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Design & Construction Standards:
TECHNICAL GUIDELINES

Division 10

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FACILITY MANAGEMENT

April 2016

SECTION 10 11 00

VISUAL DISPLAY SURFACES

PART 1 GENERAL

1.02 WARRANTY

- A. Provide written 25-year warranty, signed by the manufacturer, to replace markerboards that do not retain original writing and erasing qualities. Included are surfaces that exhibit crazing, cracking, or flaking due to causes other than improper care and maintenance.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide marker/tackboards as manufactured by one of the following:
 1. Claridge
 2. Aline
 3. Ghent
 4. Greensteel
 5. Nelson/Adams
 6. LBI BOYD

2.02 MATERIALS

- A. Markerboard
 1. Ruling, when ordered for use in music and math rooms, shall be factory-applied and permanently fused on the writing surface. Provide 1/8" black lines on markerboards.
 2. Core to be 7/16" minimum thickness particleboard with 0.005" aluminum foil backing.
 3. Writing surfaces shall be porcelain-enameled finish on 24-gage enameling-grade steel, no exceptions.
- B. Tackboard
 1. Tacking surface to be cloth-backed vinyl with a Class A fire rating.
 2. Backing to be 1/2" minimum thickness fiberboard.
- C. Trim
 1. Trim shall be natural anodized finish extruded aluminum. All markerboards and tackboards shall have continuous edge trim.
 2. Trim pieces (Claridge numbers are referenced. Each manufacturer to provide its respective matching trim).
 - a) Perimeter: No. 180
 - b) Head trim: No. 181 with cork insert
 - c) Marker tray: No. 371A
 - d) Map hooks: No. 51M (provide one per each two lineal feet of length).
 - e) Map rail (installed alone): No. 51 complete with cork insert, 5/8" minimum thickness.
 - f) End stops: No. 51ES
 - g) Flag holder: No. 51FH one per classroom.

D. Tackwall Board and Accessories.

1. Tackwall Board: USG Micore 300 mineral fiberboard.
 - a) Minimum STC: 24
 - b) Flame Spread: Class A per ASTM D 84
 - c) Low VOC.
 - d) ¼” or 3/8” when laminated to gypsum board, ½” when glued to masonry.
2. Reveal Trim: Fry Reglet DRMF-50-75 or DRM-50-75 both with custom snap in (DRM-SNAP-IN-625). Snap-in Color: See Material Finish/Color Schedule, on Architectural Drawings.
3. Adhesive for Tackwall:
 - a) Laminating tackboard to gypsum board: Liquid contact adhesive.
 - b) Adhering tackboard to masonry: Trowelable multi-purpose construction adhesive.
4. Finish Accessories:
 - a) Joint Compound: All purpose ready mixed type.
 - b) Joint Reinforcement: Fiberglass joint tape.

E. Fabric:

1. Manufacturer/Pattern: Design Tex Performance Wall Covering/Igneous 5096, MDC High Performance Textiles/ Patala
 - a) Material: 100% woven polyolefin
 - b) Width: 54 inches
 - c) Fire Resistance: Class A Fire rated per ASTM E-84
 - d) Color: See Material Finish/Color Schedule, on Architectural Drawings.

2.03 FABRICATION

A. Markerboards

1. Provide head trim on top edge and marker rail on bottom edge.
2. Provide perimeter trim on vertical edges.
3. Ends of marker tray corners to be radiused ½” minimum.
4. Provide factory-assembled units in one piece up to 12’ long or manufacturer’s maximum available length, not less than 12’. Where the total length exceeds that above specified, provide two or more pieces of equal length and join with manufacturer’s standard mullion trim.
5. Porcelain markerboard face sheets shall be permanently bonded to the core by the factory.

B. Tackboards

1. Vinyl tack surfacing shall be permanently factory bonded to backing.
2. Provide perimeter trim on all edges (mitered corners only).
3. Joints in trim shall occur only at a mitered corner or center of bottom edge of board.

C. Miscellaneous

1. Each total length of markerboard, and tackboard shall be trimmed and mounted individually.
2. All boards to have map rail/tackstrip mounted on top edge (full length).
3. Provide end caps for all map rail/tackstrip ends.

4. Provide one flag holder per room containing a markerboard.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Use manufacturer's wall clips at top, bottom and sides of boards, spaced not to exceed 24" O.C.
- B. Brackets to be fastened to wall with screws in proper anchor inserts for each wall material encountered. Installation on gypsum wallboard walls shall be into solid continuous fire-treated wood blocking.
- C. Provide map hooks on headsails of markerboard. Provide one (1) map hook for each 2' length of board, but not less than two (2) on boards 4' or less in length. Provide end stops on all terminal ends.
- D. Provide map rails with concealed screws in proper anchor inserts for each wall material encountered. Spacing of screws not to exceed 24" on-center. Provide end stops on all terminal ends.

