SECTION 02520
PRECAST CONCRETE PAVERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Precast concrete pavers and sand bed.

2. Supplementary components and other miscellaneous accessories required for a complete installation.

B. Related work:

1. Section 02316 for Excavating, Backfilling and Compacting for Pavement.

2. Section 02317 for Excavating, Backfilling and Compacting for Structures.

3. Section 02772 for Site Concrete Work.

C. Unit pricing: Per square foot.

1.2 REFERENCES

A. ASTM - American Society for Testing and Materials.

1.3 SUBMITTALS

A. Product Data: Manufacturer's current specifications and catalogue cuts for precast pavers.

B. Samples:

1. Precast Pavers: 4 for each type and color.

C. Test Reports:

1. Compressive strength of precast pavers.

2. Chemical and physical composition of sand used for the project.

1.4 QUALITY ASSURANCE

A. Qualifications: Show not less than 5 years experience in installation of precast paving systems similar to the work required for this project.

B. Source: All pavers shall come from a single manufacturer and from the same batch.

C. Mock-Up: 4 ft. x 4 ft.

1.5 HANDLING

A. Labeling: Furnish standard products in manufacturer's standard containers bearing original labels legibly showing quantity, type and name, address and telephone number of manufacturer.

B. Delivery: Deliver paving stones and unload at the job site on pallets and bound in such a manner that no damage occurs to the product during hauling, handling or unloading at the job site.

C. Protection: Protect materials from staining or chipping. Replace damaged or defective stones at no additional cost to District.

PART 2 - PRODUCTS

2.1 INTERLOCKING PRECAST CONCRETE PAVERS

A. Materials: Materials used to manufacture precast concrete pavers shall conform to the following.

1. Portland cement: ASTM C 150.

2. Aggregates: ASTM C 33 washed, graded sand and rock. No expanded shale or lightweight aggregates.

B. Compressive Strength: Minimum 8,000 psi in accordance with testing procedures ASTM C 140.

C. Style: California Architectural Narrow Modular Paver, 18" x 3" x 4".

D. Color and Finishes: #1412 Agave Green (Sandblast Color with Slag). Walking surfaces of precast Concrete paving units shall have minimum coefficient of friction of 0.60 wet and dry.

E. Manufacturer:

1. Stepstone, Inc.

2. Equal.

2.2 SAND LAYING COURSE

A. The sand laying course shall be well graded, clean, washed sand with 100 percent passing a 3/8" sieve size and a maximum of 3 percent passing a No. 200 sieve size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification: Verify that subgrade preparation for precast paving has been completed prior to commencement of work and that subgrade has been graded to allow for placement of aggregate base and sand leveling course. Verify that adjacent (walls and) and concrete paving (band) has been installed defining limits of precast pavers.

B. Inspection: Inspect all pavers to be clean and free of foreign materials before installation.

C. Notification: Notify Architect of conflicts discovered on the site, or prior work done by others, which would prevent proper installation of precast paving.

3.2 PREPARATION

A. A suitable base shall be prepared as specified in related sections of this specification.

B. The base course shall be shaped to grade and cross section with an allowable tolerance of 1/4" (relative to specified dimensions below finish design elevation).

C. The compacted base shall be 4-3/4 in. below final grade for 4 in. pavers.

3.3 SAND LAYING COURSE

A. Contractor shall inspect and approve the finished base course prior to placement of the sand laying course.

B. Spread the sand evenly over the area to be paved.

C. Screed the sand to a level that will produce a 1 in. thickness after the paving stones have been placed and vibrated.

D. In addition, provide the proper level of sand such that the final elevation of pavers will nominally 1/4" to 3/8" higher than the adjacent curb, gutters, other paving, etc., to allow for free drainage from chamfers on block edges.

E. Do not disturb this sand laying course once screening and leveling to the desired elevation is achieved.

3.4 PLACEMENT

A. The pavers shall be placed in the approved pattern as noted or shown on the drawings.

B. The pavers shall be placed in such a manner that the desired pattern is maintained and the joints between the pavers are nominally 1/8" with no individual gap exceeding 1/4".

