

## SECTION 00 10 00

### GENERAL DESIGN CONSIDERATION

#### PART 0 - PURPOSE

- A. Describe broad guidelines for design of schools.
- B. Establish materials qualities and applications.
- C. Describe materials and conditions which do not easily fit into specific specification sections.
- D. See specific sections of Design and Construction Standards for additional requirements.

#### PART 1 - SAFETY

- A. Safety is a primary concern. All design work shall consider the safety of building occupants.
- B. Follow the District's Construction Safety Standards and the DPS Safety Department.
- C. Specific Issues:
  - 1. Fire extinguisher cabinets - see Section 10 44 00.
  - 2. Exterior Conditions
    - a. Exterior walking surfaces subject to wet or freezing conditions shall be non-slip textured.
    - b. Exterior stair nosings shall be bullnose, broomed finishes (no embedded nosings).
  - 3. Interior Stair Nosings – non-slip, resilient tread / nosings
  - 4. Stair Railings:
    - a. Avoid open railings – provide solid walls between adjacent flights of stairs.
    - b. Avoid open guardrails at landings.
  - 5. Floor level changes:
    - a. By ramp if less than 1'-0" (code requirement).
    - b. By ramp wherever possible (ADA compliance).

#### PART 2 - MAINTENANCE

- A. Low maintenance materials shall be used throughout construction. Exposed surfaces should be resistant to damage and easily cleaned.
- B. All public areas (exterior and interior) should be considered as subject to vandalism. Graffiti and intentional damage should be considered as possible in these areas.
- C. Exterior Maintenance:
  - 1. Provide for snow removal and storage.
  - 2. Provide for trash pick-up by front loading trash truck.
  - 3. Provide for maximum sod areas mowable by large tractor mower (limit hand mower areas).

#### PART 3 - ASBESTOS REMEDIATION

- A. The DPS Environmental Services will arrange for testing to determine whether existing roofing materials are asbestos containing.
- B. The DPS Environmental Services will determine whether removal of asbestos roofing materials is to be in the construction contract or will be handled under separate contract.
- C. Consult with the DPS Environmental Services before specifying removal of asbestos-containing materials.

## **PART 4 - MATERIALS**

### **A. Exterior Finish Materials**

1. Walls:
  - a. Hard, durable, low maintenance materials such as brick, pre-cast concrete, etc.
  - b. Cleanable materials; removal of graffiti may be necessary.
2. Exterior Doors:
  - a. painted hollow metal
  - b. half-light or solid
3. Salvage Materials
  - a. A/E shall coordinate with DPS Maintenance through DPS to determine what materials and products are to be salvaged for the District.
  - b. When project involves significant number of items to be salvaged, the A/E shall develop a schedule of those items:
    - (1.) Indicate original location, final location, item description and any special notations required to assure proper removal and reinstallation or delivery to Owner.
    - (2.) Identify items requiring routine maintenance, special storage requirements, cleaning before storage and/or before reuse in the project.
  - c. A/E shall distinctly define differing salvage requirement including:
    - (1.) Items to be removed by Contractor and reinstalled under the Contract.
    - (2.) Items to be removed by Contractor and delivered to the Owner.
    - (3.) Items to be removed by Contractor and stored by Contractor for Owner collection.
    - (4.) Items to be removed by Owner.
    - (5.) Items to be partially salvaged by Owner with remainder becoming property of the Contractor.
  - d. Where items are to be salvaged by the Contractor for the Owner, documents shall state if Contractor is to deliver or store or stockpile the materials. If Contractor is to stockpile or store materials, a maximum period of storage shall be specified so that the Contractor knows how long he must maintain the materials in a suitable conditions before delivery to or collection by the Owner.

## **PART 5 - BUILDING AREAS WITH SPECIFIC NEEDS**

### **A. Entries**

1. Security Lighting: Provide security lighting at all building entries. Break resistant materials (tempered glass).
2. Exterior stairs to below grade entrances shall be enclosed with doors at grade level.
3. Avoid steps at entries.

### **B. Exterior Walls**

1. Durable, cleanable materials such as brick (ground face block), concrete, etc.
2. Projecting Elements - avoid any elements which would assist in the climbing of building walls.
3. Minimum parapet height (above adjacent grade) shall be 14' - 0".

### **C. Classroom Technology**

1. Refer to Division 27 Standards.

#### D. Furnishings

1. Pre-manufactured plastic laminate-faced casework is to be used for general classroom and office cabinetry.
2. Areas of frequent high moisture should not use plastic laminate-faced casework.
3. Do not use premium color laminates.
4. Maximum width of cabinets shall be 48" wide.
5. Avoid glass doors, and under-cabinet appliances unless approved in writing by DPS.
6. Architect shall coordinate all plumbing and electrical requirements with the casework, including heights, cut-outs and any required grommets.
7. Architect shall coordinate cabinets that are to have a lock function. Generally, all cabinets shall be lockable except under-sink cabinets.
8. Countertops
  - a. Provide backsplash at all adjoining surfaces, including ends, minimum 4" in height.
  - b. Specify all Countertops under one specification section (Division 12-12 36 00).
  - c. High School Science labs require chemical resistant tops.
  - d. Middle School science labs require chemical resistant plastic laminate countertops.
9. Architect to coordinate ADA (adult and children's) requirements for countertops used as work surfaces and under-cabinet equipment.
  - a. To provide accessibility at sink cabinets, place faucet on side of sink instead of at back of sink, and do not provide wheelchair knee space beneath sink.
10. A maximum of 5 laminate face colors are to be used per school. Contrast countertops with cabinetry.
11. Types of countertops
  - a. General use: Standard plastic laminate
  - b. High school chemistry labs: Chemical resistant resin or solid surface
  - c. Middle school chemistry labs: Chemical resistant plastic laminate
  - d. High abuse areas (high abuse areas vary according to specific project needs): Scratch resistant plastic laminate
  - e. Restrooms: Solid surface
  - f. Exterior window sills shall not be plastic laminate (use solid cast plastic material)
  - g. Wall caps on half walls shall be plastic laminate
12. Coordinate heights of countertops with ADA requirements.
13. Radius corners are required in high traffic areas.
14. Architect shall coordinate seating locations, both in folded and deployed condition with game and athletic court line painting and size requirements. Provide minimum 5' safety zone beyond court.
15. Architect shall coordinate with DPS, the required seating capacities for each type of school, as the specific requirements will vary by type and location.
16. Architect shall coordinate any power requirements with the electrical engineer. Any telescoping seating over six rows high (7 or more) shall be powered.
17. Pool areas shall have aluminum framing only, and seats made of plastic or aluminum, and will be only manually operated.
18. Architect shall coordinate school colors and logos (where available) with that of standard options for seating.

19. Architect shall coordinate ADA requirements with telescoping seating.
20. Seating shall be lockable in its folded and open configuration to avoid accidental deployment or tampering. Partial deployment of rows shall not be allowed.
21. Locks shall be keyed and allow for replacement cylinders.
22. Architect shall coordinate anchor methods with substrate and finished flooring materials as well as wall anchorage with framing and materials. Provide reinforcement details where substrate is otherwise inadequate for anchorage.
23. Architect shall confirm requirements for aisles with the Denver Building Department.
24. Architect shall coordinate doors into the space that is to have the telescoping seating, providing removable mullions and proper height to allow for delivery and installation.
25. Portable seating shall have a maximum height of 6'-6".
26. Bleachers shall always be set on a concrete or asphalt pad, sloped to drain. Refer to other Division 3 standards for paved pads.
27. All bleachers shall be permanent fixed structures.
28. Provide seating for up to 200 people, with larger capacities requiring DPS approval.
29. Do not locate bleachers over or under site utilities.
30. Assure that all safety requirements are met.
31. Meet building code requirements including, but not limited to, configurations and design loads.

#### **PART 6 - METAL FABRICATION**

- A. Consider provision of foot scrapers at main building entrances from playgrounds. DPS standard detail may be used.
- B. Metal gratings
  1. Ensure compliance with ADA accessibility guidelines in pedestrian areas.
    - a) Maximum 3/4" clear opening (sufficient to prevent a 3/4" sphere from passing through) in other pedestrian and play areas including grass fields and other landscape areas.
  2. Individual grating sections maximum 120 pounds weight.
  3. Detail gratings with bolt-down accessories to prevent easy removal.
- C. Manhole frames and covers: Non-rocking design with machined bearing surfaces to prevent movement or noise under traffic.
- D. Bollards / guard posts
  1. Bollards shall be fixed, not removable, and shall be filled with concrete.
  2. Removable bollards are to be used only where unavoidable, and reviewed with DPS.
    - a) Design removable bollards with fittings so they can be locked using padlocks.
    - b) Where bollard removal is required for emergency vehicle access, provide fittings to permit double locking (pad locks by DPS and the emergency response agency) so that either DPS or the Emergency Response agency may remove bollard by unlocking their padlock only.
- E. Stage dressing and other overhead open grids.
  1. At stages and platforms, 4'-0" o.c., perpendicular to stage opening.
  2. Grid at other locations.
  3. Mount with open side down.