END OF SECTION 10 11 00

SECTION 10 14 00

SIGNAGE

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. All signage shall be in strict conformance to local codes, ADA, and signage ordinances.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

- A. Provide signage and graphics as manufactured by one of the following:
 - 1. Fast Signs
 - 2. Signage Inc.
 - 3. Signs Now & Division 10 Signage Corp.
 - 4. Best Sign Systems

2.02 FABRICATION

- A. Pre-assemble components in shop as much as possible to minimize field assembly.
- B. Sizes
 - 1. Exterior Signs
 - a) Main building sign shall include school name and Street number in 12" high cast or routed aluminum, all upper case in a high contrast finish to that of the building.
 - b) Traffic signs - size varies, but must match national standard for roadway signage and are painted reflective paint with contrasting symbols or text.
 - 2. Interior signs
 - a) Directional signs - generally 12" x 12" with Tactile and Braille room numbers and raised directional arrows. 1" Helvetica Medium.
 - b) Room Identification Signs - generally 7" wide x 7" high with beveled edges, depending on text information, but not to exceed 9" wide x 7" high.
 - 1) Room number information will be printed in 1 1/2" Helvetica Medium. All letters with room text will be upper case only. Raised Tactile and Braille room numbers, in Photopolymer layout and Braille size is Grade II. Raised lettering shall be one piece integral with the back panel of the sign.
 - 2) Room title will be printed in 1" Helvetica Medium.
 - 3) Where signage already exists, the signage will match the DPS standard or closely resemble the existing signage in color, size and material. Coordinate with DPS.
 - c) Room Number Sign - generally shall be 1 1/2" high x 3" wide with square corners.
 - 1) Room Number information will be printed in 1" Helvetica medium font.
 - 2) Room Number text will be upper case only. All letters shall be engraved white letters with black background.
 - 3) Room Number sign shall be placed on upper door frame and centered.
 - d) Restroom Signs - generally 7" wide x 9" high.
 - 1) Tactile Number and Braille Number and 4" Boys/Girls raised symbol Plates. Text will be in 1" Helvetica medium, upper case, with 5" pictorials.

- 2) All raised lettering shall be integral with the back panel of the sign.
3. Site Signage
 - a) Sign posts to be unistrut with telespar sleeve. Please reference CCoD signage standards.

2.03 MATERIALS

- A. Exterior Signs
 1. Aluminum
- B. Interior Signs
 1. Laminated Impact Acrylic- 1/8" thick.
 2. Molded Plastic
 3. Photopolymer Layout
 4. Color will be Pantone "Warm Gray, No 10U".
 5. Lettering to be scratch resistant.
- C. Bronze Plaques
 1. Cast Bronze
- D. Vinyl Signs
 1. Color will be Pantone "Warm Gray, No 10U".
 2. Size of letters will be approved by DPS.

2.04 FINISHES

- A. Acrylic/ Molded Plastic
 1. Colors as selected from manufacturers standard choices with high contrasting text, with photopolymer layout.
 2. Matte, easy to clean, smooth surface.
- B. Aluminum
 1. Clear anodized finish for exposed surfaces.
 2. Kynar finish in available standard colors.
- C. Graphics- text and designs from available standard colors using one of the following methods:
 1. Interior
 - a) Applied vinyl copy- for directional signs only.
 - b) Precision routed copy.
 - c) Routed dimensional copy.
 - d) Cast dimensional.
 2. Exterior
 - a) Cast Letters.
 - b) Factory applied baked enamel.
 3. Plaques
 - a) Dedication Plaque and School Plaque.
 - i) Cast bronze.
 - ii) Textured background.
 - iii) Raised letters w/ polished face (New Times Roman or Old Bookman).

