prohibited.
- Acceptable Installers
  1. In business under the same name in the state of Colorado for no less than 24 consecutive months prior to the bid opening.
  2. Certified and approved by the window manufacturer to install and service specified windows.

END SECTION 08 50 00

08 60 00 Roof Windows and Skylights – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- Submittals
  1. Product Data: Required
  2. Shop Drawing: Required
  3. Closeout: Submittals listed above, updated to record status.
- For reasons of acoustics, safety, security, glare, blackout, energy efficiency, occupant comfort, weathertightness, hail, and maintenance, the use of skylights is generally not recommended.
- Daylighting by means of vertical glazing in the form of clerestories, monitors, or borrowed lights is preferred, to the greatest extent possible.
- When provided, limit skylights to non-assignable, public, and circulation areas equipped with security detection system
- Skylights over 20 square feet are prohibited.
- Light tubes are categorically prohibited.
- Skylight design and construction
  1. Configure skylight to roof structure, sheathing, and insulation so as to permit future retrofit roofing without removal or modification of skylight curb.
  2. Frame: Premanufactured aluminum or galvanized steel unit configured to permit removal for maintenance. Site fabricated and wood frames are prohibited.
  3. Curb: Double wall insulated with vertical dimension sufficient to permit 8 inch minimum base flashing
  4. Counterflashing: Premanufactured metal profile to fit frame and dimensioned to overlap base flashing a minimum of 3 inches.
  5. Glazing
     a. Preferred: 0.6 inch cellular polycarbonate structured sheet (PCSS) with UV-resistant coating.
     b. Alternate: 3/16 inch minimum thickness double wall clear or translucent acrylic.
     c. Glass glazing is prohibited.
  6. Profile: Pyramid or dome.

END SECTION 08 60 00

08 71 00 Door Hardware – November 1, 2006

- Work in this section is restricted to specific products of specific manufacturers that have been previously approved by Jefferson County School District, R-1.
- Substitutions are prohibited
- New Construction
  1. Lock/Latch: Any product listed in this Section
  2. Keyway
     a. Sargent
     b. Schlage
     c. Yale
  3. Finish: Any finish permitted by this section of the Technical Guidelines

- Building Addition
  1. Lock/Latch: Any product manufactured by the designated “Predominant Manufacturer” for the facility.
  2. Keyway:
     a. Match “Predominant Manufacturer” if listed in this Section.
     b. Jefferson County School District, R-1 will establish “Predominant Manufacturer” if not listed.
  4. Finish:
     a. Match existing building hardware finish if consistent with finishes permitted by this section of the Technical Guidelines.
     b. Jefferson County School District, R-1 will establish finish if existing finish is mixed or not listed in this section of the Technical Guidelines.
- Building Renovation
  1. Same as Building Addition, except that Jefferson County School District, R-1 will establish the “Predominant Manufacturer” for the facility based upon the lock/latch and/or the keyway.
- Coordination
  1. Coordinate solid blocking between studs of frame construction to support wall mounted items such as stops.
  2. Coordinate keying with Jefferson County School District Project Manager and Facilities Maintenance.
  3. Coordinate template with door/frame manufacturer & installer.
  4. Coordinate with Access Control Hardware (08 74 00)
  5. Electro-Mechanical Hardware requires meticulous coordination among:
     a. Architect
     b. Electrical engineer
     c. Hardware supplier/contractor
     d. Electro-mechanical hardware supplier/contractor
     e. Frame supplier/contractor
     f. Electrical Contractor
     g. Security systems Contractor
  6. A hardware and keying conference is mandatory within 30 days of contract award.
  7. Key stamping and distribution
- In the absence of other information, standards of the following organizations apply:
  1. Builders Hardware Manufacturers Association (BHMA)
  2. American National Standards Institute (ANSI)
  3. National Fire Protection Association (NFPA)
- Submittals
  1. Product Data: Required
     a. Catalogue cuts: Indicate item, manufacturer, type, reference number, finish.
     b. Manufacturer’s installation instructions
  2. Hardware Schedule: Required
     a. Per DHI document, "Sequence and Format for the Hardware Schedule" (4 copies).
     b. Clearly indicate the manufacturer of each item proposed. Reference template(s).
  3. Keying Schedule: Per DHI manual "Keying Procedures, Systems, and Nomenclature"

4. Closeout:
    a. Submittals listed above, updated to record status.
    b. O&M Data: Required for all specified hardware items.
    c. Bitting List: Closeout submittal to be forwarded directly and securely to Jefferson County School District Construction Project Manager.

