



## DISTRICT-WIDE STANDARD SPECIFICATIONS

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## **DIVISION 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

*DEFERRED until CMAR Selection; Subject to Contract Terms and Conditions*

## **DIVISION 1 – GENERAL REQUIREMENTS**

*NOTE: Certain Sections Deferred until CMAR Selection; Subject to Contract Terms and Conditions*

### **01 25 00 PRODUCT SUBSTITUTIONS**

- A. Administrative and procedural requirements for handling of substitution requests.
- B. Items which **CANNOT** be substituted:
  - 1. Certain items of Finish Hardware including locks and latches, panic devices, closures.
  - 2. Direct Digital Temperature Control and Energy Management System.
  - 3. Telecommunications and Electronic Security Systems.
  - 4. Variable Frequency Drive Motors (2 HP and larger).
  - 5. Fire Alarm System.

### **01 31 10 ELECTRONIC DATA TRANSFER AGREEMENT**

- A. Administrative and procedural requirements for electronic transfer of contract documents prepared in part or in entirety on computers using software programs.

### **01 33 00 SUBMITTALS**

- A. Administrative and procedural requirements for submittals required for the performance of the work including shop drawings, product data and samples.

### **01 35 45 ENVIRONMENTAL PROCEDURES AND DOCUMENTATION**

- A. Administrative and procedural requirements of the Work including commissioning of building energy systems, recycled content of products installed in the Work, indoor air quality management during construction and during occupancy.

### **01 45 00 QUALITY CONTROL**

- A. Administrative and procedural requirements to assemble and erect mock-up and samples.

### **01 50 00 TEMPORARY FACILITIES**

- A. Requirements for temporary services including utilities, construction and support facilities, security and protection provided by the Contractor.

### **01 70 00 PROJECT CLOSEOUT**

- A. Administrative and procedural requirements of Project closeout including inspections, punch lists, record documents, operating and maintenance documents, and warranties.
- B. Prior to Contractor's Receipt of Final Payment, Contractor to provide District with unconditional lien releases of all subcontractors and suppliers involved on project.

**01 74 20 CONSTRUCTION WASTE MANAGEMENT**

- A. Administrative and procedural requirements of segregation and diversion of construction and demolition debris from landfill.

**01 79 00 DEMONSTRATION AND TRAINING**

- A. Administrative and procedural requirements for training of Owner's staff in the proper operation and maintenance of equipment and systems installed in the Work including fire suppression, plumbing, heating, ventilating and air conditioning, electrical, communications, electronic safety and security and digital temperature control and energy management.

**DIVISION 2 – EXISTING CONDITIONS**

**02 41 14 SITE CLEARING**

- A. Clearing of site debris, organic matter and grubbing.
  - 1. Remove all debris, organic matter and soils spoils from project site. Dispose of materials legally and in conformance with State and County regulations.
- B. Removal of underground utilities and foundations.
- C. Execute work in conformance with recommendations in Soils Report.

**02 41 16 STRUCTURE DEMOLITION**

- A. Complete demolition of building structure including capping of existing utilities.
- B. Itemize salvaged materials and systems for delivery to Owner. (May or may not be installed in new Work.)
  - 1. Salvaged materials and systems shall be at Owner's option as well as on a project to project basis.

**02 41 19 SELECTIVE STRUCTURE REMOVAL**

- A. Selective cutting and patching of existing structural elements and building systems of the Project.

**DIVISION 3 - CONCRETE**

**03 01 35 CEMENTITIOUS REPAIR**

- A. Water: Clean and free of detrimental amounts of oil, alkali and organic matter.
- B. Portland Cement: ASTM C150, Type 1.
- C. Aggregate: Sand conforming to ASTM C144.
- D. Hydrated Lime: ASTM C206 or C207; Type S.
- E. Bonding agent: ASTM C1059, Portland cement mixed with water to a creamy consistency, Portland cement dust coat or as recommended by the latex admixture manufacturer.

- F. Concrete repair mortar admixture: Latex/acrylic admixture designed for mixing with Portland cement mortar bed, and capable of producing the following:
  - 1. Placement in thicknesses of feather edge to 2-inches in height.
  - 2. Capable producing mortar with the following characteristics:
    - a. Compressive strength: ASTM C109, 4,000 psi at 7 days, 5,000 psi at 28 days.
    - b. Flexural strength: ASTM C348, 1,300 psi at 28 days.
    - c. Bond strength: ASTM C1042, 1,300 psi at 14 days.

### **03 11 05 CONCRETE FORMWORK**

- A. Formwork for cast-in-place concrete, including shoring, bracing, and anchorage.
- B. Plywood: Douglas Fir species; select sheathing-tight face grade; sound, undamaged sheets with straight edges.
- C. Lumber: Douglas Fir species; Construction grade; with grade stamp clearly visible.
- D. Form ties: Removable metal of adjustable length; free of defects that will leave holes no larger than one inch diameter in concrete surface. Spreaders shall be metal; NO wood.
- E. Form Release Agent: Colorless material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating intended for use on concrete.
- F. Fillets for Chamfered Corners: Wood strips.
- G. Expansion Joint Filler. Preformed 1/2 inch thick. Flexcell, elastic fiber, seal tight fiber or approved equal.
- H. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; of strength and character, and anchored to maintain formwork in place while placing concrete.

### **03 20 05 CONCRETE REINFORCEMENT**

- A. Standards: American Concrete Institute (ACI)
- B. Reinforcing steel bars, welded steel wire fabric and support chairs for cast-in-place concrete.
- C. Reinforcing Steel: ASTM-A615, 60 ksi yield grade (for No. 4 and larger); 40 ksi yield grade (for No. 3 and smaller) billet-steel deformed bars, uncoated finish.
- D. Welded Steel Wire Fabric: ANSI/ASTM A185 plain type; coiled rolls; uncoated finish.
- E. Tie Wire: Minimum 16 gage annealed type.
- F. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete, including load bearing pad on bottom to prevent vapor barrier puncture.

### **03 30 00 CAST-IN-PLACE CONCRETE**

- A. Cast-in-place concrete for foundations walls and slabs.
- B. Cement: ASTM C150, Type I or Type II, Portland type; grey color.

- C. Fine and Coarse Aggregates: ASTM C33.
- D. Water: Clean and not detrimental to concrete.
- E. Sand: Clean, dry, well graded.
- F. Mix Designs:
  - 1. Mix concrete in accordance with ASTM C94.
  - 2. Provide concrete for foundations and slabs to attain 28 day compressive strength of 3000 psi.
  - 3. Provide concrete for sidewalks and flatwork to attain 28 day compressive strength of 4000 psi.
- G. Slab-on-Grade Vapor Retarder: 15 mil minimum thick. WVTR less than 0.008 per ASTM E96.

**03 35 20 STAINED CONCRETE FINISH**

- A. Provide minimum wet Coefficient of Friction of 0.5 friction rating per ASTM D2047.
- B. Provide mock-up for each color/stain selected. Mock-up shall be complete finished system and shall each be minimum 75 square feet.
- C. Provide chemical stain system; acidic solution of metallic salts. Manufacturers:
  - 1. LM Scofield.
  - 2. H and C Concrete Care Products.
  - 3. Approved Equal.

**03 35 40 CONCRETE SEALING**

- A. For areas designated to be sealed (exposed concrete floors without floor coverings).
- B. Sealer:
  - 1. Cementone Clear Sealer by LM Scofield Company, Sonneborn "Kure-N-Seal W" as manufactured by ChemRex Inc., "Dress & Seal WB30" as manufactured by L & M Construction Chemicals, "Clearseal WB 150" as manufactured by Tamms Industries; or approved equal.
  - 2. Meeting the following requirements:
    - a. ASTM C309, Type 1, Class A or B.
    - b. ASTM C1315, Type 1, Class A or B.

**03 35 50 VAPOR EMISSION AND ALKALINITY CONTROL**

- A. Provide topical, liquid system on all concrete slabs (on-grade and over metal deck) which are scheduled to receive carpet and/or resilient flooring finishes.
- B. Manufacturers:
  - 1. Creteseal "CS2000."
  - 2. Floorseal Technologies "Vaporseal 309."
  - 3. Approved equal.

## **DIVISION 4 - MASONRY**

### **04 05 00 MORTAR AND GROUT**

- A. Cement, Hydrated Lime, Quicklime, Lime Putty, Aggregate, "Sika Grout Aid" Admixture, and Water.
- B. Type S Mortar, 28 day compressive strength of not less than 1800 psi. Water-Repellent Admixture for Mortar: Provide liquid water-repellent admixture in mortar for use with CMU's containing integral water repellent; Xypex Chemical Corporation, Xypex Admix C-Series, ACM Chemistries, Inc.; RainBloc for Mortar, BASF Construction Chemicals (Master Builders); Rheopel Mortar Admixture, Grace Construction Products, W. R. Grace & Co.; Dry-Block Mortar Admixture.
- C. Grout, 28-day compressive strength of not less than 2000 psi, fine and coarse.

### **04 22 00 CONCRETE UNIT MASONRY**

- A. Light weight, hollow load bearing moisture controlled units. 8" wide by 8" high x 16" long.
- B. Bond beam units, open end units and other special units as indicated.
- C. Sealant options based on project review:
  - 1. Integral Water Repellent (liquid polymeric) for integral color units with exterior exposure, Xypex Chemical Corporation, Xypex Admix C-Series, ACM Chemistries, Inc.; RainBloc, BASF Construction Chemicals (Master Builders); Rheopel Plus, Grace Construction Products, W. R. Grace & Co.; Dry-Block.