- b) Concealed mounting.
- c) Bevel border edges.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installers must coordinate blocking requirements with the contractor.
- B. Mount room signs using both 3M Scotch Brand VHB double stick tape and silicone adhesive at the center of the sign where there are appropriate substrates.
 - 1. In areas of high vandalism provide a bead of latex sealant around the sign perimeter or provide a metal frame which the sign fits into.
- C. Mounting locations
 - 2. Internal traffic and street signs: locate as required adjacent to intersections and along no parking lanes, as well as centered in front of ADA parking stalls. (Not in right of way).
 - 3. Directional at opposite wall from elevator exit and at major corridor intersections.
 - 4. Room Identification Signs: Install signs 48” from finished floor on the latch side of the door 2” from frame. This is for all schools K-12.
 - 5. Room Number (Denver Fire Department): mount sign on the head of the doorframe centered above the door.
 - 6. Restroom: Same as Room Identification above.
 - 7. Elevator signs: Placed outside of each elevator shaft above the shaft doors, on each building floor, same as room number above.
 - 8. In Case of Fire: Is to be mounted outside each elevator, on each floor directly adjacent to the elevator call buttons, if it is not engraved onto the call button cover plate.
 - 9. Room capacity: Mounted on the wall opposite of and next to the main exit from the room.
 - 10. Egress to be mounted in reference to route/door directions.
 - 11. Mount 60” AFF and 2” from jamb
 - 12. Stairs/Stairwells:
 - a) Outside the Stairwell: Mount on the wall adjacent to the door leading to the stairwell on the latch side.
 - b) Inside the Stairwell: Mount on the door, or as required by code.
- D. Mount bronze plaques using concealed fasteners. Mounting locations to be determined by DPS.

3.02 SPARE PART

- A. One of each type of sign as a stock sample.

END OF SECTION 10 14 00

SECTION 10 21 13

TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SUBMITTALS

- A. Shop Drawings
 - 1. Submit detailed shop drawings for each partition area contained on the project.
- B. Warranty
 - 1. A minimum of Twenty-four (24) month warranty shall be provided on all metal toilet partitions plus any additional manufacturers warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide overhead braced toilet partitions as manufactured by one of the following:
 - 1. Accurate Partitions Division of United States Gypsum
 - 2. AMPCO
 - 3. Bobrick Washroom Equipment
 - 4. Comtec Industries
 - 5. General Partitions Manufacturing Corporation.
 - 6. Knickerbocker Partition Corporation
 - 7. Hadrian Partitions
 - 8. Santana
 - 9. Metpar
 - 10. American Sanitary
 - 11. Global

2.02 MATERIALS

- A. Metal toilet partitions
 - 1. 20 gauge steel partitions and 22 gauge steel doors shall be provided.
 - 2. Panels shall have a baked enamel finish.

2.03 GENERAL MATERIALS AND FABRICATION

- A. Specify minimum thicknesses of pilasters, doors, panels, and urinal screens.
 - 1. All pilasters shall be 1 ¼" thick.
 - 2. All doors, urinal screens and panels shall be 1" thick.
- B. Provide continuous wall and pilaster brackets.
- C. Provide hinges that are continuous, integral, or wrap around – through bolted onto partitions.
- D. Pilaster detailing shall consist of a combination of manufacturer's standard details for "floor-mounted" partition types - minimum 6" in width.
- E. Pilaster door hardware shall allow for door to be partially open when unoccupied.
- F. Hardware shall be stainless steel #304 satin finish throughout.
- G. Shoes shall be stainless steel.

- H. Hardware shall be through bolted onto panels.
- I. Provide pilaster shoes, brackets, anchorages, fasteners, latches, pulls, hinges, coat hooks, bumpers, and all miscellaneous hardware necessary for a complete and secure assembly.
- J. Provide vandal proof wall and floor mounting hardware.
- K. Provide security latches on stalls.
- L. Provide pulls for each side of handicapped stall doors.
- M. Overhead rail shall be of anti-grip type design.

PART 3 EXECUTION

3.01 INSTALLATION/APPLICATION/ERECTION

- A. Secure floor supports with two (2) or more rust free expansion anchors (no lead, plastic or fiber).
- B. Wall Anchorage devices:
 - 1. Masonry - metal expansion type screws (no plastic, lead, or fiber shall be used).
 - 2. Drywall- metal wood screws.
- C. All holes provided by the manufacturer shall be used with mounting anchoring.
- D. Provide solid fire treated blocking at all points of partition attachment unless the surrounding construction is masonry.

3.02 SPARE PARTS

- A. Hinges - one complete set for every 5 stalls.
- B. Screws and bolts - one complete set for every 5 stalls.
- C. Latches and strikes - one set for every 5 stalls.
- D. Six sets of security tools.