- F. Expansion joint covers should be metal. Resilient type expansion joint covers/fillers are not preferred.
- G. Metal stairs
  - 1. Metal pan type with concrete fill (use interior only, not acceptable exterior).
  - 2. Closed riser, w/ rounded nosings.
  - 3. Bolt connected to surrounding structure.
- H. Penthouse access
  - 1. Penthouse access shall be by interior ship's ladder with railing.
- I. Ladders
  - 1. Sturdy, rigid rails.
  - 2. 1" minimum diameter rungs.
  - 3. Rungs shall be deformed rebar or other non-slip design.
  - 4. Ladders shall have landing support over parapet tops or gravel stop edges.
  - 5. Ladder designs shall meet OSHA standards.
  - 6. Provide roof access ladders where roof levels change by more than 3 feet.
  - 7. Where ladder terminates in a roof scuttle hatch, consider provision of ladder stringer extension device (also see standards Section 07 70 00).
- J. Stage risers shall have handrails.
- K. Railings
  - 1. Stainless steel pipe (no tubing) at swimming pools and lunchroom serving lines.
  - 2. All other railings shall be Schedule 40 steel pipe.
- L. Bollards
  - 1. Steel pipe, minimum 4" diameter galvanized schedule 40.
  - 2. Ornamental/architectural bollards only with approval of DPS.
  - 3. Non-ornamental bollards shall be field painted safety yellow.
  - 4. Bollards shall be filled with concrete (non-ornamental only), unless the bollard is to be removable.
- M. Detailing
  - 1. Detail all anchorage conditions.
  - 2. Detail all special fabrication details.
  - 3. Detail all embed conditions.
- N. Material specs
  - 1. Specify metal type and gauges for all components of each fabrication.
  - 2. Specify prime painting and touch-up at damaged paint.
- O. Anchorages (specify based on substrate)
  - 1. Use of percussion powder actuated fasteners is prohibited.
  - 2. Nelson studs for concrete substrates.
  - 3. Metal plates w/ anchor bolts for masonry substrates.
  - 4. Provide solid blocking w/ plaster ring for plaster and gypsum board substrates.

5. Provide metal wall bracket filler plates wherever mounting brackets are attached to supporting structure or blocking through gypsum board, plaster or tile.
6. Where railings are set in concrete foundations, walks or walls; core drill anchorage sleeves and install railings with non-shrink, non-metallic grout formed to create positive drainage away from the installation point.

#### **PART 7 - ROUGH CARPENTRY**

- A. In general work in this section is not specified in other sections and is not exposed to normal view.
- B. Wood frame construction is not preferred in DPS facilities. Use of wood frame construction requires A/E coordination with building code requirements and approval of DPS.
- C. Provide continuous fire-retardant treated ¾" plywood or OSB continuous lumber blocking at all mounting locations including but not limited to:
  1. Handrails and guardrails
  2. Door stops
  3. Hold opens
  4. Grab bars
  5. Architectural specialties
  6. Plumbing fixtures
  7. Toilet accessories
  8. Luminaires (wall mounted)
  9. Surface mounted devices
  10. Casework and shelving (wall and base cabinets at the top of each unit)
  11. Industrial shelving
  12. Markerboards and tackboards
  13. Projection screens
  14. Wall-mounted door holders (magnetic and mechanical)
  15. Miscellaneous equipment
  16. All other surface-mounted items as required for proper anchorage
  17. Coordinate with the library furnishings planner and supplier (separate contract through DPS) so that blocking is installed by the General Contractor for all shelving and custom casework provided under the Library Furnishings Contract.
- D. Indicate on the drawings the mounting heights for projection screen blocking.
  1. Metal scrap backing is prohibited.

#### **PART 8 - THERMAL AND MOISTURE PROTECTION**

- A. Inspection by Owner's Testing Agency does not relieve A/E of contract responsibilities.
- B. Coordinate the specific fireproofing requirements of the building with DPS at the beginning of the project.
- C. Provide fireproofing that meets the requirements of Underwriter's Laboratories (UL) and those of the Denver Building Department for specific hour(s) rated protection. Identify fire ratings and UL numbers on the drawings and/or specifications.
- D. Avoid the use of spray-on fireproofing whenever possible.

- E. Provide finished covered surfaces to conceal spray-on cementitious fireproofing unless specifically approved in writing by DPS that it is an acceptable exposed surface condition.
- F. Use of intumescent coatings shall be limited to special exposed steel structures only, and shall not be used throughout a project. Use only with written approval by DPS.
- G. Mineral fiber is prohibited for use in spray-on or trowel applied fireproofing.
- H. Cementitious fireproofing.
- I. Medium density for interior applications only.
- J. High density for interior or exterior applications.
- K. Mineral wool board fireproofing shall be used for interior applications only.
- L. Clearly indicate, on both the architectural and structural drawings, areas and elements that are to be fireproofed.
- M. Coordinate the steel finish and primer requirements of the fireproofing manufacturer with that of the steel manufacturer.
- N. Inspection by Owner's Testing Agency does not relieve A/E of contract responsibilities.
- O. Coordinate the specific type of firestopping to be used for each location.
  - 1. Through penetration firestopping in fire rated barriers, including both empty openings and openings containing cables, pipes, ducts, conduits and other penetrating items.
  - 2. Construction gap firestopping at connections of the same or different materials in fire-rated construction.
  - 3. Construction gap firestopping at the top and base of fire-rated barriers, and fire rated door and window frames.
- P. DPS may have firestopping requirements in excess of the International Building Code or the Denver Amendments; A/E shall coordinate.
- Q. Provide firestopping that meets the requirements of Underwriter's Laboratories (UL) and those of the Denver Building Department for specific hour(s) rated protection. A/E shall specify UL fire rated assembly designations in the construction documents.
- R. Coordinate with mechanical, electrical, telecom, and other systems for types and locations of through-wall penetrations to be firestopped.
- S. Detail and call out firestopping requirements at every construction joint and penetration in fire rated assemblies.
- T. Provide detail when firestopping has to meet and/or wrap structural deck and members.
- U. Allow for deflection in details.
- V. Sealant and caulk applications include, but are not limited to:
  - 1. Exterior building wall joints
  - 2. Concrete expansion joints
  - 3. Flashing joints
  - 4. Door and window frame perimeters
  - 5. Thresholds (set in full bed of compound)
  - 6. All other seams, voids and junctures, required to be weathertight (exterior), sight-tight, sound-tight, or vapor-tight (interior)
  - 7. Penetrations not required to be firestopped
  - 8. Wood trim juncture to irregular wall surfaces (joints over 1/32" in width at any point)
  - 9. Gypsum wallboard corners which are not taped

10. Junctures of dissimilar materials
  11. Junctures of similar materials
  12. Perimeter joints of plumbing fixtures
  13. Joints between interior walls and structure not required to be firestopped
  14. Pavement, curb, gutter and sidewalk joints
  15. Joints of countertops and backsplashes to each other and the adjacent wall
  16. Joints between exposed cabinet surfaces and the wall
  17. Interior joints in masonry
  18. Interior joints around hollow metal, including joint between hollow metal and hard surface flooring
  19. Inside corner joints at wall tile
  20. Other joints as indicated or as required for neat appearance
- W. Coordinate sealant requirements with the various building materials used on the project, both interior and exterior. It is strongly recommended that the A/E prepare a comprehensive sealant schedule that correlates specific materials, locations, and detail conditions.
- X. Investigate special sealants required by special design circumstances.
- Y. Avoid use of silicones in exposed joints.
- Z. Coordinate detailing with maximum infill size permitted by manufacturer for each product used.
- AA. Avoid the use of latex sealants Kitchen, Toilet Rooms, Locker Rooms and other wet areas.
- BB. Coordinate with gypsum board specifications for acoustical sealant requirements in walls.
- CC. Joint profiles should be simple, with opposing flat parallel surfaces.
- DD. Three and four point sealant contact conditions are prohibited unless otherwise approved by sealant manufacturer.
- EE. Design joints to permit future maintenance (resealing).
- FF. Insulation shall be designed to provide a complete, unbroken thermal building envelope.
- GG. Use of structure when boiler room is located.
- HH. At minimum, provide insulation types and thicknesses based on composite insulation value of R-19 for walls and R-38 for roof and roof-ceiling assemblies.
- II. Prefer insulation of boiler room ceilings under occupied spaces.
- JJ. Coordinate code requirements for proper ratings for both exposed and hidden conditions.
- KK. Exterior insulation and finish systems (EIFS) are prohibited on DPS facilities.