- To the greatest extent possible a single manufacturer is required for each hardware category throughout a facility.
- Unless otherwise noted, products in this section are expected to be Grade 1, heavy duty, vandal-resistant.
- Approved hardware finishes
    1. US10, BHMA #612 - Satin Bronze
    2. US26D, BHMA #626 - Satin Chromium
    3. US 10B, BHMA #613 - Oil Rubbed Bronze to match existing only
    4. US32D, Dull Stainless steel: Permitted only when above finishes are unavailable for specified hardware item.
    5. Closer
        a. Factory applied spray paint to match hardware finish
        b. Factory applied sprayed aluminum paint
    6. Threshold, weather-stripping: Mill finish aluminum
- Keying
    1. Key bitting: Conform to Jefferson County Public Schools master key program.
        a. Provide bitting list to Jefferson County Public Schools Project Manager in a confidential and secure manner.
    2. Grand Master Keys: For Facilities Services only
    3. Master Keys:
        a. Exclude utility areas, boiler rooms, telecomm, etc.
        b. Elementary school: provide 10 each per set
        c. Middle and senior high school: provide 20 each per set
        d. Other facilities: provide 5 each per set
    4. Main Entrance Key: Separate key and masterkey: Provide 1 key for each 6 classrooms.
    5. Area master keying
        a. Kitchen/Cafeteria/LIC: provide 5 keys each
        b. Office/Administration complex: provide 1 key for each room or office
        c. Gymnasium/Athletic complex:
        d. Senior High School: provide 30 keys
        e. All other schools: provide 8 keys
    6. Classroom keying options (by school principal)
        a. Keying by room: provide 4 keys per classroom
        b. Keying by pod, wing, or department: provide 2 keys per classroom
    7. Computer room keying options (by school principal)
        a. Key as a classroom
        b. Key with LIC
    8. Custodial and Utility (closets, storage, mechanical, electrical, etc.)
        a. Key mechanical room door(s) to Jefferson County School District R-1 grand master.
        b. Common key to all service areas in a facility and building master

9. The following locks should be operable by all facility keys:
    a. Faculty lounge
    b. Workrooms
    c. Toilet rooms
10. Key all miscellaneous and specialty door locks to building master.
11. Construction Master Keys: provide 10 each
12. Key blanks: No requirements
13. Key control
    a. Stamp "DO NOT DUPLICATE" on each key.
    b. Facilities Maintenance Locksmith will provide written instructions for serial number, stamping and distribution.
    c. Provide a key control system including envelopes, labels, tags, recap and firms

- Key cabinet
    1. Card index in a standard wall type metal key cabinet
    2. Capacity: 150 percent of the number of locks or 300 for Middle and senior high school or 150 for other facilities, whichever is greater.
- Lock/Latch
    1. Sole source specifications are required for lock/latchset and keyway according to the "Predominant Manufacturer" established for each Jefferson County School District, R-1 facility.
        a. Sargent LB
        b. Schlage E
        c. Yale GD
        d. Corbin-Russwin to match existing
    2. ANSI A156.2, Series 4000, heavy duty, Grade 1, through bolted, cylindrical or bored type with 1/2-inch throw latchbolt and lever trim.
    3. Vandal resistant clutch type mechanism is mandatory for lever trim.
    4. Able to be installed in standard 161 type cut out
    5. Backset
        a. 2 ¾ inches uniform throughout facility.
        b. 3 ¾ inches is permitted in retrofit applications to match existing
    6. Function:
        a. Classroom security function is preferred for most applications.
        b. Passage function is preferred for elementary school classroom closets
        c. Storeroom (locked at all times) lock function is prohibited in any application
    7. Construction Cylinders: No special requirements
    8. Mortise-type locksets: Not recommended. When used, limit to HM and reinforced wood doors in secondary schools.
    9. 'Silent' mechanisms are preferred for auditorium doors.
- Exterior hardware of exterior classroom doors: Non-operable fixed lever.
- Panic Exit Devices
    1. Restricted to specific manufacturers that have been previously approved by Jefferson County School District R-1 Facilities Services Department
        a. Von Duprin
        b. Sargent
    2. UL Listed
    3. Rim type device is mandatory at aluminum frames and at pairs of doors with removable center mullion.