END OF SECTION 10 21 13

SECTION 10 22 26

OPERABLE PARTITIONS

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Acoustical Rating of panels as tested by an independent acoustical laboratory in accordance with ASTM E90-85 and test procedure.
- B. All face materials shall meet class 'A' Flame spread.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide operable partitions as manufactured by one of the following:
 - 1. Hufcor
 - 2. Modernfold
 - 3. Panelfold
 - 4. Advanced Equipment Corporation

2.02 FABRICATION

- A. All panels shall have factory applied finishes.
- B. All vinyl surfaces must contain a non-mercury-based mildewcide and be manufactured without the use of cadmium-based stabilizers.
- C. Partitions shall have top, bottom, and side sound seals.
- D. All tracks shall be adjustable for height.
- E. All tracks and hangers shall be heavy-duty aluminum with nylon covered ball bearing wheels.
- F. Minimum STC: 54

2.03 MATERIALS

- A. Partition Faces:
 - 1. Vinyl
 - 2. Carpet
- B. Frames:
 - 1. Factory painted
 - 2. Clear anodized
 - 3. Bronze
- C. Tracks:
 - 1. Surface mounted

PART 3 EXECUTION

3.01 TRAINING

- A. Provide minimum of two (2) hours training for maintenance and operation of panels.

3.02 SPARE PARTS

- A. Provide two (2) sets of all required specialty tools needed for the partitions.
- B. Provide 2 sets of written documentation of parts and maintenance procedures.

END OF SECTION 10 22 26

SECTION 10 26 13

CORNER GUARDS

PART 1 GENERAL No Requirements

PART 2 PRODUCTS

2.01 MATERIALS

- A. Galvanized sheet steel:
 - 1. Galvanized sheet metal phosphatized for field painting.
 - 2. Minimum 18 gauge.
 - 3. 'C' style with 2 1/2" x 2 1/2 " legs with beveled edges.
 - 4. Field paint: Prime front of wall surface and back of guard before attachment to wall.
- B. Stainless steel (Required in Kitchen):
 - 1. Type 304 alloy, minimum 16 gauge.
 - 2. Type 430 alloy, factory standard embossed pattern, minimum 16 gauge.
 - 3. #4 Satin Finish.
- C. Fasteners:
 - 1. All fasteners to be non-corrosive and compatible with galvanized steel. All necessary fasteners to be supplied by the manufacturer.
 - 2. All components shall be isolated from dissimilar metals as recommended by the manufacturer and as approved by the architect.
 - 3. Use heavy-duty adhesive on concrete block units.
 - 4. Provide Philips oval head, size 10 screws, or tamperproof screws.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Screw into drywall every 12 inches O.C. starting 2 inches from the bottom.

END OF SECTION 10 26 13

SECTION 10 28 13

TOILET ACCESSORIES

PART 1 GENERAL No Requirements

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide toilet accessories as manufactured by one of the following:
 - 1. Bobrick Washroom Equipment, Inc.
 - 2. Bradley.
 - 3. Charles Parker Co.
 - 4. Watrous, Inc.
 - 5. American Specialties, Inc.
 - 6. Kimberly Clark.
 - 7. GO-JO.
 - 7. Georgia Pacific.

2.02 MATERIALS

- A. Stainless steel shall be AISI Type 302/304, 22-gauge (minimum) with a #4 polished finish.
- B. Sheet steel: cold-rolled, 20-gauge (minimum).
- C. Mounting devices and fasteners.
- D. Exposed fasteners shall be chrome-plated or stainless steel and shall be theft-resistant.
- E. Concealed fasteners shall be of same material as accessory or of galvanized steel.

2.03 PREFERRED EQUIPMENT

- A. Toilet paper dispensers: Obtain current specification from DPS.
 - 1. Brand Owner: Georgia-Pacific.
 - 2. Brand: Compact ®
 - 3. MFG Item#: 56746.
 - 4. Design Color: Stainless Finish.
 - 5. Dispenser Dimensions (WxDxH): 13.250"x11.750"x6.900"
- B. Paper towel dispensers: Obtain current specification from DPS.
 - 1. Brand Owner: Georgia-Pacific.
 - 2. Brand: enMotion ®
 - 3. MFG Item#: 59462.
 - 4. Design Color: Translucent Smoke.
 - 5. Dispenser Dimensions (WxDxH): 14.800"x9.750"x16.750"
- C. Soap dispensers: Obtain current specification from DPS.
 - 1. Brand Owner: Technical Concepts.
 - 2. Brand: Technical Concepts.
 - 3. MFG Item#: 750139.

4. Design Color: Black/Grey.
5. Dispenser Dimensions (WxDxH): 5.18"x5.25"x10.875"

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate installation with the work of other trades, obtaining exact sink, lavatory, urinal and toilet locations from plumbing installers.
- B. Coordinate type of toilet partition utilized.
- C. Also Reference Section 10 21 13 – Toilet Compartments.
- D. Anchorage
 1. Coordinate blocking requirements for toilet accessories.
 2. Tamper-proof mountings are required.