C. Use string lines to hold all patterns true.

D. The gaps at the edge of the paver surface shall be filled with standard pavers or with pavers cut to fit.

E. The cutting of pavers, using a doubleheaded breaker or a masonry saw, shall leave a clean edge to the traffic surface.

F. When cutting precision design areas, a masonry saw, shall leave a clean edge to the traffic surface.

G. Pavers to be alternately selected from at least 3 pallets, working from top to bottom in each pallet stack.

H. Pavers shall be vibrated into the sand laying course using a vibrator capable of 3,000 to 5,000 pounds compaction force with the surface clean and the joints open.

I. After vibration, clean masonry type sand containing at least 30 percent of 1/8 in. particles shall be spread over the paving stone surface, allowed to dry, and vibrated into the joints with additional vibrator passes and brushing so as to completely fill the joints.

J. Surplus material shall be swipe from the surface or left on the surface during construction to insure complete filling of the joints during use. This sand may also provide surface protection from construction debris.

K. Upon completion of work covered in this section, the Contractor shall clean up all work areas by removing all debris, surplus material and equipment from the site.

END OF SECTION

SECTION 06410
PLASTIC LAMINATE CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Casework, including but not limited to base and upper cabinets, storage cabinets, receptionist desk, nurse stations, counters, shelving, mail slots and cubbie holes.

2. Countertops.

3. Peg board.

4. Items associated or integral with architectural casework, including, but not limited to:

   a. Supports, reinforcement and like components.

   b. Wood grounds and blocking.

   c. Hardware and accessories.

   d. Concealed steel supports and exposed ornamental metalwork incorporated in architectural woodwork.

B. Related work:

1. Division 6 for wood nailers and blockings other than for the work of this Section.

2. Division 6 for quartz surfacing countertops.

3. Division 8 for wood doors.

4. Division 8 for finish hardware.

5. Division 12 for laboratory casework.

6. Division 15 for plumbing fixtures and fittings in countertops.

1.2 SUBMITTALS

A. Data: Manufacturer's data of all specialty items required by this Section that are not manufactured by the millwork manufacturer.

B. Shop drawings:

1. Comply with these Specifications and the WI Manual of Millwork for shop drawing policy and procedure.

2. Show location of each item, dimensioned plans and elevations, large scale details, attachment devices, finishes, and finish hardware type and location.Indicate method of seismic construction by WI-Seismic Test Codes Number.

   b. Stamp each set of shop drawings with a WI Certified Compliance Label on the first page.

3. Obtain the approval of the millwork shop drawings by these related trades (as evidenced by their stamp and signature thereon) before submitting shop drawings to the Architect.

C. Samples:

1. 8-1/2- by 11-inch samples of each type, color and texture of plastic laminate.

2. Samples of each type and manufacturer of cabinet hardware.

D. Hardware list: Identify each item by manufacturers name, catalog number, size, finish, and intended use.

E. Qualifications: Information that substantiates that the manufacturer has the qualifications, experience and reputation for doing quality work in a timely manner for installations similar to that specified in this Section.

1.3 QUALITY ASSURANCE

A. Manufacturer's qualifications: Firm (woodwork manufacturer) with not less than 5 years of production experience similar to this Project, whose qualifications indicate the ability to comply with the requirements of this Section.

B. Installer's qualifications:

1. Firm certified by WI under their "Certified Installer Program" or millwork manufacturer, or

2. Firm specializing in custom millwork with 3 years experience in installation of custom millwork similar to that required for the Project.

C. Single source responsibility: Single manufacturer for all work of this Section.

D. WI monitoring:

1. An authorized representative of WI shall monitor the installation of the woodwork, on a regular basis, and shall issue a letter to the Architect after installation is completed.