## **DIVISION 5 – METALS**

### **05 12 00 STRUCTURAL STEEL**

- A. Structural steel framing and grout under base plates.
- B. Structural Steel Members: ASTM A36. (Channels, rolled shapes, bars.) ASTM A572-50 or ASTM A992-50 (W Shapes).
- C. Structural Tubing: ASTM A500, Grade B.
- D. Pipe: ASTM A53, Grade B.
- E. Bolts, Nuts, and Washers: ASTM A307, as shown on drawings.
- F. Anchor Bolts: ASTM A307.
- G. Welding Materials: AWS D1.1; type required for materials being welded.
- H. Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at 28 days.

### **05 31 05 METAL DECK**

- A. Steel decking, accessories, edge plates and plate reinforcing at openings.
- B. Metal Decking: ASTM A653 G-60 galvanized with minimum yield stress of 38 ksi.
- C. Welding Materials: AWS D1.1; type required for materials being welded.
- D. Manufacturers: ASC Steel Deck, Verco Manufacturing or approved equal.

### **05 50 00 METAL FABRICATIONS**

- A. Fixed Ladders (For Maintenance and Operations Staff access from interior or exterior)
  - 1. Aluminum: Comply with ANSI A14.3; Type 1 Industrial, ALACO, O'Keeffe's Inc., Precision Ladders, or approved equal.
    - a. Model: Alaco, Model 560, fixed wall ladder, or approved equal.
  - 2. Fixed Steel Ladders: Fixed by Golden States Steel, or approved equal; Non-slip surfacing, McNichols, or approved equal.
  - 3. All ladders shall comply with Nevada Occupational Health and Safety Administration (OHSA).
- B. Slip resistant treated steel gratings by McNichols Company, Amico, or approved equal.
  - 1. Tree gratings: 4-foot cast gray iron, by Urban Accessories, or approved equal.
- C. Non-slip stair treads safety strips by Wooster Products Inc., Balco, or approved equal.
- D. Concrete filled steel pipe bollards, 6-inch diameter. Length and setting as designated on the drawings.

### **05 51 00 METAL STAIRS**

- A. Metal Stairs and Intermediate Landings.
- B. Stair Type: closed riser and concrete filled treads and landings.
  - 1. Provide at interior installations only.
- C. Stair Type: closed riser, open-grated tread. Galvanized G-90 Standards. Provide safety, slip resistant treatment. W.S. Molnar Company; IKG Industries, or approved equal.
  - 1. Provide at exterior installations only.
- D. Railings and Handrails smooth with welded connections, run continuously to each landing post.
  - 1. Comply with requirements of steel shapes identified in 05 12 00.
- E. Shop Paint.

## **DIVISION 6 – WOOD PLASTICS AND COMPOSITES**

### **06 10 00 ROUGH CARPENTRY**

- A. Lumber: DOC PS 20, maximum moisture content 19 percent.
- B. Wood-Preservative Treated Lumber: Pressure process: AWPA U1; use Category UC2. Preservative chemicals to be acceptable to authorities having jurisdiction and containing no arsenic or chromium.

- C. Fire-Retardant Treated Materials: Use materials acceptable to authorities having jurisdiction.
- D. Dimension Lumber Framing: Non-Load Interior Partitions: No. 2 Grade: Douglas fir-larch; WCLIB or WWPA. Framing other than Non-Load Bearing Interior Partitions: No. 1 Grade, Douglas fir-larch; WCLIB or WWPA.
- E. Plywood Backing Panels: Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated.
- F. Fasteners: nails – ASTM F 1667; powder-actuated fasteners – ICC-ES ESR 1663 and ESR 2379; wood screws – ASME B 18.6.1; lag bolts – ASME B18.2.1; bolts – steel bolts, Grade A, with hex nuts and flat washers.
- G. Metal Framing Anchors: Simpson Strong-Tie Co., Inc.; USP Structural Connectors; or approved equal.

**06 17 14 MICRO-LAM® LVL LUMBER**

- A. Manufacturers: Georgia-Pacific Wood Products, iLevel® Trus Joist®, a Weyerhaeuser Corp., or approved equal.

**06 17 24 PARALAM® PSL LUMBER**

- A. Manufacturers: iLevel® Trus Joist®, a Weyerhaeuser Corporation, or approved equal.

**06 17 33 WOOD I JOISTS**

- A. Manufacturers: Georgia Pacific, LP® Solid State® I-Joists by LP Building Products, or iLevel® Trus Joist®, a Weyerhaeuser Corporation, or approved equal.

**06 17 37 WOOD CHORD METAL WEB TRUSS**

- A. Manufacturers: Standard Structures, Inc. Alliance Trustrus, Trim Joist, or approved equal.

**06 18 01 GLUE-LAMINATED BEAMS**

- A. Industrial Grade for general beams and Architectural Appearance Grade for exposed beams.
- B. Manufacturers: Georgia Pacific, Architectural Wood Protection, or Hugh Lofting Timber Framing, or approved equal.

**06 20 00 FINISH CARPENTRY**

- A. Wood and Plywood: Select for exposed surfaces to meet requirements of WI “Custom Grade” work.
- B. Exterior Trim: Redwood, or approved equal.
- C. Interior Trim: Spruce, or approved equal.
- D. Hardboard as manufactured by Temple Inland, Georgia Pacific, ABTco, Forestex Company; or approved equal

**06 61 16 SOLID SURFACING FABRICATIONS**

- A. Solid Surfacing Countertops: Homogeneous mixture of thermoset polymer cast with an acrylic of polyester resin.
- B. Manufacturers: Avonite, "Corian" by DuPont, "Fountainhead" by Nevamar, "Surell" by Formica, or approved equal.

**DIVISION 7 – THERMAL AND MOISTURE PROTECTION**

**07 19 00 WATER REPELLANTS**

- A. Siliconized water repellent coatings over concrete surfaces, water repellent treatment, ceramic tile (interior). Coating system shall produce a treated surface having a maximum water absorption of 20 percent, in 20 minutes in accordance with Rilem Test Method II.
- B. System Manufacturer: Professional Products of Kansas, Inc., no known equal.

**07 20 10 BUILDING INSULATION**

- A. Insulation manufacturers include: Owens-Corning Fiberglas Corp, United States Gypsum Co., or approved equal.
- B. Batt Insulation: Size to fit between framing elements, thermal resistance as noted on the Drawings.
  - 1. Thermal batt insulation: Glass fiber blanket.
    - a. Facings:
      - (1) Concealed cavity walls:
        - (a) Foil: ASTM C665; Type III, Class B, Category 1. Reinforced; maximum flame spread of 75 and maximum smoke development of 150 when tested in accordance with ASTM E 84. Maximum 0.50 perm rating, ASTM E 96.
      - b. Locations behind water resistant gypsum board: Unfaced.
    - 2. Acoustical : Type I; glass fiber blanket, unfaced; maximum flame spread of 10 and maximum smoke development of 10 when tested in accordance with ASTM E 84.
- C. Thermal Resistance: In accordance with ASTM C168
  - 1. Ceilings and Roof: R 30
  - 2. Exterior Walls: R 19

**07 22 00 ROOF INSULATION**

- A. Insulation products by Johns Manville, RMAX, Hunter, Portland, ME, Atlas, Apache, or approved equal.
- B. Comply with the roofing manufacturer's requirements to receive a 10 year, "no dollar limit" guaranty for the entire above deck system.
- C. Polyisocyanurate board by Johns Manville; Dyplast, or approved equal.
- D. Silicone-treated gypsum core panel, "Dens Deck" 1/2-inch thick ness by Georgia Pacific Corporation, Gypsum Division, USG, or approved equal.

## **07 26 00 VAPOR RETARDERS**

- A. Flexible flashings, self-adhering rubberized asphalt sheet 40 mil thickness; "Vycor B40 as manufactured by W.R. Grace & Co.; Carlisle Coatings and Waterproofing Inc., Owens-Corning or approved equal.
- B. Exterior wall underlayment, bottom layer: "Commercial Wrap D" as manufactured by Dupont Chemical, or approved equal. Top layer: Type "D" 60 minute rated; "Super Jumbo Tex" as manufactured by Fortifiber Corporation, or approved equal.

## **07 41 15 PREFORMED ROOF PANELS**

- A. Metal Roof Panels Including trim, closures, etc. manufactured by The Garland Company, Inc. or approved equal.
  - 1. 1-1/2" watertight standing seam; 22 gauge; 18 inch wide panel.
  - 2. UL Class A; Class 90.

## **07 41 23 ALUMINUM COMPOSITE METAL WALL PANELS**

- A. Aluminum composite metal panels composed of 0.020 inch thick aluminum sheets bonded to a thermoplastic core for an overall thickness of 4mm.
  - 1. Acceptable manufacturers include Alpolic, Reynobond, or Alucobond.
  - 2. Rainscreen application over fluid applied membrane air barrier.
- B. Fluoropolymer paint finish with minimum 20 year finish warranty.

## **07 41 24 METAL WALL PANELS**

- A. Box rib profile exposed fastener metal wall panels.
  - 1. 36" nominal panel coverage.
- B. Fluoropolymer paint finish with minimum 20 year finish warranty.

## **07 41 25 METAL SOFFIT PANELS**

- A. Concealed fastener metal wall panel with flush profile and associated trim.
- B. Fluoropolymer paint finish with minimum 20 year finish warranty.