END OF SECTION 10 28 13

SECTION 10 44 00

FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 QUALITY ASSURANCE

- A. Where fire-rated cabinet assemblies are indicated or required, provide assemblies that have been tested, listed and labeled in accordance with (ASTM E-814) by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.
- B. Provide fire extinguishers, cabinets and accessories by a single manufacturer, per category.
- C. Conform to NFPA10-Portable Fire Extinguishers.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide fire protection specialties as manufactured by one of the following:
 - 1. JL Industries, Inc.
 - 2. Larsen's.
 - 3. Potter Roemer.
 - 4. Elkhart Brass Mfg. Co.
 - 5. Badger.
 - 6. Noris.

2.02 FABRICATION

- A. Furnish cabinet assemblies manufactured as an integral unit, complete with all parts and ready for installation.
- B. Continuous piano hinges and pull handles for all cabinet doors.
- C. Locking Devices- provide panic release lever in public spaces.

2.03 MATERIALS

- A. Cabinet Metals:
 - 1. Cold-rolled steel – heavy gauge.
- B. Cabinet Finishes:
 - 1. Baked Enamel over factory phosphate dipped and prime coated steel.
- C. Cabinet Glazing:
 - 1. Clear 1/8" scored and breakable acrylic.
- D. Fire Extinguishers:
 - 1. Multi-purpose dry chemical (Class ABC)
 - 2. Regular dry chemical (Class K)
 - 3. Wet chemical (Class K)
- E. Accessories:
 - 1. Fire Blankets and cabinets.
 - 2. Extinguisher brackets.
 - a. Extinguishers not in cabinets must be on matching brackets capable of supporting weight and of unit. Provide fire treated and curfed blocking within wall.

- F. Painted graphics shall conform to the requirements of NFPA-10. Surface applied vinyl or plastic is prohibited.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Coordinate installation with work of other trades obtaining exact locations from mechanical installers of hose valves.
- B. Provide fire treated blocking.
- C. Fire rating of wall must be maintained in cabinet cavity.

3.02 TRAINING

- A. Provide training on use of each type of extinguisher for the building's Facility Manager.

END OF SECTION 10 44 00

SECTION 10 51 00

LOCKERS

PART 1 GENERAL No Requirements

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. DeBourgh Manufacturing Co.
- B. Penco.
- C. List Industries, Inc.
- D. Lyon Metal Products, Inc.
- E. Art Metal Products.

2.02 MATERIALS

- A. Sheet Steel: ASTM A653, Grade B, galvanized to G90 coating; cold-rolled steel.
- B. Standard Corridor/personell/wardrobe : Locker minimum standards:
 - 1. Body : 16-gauge.
 - 2. Door: 14-gauge. Provide no fewer that six (6) louver openings at top and bottom.
 - 3. Doorframe: 16-gauge.
 - 4. Hinges: 14-gauge five-knuckle: 18-gauge continuous: or nut and bolt connected hinges.
 - 5. Sloping top and trim: 18-gauge with horizontal intermediate bracing at each locker for dimensions more than 6" wide. 1'-6" o.c. in the vertical directions.
 - 6. End panels: 16-gauge.
 - 7. Latch hooks: 12-gauge, form from steel, welded or riveted to doorframes. Projecting surface mounted lift handle and latch: manufacturer's standard three-point tamper guard latch, consisting of two (2) steel rods or bars engaging frame at top and bottom, and center latch engaging strike jamb.
 - 8. Bottom: 18 gauge.
 - 9. Shelf. 18 gauge.
 - 10. Cross frames: 16-gauge.
 - 11. Filler panels: 18-gauge.
 - 12. Surface mounted combination locks.
 - 13. Shelves: Provide hat shelf, fabricated from steel sheet.
- C. P.E. Locker: All welded, locker minimum standards:
 - 1. Body and shelf: 16-gauge steel sheet.
 - 2. Door : 14-gauge with net louvered vent area of no less than 25 percent of gross door surface area with minimum perforations as follows:
 - a) In double tiers, no fewer than three (3) louver openings at top and bottom.
 - 3. Doorframe: 16-gauge or steel sheet channels or steel angles.
 - 4. Bottom: 16-gauge.
 - 5. Hinges: 14 gauge heavy duty steel, full loop, five or seven knuckle; tight pin; minimum 2" high. Weld to inside of doorframe. Provide at least three (3) or more hinges for each door more than 42" high and at least two (2) or more hinges for each door 42" high or less.