2. The letter shall report the results of the monitoring, with action taken to correct non-complying work.

E. Wood product quality standards:

1. Softwood lumber standards: NIFT PS 20 and applicable grading rules of the respective grading and inspecting agency for the species and product specified.

2. Plywood standard: NIFT PS 1/ANSI A199.1.

3. Hardwood lumber standard: NIFT PS 51.

F. Referenced standards: Fabricate and install the work of this Section from materials of the species and grades specified in compliance with the American Laminators Association (ALA), ANSI A161.2, and Performance Standards for Fabricated High Pressure Decorative Laminate Countertops, and the following.

1. The Project requires WI compliance and Certification for products and installation.

2. Fabricate and install architectural woodwork in accordance with the standards established in the Manual of Millwork (including amendments) as adopted by the Woodwork Institute (WI) in the grade(s) specified below.

3. Before delivery to the jobsite, issue a WI Compliance Certificate indicating that the work to be furnished will comply with all WI requirements for the grade(s) specified.

4. Each elevation of casework and plastic laminate and solid surface shall bear the WI Certified Compliance Label indicating that it conforms to the grade specified.

5. If questions arise as to compliance with the reference standard of any item of work, the District may require reinspection of the questioned items as defined by "Reinspection Procedure" of Section 1 - General Information, of the WI Manual of Millwork. Cost of reinspection, should non-compliance be found, shall be paid by the Contractor.

6. These requirements do not limit fabrication of the work of this Section to WI members.

   a. If the fabricator/supplier/installer is not a WI licensee, the fabricator/installer shall arrange and pay for all necessary inspections required by WI to comply with the above requirements. Certified Compliance Labels shall be affixed by the WI Director of Architectural Services (DAS/Inspector).

G. Mockup:

1. Before starting production work, assemble a full size base and wall cabinet with countertop for the Architect's review and approval.

2. Locate at the Project site.

3. Finish the mockup as intended for the finish work.

4. Approved mockup will be used as a standard for the Work.

1.4 HANDLING

A. Procedure: In accordance with WI Section 2 "Recommended Care and Storage of Architectural Woodwork".

B. Delivery: Deliver materials to project site in protective wrappings clearly labeled with identification of manufacturer, item name, and specific installation location.

C. Storage: Store work in original undamaged protective wrapping, set flat, blocked off ground to prevent sagging and warping.

PART 2 - PRODUCTS

2.1 LUMBER

A. Seasoning: Wood shall be properly kiln-dried according to accepted methods for the thickness and species required in compliance with the reference WI standard.

B. Pressure-treatment: As specified in Section 06105.

C. Species and grade: Any grade and specie complying with WI provisions for the woodwork grade specified.

2.2 PANEL PRODUCTS

A. Core: One of the following.

1. Particleboard core stock: Medium density, complying with ANSI A 208.1, Table I, Grade 2-M-2 where sinks occur; Grade 1-M-3 elsewhere.

2. Medium density fiberboard (MDF): ANSI A 208.2, 47 pcf density minimum, 115 psi internal bond, 4,400 psi modulus of rupture, water absorption 7 percent maximum, screw holding face 310 lb., screw holding edge 260 lb., assembled with methylene diphenyl diisocyanate (formaldehyde free).

B. Solid phenolic panels:

1. 1/2 in. thick, Virtuon SS by Trespa USA (626) 303-3831 or equal with eased edges.

a. Colors:

1) SCC-1: Azurite Blue J21.3.4.

2) SCC-2: Lagoon J24.3.3/ST.

b. Core: Phenolic impregnated kraft papers, weighting a minimum of 93 lbs./cu. ft.

c. Faces sheet: Liquid paint of color specified above, adhered to phenolic core by a Electron-Beam-Cured process to harden surface and provide ultraviolet stability.

d. Texture: Satin.

e. Modulus of Elasticity: 1.5×10^6 psi minimum.

f. Shear strength: 2,000 psi minimum.

g. Compressive strength: 24,000 psi minimum.

h. Water absorption: 3 percent maximum.

i. Flame spread per ASTM E 84: Class 1a (25).