## **PART 9 - DOORS AND FRAMES**

- A. Hollow Metal Doors And Frames
1. Doors constructed of hollow metal shall be used where a Rating exceeding 20 minute is required by local building codes.
  2. Any door over 4'-0" x 7'-0" reviewed with DPS.
  3. Architect shall review DPS requirements for electric hardware for the project prior to DD documents.
  4. Exterior Doors:



- a) Shall be Hollow Metal with expanded polystyrene insulation.
  - b) Shall be positioned to swing against walls where possible (provide with wall stops).
  - c) Shall be flush top to prevent water pooling and inverted bottom channel to allow for cutting of door.
  - d) Shall always be double doors.
5. Kitchen Doors:
- a) Provide stainless steel insect screening in screen door which is mounted in same frame as the kitchen entrance door. Make sure that frame depth is sufficient to accommodate both doors.
  - b) Guards shall be provided for screens on both interior and exterior side of the door.
  - c) Each door shall be 4'-0" wide (minimum).
  - d) Undercutting is limited on fire rated doors. Review requirements of NFPA Bulletin 80.
6. Door Lights:
- a) Door headrails must be at least 9 inches high.
  - b) Door lights must begin 3'-6" above floor.
7. Prohibitions:
- a) Two doors hung from same mullion are prohibited.
  - b) Knock-down frames (unless approved by DPS prior to construction documents).
  - c) Hollow metal doors and frames are not to be used in pool environments.
8. Frames:
- a) Hollow metal throughout (unless otherwise approved by DPS prior to construction documents).
  - b) Removable mullions shall be provided as hardware products.
  - c) Provide removable mullions only where necessary for equipment movement shall include, but not limited to the following location (and as approved and coordinated with DPS):
    - (1.) Cross-corridor doors (unless a "no mullion" condition is indicated).
    - (2.) Main entry doors (coordinate with DPS prior to construction documents).
    - (3.) Auditorium to corridor near stage (and to exterior if available) .
    - (4.) Multi-purpose room to corridor (one pair at a minimum).
    - (5.) Cafeteria to corridor (one pair at a minimum).
    - (6.) Service entrance to exterior.
    - (7.) Gymnasium to corridor (and gymnasium to exterior).
    - (8.) Provide cutout in frame to allow for installation of Concealed Electrical Power Transfers as required.
9. Finishes:
- a) Factory Primed.
  - b) Field painted- Avoid dark- high gloss finishes.
  - c) For new buildings and expansions the paint shall be a DTM semi-gloss.
- B. Wood Doors
- 1. Wood doors to be used only where they can be provided with applicable fire rating as a wood based particleboard core door. Mineral core applications are not acceptable.

2. Wood doors are to be used on building interiors only.
3. Door lights may not be within 9" of head, 42" of floor, or within 8" of latch stile.
4. Door lite mouldings to be metal and equal to Stamping #110 or Anemostat LoPro.
5. Wood doors shall not be used in pool areas.

C. Access Doors And Panels

1. Provide access doors where required to service, use, maintain concealed valves, dampers, motors, balancing devices furnished in divisions 15 and 16.
2. Architect shall coordinate with Mechanical and Electrical Engineers to locate panels so as to minimize visual impact on public spaces as much as possible and avoid locations with public access.
3. Use both recessed and flush mounting where appropriate for building materials.
4. Architect shall coordinate where fire-rated doors are required.
5. Furnish sizes suited to conditions but not less than 16" x 16" for hand access and 24" x 24" for person access, 36" x 36" for floor access.
6. Finishes other than painted must be approved by DPS.

D. Coiling Doors And Grilles

1. Avoid use of coiling door where pairs of doors will suffice.
2. Coiling door located on the exterior of the building shall be insulated.
3. Coiling grilles are to be used on building interiors only.
4. Coiling grilles are not to be used to enhance security of the building- locking off areas of the building during after hours unless approved in writing by DPS.
5. Use of coiling grilles and doors shall not interfere with required egress of the building or sections thereof.
6. Coiling counter fire doors shall be used within all fire rated corridors and be linked to the automatic fire alarm system.
7. Coiling doors may be used in fire separation walls were allowed by the local code.
8. Coiling fire doors shall not be used where high cycle applications are needed.
9. Locate coiling hood on the secure side of public spaces.
10. Install coiling door for ease of operation and maintenance of motor assembly.

E. Fire-Rated Coiling Doors

1. Fire-rated coiling doors shall be activated by the building fire alarm system only (fusible link activation is not permitted).
2. Fire-rated coiling doors shall be electrically operated with manual operation possible in the event of a power failure.
3. Fire-rated coiling doors shall automatically reset to full operating condition when the fire alarm system returns to normal condition (not in alarm).

**PART 10 - HARDWARE**

- A. Due to the extent of detail provided in this standard, the A/E may choose to edit this standard and incorporate portions of this standard in the construction documents. To obtain an electronic copy of this standard in Microsoft Word format, contact DPS.
- B. Revisions to hardware must be approved by DPS QAQC or Structural Department.
- C. Published model numbers for lockset functions may have changed since this publication. Architects shall verify that function numbers match intended operation.

- D. Stated functions, products, operation and keying should remain unchanged.
  - 1. All new locksets shall have interchangeable/removable core cylinders.
  - 2. Architect shall coordinate with the DPS QAQC, Structural Department, or DPS to obtain the lockset and cylinder manufacturer and keyway information for existing buildings.
  - 3. All new lever trim (locksets and panics) must be "Free Wheeling".
- E. A/E shall include complete hardware schedule in Contract Documents.
- F. Multiple door entries should have keyed access on one leaf only.
- G. Exterior Custodial Entry shall have a Corbin H08 keyway. Consult w/ DPS for location.
  - 1. All MDF/IDF and DOTS rooms shall be able to accept a Best small format 7-pin interchangeable core.
- H. Removable Mullions:
  - 1. Install keyed removable mullions at all double door sets in all locations except stairways.
  - 2. Removable mullions are to be hardware type with cylinder latch for mullion removal. Latch cylinder shall be a keyed removable core cylinder.
  - 3. All mullions are to be steel (aluminum is not allowed).
  - 4. Do not paint new mullions. Factory painted finish is allowed.
- I. Door Swings:
  - 1. Arrange doors to swing to fixed wall where possible so stops can be wall mounted.
  - 2. Avoid recessing frames in masonry or concrete more than 1/2" on hinge face.
  - 3. Install all doors for 180 degree swing where possible. Coordinate detailing of door frame installations to enable 180 degree door swings.
- J. Door Stops:
  - 1. Locations in order of preference are:
    - a) Wall - (design doors/walls for wall bumper application).
    - b) Floor – (place at maximum swing and out of traffic flow).
    - c) 2" x 2" grouted bollards must be installed at all exterior doors and interior back to back entry doors. Bollards must be 42 inches high from finished surface.
    - d) Overhead (not permitted w/o Owner approval). Use surface mount devices only with DPS approval.
  - 2. Uses
    - a) Wall protection.
    - b) Hardware protection.
    - c) Safety against wind damage.
    - d) Provide stops for miscellaneous doors which are not part of normal doors specification (i.e. walk-in coolers, special casework gates).
    - e) Cautions: Locate stops away from traffic flow. Avoid trip hazard at floor stops.
- K. Closers
  - 1. All closers shall have parallel arm mounting.
  - 2. No mountings exposed to weather.
  - 3. All closer arms to be "extra heavy duty" solid steel.
  - 4. Closers to be mounted for maximum door swing.

5. Power operated closers (ADA Access) shall not be installed in any location without the approval of the Project Manager and QAQC Dept.

L. Locksets

1. All locksets shall be “free wheeling” cylindrical type (lever handles only) with interchangeable/removable core cylinders.
2. All locksets shall be compatible to accept the interchangeable core/removable cylinder designated for that building by the DPS Structural Department.

M. Controlled Access Entrances

1. Refer to Division 17 standards for guidelines on entrances to receive controlled access hardware.
  - a) Controlled access hardware includes:
    - (1.) 12v Electric strikes only.
    - (2.) A video camera (see Division 27 with integrated video camera information).
    - (3.) An intercom between the entrance and the operation location (normally the building secretary) provided under the contract for construction.
    - (4.) Signage.
2. DPS will eventually install controlled access hardware at all major building entrance points. New buildings and rehab of existing entrances shall provide for future retrofit of controlled entrance hardware.

N. Owner Provided Materials

1. Security key box (for GM Entry, Custodial Entry) will be furnished and installed by DPS.
2. DPS will provide key(s) for Security key box. Installation will be by the DPS Lock Shop. Keys to be provided to DPS Security.

O. Cylinders

1. Cylinders shall all be interchangeable/removable cores with DPS approved restricted keyways. Contact Project Manager, QAQC, or Structural Department for approved restricted keyways.
2. Exterior door groups shall have only one keyed leaf. The keyed leaf shall always be the right hand reverse leaf.

P. Keying

1. DPS will coordinate keying requirements and key schedule with DPS Locksmith Shop and the Architect.
2. Keying shall be per Owner's instructions.
3. The Architect shall include keying schedules as part of the Door Schedule. Information will be provided by DPS. The Architect will coordinate and document keying information.
4. Provide maintenance manuals per Division 1 requirements containing full finish hardware information for this job. The maintenance information shall be included in the Project Record Documents and shall include:
  - a) Name, address & phone number of hardware supplier.
  - b) Maintenance instructions and parts list for each type of operating hardware.
  - c) Warranties.
  - d) Final bitting charts including additional, unused combinations organized into master keying subsets. Include listing of all unused bitting combinations within each grand master, master and sub-master keying combinations. Submit complete masterkey systems setup information including:
    - (1.) Top master key bitting

- (2.) Control key bitting.
- (3.) System rotation or progression
- (4.) Complete bitting array
- (5.) Extended bitting charts

Q. Magnetic Hold-Open Devices:

- 1. The hardware schedule shall include magnetic hold-open devices at all classroom to corridor doors and at other locations as directed by DPS.
- 2. The Architect shall coordinate voltages and other device requirements with fire alarm designer/specifier.
- 3. Doors with magnetic hold-open devices shall be equipped with a hold-open release switch mounted adjacent to light switches and wired to disrupt power to the magnetic hold open when pressed. Release of the button will restore magnetic hold open power. See Section 16721 for specific product information.