4. Vertical rod panic devices: Prohibited on exterior doors.
5. Flat push or touch bar; Drop bar design is prohibited.
6. Tamper resistant dogging feature is required for non-rated exit devices.
    a. Allen wrench activation is preferred.
    b. Key cylinder activation is prohibited
7. Night latch (NL) function
    a. Thumb piece is prohibited.
8. Provide dummy trim pull as exterior panic device hardware.
9. Glass lites in doors are not permitted within 6 inches of panic exit device.

- Flushbolt
    1. Per applicable codes
- Deadbolt: Not recommended.
    1. Limit use to non-occupiable high-security areas.
- Keyway: Sole source specification according to facility "Predominant Manufacturer"
    a. Sargent
    b. Schlage
    c. Yale
    d. Corbin-Russwin to match existing
    2. 6 pin standard core
    3. Interchangeable core cylinder is prohibited unless approved by the Jefferson County School District R-1 Facilities Maintenance Locksmith and every door in the facility is keyed to the same interchangeable core.
    4. Except for emergency access and access control doors, exterior keyways are prohibited or plugged.
- Push/Pull:
    1. Metal only, unless otherwise required to match existing
    2. Thickness: 0.050-inch minimum
    3. Hardboard is prohibited
- Hinge
    1. Doors with exit devices:
        a. 1-3/4 thick up to 3 feet 4 inches wide: FBB 168 4-1/2 x4-1/2
        b. 1-3/4 thick over 3 feet 4 inches wide: FBB 168 5 x 4-1/2
    2. Interior doors:
        a. 1-3/4 thick up to 3 feet 2 inches wide: FBB 179 4-1/2 x 4-1/2
        b. 1-3/4 thick over 3 feet 2 inches wide: FBB 168 5 x 4-1/2
        c. 0.180 gauge
    4. Ball bearing; 5 knuckle
    5. Nonremovable pin (NRP) is mandatory at outswinging exterior doors.
    6. Butt leaf width sufficient to clear all trim.
    7. Center hung doors, Balanced hinges, and Pivot hinges are prohibited.
    8. Full height continuous ("piano") type hinges are preferred for doors in high abuse areas.
        a. Roton

- Kickplate
  1. Kickplate is required at the push side of wood doors opening to corridors and serving an occupancy load over 20.
  2. 18 gauge aluminum, stainless steel, brass, or bronze
  3. Clear acrylic: prohibited
  4. Hardboard : Prohibited
  5. 30 inch high kickplate is required at push side of high traffic wood doors at kitchen.
  6. 12 inch high kickplate elsewhere
  7. Width: 2 inches less door width on single doors; 1inch on pairs.
- Door Closer
  1. Sole source specifications
     a. LCN 4041 interchangeable
     b. LCN 4012 or 4013 is permitted where a handed closer is required.
  2. Grade 1 heavy-duty cam action type is recommended for most applications.
  3. 60% minimum efficiency
  4. Class 30 cast iron body with full cover.
  5. Piston: heat treated
  6. Pinion: double heat treated
  7. Adjustable spring sizes 2 through 6
  8. Arm: forged steel, heavy duty
  9. Parallel arm (push side) installation except as otherwise approved by Jefferson County School District, R-1 Facilities Planning & Design/Construction Management
  10. Integral stop arm is permitted only when separate doorstop is not feasible.
  11. Maximum operating force, measured at lockset: Per applicable current codes
  12. Drop-down plates are required on doors where glass obstructs the closer bracket.
- Floor mounted closures/pivots: Prohibited
- Hold-Open devices
  1. Not recommended for interior doors unless electro-mechanical type.
  2. Required for exterior doors in loading areas.
  3. "Smoke Check" electronic type automatic closers are prohibited
- Astragal
  1. Astragals are recommended at 2 leaf service and utility doors.
  2. Except as required by code, astragals on fire doors are prohibited without the approval of Jefferson County School District, R-1.
- Coordinators: Not recommended
  1. Non-hanging type
- Stop
  1. Wall type stops are preferred.
  2. Floor mounted stops are acceptable only when wall stop is infeasible.
  3. Arm type overhead stop is prohibited unless integral with closer.
- Threshold
  1. Maximum height permitted by ADA
  2. Dead-level thresholds are prohibited at exterior doors.
  3. Thermal barrier design is required at exterior doors.
  4. Vinyl-top designs are prohibited.
  5. Seal to exterior concrete slab