C. Wood veneer for cores specified above (for Alternate #4):

1. For transparent finish: The following complying with WI Section 4 Premium Grade. Provide leaves a minimum of 10 inches wide by 10-foot long.

a. Species: To be selected by Architect.

b. Face cut: Plain sliced.

c. Face assembly: Slip match.

d. Face symmetry: Center balanced match.

D. Pegboard: Perforated tempered hardboard, 1/4 in. thick, with 1/4 in. holes spaced at 1 in. square centers.

2.3 PLASTIC LAMINATE

A. Typical: HPDL, WIC Premium Grade complying with NEMA LD-3. Unless otherwise noted, the face color of laminate edge exposed in the Work shall run through the full thickness of the laminate. Laminate is scheduled at the end of this Section.

1. Horizontal surfaces: HGS 1.2 mm. When post-forming in radius less than 6 inches, use HGP one mm.

2. Vertical surfaces: HGL 1.0 mm.

3. Cabinet liner: CLS 0.5 mm.

4. Backer: BKM 1.0 mm.

5. Make, color(s) and surface finishes are scheduled on the Drawings.

B. Chemical-Resistant, High-Pressure Decorative Laminate: Lab Grade by WilsonArt or equal complying with NEMA LD-3, Grade PF-42, and as follows:

1. Laminate has the following ratings when tested with indicated reagents according to NEMA LD 3 test procedure 3.9.5:

a. Nitric acid (30 percent): moderate effect.

b. Sulfuric acid (77 percent): moderate effect.

c. Hydrochloric acid (37 percent): moderate effect.

d. Phosphoric acid (75 percent): no effect.

e. Acetic acid (98 percent): no effect.

f. Carbon tetrachloride: no effect.

g. Formaldehyde: no effect.

h. Ethyl acetate: no effect.

i. Ethyl ether: no effect.

j. Phenol (85 percent): moderate effect.

k. Benzene: no effect.

l. Xylene: no effect.

m. Butyl alcohol: no effect.

n. Furfural: no effect.

o. Methyl ethyl ketone: no effect.

p. Sodium hydroxide (25 percent): no effect.

q. Sodium sulfide (15 percent): no effect.

r. Ammonium hydroxide (28 percent): no effect.

s. Zinc chloride: no effect.

t. Gentian violet: no effect.

u. Methyl red: no effect.

C. Melamine: ALA low-pressure laminate carrying the "Permalam" mark and meeting ALA performance requirements. Color as selected by the Architect.

2.4 ADHESIVES

A. Type II as recommended by WI; refer to WI Technical Bulletin WI 428 1-1.

2.5 ROUGH HARDWARE

A. Wood screws, nails and anchors: As selected by the Contractor.

B. Toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete work for anchorage.

2.6 FINISH HARDWARE

A. General: As required for a complete installation, as indicated and specified, and as listed in WI's current Approved Hardware Listings, except as herein modified.

B. Finish: Provide exposed hardware with satin chromium plate finish (US26D); where not available, provide either satin aluminum or satin stainless steel finish.

C. Locks: Brass constructed, 6-pin tumbler lock, with single bitted keys and 3/4 in. bolt throw. Unless otherwise instructed by the District, key all keyways in the same room or space alike except student drawers, which will be all keyed different. Keying shall be planned to be grandmaster keyed. Keys shall be numbered, provide 2 keys per lock. Provide lock for each drawer and door.

D. Hinges:

1. Grade 1 (institutional).

2. Self-closing, 170-degree opening, except 90-degree where door opens against a wall, or otherwise limited to 90-degrees.

3. Provide at least 3 hinges where doors exceed 24-inch wide and 36-inch high.

E. Drawer slides for typical drawers:

1. Self-closing, metal runners with ball-bearing rollers, full extension type, rail-mounted by Accuride, Hafele America Co. or equal with the following weigh capacity:

a. Pencil drawers: 50 lb.

b. General purpose drawers: 75 lb.

c. File drawers: 100 lb.