R. Automatic Flush Bolts: Automatic flush bolts are NOT to be used at any location.

S. Manual Surface Flush Bolts: Where fixed leaf of door pairs is needed, manual surface flush bolts or cremone bolts shall be used where possible. See specification below.

T. Knox Box (for Fire Department): Architect shall include one (1) Knox Box in hardware specification for each building where the Knox Box does not already exist, and where building entry (Fire Department Entry) is changing due to addition or remodeling. Consult with DPS for requirements at existing buildings.

U. Coordinators

- 1. Coordinators are not to be used at any location.

V. Continuous Hinges

- 1. Continuous hinges shall be used as approved by DPS. See spec text 2.05 for generally preferred locations.
- 2. Continuous hinges shall be surface mount only. Use a minimum of nine thru-bolts for installation.
- 3. Coordinate locations requiring use of continuous hinges with DPS, QAQC, or Structural Department.

W. Special Conditions

1. Kitchen Exterior Door

- a) Kitchen exterior doors are required to have screen door and solid door in same frame. (See section 08 11 13 for door frame notes.) A/E shall coordinate hardware on these two doors to facilitate operation of the doors.
- 2. Astragals required on all double storage room doors.
- 3. Alarmed Exits: Where exits are required for code purposes only and are not to be used for routine access to/from spaces, alarmed panic devices may be used. Where permitted, battery powered alarmed panic devices shall be provided.

X. Existing Buildings

- 1. Architect shall coordinate with DPS, QAQC, or Structural Department regarding lockset style, function and finishes for work in existing buildings. All new hardware shall be US 26D.

**PART 11 - GLAZING**

A. Glazing for DPS buildings should consist of the following assemblies.

- 1. Interior non rated glazing should be tempered glass.
- 2. Use of wire glass is prohibited. Use fire-rated glazing from TGP or equivalent.

3. Interior double-glazing should be used only where sound isolation is critical. Where double glazing is required, provide tempered glass at exterior pane except where required to be fire resistive. Where required to be fire resistive, use one pane of tempered and one pane of fire-rated glass.
4. Exterior glazing in doors should be tempered.
5. Exterior window glazing (double pane) may not be sealed insulating units. Use one pane of tempered glass and one pane of float or plate glass.
6. No sealed insulating units should be used anywhere. Use two panes of the appropriate glazing instead.
7. Plastic glazing may be used only where high impact risks are expected such as in Gymnasiums, etc. If double glazing is desired, use plastic on the impact side only.
8. Spandrel glass is not to be used without prior approval by DPS.

**PART 12 - EXTERIOR GRILLES AND SCREENS**

- A. Provide grilles on all ground floor windows in areas where protection is a concern, and as approved and coordinated by DPS in writing. The need to provide grills varies widely.
- B. Locations possibly requiring grilles:
  1. windows within five feet of adjacent to roofs having easy access.
  2. windows that face and are in close proximity to playgrounds and ball fields or other areas that may be exposed to flying objects.
- C. Architect shall coordinate with the Denver Fire Department where such devices may be prohibited.
- D. Architect shall design grilles to accommodate window air conditioning units in buildings not having air conditioning.
- E. Architect shall design grills to accommodate out swing windows.
- F. Existing grilles removed will be replaced or reinstalled- confirmed with DPS and the Denver Fire Department.
- G. Window grilles over eight by four feet shall be manufactured in multiple sections. Large grill operation and sectionizing must be reviewed by DPS.
- H. Finish of grilles is as approved in writing by DPS.
- I. The size of any individual component of a window grille shall not exceed 4' x 8' unless approved in writing by DPS. Grills should be sized and mounted for easy removal and re-installation.

**PART 13 - FINISHES**

- A. Portland Cement Plastering
  1. Exterior applications for soffits are to be cement plaster only, white Keene Cement finish coat, smooth finish, no paint.
  2. Architect shall develop details to properly ventilate concealed spaces above exterior soffits and provide insect screening.
  3. Provide cement plaster ceilings only in all Locker and Shower rooms, white Keene Cement finish coat, smooth finish, no paint.
  4. Architect shall in general avoid the use of plaster on interior surfaces with the exception outlined above. No other locations shall receive plaster without approval by DPS.
  5. Architect shall coordinate with DPS any other locations that may require plaster, other than that listed above.
  6. Architect shall provide ample control joints to avoid cracking. Construction Documents shall indicate joint patterns and spacing.
  7. Control joints shall not carry over structural systems.

8. Architect shall coordinate the requirements where fire rated ceiling assemblies occur.
9. Architect shall coordinate metal framing requirements and those of this section.
10. All plaster shall be three coat system minimum 7/8" thick.

B. Tile

1. Provide 4" X 4" glazed wall tile to a height of 6'-8" AFF or as required by code and the Health Department.
2. Provide 6" x 6" or 8" x 8" unglazed quarry.
3. Provide 2" x 2" or quarry tile unglazed floor tile in student restrooms and shower rooms.
4. Architect shall review the locations of all ceramic tile with DPS.
5. Balance any patterned layouts centered in each room. Avoid complex patterns and patterns requiring the cutting of tile within the field of the surface being tiled.
6. Elementary schools require cut-out of quarry tile base around toilets.
7. Architect shall show control and isolation joints on the plans.
8. Slope shower drains individually so that water from one stall does not flow to the adjacent one.
9. Slip resistant tile (grit embedded materials) is prohibited.
10. Grout sealers shall not be used on any tile systems.
11. Epoxy grout shall be used for all tile grout in kitchens, restrooms or other applications. Other grout systems are prohibited.
  - a) All grout must meet ANSI A118.3 Standard.
  - b) Follow manufacturers instructions for allowable cure time for epoxy grout.

C. Acoustical Ceilings

1. Architect shall provide 2' X 4' non directional fisured boards, with square edges unless otherwise approved by DPS.
2. Color of tile and suspension grid shall be white.
3. Architect shall provide paper faced units as standard, vinyl coated in kitchens is acceptable. All restroom ceilings shall be gypsum board hard lid.
4. Architect shall specify that both tiles and suspension system is provided with hold-down clips within 10 feet of an exterior door only.
5. Do not use acoustical tile ceilings as a vertical soffit element.
6. Avoid use of acoustical tiles in areas less than 9 feet in height.
7. Balance layout centered in each room.
8. Architect shall coordinate and specify tenting of speakers and lighting where fire rated ceilings are required.
9. Architect shall provide vibration isolation where ceilings are located under kitchens, mechanical rooms, elevator rooms, gymnasiums.
10. Architect shall detail all special conditions on the project, i.e. around an overhead door.
11. Tectum ceilings shall be used only in special areas requiring additional strength and abuse-resistance. Proposed Tectum ceiling areas must be reviewed by DPS.

D. Wood Flooring

1. Avoid use in areas with exposure to high heat, wet areas, and chemicals.

2. Coordinate transitions to adjacent flooring surfaces, paying close attention to ADA requirements for thresholds.

#### E. Resilient Flooring

1. Colors and patterns
  - a) Minimize complex patterns requiring acute angles and curves.
  - b) Use a maximum of 10 colors at a given building.
  - c) Specify manufacturer's standard colors are preferred. Custom colors must be review by DPS.
  - d) Trim accessory colors shall be limited to black, brown or dark bronze.
  - e) Refer to DPS Finish Standards.
2. Specify chemical-resistant resilient flooring where flooring may be exposed to chemicals.
3. Coordinate adhesive with substrate materials and coatings.
4. Specify remedial substrate treatment for renovation and retrofit projects.
5. Sheet products shall not be used.
6. Slip resistant resilient flooring locations must be reviewed by DPS.
  - a) Non-abrasive only.
  - b) Select for easy cleaning.
  - c) Areas may include, but not limited to, ramps, vestibules, stair treads, stair and ramp landings.
7. Avoid short returns on base outside corners (for example where walls are thicker than frames at CMU radius bullnose conditions) for maintaining proper adhesion. Coordinate hollow metal details to provide frames which extend beyond wall surfaces to avoid short returns.
8. For flooring retrofit projects, coordinate removal and reinstallation of furniture and equipment with the scope of the construction contract. Under no circumstances will the custodial staff be allowed to move furniture and equipment for construction purposes. Moving and staging of furniture and equipment will be accomplished by outside vendors or will be included under the general construction contract.
9. Coordinate moisture and alkalinity testing requirements with other design and specification requirements.