6. Sloping top and trim: 16-gauge, provide horizontal intermediate bracing at each locker.
 7. End panels: 14-gauge. Provide horizontal intermediate bracing for dimensions more than 6" wide, 16" o.c. in vertical dimensions.
 8. Filler panels: 16-gauge.
 9. Shelves: Provide hat shelf, fabricated from steel sheet.
 10. Provide surface mounted combination locks.
 11. Latch hooks: 12-gauge, form from steel, welded or riveted to doorframes. Projecting surface mounted lift handle and latch: manufacturer's standard three-point tamper guard latch, consisting of two (2) steel rods or bars engaging frame at top and bottom, and center latch engaging strike jamb.
 12. Locks: Built in combination locks with key activated combination change.
- D. Varsity Athletic Locker: All welded locker minimum standards:
1. Body and shelf: 16-gauge steel sheet.
 2. Door: 14-gauge with net vent area of no less than 50 percent of gross door surface area with perforations.
 3. Expanded metal backs- form from expanded metal; welded to steel angle or steel channel frame.
 4. Expanded metal sides and intermediate partitions; form from expanded metal; welded to steel angle or steel channel frame. Provide minimum 50% free area.
 5. Doorframe: 14-gauge steel sheet channels or steel angles.
 6. Hinges: 14-gauge heavy-duty steel, full loop, five or seven knuckle; tight pin; minimum 2" high. Weld to inside of doorframe and to door. Provide at least three (3) hinges for each door more than 42" high and at least two (2) hinges for each door 42" high or less.
 7. Sloping top and trim: 16-gauge.
 8. End panels: 14-gauge w/ horizontal reinforcing at maximum 16" on center.
 9. Filler panels: 14-gauge w/ horizontal reinforcing at maximum 16" on center.
 10. Bottom: 16-gauge.
 11. Shelves: Provide hat shelf in single-tier units, fabricated from steel sheet.
 12. Latch hooks: 12-gauge, form from steel, welded or riveted to doorframes. Projecting surface mounted lift handle and latch; manufacturer's standard three-point tamper guard latch, consisting of two (2) steel rods or bars engaging frame at top and bottom, and center latch engaging strike jamb.
 13. Provide combination padlocks (1 per locker) with master keyed backs for each.
- E. Corridor/Personnel (K/D):
1. Body: Form backs, tops, bottoms, sides, and intermediate partitions from steel sheet; flanged for double thickness at back vertical corners.
 2. Frames: Form channel frames from steel sheet; lapped and welded at corners. Form continuous integral door strike on vertical frame members. Provide resilient bumpers to cushion door closing.
 3. Latch hooks: Form from steel; welded or riveted to doorframes.
 4. Cross frames: Form intermediate channel cross frames between tiers from steel sheet. Weld to vertical frame members.
 5. Doors: One-piece steel sheet, formed into channel shape at vertical edges and flanged at right angles at top and bottom edges. Fabricate to prevent springing when opening or closing, and to swing 180 degrees.
 6. Reinforcement: Brace or reinforce inner face of doors more than 15" wide.
 7. Acoustical treatment: Fabricate lockers for quiet operation with manufacturer's standard rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact.
 8. Louvered vents: Stamped, louvered vents in door face.

- a) Single-tier lockers: No fewer than six (6) louver openings at top and bottom.
 - b) Double-tier lockers: No fewer than three (3) louver openings at top and bottom.
- F. Alternate:
- 1. See latching specification below for door construction option associated with single-point latching.
- G. Shelves: provide hat shelf in single-tier units.
- H. Hinges:
- 1. Steel, full loop, five or seven knuckle; tight pin; minimum 2” high. Weld to inside of doorframe and attach to door to each hinge with at least two (2) factory-installed fasteners that are completely concealed and tamper-resistant when door is closed.
 - 2. Provide at least three (3) hinges for each door more than 42” high and at least two (2) hinges for each door 42” high or less.
 - 3. Option: Continuous 18-gauge hinge.
- I. Recessed Handle and Latch:
- 1. Manufacturer's standard housing, formed from nickel-plated steel or stainless steel, with integral door pull, recessed for latch lifter and locking devices; non-protruding latch lifter; and automatics, pre-locking, pry-resistant latch.
 - a) Provide minimum three-point latching for each door more than 42” high; minimum two-point latching for each door 42” high or less.
 - b) Three-point Cremona-type latch shall consist of two (2) steel rods or bars engaging frame at top and bottom, and center latch engaging strike jamb.
 - 2. Alternate locker latching mechanisms: provide single-point latching with locker doors that are double-faced with reinforced core.
- J. Locks:
- 1. Locker locks are to be built in combination locks: They must be key-controlled, preferably keyed to a F120, F128 or F148 master key. They must be three number dialing combination locks capable of five combination changes made automatically with a control key.
 - 2. Locks must be ordered from Master Lock Company, product/part #1630 (this specific built-in combination locker lock is to be installed on a lift handle type locker, has an automatic locking function and can only be installed on a right hand hinged door. Proper locker door & frame must be ordered and installed to accommodate this type of lock).
 - 3. Latching mechanism shall permit doors to be latched automatically when in the closed position.
 - 4. No spring loaded, retractable latch or manual deadbolt locking locker lock are permissible.
 - 5. A complete, original set of locker combinations and at least a dozen master keys shall be turned over to DPS or Structural QAQC only.
 - 6. If an addition is being built or lockers are being added to an existing building where lockers are already present the existing master key must be matched and DPS or Structural QAQC must be consulted about the sequence of serial numbers in which to order the locks so that serial numbers/combinations are not duplicated within the building.