## **07 52 00 MODIFIED BITUMINOUS MEMBRANE ROOFING**

- A. As manufactured by The Garland Company, Inc. or approved equal.
  - 1. 4-ply total; composed of 1-ply base; 2-ply modified bitumen SBS; 1-cap sheet.
  - 2. Cants and crickets: either wood fiber board, miner fiber board, or perlite.
  - 3. Hot and cold applied installations.

## **07 54 19 POLYVINYL-CHLORIDE (PVC) ROOFING**

- A. Standing seam PVC roof G410-15 as manufactured by Sarnafil roofing - or equal
  - 1. PVC Sheet: ASTM D 4434, Type II, Grade I, glass fiber reinforced, felt backed. Adhered with manufactured approved adhesive to the pre-secured insulation board or acceptable substrate.
  - 2. 60 mil (1.5 mm) thermoplastic membrane with fiberglass reinforcement and a factory applied 9 oz. felt backing

3. Decorative Standing Seams: Manufacturer's standard heat welded standing seams

#### **07 62 00 SHEET METAL FLASHING AND TRIM**

##### **A. Sheet Metals**

1. Flashing, Counterflashing, Downspouts, Gutters, Scuppers: Galvanized Steel Sheet: Copper bearing steel, galvanized per ASTM A653, minimum G90, Type 'A'; mill phosphatized for maximum paint adherence. Thickness 0.0276-inch, 20 gauge, minimum. Heavier gauge per gutter girth as required by Sheet Metal and Air Conditioning Contractor's National Association (SMACNA).

#### **07 71 10 ROOF SPECIALTIES**

##### **A. Reglets: Galvanized steel by O'Keeffe's, Inc., Fry Reglet Corporation, or approved equal.**

1. Extruded high impact polycarbonate with stainless steel splice sleeves, UV stabilized EPDM wedge gaskets, "Terminator Tape", and 22 gauge electro-galvanized counter-flashing, Type CW.
2. 24 gauge galvanized steel with manufacturer's proprietary Spring-Lok system.

##### **B. Splash Pans: 20 gauge galvanized steel in conformance with SMACNA Manual.**

#### **07 72 33 ROOF HATCHES**

##### **A. Roof Scuttles: Bilco Company Model No. "S"; O'Keeffe's, Babcock – Davis Hatchways, Inc.; or approved equal.**

1. Coverings: Galvanized steel
2. Gaskets: EPDM rubber permanently adhered to cover.
3. Hinges: Heavy duty with 3/8-inch stainless steel pins
4. Lifting mechanism: Heavy duty compression spring tube type number and size as required by size of cover for easy lifting by 1 person. Fabricate with hold open arm and manual release.
5. Furnish with latch and interior and exterior turn handles and padlock hasps.
6. Furnish roof hatch manufacturer's safety post.
7. Comply with Nevada Occupational Health and Safety Administration (OHSA) rules.

#### **07 72 39 ROOF VENTS**

##### **A. Gravity Roof Ventilators**

1. Model ST-14 with 1.4 square foot throat area, aluminum by Romlair Ventilator Co.; Greenheck Fan Corporation, or approved equal.
2. Curb: 8 inches high, factory built.
3. Bird Screen: 1/2 inch square mesh.
4. Finish: Factory applied enamel, gray color.

#### **07 72 53 SNOW GUARDS**

##### **A. Alpine Snowguards, "No. 117", or approved equal.**

1. Stainless steel base plate with stainless steel bracket for three (3) pipe snow guards.
2. Installation over metal roofing panels.

#### **07 81 29 MINERAL-FIBER CEMENTITIOUS FIREPROOFING**

##### **A. Fireproofing: Grade for exposed applications in interior unconditioned space.**

1. Minimum bond strength: 200 pounds per square foot; ASTM E 736.
2. Minimum density: 15 pounds per cubic foot; ASTM E 605.

#### **07 84 00 FIRE STOPPING**

- A. Fire safing: High-melt-point mineral wool or ceramic fiber, unfaced, ASTM E84.
  1. Loose Fill: ASTM C764; minimum density of 3.5 lbs/cu ft.
  2. Blanket: ASTM C665
  3. Board: ASTM C612
- B. Gypsum board fire stopping: ASTM C 36, Type X.
- C. Fire stop sealants: Listed for use in selected classified assembly.

#### **07 90 10 JOINT SEALING**

- A. Sealants and caulking compounds
  1. Interior caulking compound and acoustical sealant for non-moving joints in dry areas: Siliconized acrylic latex; ASTM C834.
  2. Interior wet area walls: One-part mildew-resistant silicone rubber conforming to Grade NS; ASTM C920.
  3. Exterior wall sealant: Non-priming, non-sag, one-part polyurethane; ASTM C920.
  4. Butyl Sealant: VOC compliant with jurisdictional restrictions; ASTM C1311.
  5. Acoustical sealant: One-component silicone rubber sealant; Dow Corning 790.

### **DIVISION 8 – OPENINGS**

#### **08 11 13 HOLLOW METAL DOORS AND FRAMES**

- A. Titan Metal Products Inc, Curries, Forerer; Steel, or approved equal.
- B. Flush Doors: Continuously welded vertical edges; steel stiffened core, 1-3/4 inches thick. 14 gauge galvanized steel faces for exterior; 18 gauge steel for interior.
- C. Frames: 12 gauge exterior frames; 14 gauge for interior hollow metal doors and 16 gauge for wood doors.
  1. Full welded corners only. Knock down frames not acceptable.
- D. Lites: 18 gauge steel stops and beads for ¼ inch glazing. 6 inches wide by 36 inches high.

#### **08 12 16 ALUMINUM FRAMES**

- A. Extruded Aluminum framing members, non-thermal for interior application, equal to Vistawall Series 2000 with 1-3/4" x 4-1/2" profile.
  1. Door frame voids shall be packed with mineral wool to achieve a STC 33 rating
- B. Anodized finish

#### **08 14 00 FLUSH WOOD DOORS**

- A. Flush doors solid core 1-3/4" thick unless otherwise noted
  1. Grade WMDA "custom" in accordance with WDMA I.S in accordance with Woodwork Institute

2. Cores: hot pressed 5-ply or cold pressed 7-ply construction
  3. Faces:
    - a. Wood veneer uniform white birch, transparent/clear finish, or
    - b. Light stain similar to clear finish on white birch
- B. Manufactures
1. Algoma Hard woods, Inc.
  2. Eggers Industries
  3. Haley Bros., Inc.

#### **08 23 24 OVERHEAD ROLLING DOORS**

- A. Cornell Iron Works, The Cookson Company, Lawrence Roll-Up Doors, Overhead Door Corporation, or approved equal.
- B. Units: Counter type doors. Manual push-up operation, with handles.
  1. Curtain with interlocking strips and flat-faced slats.
  2. Tubular bottom bar with locking mechanism (concealed sliding bolt deadlock).
  3. Support system consisting of hood with airflow baffle, barrel, and steel guides.

#### **08 31 10 ACCESS DOORS**

- A. Wall and Ceiling Access: Karp, Babcock-Davis/Cierra Products, Milcor, Inc, Williams Brothers Corporation of America, or approved equal.
- B. Non-fire rated openings: concealed ceiling hatch, Karp Type; concealed pivot hinge with controlled action device; square head key wrench lock.
- C. Fire rated openings: Karp Type KRP-150FR; Cierra B-IT; 16 gage steel frame; 20 gage steel pan door with 2 inch thick fire rated insulation; continuous hinge; automatic closer; key operated self-latching mortise cylinder lock and interior latch release mechanism.

#### **08 36 13 SECTIONAL DOORS**

- A. Medium Duty, electrically operated, insulated sectional door with full weatherstrip and wind locks. Include pneumatic bottom sensing edge and operator disconnect interlock.
  1. Ribbed panel profile with baked on polyester finish.
  2. Aluminum sash window section.
  3. Standard track section.

#### **08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS**

- A. Kawneer Company Inc., Vistawall Architectural Products, United States Aluminum, or approved equal.
- B. Storefront Framing: Thermally broken units. Screw spine assembly. 1-3/4 by 4-1/2-inch, with flush center glazing.
- C. System Design: Minimum 25 psf inward and outward air infiltration less than 0.06 cfm/ft of wall area at 6.24 psf pressure per ASTM E283 with a HC (Heavy Commercial) Rating.
- D. Entrance Doors: Wide stile doors with 10-inch bottom rail.

- E. Finish: Color anodized per AA-MI2C22A44.

#### **08 51 13 ALUMINUM WINDOWS**

- A. Window Units by Blomberg Window Systems; Mercer Industries, or approved equal.
- B. Window Types:
  - 1. Vertical sliding, fixed, horizontal sliding.
  - 2. Additional operable types will be acceptable. However, outware acting awning windows on lower levels will not be allowed in areas where exterior circulation is planned.

#### **08 62 00 UNIT SKYLIGHTS**

- A. Sunoptics Skylights, O'Keeffe, Inc., or approved equal.
- B. Unit Skylights: Fixed double glazed double hip or pyramid. Clear prismatic SR60 nominal 3/16 inch outer lens with white prismatic SR60 nominal 1/8 inch inner lens.
  - 1. Skylight Openings shall have nominal 3/16 inch translucent lens at finish ceiling plane.
  - 2. Skylights on accessible roofs to be protected per OSHA regulations.

#### **08 62 15 TUBULAR SKYLIGHTS**

- A. Solatube International, Inc., or approved equal.
- B. Transparent roof-mounted skylight dome and self-flashing curb, reflective tube, and ceiling level diffuser assembly; complying with ICC AC-16.