#### F. Resilient Athletic Flooring

1. Coordinate each type of flooring with DPS prior to selection for use in the project. Resilient athletic flooring will be considered for Elementary Schools only.
2. Coordinate requirements of wood athletic flooring with those found in Section 09 64 00- Wood Flooring.

#### G. Fluid Applied Flooring

1. Must review locations with District.
2. Use of product in kitchens, shower rooms, or locker rooms is prohibited.

#### H. Carpeting

1. Carpet appearance is preferred to be on an overall multi-color, random tweed. Design to be reviewed and approved by the District.
2. Carpeting should be installed only in appropriate classrooms and accessory spaces. Carpet shall not be installed in:
  - a) Corridors or other high-traffic.
  - b) Lunchrooms, cafeterias, or other food service spaces.
  - c) Within two feet of plumbing fixtures.



- d) On stairs or nosings except in low traffic areas where necessary for acoustic performance.
  - e) On vertical surfaces.
  - f) Separate carpet cushion shall not be used in any application.
  - g) Carpet-over-carpet retrofit is prohibited.
3. Welded seam carpet is preferred. Carpet tile may be used only in special circumstances and will need to be approved by the District. If carpet tile is used, install the product with with releasable adhesive.
  4. Specify appropriate underlayments. Gypsum based underlayment products shall not be specified and substrate specific.
  5. Ensure that resilient base and accessories are specified in a separate section.
  6. For carpet retrofit projects, coordinate removal and reinstallation of furniture and equipment with the scope of the construction contract. Under no circumstances will the custodial staff be allowed to move furniture and equipment for construction purposes. Moving and staging of furniture and equipment will be accomplished by outside vendors or will be included under the general construction contract.

#### **PART 14 - PAINTING**

- A. Review paint with shops.
- B. Murals and graphics: Consult with Facility Modernization and the Protective Coatings Department regarding protecting or painting over murals, graphics, and logos. DPS will consult with the Planning Manager regarding murals that may be considered historic or otherwise noteworthy.
- C. Paint color selections
  1. Generally, ceiling color shall be “ceiling white” only.
  2. Refer to DPS Finish Color Standards.
  3. Prepare color boards for review by DPS and specified advisory committees. Final color approvals must be reviewed through DPS prior to presentation to color committees.
  4. Select Field and Accent Colors from Approved DPS Recommended Color Palettes
    - a) See Exhibit “A” at end of Section 09 91 00.
  5. Wall Paint (Field Colors):
    - a) Select maximum one (1) field paint color per project.
  6. Accent Paint:
    - a) Select maximum three (3) accent paint colors per project.
    - b) Large expanses of accent colored walls and surfaces are not desirable. Accent paints are intended to be used for graphics, striping, or to emphasize architectural elements. One wall of accent paint may be allowed in each room.
- D. Provide anti-graffiti sealer at the following surfaces:
  1. Interior ground-face concrete block (CMU).
  2. Interior exposed brick.
  3. Exterior exposed brick, at locations coordinated with DPS.
- E. Repainting of existing facilities:
  1. Generally, include repainting of acoustic ceilings in building repainting projects.
  2. Replace damaged or missing ceiling panels and tiles in preparation for painting of acoustic ceilings. Typical acoustic ceilings may include lay-in acoustic panels, adhered 12” x 12” acoustic tiles, and Tectum panels.

3. Include signage replacement in repainting projects, including panel signs and vinyl lettering. Include all types of signage, including but not limited to room numbers, accessibility signage, and door and frame signs.
  - a) Refer to Section 10 14 00.
4. Include painting of exposed fire sprinkler pipe in public and finished areas. Color shall match adjacent colors.

**PART 15 - VISUAL DISPLAY SURFACES**

- A. Coordinate requirements with the District's Education Specifications.
- B. Chalkboards are prohibited. Use of chalkboards are not to be used unless directed in writing by DPS, and then only in specific approved locations.
- C. All Markerboards and Tackboards shall be mounted with perimeter trim and abutted to each other. No 'T'molding is permitted.
- D. Gymnasiums shall get one (1) 4' by 4' markerboard with tray (minimum 12" long) mounted at the top of the board and with rounded edge trim.
- E. Classroom Markerboards
  1. Typical classrooms shall have at least two (2) markerboards of at least 12' length.
  2. Mount markerboards on opposing walls.
  3. Preferred Mounting Height (to bottom of the board)
    - a) Kindergarten/ECE: 25" AFF. Per Children's ADA standards.
    - b) Grades 1 and 2: 27" AFF. Per Children's ADA standards.
    - c) Grades 3 to 5: 30" AFF. Per Children's ADA standards.
    - d) Grades 6 to 12: 36" AFF. Per ADA standards.
- F. Classroom Tackboards
  1. Provide a minimum of Four (4) tackboards of 4' width in each classroom.
  2. Location: at each end of markerboards where possible.
  3. Locate a minimum of 3'-0" from egress doorway.

**PART 16 - SIGNAGE**

- A. Architect shall coordinate the specific sign requirements with the District at the beginning of the project (Schematic Design). Confirm if bi-lingual signs need to be used.
- B. Provide a Corner Stone containing a document box (time capsule) and marked by a bronze plaque in a location directed by DPS.
- C. One bronze plaque is required for each new building.
  1. See standard drawings for plaque details. Coordinate text with DPS.
- D. A single style and color (may be multi-colored) shall be developed for the entire project.
- E. Rooms with more than one entry shall have a room wall sign at all entries.
- F. Site Signage shall be coordinated with the project Civil Engineer and be in conformance with the City of Denver Signage Ordinance as well as the requirements of both, Denver Transportation and the Denver Fire Department, as well as ADA.
  1. Post and Panel signs may be required for projects to indicate directions along access drives to provide way finding for service entrance, visitor and staff parking, and secondary entries, accessible route, etc. Use only as approved by DPS.

2. **Street/Traffic Signage:** Standardized Street signage may be required for the facility, and shall include, but not be limited to: Stop, Yield, No Parking, ADA Parking, Bus Loading Zone, Staff Parking, etc. Architect shall coordinate these requirements with the City of Denver Traffic Division and DPS. Must be installed on DPS property, not in the right of way.
- G. **Interior Way Finding Signs:** The intent of the signage system is to direct visitors from the main building entrance to their destinations with the building.
1. **Directional:**
    - a. **Room Ranges:** Signs will be placed at each corridor junction in each building, indicating, which direction to go for ranges of room numbers (i.e. 101-120). The system shall focus upon room numbers and symbols, and avoids the use of unit names to minimize sign system maintenance over time. The signs shall direct major spaces such as Libraries, Cafeteria, Gymnasium and Auditoriums.
    - b. **Compass Direction:** As each building dictates, a direction sign will be placed at the main passenger elevators on each floor providing a north, south, east, and west direction. This may be substituted with a floor directory with graphic floor plan as outlined above.
  2. **Room Identification or Title:**
    - a. Room titles shall be limited to those rooms which have specialized uses which are not likely to change.
    - b. Rooms which shall have room titles include, but not limited to: Library (LMC), Cafeteria, Locker Room, Gymnasium.
    - c. Room titles such as “Principal’s Office” shall not be used. Office rooms shall contain only room number and insert slots for names and titles.
    - d. Room titles are in addition to room numbers. All signage shall include the room number.
    - e. Classrooms shall not have room titles, but shall contain two insert slots for further identification, such as grade level and teacher’s name.
  3. **Room Identification:** The room identification number sign will be required only on the side of the door that faces the corridor or room it is accessed from. One sign per entry door. The purpose of this sign is to identify specific facility locations for recording information on uses and function. In addition to room number sign; DFD tags shall be required above the door centered on head of metal door frame. The purpose of this sign is to identify locations by the DFD and building security.
  4. **Restroom Identification:** Signs will be installed on the corridor side and will designate room use for men, women (staff areas only) boys, girls or family. Sign Information will show ADA accessible graphic designation.
- H. **Safety/Code Compliance/Regulatory Signs:**
1. **Elevators:** Each building elevator is designated with a number if multiple elevators exist. Signage shall be provided indicating the number for each elevator.
  2. Signage instructing occupants to use stairways in the event of fire, both written and in graphics, shall be posted at each elevator, on each floor.
  3. **Room Capacity:** Any room having an occupant load of 50 or more, as determined by the IBC, shall have a sign indicating the rated capacity of the room.
  4. **Stairs/Stairwells:**
    - a. Each building stairwell is assigned an identifier for location purposes. Signage for outside the stairwell will be provided for this information and along with a stair symbol, identify each stair with room number as described above (i.e. “Stair A”).
    - b. Signage for inside the stairwell will be provided for the stair identifier, the appropriate floor number and other information as to use and extend of the stair as required by local codes. (i.e stair to roof).

5. Areas of Rescue Assistance: If required by local codes due to building height, signage leading to and signage within area shall be provided in accordance to ADA requirements and the local code.
6. Evacuation plan: Located at each classroom door.
  - a) In the elevator lobby show graphic of floor plan, 'you are here' designation and routes to the stair wells and exit doors.
  - b) Provide a clear plastic sleeve that allows for inserts size 8.5"x11". Architect must provide primary (red) and secondary (blue) routes to exits. Space Management team has AutoCAD blocks for egress to provide, and all routes must be approved by DPS Department of Security.
7. Staging Area.
8. Exterior Door Numbers: Sequencing starts at the Main Entry Door with #1 and works clockwise to all exterior doors.