F. Pulls: Provide pulls on all doors and drawers unless otherwise indicated. U-shaped, wire type, 4 inches center-to-center, Trimco 562-4 stainless steel or equal.

G. Keyboard and mouse tray:

1. Model A115 by Human Scale.

2. Model KP1 with KP1A mouse support by Doug Mockett & Co., Inc.

H. Door bumpers: Drilled-in, clear, soft plastic.

I. Catches: 2 on doors over 36 in. tall, 1 on doors under 36 in. tall. Elbow catches on companion doors where locks are installed, Epco No. 1018-N or equal.

J. Magnetic catches: Epco No. 591 for standard doors and Epco No. 592 for large doors or equal.

K. Touch latches: Hafele No. 245.61.724 with strike or equal.

L. Surface bolts: Trimco No. 4876 or equal.

M. Adjustable Shelving: One of following.

1. Prebored 1/8 in. diameter holes at 32mm on center with shelf support pin, KV No, 331.

2. Heavy duty standards KV No. 83 with pilaster supports, KV No. 256 or equal.

N. Grommets in casework: Plastic, of the color selected by the Architect, with flip-top of appropriate size for wire management, by Doug Mockett & Co., Hardware Concepts, Inc., Wood Technology, Inc., Blanton & Moore, or Metcor Manufacturing Co.

O. Wire manager: Black plastic by Doug Mockett & Co., Inc. WM-2A, Blanton & Moore WMC-4000 Series, or equal. Provide at each computer station and as indicate on Drawings.

2.7 FINISH MATERIALS

A. Fillers, sealers, stains and finishes: RJ McGlennon Co., Inc. Sherwin Williams, Sikkens, Minwax, WD Lockwood (stains and dyes),or equal, used with compliant stains and bases.

B. 550 VOC clear lacquer finishes: 3.91 Series Acrylic Catalyzed Lacquer.

C. Compliant stains and bases.

2.8 FABRICATION

A. General:

1. Fabricate woodwork to the dimensions, profiles and details shown in compliance with sections 15 and 16 of the WI Manual of Millwork, except as specified.

2. The Drawings indicate form and profile concept only. Fabrication and construction details shall comply with the WI Manual of Millwork, unless specified otherwise.

3. Exposed surfaces shall be faced with plastic laminate. Semi-exposed surfaces may be faced with plastic laminate or matching Melamine, except that top surface of shelving, and bottom surface of base and wall cabinets, and toe base are considered to be an "exposed surface" for the purpose of this Section, unless the toe base is indicated to receive a resilient base.

4. Shop assemble work in as large units as practicable to minimize field cutting and jointing. Where necessary to fit at site, provide ample allowance for cutting and fitting.

5. Provide sufficient scribe where casework and tops intersect walls and partitions.

6. Conceal means of fastening various parts and members together.

7. Make-up units to 8-foot long by 4-foot wide in one piece. For longer pieces spline backing and laminate plastic with flush, hairline joints. Indicate joints on shop drawings. Ease intersections of planes of self edged plastic laminate work.

8. Cut openings in plastic tops for fixtures installed by other trades after verifying size of opening with actual size of equipment to be used, before cutting openings. Comply with ANSI A161.2. Seal edges of openings after fabrication.

9. Assemblies shall be free from open joints, hammer and machine marks, structural defects and surface blemishes.

B. Casework: Fabricate casework using flush overlay WI Style A (frameless), Type I construction (modular Sections) in compliance with WI Custom and Lab Grades.

1. Tops: Minimum 1-inch thick, 5-ply construction, maximum deflection, 1/8 inch over 72 inches.

2. End panels and back panel: Recessed or flush, provided for all cabinets.

3. Box drawers: 1/2-inch solid hardwood sides, dovetailed and glued. 1/4 inch, 5-ply hardwood bottom, fitted into dado, glued and blocked into place. Equip with drawer glides with stops to prevent accidental removal.