2.03 LOCKER ACCESSORIES

- A. Interior equipment: Furnish each locker with the following items, unless otherwise indicated.
- 1. Hooks: Manufacturer's standard zinc-plated, ball-pointed steel. Provide one double-prong ceiling hook, and not fewer than two single-prong wall hooks for single, double, and triple-tier units. Attach hooks with at least two (2) fasteners.

2. Number plates: Manufacturer's standard etched, embossed, or stamped aluminum number plates with numerals at least 3/8" high. Number lockers in sequence as coordinated with DPS. Attach plates to each locker door, near top, centered, with at least two (2) aluminum rivets.
3. Integrated or free standing post-mounted, fixed locker bench at P.E. and varsity athletic lockers.
 - a) Wood surface.
 - b) Steel surface matching finish of locker.

2.04 FABRICATION

- A. Corridor/personell/wardrobe lockers (knocked down construction): Fabricate lockers for nominal assembly at project site.
- B. P.E. and Varsity Athletic Lockers (All-Welded Construction): Pre-assemble lockers by welding all joints, seams, and connections; no bolts, screws, or rivets shall be used in assembly. Grind exposed welds flush. Connection of door to hinges to be securely fastened with a minimum of two (2) factory-installed rivets per hinge.
- C. Fabricate lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make exposed metal edges free of sharp edges and burrs, and safe to touch. Weld frame members together to form a rigid, one-piece assembly.

2.05 FINISHES

- A. Powder-Coated Finish: Immediately after cleaning and pre-treating, electrostatically apply manufacturer's standard backed polymer finish consisting of thermosetting power topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05").
 1. Select from manufacturer's standard colors. (Maximum of six per school).

Part 3 EXECUTION

3.02 INSTALLATION

- A. Install metal lockers and accessories level, plumb, rigid, and flush according to manufacturer's written instructions.
- B. Adjust hardware and doors after installation for proper operation.
- C. Anchor lockers to floors and walls at intervals recommended by manufacturer, but not more than 30" on center and at each end. Install anchors through backup reinforcing plates where necessary to avoid metal distortion, using concealed fasteners.
- D. Fit exposed connections of trim, fillers, and closures accurately together to form tight hairline joints to lockers and surrounding construction with concealed fasteners and splice plates.
- E. Provide fasteners appropriate to the substrate and as approved by DPS.
- F. Each anchor must withstand a pull of 200 lbs. of force on all sides and locations.
- G. Coordinated Blocking requirements per Section 06 10 00.
 1. Coordinate locations of fire treated blocking required by locker installation that are attached to walls.

3.03 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices operate properly.
- B. Clean interior and exposed exterior surfaces, and polish stainless steel and nonferrous metal surfaces.
- C. Protect lockers from damage, abuse, dust, dirt, stain or paint. Do not permit locker use during construction.
- D. Touch up all damaged finishes to factory level finish, or replace locker units that cannot be restored to factory finish appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

3.04 SPARE PARTS

- A. Provide the following for each type of locker provided:
1. Combination locks: 5% of total, but not less than 10 units.
 2. Full Latch Mechanism: 5% of total, but not less than 10 units.
 3. Door strikes: 5% of total, but not less than 10 units.
 4. Locking bars: 5% of total, but not less than 10 units.
 5. Hinges: 5% of total, but not less than 10 units.
 6. Hooks: 5% of total, but not less than 10 units.
 7. One dozen master keys, delivered to DPS only.

END OF SECTION 10 51 00

SECTION 10 75 00

FLAGPOLES

PART 1 GENERAL

1.01 REQUIREMENTS

- A. Structural performance: provide flagpoles capable of withstanding the effects of wind loads as determined according to the local building code in effect for this Project or NAAMM FP 1001, "Guide Specifications for Design Loads of Metal Flagpoles," whichever is more stringent.
 - 1. Basic wind speed: for project location as determined by the local code or the wind charts provided by the pole manufacturer - whichever is more stringent.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aluminum.