#### **08 71 00 FINISH HARDWARE**

- A. Furnish each type of hardware from a single manufacturer. Manufacturers:
  - 1. Continuous Hinges: Ives, Select
  - 2. Hinges; Ball-Bearing type: Ives. NO SUBSTITUTION
  - 3. Locks and Latches: Schlage ND Series with Rhodes Lever; NO SUBSTITUTION
  - 4. Cylinders: Schlage Primus C; NO SUBSTITUTION
  - 5. Exit Devices: Von Duprin; NO SUBSTITUTION
  - 6. Closers/Overhead Stops: LCN; NO SUBSTITUTION
  - 7. Trim: Ives, Trimco
  - 8. Floor/Wall Stops: Ives, Trimco
  - 9. Thresholds/Weather-stripping: National Guard Products, Pemko
  - 10. Key Control System and Cabinet: Major Metalfab
  - 11. Special Items: Adams Rite
  - 12. Lock Astragals: Specialized Builders Hardware
- B. Keying Hierarchy: District Standard.

#### **08 74 00 LOW ENERGY DOOR OPERATOR**

- A. Dor-O-Matic, actuators 95390-900 with wireless remote switch or LCN equal at exterior and Dor-O-Matic 95380-900 wireless remote for mounting on horizontal mullion or LCN equal at interior, receivers 84160-600 for wireless operation or LCN.

- B. Push button, push plate, switch-activated, manual or field-programmable manual/electric power assisted Push-N-Go opening.
- C. Card Readers: by others.

#### **08 80 00 GLAZING**

- A. Glass Types: float glass, heat-strengthened, fully heat-tempered, 1/4-inch thick.
- B. Sealed Insulating Units: ASTM E774. 1 inch thick (2 plies of 1/4 inch glass with 1/2 inch airspace. Low-E coating on No. 2 surface, equivalent to PPG Solar Ban 80.
- C. Mirrors: 1/4-inch float.

#### **08 90 00 LOUVERS AND VENTS**

- A. Manufacturers: Loren-Cook, Greenheck, Ruskin, or approved equal.
- B. Wall, roof soffit and foundation conditions.

### **DIVISION 9 – FINISHES**

#### **09 21 16 GYPSUM BOARD SHAFT WALL SYSTEM**

- A. US. Gypsum Co., Gold Bond Building Products Div., National Gypsum Co., Domtar Gypsum Co., or approved equal
- B. Steel Framing, Gypsum Shaft wall Board, Type X liner panel or core board designed for shaft wall construction, with moisture-resistant paper facings, gypsum wallboard, Type X.
- C. Cavity and Horizontal Shaft Wall Systems of gypsum shaft wall boards inserted between U- or J-shaped metal floor and ceiling tracks; with specially shaped studs engaged in tracks and fitted between shaft wall boards; and gypsum boards on finished side or sides applied to studs in number of layers.
  - 1. Shaftwall Board Thickness: Not less than 1 inch.
  - 2. Stud Shape: C-H or double E.

#### **09 22 16 METAL FRAMING SYSTEM**

- A. Structural steel with a 90% minimum post-consumer recycled content.
- B. Angeles Metals, Dietrich Industries, Milcor Division, Inryco, Inc., US Gypsum/Unimast, or approved equal.
- C. Tracks:
  - 1. Top Runner with Slotted Flanges, Superior Flex Track System (SFT); Delta Star, Inc. SLP-TRK; Metal-Lite, Inc., or approved equal.
  - 2. Deflection and Fire stop Track: "Fire Trak" by Fire Trak Corp., or approved equal.

## **09 24 00 PORTLAND CEMENT PLASTER**

- A. LATH: Type 1 – Wire Mesh, 17 gauge welded wire by Structalath “Twin Track” and Type 2: 3.4 pounds per square yard expanded metal lath. Type 3: 3.4 pounds per square yard expanded metal lath. Type 4: 3.4 pounds per square yard, 3/8 inch rib-lath.
- B. SCREEDS: Clark-Western Building Systems, Cemco, Structalath, or approved equal.
- C. PLASTER:
  - 1. Bonding Agent: Thoro System, Larsen, or approved equal.
  - 2. Cement: Portland cement, Type II.
  - 3. Plastic Cement: Portland cement (plastic), Type II.
  - 4. Aggregate: Sand.
  - 5. Lime: Type S.
  - 6. Water: Clean and free of deleterious substances.
  - 7. Fibrillated Fibers: “Harbourite” 100 percent virgin polypropylene fibers by Fibermesh.
- D. Scratch Coat: 1 part plastic cement; 4 parts sand; 10 gallons water, maximum; 5 pounds fibrillated fibers per 1000 pounds of cement.
- E. Brown Coat: 1 part plastic cement, 5 parts sand; 11 gallons water, maximum; 5 pounds fibrillated fibers per 1000 pounds of cement.
- F. Finish Coat: AKROFLEX Malibu Finish (16 – 20 sanded) by Omega Products International, Inc., or approved equal.

## **09 28 13 CEMENTITIOUS BACKER BOARD**

- A. Cementitious Fiber-Mat Reinforced Sheathing: DUROCK, PermaBase by National Gypsum, or approved equal. ½ inch thick and 48 inches by 96 inches.

## **09 29 00 GYPSUM BOARD**

- A. Gypsum Board: United States Gypsum; Gold Bond Building Products Division; or approved equal. Type “X”, 5/8 inch thick. Square cut ends and tapered edges, per ASTM C1396.
- B. Water Resistant label at wet areas.
- C. Exterior Gypsum Sheathing: ASTM C1177, ½ inch thick. United States Gypsum, Gold Bond Building Products, or approved equal.

## **09 30 00 TILING**

- A. Dal Tile, American Olean, or approved equal.
  - 1. Interior Tile
    - a. Unglazed Wall Tile: ANSI Standard Grade, unglazed mosaic tile.
    - b. Glazed Wall Tile: ANSI Standard Grade glazed mosaic tile.
    - c. Floor tile: Minimum Co-efficient of Friction 0.6 for flat surfaces, tested wet and dry. Unglazed mosaic tile. Provide Co-efficient of Friction 0.8 for sloped/ramped surfaces; tested wet and dry.
  - 2. Exterior Tile: Standard Grade, glazed tile; cushion edges, satin matte finish.
- B. Systems Installation per Tile Council of North America.

## **09 51 00 ACOUSTICAL CEILINGS**

- A. Manufacturers:
  - 1. Suspension Grid System: Armstrong World Industries, Chicago Metallic, USG Interiors, or approved equal.
  - 2. Acoustic Panels: Armstrong World Industries, USG Interiors, or approved equal.
- B. Suspension System: Exposed tee, double web, heavy duty steel system, 15/16 wide, ASTM C635.
- C. Acoustic Panels: ASTM E1264; flame spread less than 25 per ASTM E84; 24 inch by 48 inch; beveled tegular edge; NRC 0.65-0.75.

## **09 64 66 WOOD ATHLETIC FLOORING**

- A. Manufacturers: Action Floor Systems; Robbins Sport Surfaces; Horner Flooring Company, Inc.; or approved equal..
- B. Wood Floor System: Floating Type:
  - 1. Sub-floor: 1-1/8 inch plywood; APA Grade C-O Exterior; PS-1 per Product Standard for Construction and Industrial Plywood.
  - 2. Sleepers: as recommended by system manufacturer and PS-20, American Softwood Lumber Standard.
  - 3. Finish Flooring: random length (MFMA-RL) strip flooring; second or better northern hard maple, kiln-dried, tongue and groove and end matched. Moisture content between 6 and 9 percent. Floor strip thickness of 25/32 inch by 2-1/4 inch width.
  - 4. Base: manufacturer's standard 3 inch by 4 inch molded and vented vinyl cove base.
- C. Quality Assurance:
  - 1. Floor System Performance: DIN V-18032 – Part 2.
  - 2. Manufacturer: minimum of twenty (20) years in fabrication of wood athletic flooring.
  - 3. Installer: accredited per MFMA Accreditation Program.
  - 4. Mock-up: build mock-ups to verify samples submitted demonstrating aesthetic and quality standards.
- D. Flooring Finish: System of compatible components recommended by manufacturer and MFMA. System composed of sealer, finish coat and game line striping.

## **09 65 00 RESILIENT FLOORING**

- A. Vinyl Composition Tile; conform to ASTM F1066, 12 inch by 12 inch, Mannington Commercial, Armstrong World Industries, or approved equal.
- B. Sheet Vinyl, conform to ASTM F1303, 6-foot nominal widths, Mannington Commercial, Inc., Armstrong World Industries, Inc., or approved equal.
- C. Stair Treads: Molded rubber; square nose, smooth surface. Manufactured by Johnsonite, Roppe, or approved equal.
- D. Rubber Wall Base: Comply with ASTM F1861, matching end stops and preformed or molded corner units with 4-inch returns. Manufactured by Johnsonite, Roppe, or approved equal.
- E. Resilient Edge Strips: 1-inch minimum wide by 1/8-inch thick, homogeneous vinyl or rubber composition as manufactured by Johnsonite, Roppe, or approved equal.