4. File drawers: 1/2-inch solid hardwood sides, dovetailed and glued. 1/2 inch, 5-ply hardwood bottom, fitted into dado, glued and blocked into place. Equip with drawer slides with stops to prevent accidental removal.

C. Shelving: Comply with WI Technical Bulletin 435, loading 40 psf, 3/4-inch minimum thickness, maximum deflection L/144, except that all shelving shall be of the same thickness in the same assembly, room or space where not concealed by doors.

D. Opening in casework for equipment provided under this Contract, and equipment furnished by the District for installation under this or separate contract:

1. Verify size of equipment by measuring the actual equipment from shop drawings or templates to be provided by those furnishing the equipment.

2. Make accurate cutouts and openings, plumb, level and square. When the equipment does not cover cut edges, finish edges same as faces.

E. Finish hardware:

1. Fit hardware accurately and install in compliance with the hardware manufacturer's printed instructions.

2. Accurately fit doors and drawers with uniform clearance at all edges.

3. Doors and drawers shall operate freely, but not loosely, without sticking or binding, with all hardware adjusted and functioning properly.

2.9 FINISHING

A. This Article applies to surfaces not covered with plastic laminate.

B. In preparation for finish, clean woodwork and fill nail holes. Use matching wood filler.

C. Finish surfaces at the mill, smoothly dressed, belt-sanded and hand-sanded.

D. Finish surfaces to be concealed after the millwork is in place with a coat of clear or opaque sealer. Finish inside of drawers, where not covered by plastic laminate, with a clear, glossy sealer.

2.10 FINISHING

A. Match approved samples. In preparation for finish, clean woodwork and fill nail holes. Use matching wood filler where woodwork is to receive a transparent finish.

B. Finish woodwork at the mill, smoothly dressed, belt-sanded and hand-sanded. In sanding, use same sequence and grade of abrasive used in the Architect's control sample to achieve the same finish. Clean woodwork thoroughly with a tack cloth.

C. Finish surfaces shall be free from open joints, hammer and machine marks, structural defects and surface blemishes.

D. For millwork scheduled to receive a transparent finish: Comply with WI section 5 and the following.

1. System: WI Custom Grade, system No. 2, water reducible acrylic lacquer.

2. Filler: Fill open grade wood.

3. Staining: To match control samples.

4. Sheen: 10 to 15 gloss range, ASTM D 523.

E. Back prime woodwork on all surfaces that will be concealed with one coat of wood primer. Schedule delivery to allow time for application and drying of back prime coat before installation of woodwork for those items that have not been back-primed in the shop.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions and measurements affecting the work of this Section at site.

B. Correct conditions detrimental to the proper and timely completion of this work before proceeding with installation.

3.2 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

3.3 INSTALLATION

A. General:

1. Install woodwork in compliance with WI Manual of Millwork, plumb, level, with tight, flush joints.

2. Shim as required using concealed shims.

3. Comply with Code requirements for seismic attachment and bracing.

B. Casework:

1. Install in a manner consistent with the specified quality grade, plumb, level, true and straight with no distortions.

2. Secure to ground, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a satisfactory installation. Scribe and cut for accurate fit to adjacent finished surfaces.

3.4 REPAIRING/CLEANING/PROTECTING

A. Replace woodwork damaged beyond satisfactory field repair, as determined by the Architect, with satisfactory millwork at no additional cost to the District.

B. Clean exposed interior and exterior surfaces. Touchup finish, where repairs are acceptable to the Architect, as required, otherwise remove and refinish damaged or soiled areas of finish.

C. Protect woodwork against damage during remainder of construction period, complying with manufacturer's directions.

D. Before inspection for Substantial Completion, remove protective covering and clean surfaces using procedures and materials recommended by manufacturer.