#### **PART 17 - TOILET COMPARTMENTS**

- A. Provide overhead braced type partitions only.
- B. Metal toilet partitions are preferred. Phenolic and Solid Color Reinforced Composite (SCRC) and other materials are prohibited.
- C. All toilet partitions, hardware, etc., shall be supplied by a single manufacturer.
- D. Architect shall coordinate layout with plumbing installation to assure proper clearances and drain locations.
- E. Architect shall coordinate toilet accessories locations for proper ADA clearances. Refer to section 00 70 00 regarding ADA children's requirements.
- F. Architect shall ensure proper ADA clearances and mounting heights are maintained in designated stalls.
- G. Provide zero sight lines when detailing partitions; pilaster-to-panel spacing shall not exceed ½". Panel-to-wall spacing shall not exceed 1".
- H. Architect shall coordinate layout of partitions so that doors are not obstructed from full movement by toilet accessories and fixtures.
- I. Colors: Maximum of one (1) color per room and two (2) colors for the entire project may be selected.
- J. Non-ADA stalls shall be minimum 2'-8" clear inside dimensions.
- K. Urinal screens
  1. Confirm locations of urinal screens with the Authorities Having Jurisdiction (AHJs) and with the DPS.
  2. Provide floor-to-ceiling mounted pilasters at urinal screens, in addition to continuous wall brackets.

#### **PART 18 - TOILET ACCESSORIES**

- A. Mounting Heights
  1. Where ADA requirements conflict with published DPS Standards, use DPS Accessibility Standards.
- B. All equipment provided for toilet accessories should be of high durability and vandal-resistant.
- C. Architect shall confirm wall depths to ensure recessed accessories will fit wall cavity.
- D. Architect shall confirm and correctly detail fire rated walls where recessed accessories are to be located.
- E. Wall-mounted waste receptacles are prohibited. DPS will provide waste receptacles under separate contract.
- F. Provide sanitary napkin disposal units at restrooms used by female Middle School students, female High School students, and female adults.
- G. Sanitary napkin dispensers require DPS approval prior to installation.
- H. Provide minimum one mirror in each restroom.

- I. Architect shall review all locations for the installation of accessories, and should verify that items are shown on Drawings and/or included in this Section. Normal distribution of equipment is as follows.
  1. Paper towel holders
    - a) One (1) or two (2) per wash fountain.
    - b) One (1) per classroom sink.
    - c) One (1) per lavatory or pair of lavatories, depending upon layout.
  2. Toilet paper holders: one (1) per water closet.
  3. Soap dispensers
    - a) One (1) per hand wash sink in kitchens.
    - b) One (1) per pair of lavatories.
    - c) One (1) or two (2) per wash fountain, depending upon layout.
  4. All dispensers to be obtained from one source.

**PART 19 - CORNER GUARDS**

- A. Architect shall provide wall and corner guards at all building service areas and corridors that are to receive or move supplies and equipment on a regular basis.
- B. Provide wall guards minimum 12 inches high in receiving areas.
- C. Provide a corner guard on all outside drywall corners subject to damage in high traffic areas.
- D. Flush mounted corner guards shall not be used.
- E. Provide Stainless steel in kitchen areas, galvanized steel in other areas.

**PART 20 - FLAGPOLES**

- A. Locate flagpoles in a prominent location at main entry or in front of the building.
- B. Approaches to the flagpole shall be ADA accessible.
- C. A minimum of two (2) flagpoles shall be utilized for each school (one each for the US and State Flags).
- D. A maximum of one (1) flag may be flown per flagpole.
- E. Maximum height of each flagpole shall be 40 feet.
- F. Maximum flag size shall be (5'x7').
- G. All flagpoles are to be a single one-piece tapered construction.
- H. Arrangement of flagpoles shall conform to Federal flag flying guidelines.

**PART 21 - GRANDSTANDS AND BLEACHERS**

- A. Bleachers shall always be set on a concrete or asphalt pad, sloped to drain. Refer to other Division 3 standards for paved pads.
- B. All bleachers shall be permanent fixed structures.
- C. Provide seating for up to 200 people, with larger capacities requiring DPS approval.
- D. Do not locate bleachers over or under site utilities.
- E. Assure that all safety requirements are met.
- F. Meet building code requirements including, but not limited to, configurations and design loads.

**PART 22 - LOCKERS**

- A. Architect shall coordinate with DPS the type, layout and size of lockers required on the project.

- B. Varsity athletic lockers shall be fully vented on all sides and be used only for varsity athletic lockerooms, not for P.E.
- C. Architect shall coordinate locker installations with both the Children's and Adult ADA guidelines, depending on the project.
- D. Architect shall specify type of base to be provided and provide details for mounting.
- E. All locker doors shall be free of any obstructions.
- F. Architect to coordinate depth of locker and cavity depth when using recessed conditions.
- G. All lockers not recessed are to receive sloped tops.
- H. Provide not more than six separate colors in a single school.
- I. No open leg lockers shall be permitted.
- J. Minimum locker dimensions for lockers:
  - 1. Standard locker: 15"W x 18"D x 72" high single tier.
  - 2. Varsity athletic locker: 18"W x 18"D x 72" high single tier.
  - 3. P. E. locker: 18" W x 18" D x 72" high double tier.
- K. Consult with DPS for locker sizes and layouts.
- L. Include DPS numbering preferences.

**PART 23 - CONVEYING EQUIPMENT**

- A. Coordinate heights of countertops with ADA requirements.
- B. Radius corners are required in high traffic areas.
- C. Architect shall coordinate seating locations, both in folded and deployed condition with game and athletic court line painting and size requirements. Provide minimum 5' safety zone beyond court.
- D. Architect shall coordinate with DPS, the required seating capacities for each type of school, as the specific requirements will vary by type and location.
- E. Architect shall coordinate any power requirements with the electrical engineer. Any telescoping seating over six rows high (7 or more) shall be powered.
- F. Pool areas shall have aluminum framing only, and seats made of plastic or aluminum, and will be only manually operated.
- G. Architect shall coordinate school colors and logos (where available) with that of standard options for seating.
- H. Architect shall coordinate ADA requirements with telescoping seating.
- I. Seating shall be lockable in its folded and open configuration to avoid accidental deployment or tampering. Partial deployment of rows shall not be allowed.
- J. Locks shall be keyed and allow for replacement cylinders.
- K. Architect shall coordinate anchor methods with substrate and finished flooring materials as well as wall anchorage with framing and materials. Provide reinforcement details where substrate is otherwise inadequate for anchorage.
- L. Architect shall confirm requirements for aisles with the Denver Building Department.
- M. Architect shall coordinate doors into the space that is to have the telescoping seating, providing removable mullions and proper height to allow for delivery and installation.
- N. Portable seating shall have a maximum height of 6'-6".
- O. Comply with ADA accessibility guidelines, applicable codes including elevator codes, Denver Wastewater Management (DWM) requirements, Denver Landmark Commission, and requirements of other Authorities Having Jurisdiction (AHJ).

- P. Coordinate elevator delivery, installation, and testing and inspection periods with the construction schedule.
  - 1. It may be necessary to require elevator submittals to be delivered early in the construction period.
- Q. Elevator locations
  - 1. New two-story and taller buildings shall have elevators.
  - 2. Two-story additions to existing buildings without elevators shall have elevators.
    - a. The requirement to provide elevators in one-story additions to two-story (or taller) existing buildings will be determined by DPS.
    - b. If it is determined that an elevator will be added in the future, consider construction of shaft and machine room for future installation of elevator.
  - 3. Locate elevators for optimum ADA access.
  - 4. Installation in existing split-level schools shall be placed to accommodate all levels if possible.
  - 5. Locate elevators for multiple-function use (freight, ADA, custodial).
- R. Wheelchair/Vertical Platform lifts must be approved by DPS QAQC and Planning prior to installation.
- S. Limited use / limited application (LULA) type elevators are prohibited.
- T. Elevator size and capacity
  - 1. For buildings over two stories in height, coordinate with AHJs for the possible requirement to accommodate stretchers/gurneys.
- U. Hydraulic elevators are preferred. If traction elevators are contemplated, confirm acceptability with DPS.
- V. Durability and maintenance: Select only equipment suitable for potential heavy uses. (Elevators needed for occasional use by physically-impaired individuals are most often used for other uses, i.e. convenience, freight, etc.) Provide vandal-resistant buttons, indicators and panels. Lightweight equipment will not last.
- W. Emergency power: Coordinate requirements for emergency power, etc., for elevator and elevator recall function as required by the AHJ.
- X. Communications, controls, and alarms: Coordinate with the HVAC, electrical, telecommunications, and security systems.
- Y. Elevator machine rooms
  - 1. Machine rooms shall comply with applicable code requirements for lighting, ventilation, convenience power, clearances to equipment, headroom, fire ratings, etc.
  - 2. Machine rooms shall be adjacent to shaft wherever possible, and designed to maximize service convenience.
  - 3. Design systems to maintain proper operating temperature for equipment in machine rooms.
    - a. Coordinate possible code requirement for a dedicated machine room cooling system.
    - b. Ensure that the HVAC temperature controls system monitors machine room temperature.
  - 4. Machine room must be properly sound isolated from adjacent classrooms or offices.
  - 5. Avoid routing of services through machine room that do not serve the machine room.
  - 6. Do not provide a high temperature alarm in the machine room (although this was a previous standard).
- Z. Smoke doors: Applicable codes may require elevators to have separate smoke doors separating the elevator cab doors and the corridor.
  - 1. If not required, do not provide elevator smoke doors.
  - 2. Elevator smoke doors may be at the elevator openings or between a vestibule and the corridor.