- F. Floor Tile: Rubber, class 1-B homogeneous, through mottled with hammered texture
  - 1. .080" thick tiles – 24 inch square
  - 2. Johnsonite or approved equal

**09 68 00 CARPETING**

- A. Manufacturers: C and A "Aftermath 2" or approved equal.
- B. Broadloom:
  - 1. Construction: Tufted multi-level loop pile
  - 2. Yarn:
    - a. Face Fiber: Continuous filament solution dyed; either 6 or 6.6 nylon.
    - b. Tufts per square inch: Square tufted; 64 minimum.
    - c. Pile height: 1/8-inch.
    - d. Face Weight: Minimum 26 ounces per square yard
    - e. Minimum role width: 12-feet
  - 3. Backings: Minimum delamination rating.
    - a. Primary Backing: synthetic woven or Non-woven
    - b. Secondary Backing: Closed cell , vinyl cushion backing system
      - (1) Density (ASTM D-1667): 18.5 lbs/cu ft +/- 5%
      - (2) Compression Set (ASTM D-1667): Max 10%
      - (3) Compression Deflection (ASTM D-1667): Min. 7 psi @ 25%; Max. 25 psi @ 25%
      - (4) Impermeable to moisture and airflow
      - (5) Provide for a chemically welded seam that is also impermeable to moisture and airflow
      - (6) 6' Width Roll Goods
  - 4. Burning Characteristics
    - a. Flammability Requirements: Class 1, in direct glue down application.
    - b. Optical Smoke Density: maximum 450.
  - 5. Tuft Bind: Minimum 20 pounds.
  - 6. Complying with Carpet and Rug Institute's "Green Label Plus", indoor air quality labeling program.
- C. Tile:
  - 1. Face Fiber: Solution dyed nylon.
  - 2. Face Weight: Minimum 28 ounces per square yard.
  - 3. Backings: Per ASTM D3936.
    - a. Primary Backing: Synthetic-polypropylene fiberglass scrim system.
    - b. Secondary Backing: Unitary.
  - 4. Size: 24 inches by 24 inches.

**09 77 33 VINYL TACKBOARD**

- A. Panels:
  - 1. Core: 1/2-inch thickness industrial cellulose fiber insulating board, by Emco Limited Building Products, Knight-Celotex, or approved equal.
  - 2. Surfacing: Cloth backed vinyl, Type 2. Koroseal Division of RJF International; Fairlawn, OH, or approved equal.
    - a. Vinyl weight: Minimum 18 ounces per square yard.
    - b. Cloth weight: Minimum 3 ounces per square yard.
  - 3. Size: 48-inches wide by 96 inches height.

## **09 91 10 PAINTING**

- A. Dunn-Edwards Corporation, Sherwin-Williams Company, ICI Paints, Frazee Paint Company, Kelly-Moore, or approved equal.
- B. Paint systems shall comply with state and local regulations controlling use of Volatile Organic Compounds (VOCs).
- C. Paint types:
  - 1. Exterior Paints
    - a. Primers/Undercoaters
    - b. Secondary and finish opaque coats
  - 2. Interior Paints
    - a. Primers/Undercoats
    - b. Secondary and finish opaque coats
- D. Paint Schedule – Exterior Systems
  - 1. Metal doors and frames – ferrous: Primer, two finish opaque coats.
  - 2. Mechanical and electrical equipment, panels, conduits and piping: Primer, two finish opaque coats.
  - 3. Steel: Etching/Cleaner, two finish opaque coats.
  - 4. Galvanized steel: Etching/Cleaner, two finish opaque coats.
  - 5. Concrete block: Filler, two finish opaque coats.
- E. Paint Schedule - Interior Systems
  - 1. Metal doors and frames: Primer, two finish opaque coats.
  - 2. Electrical Panels: Primer, two finish opaque coats.
  - 3. Steel: Primer, two finish opaque coats.
  - 4. Gypsum board walls, wet and dry areas: Stipple effect: Sealer, two finish opaque coats.
  - 5. Gypsum board ceilings, wet and dry areas: Sealer, two finish opaque coats.
  - 6. Concrete Block: Sealer, two finish opaque coats.
  - 7. Cement Plaster: Sealer, two finish opaque coats.
  - 8. Wood Trim: Primer, two finish opaque coats.

## **DIVISION 10 – SPECIALTIES**

### **10 11 00 VISUAL DISPLAY SURFACES**

- A. Porcelain-Enamel Marker board Assembly: factory-laminated marker board assembly of 3-ply construction consisting of backing sheet, core material, and 0-013 inch porcelain-enamel face sheet with a low-gloss finish, magnetic surface. Provide marker tray and map rail.
  - 1. AARCO Products, Inc., ADP/Lemco, Inc., Bangor Cork Co., Inc., Best-Rite Manufacturing, Claridge Products & Equipment, Egan Visual, Inc., Ghent Manufacturing, Inc., Marsh Industries, Inc., Poly Vision Corporation, or approved equal.
  - 2. Size: 96 inches wide by 48 inches high.
- B. Vinyl Fabric-Faced Tack Assembly: Vinyl fabric factory laminated to 3/8 inch thick fiberboard laminated to 1/4 inch hardboard. Surround with aluminum frame.
  - 1. A-1 Visual Systems, AARCO Products, Inc., ADP/Lemco, Inc., Bangor Cork Company, Inc., Best-Rite Manufacturing, Claridge Products & Equipment, Inc., Egan Visual, Inc., Ghent Manufacturing, Inc., Marsh Industries, Inc., Poly Vision Corporation, or approved equal.
  - 2. Size: 96 inches wide by 48 inches high.

- C. Interactive White Board: Interactive board with wall mounted projector.

## **10 14 00 SIGNAGE**

- A. Exterior Safety Identification:
  - 1. Exterior windows of permanent campus buildings: provide 3/16" aluminum plate sign with 5inch height Helvetica capital letters identifying each classroom. lettering to be routed out Install adjacent to each exterior facing window on left side, mount with 4 vandal resistant ss fasteners.
  - 2. Exterior wall of campus buildings: 6-inch height by 1 inch thick stroke Helvetica capital letters painted (contrasting color) text.
- B. Exit Sign:
  - 1. LED Exit Sign with Battery Backup:
    - a. Long-Life LEDs: LEDs last up to 25 years.
    - b. Battery Included: rechargeable, maintenance-free, replaceable battery that provides emergency illumination is included.
    - c. Push-To-Test Switch.
    - d. Approvals: complies with UL 924, the National Fire Protection Association (NFPA), and the National Electric Code (NEC).
- C. Interior Signage Types: Cast-phenolic plate, 1/8 inch thick. Provide non-tamper screw attachment. Braille where indicated.
  - 1. Room Identification Signs: Place at all room entry doors.
  - 2. Assistive Listening Device Signs: Place within rooms with occupancy loads exceeding 50.
  - 3. Toilet Room Signs:
    - a. Men's or Boys: Equilateral triangle, 12 inches high.
    - b. Women's or Girls: Circle, 12 inches diameter.
    - c. Room Sign: Per No. 1 above.
  - 4. Accessible Entrance Signs: 6 inches wide by 9 inches high, international symbol of accessibility.
- D. Exterior Metal Signs: provide with U.V. coatings over painted metal sign types.
  - 1. Accessible parking sign(s).
  - 2. Van accessible sign(s).
  - 3. Parking lot entrance sign(s).
  - 4. Direction way-finding sign(s).

## **10 21 13 COMPOSITE TOILET COMPARTMENTS**

- A. Bobrick Washroom Equipment, Inc., Bradley Corporation, or approved equal.
- B. System Floor Mounted Overhead Braced.
- C. Panels, doors, pilasters and screens: Solid color, reinforced composite with homogenous color throughout. 3/4-inch thickness.
  - 1. Doors: Swing doors into compartments, unless otherwise shown. 54-inches high.
    - a. 24-inches wide / 36-inches wide, minimum, at stalls designated as "Accessible".
  - 2. Urinal screens: 24-inches wide; 42-inch high.
  - 3. Compartment panels: 54-inches high.
  - 4. Pilasters: 82-inches high.
  - 5. Coat Hooks: Provide one (1) per compartment on interior side.

- D. Hardware: Institutional grade.

#### **10 28 13 TOILET ACCESSORIES**

- A. Bobrick Washroom Equipment Inc., Bradley Corporation, or approved equal.
- B. Grab Bars: 18 gage, 1-1/4 inch outside diameter, type 304 stainless steel tubing welded to 3/16 inch type 304 solid stainless steel wall plates.
- C. Framed Glass Mirror: roll formed type 304 stainless steel frame with welded, mitered corners. 1/4 inch copper plated glass with a 15 year guarantee against loss of reflective quality; 24 inches wide by 36 inches high.
- D. Toilet Tissue Dispensers: Surface-mounted, capacity: Two 5-1/4 inch diameter rolls of tissue. 22 gage type 304 stainless steel. Provide 1 flush tumbler lock.
- E. Soap Dispensers: District provided; Contractor installed. Wall-mount..
- F. Paper Towel Dispensers: 22 gage type 304 stainless steel front loading, piano hinged with 1 flush tumbler lock. Wall mount. Bottom dispensing continuous roll-type paper towel.
- G. Sanitary Napkin Receptacles: Surface-mounted, 22 gage type 304, stainless steel piano hinged cover.
- H. Toilet Seat Cover Dispenser: Type 304 stainless steel, surface-mounted.
- I. Waste Receptacle: Surface-mounted, 20 gauge Type 304 stainless steel. Vinyl liner, capacity minimum 12 gallons.

#### **10 44 00 FIRE PROTECTION SPECIALTIES**

- A. J.L. Industries, Larsens, Potter-Roemer, or approved equal.
- B. Fire Extinguishers: Multi-purpose dry chemical; UL rated 4A-60B:C.
- C. Cabinets: Steel cabinet with clear acrylic bubble, 4-inch tub depth and flat trim; ADA compliant projection. Provide with bendable cam safety lock. White epoxy coated tub; red coated door and trim. Semi-Recessed installation. Provide non-fire and fire-rated cabinets.