3.5 PLASTIC LAMINATE SCHEDULE

A. PLAM-1: Formica, Bright White, 20-459-90, polished finish.

B. PLAM-2: Wilsonart International, Melon Brush, 4807-60, matte finish.

C. PLAM-3: Wilsonart International, Aqua Brush, 4840-60, matte finish.

D. PLAM-4: Lamin-Art, Metalene Astro Pearlescence, 5062-T, textured finish.

E. PLAM-5: Panolam Industries / Nevamar, Marrakesh Blues, KH3001T.

F. PLAM-6: ARPA USA, Alu Snow, 9206, erre finish.

G. PLAM-7: Chemetal Corp., Venetian Stainless Steel Vertical Aluminum, 273.

H. PLAM-9: Panolam Industries / Nevamar, Tropical Allusion, ALB001T.

I. PLAM-10: ARPA USA, Blue Jasper, 2202, erre finish.

J. PLAM-11: Nevamar, Noise Collection, Sapphire, HUM ND00026-PV.

K. PLAM-12: Nevamar, Paparazzi Jett Black, S 6053GR, glitter rock finish.

END OF SECTION

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SECTION 09672
RESINOUS FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Resinous flooring and coved base at locations shown on Drawings.

2. Pressure resistant grout beneath resinous flooring.

3. Primer, resin, mortar, undercoat, sealants, and sealer.

B. Related work: All other waterproofing membranes.

1.2 SUBMITTALS

A. Samples: 24-inch square of the selected colors of each type of resinous flooring mounted on plywood or hardboard. Step application to show all the components.

B. Shop drawings: Large scale details of floor patterns and striping, coves and corners. Dimension terminations and penetrations through resinous flooring.

C. Data: Manufacturer product data for system proposed for use.

D. Letter of acceptance: From the manufacturer to verify its acceptance of the applicator and acceptance of substrates as satisfactory to receive this work.

E. Closeout: Copy of care and maintenance recommendations.

1.3 QUALITY ASSURANCE

A. Single source responsibility: Obtain primary resinous flooring materials from a single manufacturer with not less than 10 years experience in manufacturing and installing principal materials described in this Section.

B. Applicator's qualifications: Firm acceptable to flooring manufacturer, and with a minimum of 5 consecutive years of experience in application of the floor systems proposed for use on projects of similar size and scope.

C. Pre-installation meeting: Prior to start of installation arrange a meeting between the manufacturer of the resinous flooring and the trade responsible for the installation, Contractor and Architect to review conditions of substrate and review installation and curing instructions.

1.4 HANDLING

A. Materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements are allowed.

B. Store materials in a dry, enclosed area protected from exposure to moisture. Maintain temperature of storage area between 60- and 85-degree F.

1.5 JOB CONDITIONS

A. Cure concrete substrate for a minimum of 30 days prior to starting the work of this Section unless manufacturer states otherwise during pre-conference meeting.

B. Illuminate work areas during installation to provide the same or greater level of illumination, as required to properly perform this work, as will occur in the room or space after the building is in operation.

PART 2 - PRODUCTS

2.1 MANUFACTURE/SYSTEMS

A. Stonhard, Inc. (basis of design), Dudick Inc., or equal.

B. Resinous membrane system

1. ~~Stoneshield~~ Stonshield HRI or Dudick Steri-Quartz B, 3/16-inch thick.

a. Epoxy primer: Penetrating 2-component 100 percent solids primer.

b. Mortar: 3-component mortar consisting of epoxy resin, curing agent and quartz silica aggregate,

c. Epoxy undercoat: 3-component, brightly colored quartz silica aggregate broadcast

d. Sealer: 2 part, clear, high performance, epoxy sealer.

e. Color: Cobalt.