- Weather-stripping
  1. Smoke gaskets per code; acoustical gaskets elsewhere at doors to assignable interior spaces.
  2. Automatic Door Bottoms: Prohibited without the approval of Jefferson County School District, R-1
  3. Sweep type weather-stripping is not recommended.
  4. Exposed surface-mounted weather-stripping is prohibited except at door bottom.
- Electro-Mechanical Hardware
  1. Not recommended except for:
     a. Magnetic hold-open devices required by code in corridors.
     b. Card access control at designated openings.
  2. See 08 74 00
  3. Automatic operator: Not recommended
- Delayed Egress Hardware: Not permitted
- Accessories
  1. Strike plate: manufacturer standard with sufficient lip to protect trim
  2. Silencers: Minimum 3 per Hollow Metal frame, latch side of stop.
  3. Security cover (guard) plate is required over latch bolt in exterior doors.
     a. Not permitted at doors with panic hardware or in-swinging doors.
- Screws & Fasteners
  1. Sex nuts and bolts are required throughout.
  2. Exposed-to-view screws: match the hardware finish as closely as possible
  3. Door closers and exit devices on wood doors: Closed-head sex bolts
- Source Quality Control
  1. Substitutions are prohibited.
  2. Fire Rated Openings:
     a. UL labeled
     b. Hardware for fire rated openings shall comply with NFPA Standard #80.
     c. Provide only hardware which has been tested and listed by UL for the types and sizes of doors required and complies with the requirements of the door and frame labels.
  3. Tag each item or hardware package separately with identification related to the final hardware schedule.
     a. Include installation instructions in the package.
- Acceptable Installers
  1. Experienced in furnishing and servicing hardware in the state of Colorado for not less than five consecutive years
  2. The supplier shall have in his/her employ an Architectural Hardware Consultant certified by the American Society of Architectural Hardware Consultants (AHC), who is available for assistance during the course of the work and throughout the warranty period regarding work in this section and the following:
     a. Installation & repair training
     b. Service equipment
     c. Master Keying
     d. Key Control
     e. Replacement/repair parts

- Installation
  1. Do not install surface mounted items until finishes have been completed.
  2. Panic Hardware: Through-bolt attachment is required.
  3. Closer
     a. Through-bolt attachment is required
     b. Parallel (push side) mounted
  4. Panic exit device
     a. Screw attachment is prohibited.
     b. Notching of frame is prohibited.
  5. Weather-stripping and Seals
     a. Continuity of installed weather-stripping should not be interrupted.
- Pre-installation conference is mandatory. Include:
  1. Jefferson County School District, R-1 Project Manager
  2. Architect
  3. General Contractor
  4. Door and Frame Contractor
  5. Hardware Supplier (and Installer if separate)
  6. Facilities Maintenance Locksmith
- Adjust and check each operating item of hardware and each door to insure proper operation or function of every unit. Replace units, which cannot be adjusted to operate freely and smoothly as intended for application. Clean and re-lubricate hardware items as necessary to provide smooth operation.

END SECTION 08 71 00

08 74 00 Access Control Hardware – November 1, 2006

- Work in this section is restricted to specific products of specific manufacturers that have been previously approved by Jeffco Public Schools Facilities Services Department.
- Submittals
  1. Product data: Required
  2. Shop drawing: Required; include riser diagram, portal control wiring interface, and door elevation diagrams.
  3. Closeout:
     a. Submittals listed above updated to as-constructed status
     b. Operation and Maintenance manual including thorough system test procedures.
- Work in this section is restricted to manufacturer certified installers.
- Install Access Control Hardware at 2 to 5 exterior doors per building:
  1. Main Entrance
  2. Staff Entrance
  3. Food Service Entrance
  4. High School Student Entrance
  5. High School Athletic Entrance

- Key override is required at Access Control doors.
- Connect Access Control Hardware to report to JSDR-1 central fire/security system.
  1. Refer to Data Diagram

END SECTION 08 74 00

08 79 00 Hardware Accessories – November 1, 2006

- Work in this section is restricted to specific products of specific manufacturers that have been previously approved by Jefferson County School District, R-1 Facilities Services Department.
  1. Knox-Box as manufactured by the Knox Company, Phoenix, AZ
- Key Storage Equipment
  1. Mandatory for buildings over 5,000 gross square feet
  2. Knox-Box model 4400 series, recess mounted, dual lock, black, without tamper switch (Knox part #4432)
  3. Dual cylinder: Top cylinder keyed to local fire department, bottom cylinder keyed to Jefferson County Public Schools, R-1 cylinder (Knox System Code ss-07-201-03-05)
  4. Install near main building entrance, minimum 6 feet 6 inches above adjacent grade or as mutually agreed upon by the local fire department and Jefferson County Public Schools.
  5. Purchase requires written authorization order form.