#### **10 75 00 FLAGPOLES**

- A. Concord Industries, Pole-Tech Co., Inc., Ewing, Eder Flagpole Company, Inc., EMC, American Flagpole, Adams Flagpole, Morgan-Francis, or approved equal.
- B. Flagpole: Aluminum and tapered/cylindrical, 25 foot exposed height.
  - 1. Ball: 14-gauge, 8-inch diameter spun aluminum; set on 5/8-inch aluminum rod.
  - 2. Base: flashing collar and base plate cover: Ornamental cast aluminum.
- C. Internal Halyard winch system

## DIVISION 11 – EQUIPMENT

### 11 82 26 FOOD SERVICE EQUIPMENT

- A. Standards:
  - 1. Comply with National Sanitation Foundation Standards and provide NSF “Seal of Approval” on each manufactured item and on major items of custom-fabricated work.
  - 2. For electrical components provide UL listing.
  - 3. Provide restraints for food service equipment per Sheet Metal and Air Conditioning Contractors National Association’s (SMACNA) “Kitchen Equipment Fabrication Guidelines”.
  - 4. For mechanical refrigeration systems comply with American Society of Heating, Refrigeration and Air Conditioning Engineers’ (ASHRAE) “Safety Code for Mechanical Registration”.
  - 5. Comply with Access Requirements of ADA.
  
- B. Materials:
  - 1. Stainless steel sheets per ASTM A240, Type 304 Condition A, 18-8 with No. 4 finish.
  - 2. Stainless steel tubing per ASTM A213 (seamless) or A249 (welded); Type 304 18-8 with No. 4 finish.
  - 3. Cold-rolled shapes per ASTM A36.
  - 4. Galvanized sheet steel per ASTM A526.
  - 5. Millwork shall be seasoned and kiln dried with moisture content maximum ten percent; minimum five percent.
    - a. Plywood shall be fire-retardant with flame spread 25 or less.
    - b. Plywood Veneer (Exposed) shall be architectural grade; book and sequence match.
    - c. Hardwood shall comply with PS-51-71 Type 1 for painted finish.
  
- C. Electrical and Mechanical Requirements
  - 1. Provide commercial grade signals, “on-off” push buttons or switches and other speed and temperature controls.
  - 2. Food service equipment shall be completely wired internally:
    - a. Provide terminal boxes for permanent connection or cord and plug for interruptible connection.
  - 3. Water inlets to be located above positive water level to prevent siphoning.
  - 4. Provide indirect waste lines for equipment discharge into floor drains.
  - 5. Steam operative valves shall be provided with composition hand wheels.
  - 6. Refrigeration equipment shall be designed and installed to maintain the following general temperatures:
    - a. Walk-in refrigerator: 35°F
    - b. Walk-in freezer: -10°F
    - c. Reach-in refrigerator: 35°F
    - d. Reach-in freezer: -10°F
    - e. Under counter refrigerator: 35°F
    - f. Under counter freezer: -10°F
    - g. Cold pans: 0°F
    - h. Work Room: 50°F
  
- D. Hood Extractor Ventilation and Fire Suppression System: Captive Air or approved equal.
  - 1. Fire Suppression: Ansul No. R-102, or approved equal per NFPA, latest edition and 17A Standards, latest edition.
  
- E. Start Up and Testing
  - 1. Perform start up services, perform demonstrations and training to District staff with factory-authorized representative.

- F. Itemized Food Service Products
  - 1. See Attachments 'A' and 'B' at the end of this Material Standards Document.

#### **11 82 26 WASTE COMPACTORS**

- A. JV Manufacturing, Inc., Fox Compactors, SP Industries, Inc., or approved equal.
- B. Integral rear feed cart dumper, one cubic yard charge box capacity, 10 cubic yard container capacity.

### **DIVISION 12 – FURNISHINGS**

#### **12 21 26 ROLLER SHADES**

- A. MechoShade Systems, Inc. Hunter Douglas, Lutron, SWF Contract, or approved equal.
  - 1. Shade Bands includes the fabric, (3 percent open), the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube.
  - 2. Shade band and Shade Roller Attachment.
  - 3. Fascia: continuous removable extruded aluminum fascia that attaches to shade mounting brackets.

#### **12 32 17 CUSTOM CABINETS**

- A. Acceptable fabricators include those licensed by the Woodwork Institute (WI) to apply Woodwork Institute labels. Non-licensed fabricators shall secure WI compliance grade stamps for each cabinet run and final installation.
- B. Construction: Style A, frameless, custom grade, Type 1 flush overlay for door and drawers.
- C. Laminates: Pionite, Wilsonart, Formica, or approved equal.
  - 1. High pressure decorative laminate
  - 2. Low pressure facings: Polyester melamine.
  - 3. Edge banding: Polyvinyl chloride, PVC; minimum .024 inch.
- D. Hardware:
  - 1. Provide hinges, pulls, catches, leaf latches, locks (at doors and drawers), bolts, drawer guides, adjustable shelf hardware, electrical and data cabling grommets.

#### **12 48 16 ENTRANCE FLOOR GRILLES**

- A. Arden Architectural Specialties, Inc., Kadee Industries, Inc., or approved equal.
- B. Foot Grilles
  - 1. Rails: Aluminum: 1-3/4-inch deep rails at 1-1/2-inch intervals with key locks at 6-inch intervals.
  - 2. Inset: Crimped solution dyed polypropylene fiber, tufted into double ply backing and mechanically secured to tread rails.
- C. Frames: Load capacity: 300 pounds per square foot. Frame sits directly on concrete.
- D. Pit liner: One-piece aluminum pan, 16 gauge sheet aluminum.

## **12 48 43 FLOOR MATS**

- A. Carpet Tile: 24" x 24" 100% Olefin indoor/outdoor loop carpet with a face weight of 43.00 oz./sq.yd.
  - 1. Shaw Floors "Succession Tile II" or approved equal

### **DIVISION 13**

*NOT USED*

### **DIVISION 14 – ELEVATORS**

## **14 24 00 HYDRAULIC ELEVATORS**

- A. Holeless hydraulic type with beside the car, single acting, dual cylinder operation.
  - 1. 4,500 lb. load, 80 fpm speed
  - 2. 208 volt, 3 Phase, 60 Hz
  - 3. Interior dimensions and hoistway entrance to meet ICC ANSI A117.1 and ADAAG
  - 4. Otis Elevator Co., Schindler Elevator, ThyssenKrupp Elevator, or approved equal.

### **DIVISIONS 15-20**

*NOT USED*

### **DIVISION 21 – FIRE SUPPRESSION**

## **21 13 13 FIRE SUPPRESSION SPRINKLER SYSTEMS**

- A. Fire sprinkler systems shall be wet-pipe. All pipes to be painted red.
- B. The fire sprinkler system shall be designed and installed by a licensed fire protection engineer and comply with NFPA 13, 20, 24, and all local fire and building codes.
- C. Pipe for installation above ground shall conform to ASTM A795, A53, or A135. Thin wall pipe with Victaulic couplings may be used for fire lines 2" and larger. Piping for line sizes 1½" and smaller shall be Schedule 40 pipe with screwed fittings.
- D. Fire sprinkler, lines routed outside of the building insulation in soffits, overhangs, under canopies, or in ventilated un-insulated attics shall be protected by anti-freeze system or dry pipe system.
- E. Standard semi-recessed type heads (+ 7/8 below ceiling) shall be used at all finished ceiling and soffit locations.
- F. Electrical J-Box Covers for the fire suppression system to be red.

### **DIVISION 22 - PLUMBING**

## **22 11 16 DOMESTIC WATER PIPING**

- A. Copper Water Pipe
  - 1. Pipe: Above grade, Type L hard drawn copper tubing per ASTM B-88, plain ends.
  - 2. Fittings: Solder type, wrought copper per ANSI Standard B16.22 or cast red bronze per ANSI Standard B16.18.
  - 3. Unions: Solder type, cast red bronze.

4. Joining Materials/Methods
  - a. Canfield, Silvabrite or equal lead free solder with a non-corrosive water based flux.
  - b. 15% silver brazing alloy, water based silver brazing flux. Silver content must be clearly identified on the brazing rod.
5. Connections:
  - a. Copper to dissimilar metals: dielectric connector.
  - b. Copper to threaded connections: cast brass adapters.

## **22 13 16 SANITARY WASTE AND VENT PIPING**

- A. Inside Building (to 5'-0" outside building line).
  1. Soil, waste and vent piping
    - a. Below slab, service weight cast iron soil pipe and fittings, asphaltic coated for sizes 2 1/2" and smaller. Above floor from 6" above slab shall be galvanized steel pipe or service weight cast iron soil pipe and fittings, asphaltic coated for sizes 2 1/2" and smaller. Urinal waste shall be service weight cast iron soil pipe and fittings, asphaltic coated. Sizes 3" and larger shall be service weight cast iron soil pipe and fittings, asphaltic coated.
    - b. Fittings
      - (1) Contractor may use "No-Hub" "Husky" joints. No-Hub fittings for waste and soil pipe shall be four-band stainless steel type. Standard two band stainless steel band type may be used for vent piping.