2.02 FABRICATION

- A. Style: Ground set.
- B. Ship to project site in one piece.
- C. Provide tapered flagpoles.
- D. Flagpole base construction shall consist of an outer sleeve set in concrete, inner sleeve to receive flagpole and sand fill between sleeves.

2.03 ACCESSORIES

- A. One (1) United States flag.
- B. One (1) Colorado State flag.
- C. Finial ball.
- D. Internal halyard- winch system with removable crank handle.
- E. External halyard- with cleats and locking protective covers.
- F. Revolving trucks.
- G. Halyard flag snaps.
- H. Collars.
- I. Foundation and wall sleeves.
- J. Wire core rope.
- K. Metal pulley wheels.

2.04 FINISHES

- A. Aluminum:
 - 1. Natural satin finish: Provide fine, directional, medium satin polish.
 - 2. Clear anodized finishes.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Paint portions of flagpole below grade with a heavy coat of bituminous paint (both inside and outside).

- B. Pole shall be set into ground a minimum of three feet with a minimum of six (6) inches of concrete below bottom of flagpole.
- C. The flagpole flying the United States flage shall be higher than surrounding flagpoles.

3.02 SPARE PARTS AND TOOLS

- A. Provide the following spare parts per flagpole for each type:
 - 1. Internal halyard
 - a) Two (2) cranks
 - b) One (1) truck
 - c) One (1) winch
 - d) One (1) weight assembly
 - 2. External halyard.
 - a) One (1) cleat
 - b) One (1) truck

END OF SECTION 10 75 00

SECTION 10 82 13

EXTERIOR GRILLES AND SCREENS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Expanded Metal Window Grills.
- B. Perforated Steel Grills.

1.02 QUALITY ASSURANCE

- A. Where windows are indicated or required for proper egress. Provide assemblies that comply with NFPA 101 sec. 5-2.1.7.2 for push or pull type exit devices.
- B. All grills shall qualify as a HUD "HEAVY" (level 5) as certified by NAMI or similar testing agencies. At a minimum they shall meet the following standard tests:
 - 1. Impact Test: Resist 100 foot-pounds of force without stretching the grill material more than 3" and without tearing the grill fabric at any point.
 - 2. Forced Entry Test: Resist prying load of 150 pounds and simultaneous pulling load of 300 pounds without springing the lock or bending the frame. This requirement is subject to review and approval by the Denver Fire Department.
 - 3. Sag Test: Resist 90 pounds of weight on the open grill with no more than a .063" sag in the grill.

1.03 SUBMITTALS

- A. Submit product literature and test results to the Architect.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Provide exterior window grills as manufactured by one of the following:
 - 1. Avant Guards, Inc.
 - 2. Kane Manufacturing Corp.
 - 3. Metro Screenworks.

2.02 FABRICATION

- A. Welding shall comply with the requirements of AWS. Grind welds smooth.
- B. Window grills, unless otherwise noted by DPS, shall cover the entire window opening.
- C. Where hinged grills cannot be opened due to obstructions, provide removable sections.
- D. Unless otherwise noted by DPS, provide windows at roof levels with hinged grills at lower sash.

2.03 MATERIALS

- A. Frames:
 - 1. Galvanized Steel 10 gauges (12-gauge subframe).
 - 2. Extruded Aluminum 10 gauge (12 gauge subframe).
 - 3. Hot Rolled Steel 10 gauge (12 gauge subframe), ASTM A36.
 - 4. Cold Rolled Steel 10 gauge (12 gauge subframe), ASTM A611, Grade C.
 - 5. Wrought Iron 10 gauge (12 gauge subframe).
- B. Grills:

1. Expanded Perforated Steel, Various Patterns.
 - a) Standard: 16 gauge galvanealed metal having 63% open area with 5/32" holes on 3/16" stagger centers, and shall comply with ASTM A568.
 2. Steel Wire Mesh – Diamond or Square, 3/8" clear opening is maximum.
- C. Connections shall be:
1. Galvanized Steel Bolts.
 2. Stainless Steel Bolts.
- D. All components shall be isolated from dissimilar metals as recommended by the grill manufacturer and as approved by the architect.
- E. Hinges: A minimum of 2 heavy duty hinges shall be provide for a 4 foot long grill and a minimum of 4 for an 8 foot long grill, or as otherwise approved in writing by DPS.

END OF SECTION 10 82 13