END SECTION 08 79 00

08 80 00 Glazing – November 1, 2006

- Work in this section is open to any product or material meeting the requirements of this Technical Guideline.
- In the absence of other information, standards of the following organizations apply:
  1. Flat Glass Marketing Association (FGMA) Glazing Manual
  2. American Architectural Manufacturers Association (AAMA)
  3. National Fenestration Rating Council (NFRC)
  4. Windows and daylighting (http://windows.LBL.gov)
- Submittals
  1. Product Data: Required for Processed glass
  2. Samples: Required for Processed glass
  3. Closeout: Submittals listed above, updated to record status.
- Warranty
  1. Insulating glass: Ten-year manufacturer's material and labor warranty for replacement of units with defective seals exhibited by any of the following and not due to breakage:
     a. Internal moisture or condensation
     b. Internal dust or dirt
     c. Deterioration of internal coatings

- Maintenance
  1. Coordinate the design and location of glazing to provide method(s) for cleaning and replacement.
  2. Assure availability of replacement units within the Denver Metro Area.
  3. Issues for glazing over 10 feet above first floor elevation:
     a. Inside set glazing is preferred; especially above first floor level
     b. Unit size limit: 12 square feet
  4. Minimize types of glazing in a single building.
  5. Insulating Glass is mandatory for exterior applications.
  6. Plastic glazing is mandatory for non-vertical installations.
  7. Glazing within 12 inches of floor or grade is prohibited.
  8. Glazing within 36 inches of floor or grade is prohibited unless it is
     a. Heat-treated or
     b. Laminated
  9. Tinted glass is preferred over reflective glass.
- Monolithic glass: Clear Float Glass: 1/4 inch thick, glazing quality
- Insulating glass
  1. Double pane factory-sealed 1 inch units.
  2. Organic double sealed edge; triple seal is preferred. Silicone single seal is prohibited
  3. Breather tubes as required for altitude.
  4. Coated or uncoated,
  5. Color: Gray/bronze preferred
  6. Each unit must bear Insulating Glass Certification Council (IGCC) certification numbers.
- Insulating Low-Emissivity glass: No requirements
- Laminated Architectural Glass: No requirements
- Wired Glass: Prohibited unless tempered and ICC approved for educational occupancies.
- Wireless fire-rated ceramic glazing: No Requirements
- Tempered glass: Horizontal-tempering process is preferred.
- Impact Safety Rated Glazing: Mandatory in high activity areas such as Gymnasium, Aerobics, Performance, Commons, and corridors.
- Annealed Glass: Not recommended
- Patterned Glass: Not recommended
- Optical glass: Required at projection windows
- Mirrors: Frame type for future replacement
- Plastic Glazing:
  1. Also see 08 45 00
  2. Acrylic glazing ("Plexiglas") is prohibited.
  3. Polycarbonate ("Lexan"") glazing including multi-wall cellular polycarbonate structured sheet: Restrict to special applications over 8' - 0" above finished floor.
     a. Glass coated type
     b. Abrasion resistant
     c. 1/4 inch minimum thickness
     d. Maximum pane dimension: 24 inches
     e. L/100 maximum deflection
  4. Fiber Reinforced Plastic (FRP): Not Recommended

- Glazing Installation
  1. Dry glaze method is preferred
     a. Applied stop: Recommended
     b. Tape and wedge gasket: Permitted
     c. Pressure Bar: Permitted
  2. Wet glaze method: Not recommended
  3. Wet / Dry glaze method: Permitted
  4. Marine glazing method: Not recommended
- Exterior Glazing Schedule

Orientation (and Compass Points)	**U - Factor**	**Solar Heat Gain Coefficient**	**Visible Light Transmittance**	**Shading Coefficient**
North (300º - 60º)	0.3 - 0.5	N.A.	60% Minimum	N.A.
South (150º - 210º)	0.4 - 0.5	0.2 - 0.6	50% - 80%	0.4 - 0.8
East/West (60º - 150º and 210º - 300º)	0.4 - 0.5	0.2 - 0.4	50% - 80%	0.4 - 0.6

1. Numbers, per NFRC label, are targets
2. Schedule assumes non-solar building design.
3. Shading coefficient recommendation assumes no shading by other means.

END SECTION 08 80 00

08 90 00 Louvers and Vents – November 1, 2006

- Work in this section is open to any product or material
- Operable louvers and vents should be tool-adjustable only. Manually adjustable units are not recommended.

END SECTION 08 90 00