## **22 42 00 COMMERCIAL PLUMBING FIXTURES**

- A. The following fixtures are the preferred manufacturer and model.
  1. Water Closets – wall supported: Kohler, American Standard, or approved equal. Standard Flush Valve: Zurn, Sloan, or approved equal.
  2. Urinals: Kohler, American Standard, or approved equal. Standard Flush Valve: Zurn, Sloan, or approved equal.
  3. Lavatory – wall mounted: Kohler, American Standard, or approved equal. Lever faucet: Chicago, Zurn, or approved equal.
  4. Lavatory – Counter Mounted: Kohler, American Standard, or approved equal. Lever faucet: Chicago, Zurn, or approved equal.
  5. Counter mounted classroom sinks: Elkay Mfg., Just Mfg. or approved equal.
  6. Wall Mounted Drinking Fountains (Indoor/Outdoor Use): Provide with mounting plates and in the wall supports to the floor to maximize durability.
  7. Mop sinks: Cast Iron or Terrazzo slop sink; floor mounted only; faucet: Chicago.
  8. Staff room sink: Double compartment SS, faucet: Chicago.
  9. Water Heaters: ASME Certified.
  10. Chemical Rated Floor Drains (Science Rooms). Smith 2005-B with acid resistant coating, or approved equal.
  11. Clay Tap Drains (Art Rooms): Zurn Z-1019 with strainer, or approved equal.

## **DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING**

### **23 07 00 HVAC INSULATION**

- A. All mechanical insulation shall meet latest edition of the Douglas County requirements as a minimum for application and thickness, insulation manufacturers are Owens-Corning, Certainteed, Knauf, or approved equal.
- B. Ducts shall be insulated where required per code and where potential for condensation may occur.

- C. Duct insulation in concealed areas shall be flexible fiberglass blanket with aluminum foil vapor barrier. Ducts in equipment rooms shall be rigid fiberglass sheet with a fiberglass Fab-cloth jacket and Childer's CP-10 or CP-11 coating.
- D. Molded fiberglass pipe insulation is required on all domestic hot water.

**23 09 13 INSTRUMENTATION AND CONTROL DEVICES**

- A. Economizers: MicroMetl
- B. Modulating control valves (2 or 3-way) shall be Belimo characterized control ball valves up to 2". Control valves above 2" shall be Belimo globe valves.
- C. Balancing valves shall be Tour & Anderson or approved equal.

**23 09 23 DIRECT DIGITAL CONTROL SYSTEM FOR HVAC**

- A. Control system shall be Alerton BAC Net/IP, NO SUBSTITUTIONS.

**23 11 23 FACILITY NATURAL GAS PIPING**

- A. Gas piping
  1. Above grade and to 30" below grade, shall be Schedule 40, black steel pipe with 150 lb. malleable iron, welded joints.
  2. Below grade pipe shall be protected with X-Tru-Coat and fittings covered with X-Tru-Coat, heat shrink, sleeves to 6" above grade. Above grade sizes 2" and smaller may be screwed joints.
  3. Underground gas piping below 30" depth and 30" after the first change in direction, shall be polyethylene pipe with fusion welded joints.

**23 31 00 HVAC DUCTS AND ACCESSORIES**

- A. All fume hood exhaust duct shall be stainless steel.
- B. Factory-made Air Ducts (Fiberglass flexible ducts): Factory-made air ducts shall be approved for the use intended and shall conform to the requirements of Douglas County.
- C. Galvanized Sheet Steel: Lock-forming quality, ASTM A 653, G90 (ASTM A 653M, Z275) coating designation with mill phosphatized finish for exposed surfaces of ducts. All galvanized sheet metal shall comply with Douglas County.
- D. Joint and Seam Sealant: Comply with UL723, UL181B, and ASTM-E84.
- E. Round Duct: Machine formed, spiral lock seam construction spot welded and bonded seams with an intermediate standing rib for rigidity.
- F. Fittings: (except elbows) machine formed using SMACNA RL-1 seams with seal class B.
- G. Elbows: fittings shall have a wall thickness not less than that specified for longitudinal straight ducts as shown in Table 3-2 and 3-3, SMACNA HVAC Duct Construction Standards.
- H. Rectangular Duct, Flexible Blanket Liner: Flexible blanket made from strong, glass fibers bonded with a dark impregnated thermosetting resin.

- I. Flexible Connectors: Ventlok, flexible fabric, Duralon Flexible fabric with Metalfab connectors at connections to fans and air handling equipment.
  - 1. Comply with UL 181, Class 1. Ventfabrics Inc. Ventlon coated glass fabric.
- J. Manual Volume Dampers
  - 1. Opposed blade type: 6" maximum blade width, 16" dia. and larger, Vent Products, or approved equal.
  - 2. Butterfly type, volume dampers, 14" and smaller.
- K. Smoke/Fire dampers: Ruskin or approved equal. Comply with local Fire Marshal requirements.
- L. Sealants:
  - 1. Duct sealant: Design Polymerics, Permatite, Ductmate, RCD Corporation or approved equal.
  - 2. Silicone: ASTM 920, Type S, Grade NS, Class 25 or equal.
  - 3. Polyurethane: Federal Specification TT-S-00230C, Type II, class A; ASTM C-920, Type S, Grade NS, Class 25; Federal Specification - TT-S-001543 A.
  - 4. Joint and Seam Sealant: Comply with UL723.
  - 5. Tapes and Adhesives: Pressureless Tapes.

### **23 34 00 HVAC FANS**

- A. General exhaust fans shall be Greenheck, Cook, or approved equal.

## **DIVISION 26 – ELECTRICAL**

### **26 06 10 BASIC ELECTRICAL REQUIREMENTS**

- A. Power distribution system, interior building lighting systems including controls, egress lighting system, exterior building and landscape lighting systems including controls, lighting system branch circuiting, power wiring and service connections to HVAC and plumbing equipment, elevators, etc., wiring devices and branch circuiting for convenience outlets in building, low voltage structured cabling, telecommunications systems, audio visual systems, fire alarm system and intrusion system.

### **26 06 20 ELECTRICAL SYSTEM TECHNICAL STANDARDS**

- A. Power Systems:
  - 1. Normal Power: New main switchgear fed from new utility transformer.
    - a. 277/480 volt, 3 phase, 4 wire provided by utility company:
      - (1) 480 volt, 3 phase, 3 wire: large HVAC and plumbing equipment loads, motors  $\frac{3}{4}$  horsepower and greater.
      - (2) 480 volt, 1 phase, 2 wire: large miscellaneous equipment loads.
      - (3) 277 volt, 1 phase, 2 wire: lighting loads and miscellaneous equipment loads.
    - b. 120/208 volt, 3 phase, 4 wire step-down transformers:
      - (1) 208 volt, 3 phase, 3 wire: miscellaneous motors and equipment loads.
      - (2) 208, 1 phase, 2 wire: miscellaneous equipment loads.
      - (3) 120 volt, 1 phase, 2 wire: wiring device loads, small motor and equipment loads, and some lighting loads (mainly incandescent).
    - c. Motors of two horsepower and greater shall be controlled by a variable frequency drive and integrated with the District EMS. ABB Company or Danfoss.

## **26 13 00 DISTRIBUTION SWITCHGEAR**

- A. Square D switchgear, or approved equal, including accessories required for electrical distribution system: main service switchboard and distribution switchboards including accessories, disconnect switches, dry-type ventilated transformers, panel boards, overcurrent protection devices; circuit breakers for branch circuit panel boards and fuses.

## **26 61 00 BUILDING LIGHTING**

- A. Complete normal and egress lighting system consisting of fixtures, lamps, ballasts, and controls.
  - 1. Lamp type:
    - a. Retrofit requires T8 fluorescent; 28-watt unless Super T8 can be proved economically viable.
    - b. New construction requires Super T8 fluorescent.
  - 2. Ballasts: Electronic.
  - 3. Controls: utilize single and double switching and sensors as room/occupancy conditions dictate.
    - a. Sensors to include photo-cell and occupancy type.

## **26 90 00 LOW VOLTAGE SYSTEMS**

- A. Low Voltage Underground Utilities; SBC service, Fiber, and CATV.
- B. Structured Cabling: voice and data horizontal structured cable system.
  - 1. Approved Manufacturers:
    - a. Panduit
    - b. Beldon
    - c. NO other manufacturers considered.
  - 2. See Attachment 'C' for Telecommunications Specification Standards at the end of this Materials Document.
- C. Audio Visual Systems: all electronic equipment such as video switchers, projectors, "Smart" boards, VCR/DVD, speakers and amplifiers, projector supports, cabling, control panel, interface panels racks and pathways.
- D. Fire Alarm System: tie into existing system fire alarm panel. Manual pull stations, horn/strobes, water flow and HVAC systems connected, door release and HVAC shutdown, smoke detectors.
  - 1. Manufacturer: Notifier; NO SUBSTITUTIONS.
- E. Intrusion Alarm System: Alarm contacts, motion detectors, keypads, intrusion panels shall be DMP, motion detectors shall be Visonic, Rockonet or Detection Systems.
  - 1. Provide alarm system for Lab Rooms, Administration Offices and Public Entry, Front Office areas.
- F. Bell System: IP based for new systems; analog capable for existing systems.
  - 1. Telcor Corporation, Rauland Intercom, or approved equal.
  - 2. Generic Standards:
    - a. Provide intercom call button in each classroom or student-occupied room.
    - b. Provide dedicated intercom speaker in each classroom or student-occupied room.
    - c. Provide analog-faced clock in each classroom or student-occupied room.
    - d. For non-classrooms or non-student-occupied rooms provided with a data drop, provide intercom call button and intercom speaker.
- G. Camera/Surveillance System: IP based for new systems.