3. Smoke doors at elevator doors shall be equipped with magnetic hold-open devices controlled by the fire alarm panel.
  4. Coordinate with electrical for line voltage requirements.
- AA. Car controls: Provide one car interior control panel at each car door.
- BB. Hall call stations
1. Coordinate with DPS for type of hall call controls to be used on each project.
    - a. Previous standard was keypad operation.
    - b. Standard may be changing to card reader operation.
  2. Cab call panel shall be equipped with a key for selection of “automatic,” “manual” or “off” operation.
- CC. Handrails: Cab handrails shall meet code requirements.
- DD. Fire sprinklers: Determine during design phase whether the AHJs will require the machine room and hoistway to receive fire sprinklers.
1. Determine applicability of requirement for shunt-trip protection of fire sprinklers in machine room and hoistway areas, and design accordingly.
- EE. Fire recall feature
1. When the building fire alarm is activated, the elevator shall move to the “primary” designated floor, the doors open, and the elevator become inactive.
    - a. The primary level is the “fire access” level, and shall be equipped with a “fire key” function and a “smoke vent” key function at the hall call station.
  2. When the fire alarm is activated by the smoke detector in the corridor or vestibule at the primary level, the elevator shall go to a designated “alternate” floor, the doors open and the elevator become inactive.
  3. Coordinate elevator with fire alarm system. Verify compatibility and provision of necessary equipment.
- FF. Custodial override: Provide a keyed override (run/stop switch) of the door open alarm feature to accommodate cleaning.
- GG. Emergency telephone
1. Meet ADA accessibility requirements.
  2. Confirm with DPS programming for automatic dialer emergency number (usually DPS Safety & Security at 720-423-3911).
- HH. Vents and vent controls
1. Verify AHJ requirements to vent elevator shafts (hoistways).
  2. Where ventilation is required, ventilate to the exterior.
  3. Vents shall be closed by motorized damper and open automatically by:
    - a. Alarm from the elevator hoist way smoke detector (and only that detector); or
    - b. A power failure.
- II. Keying: All elevators shall be keyed alike within each school. Coordinate with DPS for type of cylinders and keyway.
1. Verify which keys are required to be delivered to the Denver Fire Department for placement in the Knox Box.
- JJ. Each elevator pit shall have a pit ladder.
- KK. Sump pumps: Elevator pits shall be equipped with sump pumps only if required by the AHJ, or if necessary due to high water table or other groundwater problems. Avoid sump pumps where possible.



1. Verify requirements with AHJs including DWM.
  2. Verify groundwater with the geotechnical investigation.
  3. Provide power as required by the AHJ.
  4. Pump shall be activated by a float switch in sump.
  5. Where required by DWM, discharge from elevator sump to sanitary sewer via a sand and oil interceptor.
- LL. Moisture sensors: Elevator pits may be equipped with moisture sensors only with specific approval of DPS.
1. Water in elevator pits leads to mold, odors, and rust.
  2. If a moisture sensor is provided, coordinate alarm and reporting requirements with the security and telecommunications systems.
  3. If a moisture sensor is provided, it shall be completely independent of the flood controller (if any) for the backflow prevention system. There shall be no interconnection between detection of moisture in the elevator pit and flood control for the backflow prevention system.
- MM. Comply with ADA accessibility guidelines, applicable codes including elevator codes, Denver Wastewater Management (DWM) requirements, Denver Landmark Commission, and requirements of other Authorities Having Jurisdiction (AHJ).
- NN. Coordinate elevator delivery, installation, and testing and inspection periods with the construction schedule.
1. It may be necessary to require elevator submittals to be delivered early in the construction period.
- OO. Elevator locations
1. New two-story and taller buildings shall have elevators.
  2. Two-story additions to existing buildings without elevators shall have elevators.
    - a. The requirement to provide elevators in one-story additions to two-story (or taller) existing buildings will be determined by DPS.
    - b. If it is determined that an elevator will be added in the future, consider construction of shaft and machine room for future installation of elevator.
  3. Locate elevators for optimum ADA access.
  4. Installation in existing split-level schools shall be placed to accommodate all levels if possible.
  5. Locate elevators for multiple-function use (freight, ADA, custodial).
- PP. Wheelchair/Vertical Platform lifts must be approved by DPS QAQC and Planning prior to installation.
- QQ. Limited use / limited application (LULA) type elevators are prohibited.
1. For buildings over two stories in height, coordinate with AHJs for the possible requirement to accommodate stretchers/gurneys.
- RR. Hydraulic elevators are preferred. If traction elevators are contemplated, confirm acceptability with DPS.
- SS. Durability and maintenance: Select only equipment suitable for potential heavy uses. (Elevators needed for occasional use by physically-impaired individuals are most often used for other uses, i.e. convenience, freight, etc.) Provide vandal-resistant buttons, indicators and panels. Lightweight equipment will not last.
- TT. Emergency power: Coordinate requirements for emergency power, etc., for elevator and elevator recall function as required by the AHJ.
- UU. Communications, controls, and alarms: Coordinate with the HVAC, electrical, telecommunications, and security systems.
- VV. Elevator machine rooms

1. Machine rooms shall comply with applicable code requirements for lighting, ventilation, convenience power, clearances to equipment, headroom, fire ratings, etc.
  2. Machine rooms shall be adjacent to shaft wherever possible, and designed to maximize service convenience.
  3. Design systems to maintain proper operating temperature for equipment in machine rooms.
    - a. Coordinate possible code requirement for a dedicated machine room cooling system.
    - b. Ensure that the HVAC temperature controls system monitors machine room temperature.
  4. Machine room must be properly sound isolated from adjacent classrooms or offices.
  5. Avoid routing of services through machine room that do not serve the machine room.
  6. Do not provide a high temperature alarm in the machine room (although this was a previous standard).
- WW. Smoke doors: Applicable codes may require elevators to have separate smoke doors separating the elevator cab doors and the corridor.
1. If not required, do not provide elevator smoke doors.
  2. Elevator smoke doors may be at the elevator openings or between a vestibule and the corridor.
  3. Smoke doors at elevator doors shall be equipped with magnetic hold-open devices controlled by the fire alarm panel.
  4. Coordinate with electrical for line voltage requirements.
- XX. Car controls: Provide one car interior control panel at each car door.
- YY. Hall call stations
1. Coordinate with DPS for type of hall call controls to be used on each project.
    - a. Previous standard was keypad operation.
    - b. Standard may be changing to card reader operation.
  2. Cab call panel shall be equipped with a key for selection of “automatic,” “manual” or “off” operation.
- ZZ. Handrails: Cab handrails shall meet code requirements.
- AAA. Fire sprinklers: Determine during design phase whether the AHJs will require the machine room and hoistway to receive fire sprinklers.
1. Determine applicability of requirement for shunt-trip protection of fire sprinklers in machine room and hoistway areas, and design accordingly.
- BBB. Fire recall feature
1. When the building fire alarm is activated, the elevator shall move to the “primary” designated floor, the doors open, and the elevator become inactive.
    - a. The primary level is the “fire access” level, and shall be equipped with a “fire key” function and a “smoke vent” key function at the hall call station.
  2. When the fire alarm is activated by the smoke detector in the corridor or vestibule at the primary level, the elevator shall go to a designated “alternate” floor, the doors open and the elevator become inactive.
  3. Coordinate elevator with fire alarm system. Verify compatibility and provision of necessary equipment.
- CCC. Custodial override: Provide a keyed override (run/stop switch) of the door open alarm feature to accommodate cleaning.
- DDD. Emergency telephone
1. Meet ADA accessibility requirements.

2. Confirm with DPS programming for automatic dialer emergency number (usually DPS Safety & Security at 720-423-3911).

EEE. Vents and vent controls

1. Verify AHJ requirements to vent elevator shafts (hoistways).
2. Where ventilation is required, ventilate to the exterior.
3. Vents shall be closed by motorized damper and open automatically by:
  - a. Alarm from the elevator hoist way smoke detector (and only that detector); or
  - b. A power failure.

FFF. Keying: All elevators shall be keyed alike within each school. Coordinate with DPS for type of cylinders and keyway.

1. Verify which keys are required to be delivered to the Denver Fire Department for placement in the Knox Box.

GGG. Each elevator pit shall have a pit ladder.