1. Nonproprietary IP compliant camera using PoE capable of delivering 1 megapixel output. Minimum of 60 degree field of view..
2. Generic Standards:
  - a. Provide cameras at ALL outside entrance doors of all buildings on secondary school campus.
  - b. Provide cameras at Athletic Parking and General Parking lots on secondary school campus.
  - c. Provide camera at main entrance doors at Administration Building on elementary school campus.
  - d. Provide network drop for future IP camera at all existing analog camera locations.

## **26 90 01 BASIC MATERIALS & METHODS (LOW VOLTAGE)**

- A. Cable Tray System: Trays to be welded construction 12" wide with a depth of 4" and 18" sweeps, supports to be trapeze type.
  1. Panduit Corporation, Belden, Hoffman
  2. No other Manufacturers accepted.
- B. Communications Voice/Data System: Structured cabling system with connection for voice and data networks: fiber optic cable, copper cable, telephone outlets for public telephones.

## **DIVISION 31 – EARTHWORK**

### **31 17 23 PAVEMENT MARKING**

- A. Paints: VOC limit; 150 grams per liter.
- B. Concrete and asphalt concrete pavements: CSS 84-302.
- C. Concrete steps: Heavy duty acrylic marking paint Dunn-Edwards, Kelly Moore, or approved equal.
- D. Thermoplastic stripes and markers: CSS 84-2.02.

### **31 21 13 TRENCHING**

- A. Pipe bedding and initial backfill (sewer and storm drain pipes only): Crushed rock.
- B. Pipe bedding and initial backfill (water pipes only): Sand.
- C. Drain Rock (for stabilization only): Washed course aggregate.
- D. Pipe bedding and backfill material used in trenches containing utilities owned by utility companies shall meet all requirements of that utility company
- E. Trench Backfill material for backfilling trenches, above the pipe bedding and initial backfill material, shall be well-graded on-site native fill or import granular material, and judged suitable by Geotechnical Engineer.
- F. Trench "capping" material for use above trench backfill material shall be on-site native fill material judged suitable by Geotechnical Engineer.

## **31 22 00 SITE GRADING**

- A. All fill shall be approved local materials from required excavations, supplemented by imported fill, where necessary.
- B. Fill materials should be granular in nature and shall be approved by the Geotechnical Engineer.
- C. Capillary barrier material under floor slabs shall be provided to the thickness shown on the drawings. This material shall be clean gravel or crushed.
- D. Asphalt concrete, aggregate base and other paving products shall comply with the appropriate provisions of the State of Nevada Standard Specifications.
- E. Topsoil material for landscaped areas shall be loose and friable soil equal to existing surface soils found on the site.
- F. Water: Furnish all required water for construction purposes, including compaction and dust control.

## **DIVISION 32 – EXTERIOR IMPROVEMENTS**

### **32 17 26 TACTILE WARNING SURFACES**

- A. Engineered Plastics, Inc., ADA Solutions, Inc., or approved equal.
- B. Polymer composite tactile panels. Minimum height of units: 1.4-inches, with a minimum 3/16-inch face thickness.

## **DIVISION 33 – UTILITIES**

### **33 11 16 SITE WATER SYSTEM**

- A. Manufacturers:
  - 1. Tapping Valves: Clow Valve Co., East Jordan Iron Works, Inc., Grinnell Corp., U.S. Pipe & Foundry Co., or approved equal.
  - 2. Gate Valves: American Cast Iron Pipe Co., Clow Valve Co., East Jordan Iron Works, Inc., Grinnell Corp., U.S. Pipe & Foundry Co., or approved equal.
  - 3. Indicator Posts and Indicator Gate Valves: American Cast Iron Pipe Co., Clow Valve Co., Grinnell Corp., U.S. Pipe & Foundry Co., or approved equal.
  - 4. Wet-Barrel Fire Hydrants: Clow Valve Co., Mueller Co., Grinnell Corp., or approved equal.
  - 5. Detector Check Valves: Grinnell Corp., Watts Regulator Co., or approved equal.
  - 6. Fire Department Connections: Elkhart Brass Mfg. Co., Inc., Firematic Sprinkler Devices, Inc., Grinnell Corp., Guardian Fire Equipment, Inc., or approved equal.
  - 7. Alarm Devices: Grinnell Corp., Reliable Automatic Sprinkler Co., Inc., Victaulic Co. of America, or approved equal.
- B. Pipes: Polyvinyl Chloride (PVC) Pipe (4" through 12") AWWA C900; Classes 150 and 200 (Class 200 pipe to be used on all fire water lines) and Polyethylene Pipe (PE) Pipe: (1/2" through 3") AWWA C901 (Product 3/4" to 1") Ford BA 63-332W (3/4") BA 63-444W (1"), James Jones J-1962W, Muller B-24259.
- C. Valves: Nonrising Stem Gate Valves 3 Inches (80 mm) and Larger:
  - 1. Valve Boxes Concrete valve box having a cast iron traffic lid with inset lettering "WATER," by Christy Concrete Products, Inc. No. G5.

2. Curb Stops: bronze body, ground key plug or ball, and wide tee head, with inlet and outlet to match service piping material.
- D. Backflow Preventers: ASSE standard backflow preventers of size indicated.
1. Reduced-Pressure-Principle Backflow Preventer, ASSE 1013, with OS&Y gate valves on inlet and outlet, and strainer on inlet.
  2. Manufacturers:
    - a. Febco Sales, Inc.
    - b. Hersey Products, Inc.
    - c. Watts Regulator Company
    - d. Approved equal.

### **33 31 11 SITE SANITARY SEWERAGE**

- A. Manholes: Cooks Concrete Products, Inc., Jensen Precast, North Valley Precast, or approved equal.
- B. Cleanouts: Ancon, Inc., Josam Co., Smith (Jay R.) Mfg. Co., Wade Division; Tyler Pipe, Zurn Industries, Inc.; Hydromechanics Division, South Bay Foundry, or approved equal.
- C. Pipes and Fittings: PVC (Polyvinyl Chloride) Sewer Pipe and Fittings (solvent cement, and gaskets), and Couplings.

### **33 41 11 SITE STORM DRAINAGE**

- A. Storm Drainage System Piping, fittings, and accessories, connection of drainage system to City system, catch basins, paved area drainage, and site surface drainage and appurtenances from a point 5 feet outside the building to the point of disposal.
- B. Manufacturers:
  1. Manholes: Cooks Concrete Products, Inc., Jensen Precast, and North Valley Precast.
  2. Cleanouts: Ancon, Inc., Josam Co., Smith (Jay R.) Mfg. Co., Wade Division; Tyler Pipe, Zurn Industries, Inc.; Hydromechanics Division, South Bay Foundry.
  3. Drop Inlets: Cooks Concrete Products, Inc., Jensen Precast, and North Valley Precast.
- C. Pipes and Fittings: PVC (Polyvinyl Chloride) for solvent cement or elastomeric gasket joints; reinforced concrete pipe and fittings, cast-in-place concrete pipe, high-density polyethylene (HDPE), and acrylonitrile-butadiene-styrene (ABS) for solvent cement sealed joint end.

### **33 50 00 FUEL DISTRIBUTION UTILITIES**

- A. Provide a minimum pressure of 3 pounds per square inch (psi) site gas piping (subject to local utility company approval).
- B. Underground to 5'-0" outside building line:
  1. Gas Piping: Schedule 40, black steel pipe; malleable iron screwed fittings for sizes 2" and smaller. Weld sizes 2-1/2" and larger. Weld all below grade piping.
    - a. Above grade and to 30" below grade, shall be Schedule 40, black steel pipe with 150 lb. malleable iron, welded joints.
    - b. Below grade pipe shall be protected with X-Tru-Coat and fittings covered with X-Tru-Coat, heat shrink, sleeves to 6" above grade. Above grade sizes 2" and smaller may be screwed joints.
    - c. Provide a sacrificial anode for the underground portion of all steel piping when required by the local authority.

## C. VALVES

### 1. Ball Valves:

#### a. Shut-off service

- (1) Sizes 1" and smaller: Nibco 585 or Apollo 77-100, 400 psi rated, threaded or sweat ends, full port, teflon seat, quarter turn handle with stops, two piece bronze body.
- (2) Sizes 1-1/4" to 2": Nibco 595 Y or Apollo 82-100, 400 psi rated, three piece bronze body, threaded or sweat ends, teflon seat, full port swing-out accessibility, removal.
- (3) Sizes 2 1/2": Nibco 595 Y or Apollo 82-100, 400 psi rated, three piece bronze body, flanged ends, teflon seat, full port swing-out accessibility, removal.

### 2. Balancing/shut-off service (Flow Metering Device)

#### a. 300 psi, 250o F rating, Tour & Anderson.

- (1) Sizes 1/2" to 2": Tour & Anderson Circuit Balancing Valve, Series 787 (STAD), shall be Y-Pattern design and all metal parts of nonferrous copper alloy; positive shut off EPDM no drip seat; hidden memory stop; threaded connections. Valve to have differential pressure read-out ports across valve seat area.
- (2) Sizes 2 1/2" and larger: Tour & Anderson Circuit Balancing Valve Series 788 (STAF, flanged end) or Series 789 (STAG, grooved end), shall be Y-Pattern design with cast iron body all other metal parts of nonferrous copper alloy. The valves shall have eight, twelve, or sixteen 360-degree adjustment turns of the hand wheel with hidden memory feature to program the valve with tamper-proof balancing setting.
- (3) Provide portable-indicating meters encased in protective case, one for the 1/2" to 1 1/2", and one for the larger sizes. The meter shall readout in inches w.g. with  $\pm 1.5\%$  accuracy. Provide master charts reading out in gpm for each meter.

**END OF DISTRICT-WIDE STANDARD SPECIFICATION**