HHH. Sump pumps: Elevator pits shall be equipped with sump pumps only if required by the AHJ, or if necessary due to high water table or other groundwater problems. Avoid sump pumps where possible.

1. Verify requirements with AHJs including DWM.
2. Verify groundwater with the geotechnical investigation.
3. Provide power as required by the AHJ.
4. Pump shall be activated by a float switch in sump.
5. Where required by DWM, discharge from elevator sump to sanitary sewer via a sand and oil interceptor.

III. Moisture sensors: Elevator pits may be equipped with moisture sensors only with specific approval of DPS.

2. Water in elevator pits leads to mold, odors, and rust.
3. If a moisture sensor is provided, coordinate alarm and reporting requirements with the security and telecommunications systems.
4. If a moisture sensor is provided, it shall be completely independent of the flood controller (if any) for the backflow prevention system. There shall be no interconnection between detection of moisture in the elevator pit and flood control for the backflow prevention system.

## **PART 24 - EQUIPMENT**

### **A. Laboratory Equipment**

1. Architect shall coordinate with DPS the specific types and quantities of equipment required and differentiate FF&E items from those provided in this section.
2. Architect shall coordinate requirements and locations for electrical power for all laboratory equipment.
3. Architect shall coordinate special HVAC requirements for Laboratory equipment.
  - a) Coordinate vents with fire-rated shaft construction where required by Codes.
  - b) Coordinate make-up air to maintain air balance when hoods are running or stopped.
4. Architect shall coordinate special services, such as gas and water and compressed air.
5. Architect shall coordinate special plumbing requirements, such as deep sinks, and lab faucets.
6. Architect shall coordinate heights, widths, and weights of bench mounted equipment with that of base cabinet construction- including anchoring to walls.
7. Architect shall coordinate proper venting of flammable material storage. Flammable and other hazardous materials storage cabinets shall not be vented unless required by Code Authorities.

8. DPS Environmental Services will provide A/E with expected quantities for new facilities or current quantities for existing facilities.
  9. Coordinate acid waste piping requirements with plumbing.
  10. Fume Hoods
    - a) Provide intergral base cabinet or non-combustable countertop for all hoods.
    - b) Hood must provide a minmum face of 100 FPM velocity.
  11. Chemical Storage Cabinets:
    - a) Acid and Corrosive cabinets may be constructed of materials other than steel provided they are UL certified for intended use.
    - b) Flammable storage cabinets shall be steel.
- B. Vocational Shop Equipment**
1. Architect shall contact Denver Fire Department on requirements for paint booths at the beginning of the project.
  2. Architect shall coordinate with DPS the locations, sizes, and type of paint booths to be used. Typical areas of use are wood shop, and art classrooms.
  3. Architect shall coordinate with the electrical engineer where such devices may require power operation. Life safety tie-ins shall also be coordinated.
  4. Architect shall coordinate with mechanical engineer special venting requirements of the manufacturer and local codes.
  5. Provide fire rated chases for plenums or adjacent floors when duct work travels through them. Use direct side wall discharge as much as possible to avoid penetrating floors for venting. Avoid where possible, penetration of fire rated assemblies.
  6. Architect shall coordinate all booth, room and exhaust duct sprinkler requirements.
  7. Paint booths may require a separate monitored sprinkler branch, with a bag protected head.
  8. Place paint booths on floors or benches made of non-combustible materials.
  9. Where a pit is required for filtration on automotive booths, architect shall coordinate with Structural engineer for foundation support requirements.
  10. Architect shall locate paint booths mounted on work surfaces with proper floor and wall anchorage.
  11. Provide at least three feet of clear space around unit.
  12. No open flame shall be within twenty feet of a paint booth.
  13. Coordinate the utilities required within or adjacent to paint booths. Compressed air shall be provided by compressor dedicated to providing process air. Temperature control air compressors shall not be used to supply paint booths.
- C. Stage Curtains**
1. Design of stage curtains should include side legs (tormentors), valances, cyclorama and main drape (for all levels of schools).
  2. High Schools shall have a specialized consultant hired for the project for acoustics, lighting, rigging and equipment.
  3. Architect shall Coordinate curtain layout with lighting, mechanical, catwalks and any supporting structure – and ensure proper masking of such from audience view.

4. Architect shall provide drawings (a section through the stage and a reflected ceiling plan) showing exact location of all stage curtain components and fire sprinkler locations.
5. Where stages have a folding partition closure, coordinate main drape with requirements for partition stacking space.
6. Architect shall coordinate location of projection screen so that curtains are not within the projection beam.
7. Architect shall coordinate requirements for electrical power for curtain and rigging operation.
8. Architect shall coordinate with DPS any special requirements for the stage set-up.
9. Architect shall coordinate any special requirements for a curved curtain track.
10. Architect shall coordinate all structural bracing, support and blocking requirements of curtain track, lighting and rigging.
11. Architect shall coordinate and incorporate any special requirements by the Denver Fire Department and Building Department in relation to stage curtains for sprinkler and drop curtains for stages.
  - a) details shall be provided at the Construction Document phase of the Project.
12. Curtain operation: Manual operating curtains via pulley, ropes and counterweights.
13. Stage Curtains
  - a) Proscenium curtains
    - i) Main Traveler or Grand Drape plus matching Grand Valence
  - b) Masking curtains
  - c) Drops/cycloramas
  - d) Scrims
  - e) Valances
  - f) Mid and Upstage Traveler Curtains
  - g) Curtain tracks and associated hardware

#### D. Athletic and Recreation Equipment

1. Architect shall coordinate with DPS the sports to be played at each school.
2. Architect shall coordinate recreation program requirements with DPS for each school.
3. Architect shall coordinate with Education Specification for quantity and size of equipment, playing fields and courts not covered in the Playground Standard.
4. Architect shall coordinate with DPS Section 32 18 23.
5. Both outdoor and indoor playgrounds are possible. Coordinate with DPS Playground Standard 32 18 23 for guidelines.
6. Architect shall coordinate layouts, power supply, and mounting requirements for all FF&E items purchased by DPS related to this section, i.e. cardiovascular equipment.
7. Architect to coordinate requirements of a Learning Landscape with DPS.
8. Architect shall coordinate equipment design with accessibility (ADA) requirements and applicable codes.
9. Equipment shall be age appropriate, and may require physical separation of ages.
10. Architect shall coordinate all equipment design with DPS Playground Standard 32 18 23.
11. Architect shall coordinate school colors and logos for incorporation into project.
12. Architect shall coordinate floor anchorage and in-floor mounting requirements for all indoor equipment with area to be used.

13. Architect shall provide for proper structural blocking and support for all indoor mounted equipment.
14. Architect shall coordinate in-floor mounting and power requirements of equipment.
15. Architect shall coordinate requirements of game striping and sizing, both interior and exterior.
16. Architect shall coordinate equipment storage requirements.
17. Architect shall coordinate with DPS items that are to be fixed and/or moveable.
18. If a pool is involved, a pool consultant shall be hired and include associated equipment requirements for lanes, diving boards, starting blocks, etc. Reference NFHS Swimming Rules for construction standards.
19. All outdoor poles in paved areas shall be painted safety yellow, coordinate with Section 09 91 00.
20. No motorized rigid partitions shall be used to divide interior recreation space.
21. Architect shall coordinate the requirements for an electronic scoreboard with DPS.
22. Coordinate with DPS if indoor Basketball goals are fixed or foldable.
23. If shooting and archery ranges are to be part of the scope, a specialized consultant shall be required for the design of it.
24. The following materials are not permitted to be used on exterior play areas or equipment.
  - a) Wood
  - b) Recycled plastic.
  - c) Synthetic Lumber
  - d) Concrete- unless used for structure
  - e) Rubber Tires
  - f) Non-commercial- 'home made' equipment

**PART 25 - FIRE PROTECTION SPECIALTIES**

- A. Provide fire extinguisher, valve, and hose cabinets as required by the local Denver Building Codes enforced at the time of design and in consultation with the Denver Fire Department.
- B. Architect shall coordinate with Mechanical Engineer locations for fire valves and hose cabinets that may be required.
- C. Locate all fire extinguishers in glass/lever door cabinets when used in public spaces and at (but not limited to) the following locations: corridors, classrooms that require them by the Denver Fire Department, Science Labs, Computer Labs, Art Classrooms, Home Economics, Industrial Arts Shops.
- D. Use both semi-recessed and flush mounting where appropriate for building materials.
- E. Architect shall coordinate where fire-rated cabinets are required. Surface mounted units are prohibited.
- F. Architect shall review with both DPS and the Denver Fire Department the type and size of fire extinguishers required.
- G. Architect shall coordinate the wall depth with the cabinet depths.
- H. Cabinets doors shall be free of any obstructions for door operation.
- I. Cabinets shall be located in conformance to ADA Guidelines for mounting heights and protrusion from wall.
- J. Use minimal glass dimensions for cabinet doors and provide with lever action opening device.
- K. No full glass or solid doors are to be used.
- L. Provide fire extinguishers in all Server Rooms and Electrical Rooms.
- M. Provide fire blankets and cabinet in Science Rooms.

**END SECTION 00 10 00**