C. System physical properties:

1. ~~Stoneshield~~ Stonshield HRI or Steri-Quartz B:

a. Compressive strength: ASTM C 579, 10,000 psi.

b. Tensile strength: ASTM C 307, 2,000 psi.

c. Flexural strength: ASTM C 580, 4,300 psi.

d. Hardness: ASTM D 2240, Shore D Durometer 85 to 90.

e. Bond strength, ASTM D 4541, >400 psi.

f. Water absorption: ASTM C 413, 0.1 percent.

g. Coefficient of friction: Not less than 0.6 when tested in compliance with ASTM C 1028 (field test) or ASTM D 2047 (laboratory test).

2.2 PRESSURE RESISTING GROUT

A. Stonfil OP2 or Dudick Shock-Crete SF, 2-component polymer modified cementitious, osmotic pressure resistant grout at 1/8-inch thickness. Provide a line item add on bid. This shall be applied as an underlayment for the resinous flooring system if the vapor pressure test results in Article 3.1 are in excess of 6 lb.

2.3 EPOXY PATCHING MORTAR

A. Stonset PM5 or Dudick Scratch-Coat 300 , 2-component non-sag, 100% solids epoxy patching to be used to fill all cracks less than 1/8 in. prior to application of flooring systems

2.4 JOINT SEALANT MATERIALS

A. Stonproof MP7 or Caulk 210 is flexible urethane sealant to be used where concrete expansion/isolation joints are to be honored in the resinous flooring system.

B. Divider strips and other accessories: As recommended by the resinous flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION/PREPARATION/PROTECTION

A. Examine surfaces to receive flooring for conditions that could adversely affect its permanence and appearance.

B. Examine substrate for excessive moisture content and unevenness, which would prevent the proper execution of the work of this Section.

1. Conduct calcium chloride moisture test, one for every 1,000 square feet of flooring, to verify that slabs are within limits acceptable to flooring manufacturer.

2. Allow sufficient time in the construction schedule to allow slabs to dry sufficiently, force dry slabs, or provide a compatible surface coating so that water vapor emission will be at a level acceptable to the floor covering manufacturer.

a. Concrete slab with water vapor pressure exceeding 6 lb. shall receive waterproofing membrane before installation of resinous flooring system.

3. Fill cracks and grind down bumps that would telegraph through the flooring so that a straightedge placed anywhere on the surface touches the floor with no more than a 1/8-inch gap.

4. Remove dirt, oil, grease, or other foreign matter from surfaces to receive flooring, including curing compounds or laitance by mechanical means include use of a scabbler, scarifier or shot blast machine.

C. pH test:

1. Perform pH tests on concrete floors regardless of the age or grade level.

2. If pH is greater than 10, it shall be neutralized prior to beginning installation.

D. Do not start installation until subfloor temperature is 60-degree F or above.

E. Correct other conditions detrimental to the proper and timely completion of this work before proceeding with installation.

F. Protect adjacent surfaces with waterproof covers, securely taped in place, to prevent staining and other damage caused by this work. Restore damaged surfaces to their original condition.

3.2 INSTALLATION

A. Install resinous flooring system in compliance with the flooring manufacturer's instructions and these Specifications.

B. Apply each component of resinous flooring system to produce a uniform monolithic wearing surface of thickness specified, uninterrupted except at divider strips, sawn joints or other types of joints as indicated.

C. Take thickness readings as the installations progress to make sure that the proper amounts of materials are being applied.

D. The installed flooring shall be smooth, uniform in thickness and color, and free from other defects. Top edges of self-coved bases shall be straight and level, finished neatly. Trowel marks are unacceptable.

E. Install integral 6 in. high coved base where shown on Drawings.

F. Cure resinous flooring in compliance with its manufacturer's instructions.

3.3 PROTECTION

A. Protect the installed flooring against damage, including misuse by other trades.

B. Repair damaged areas to match adjacent undamaged areas.

END OF SECTION

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SECTION 12490
ROLLER SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Manual roller shades.

2. Motorized roller shades.

B. Furnish the following for installation in other Sections:

1. Line-voltage control components such as switches as necessary to provide control characteristics as specified elsewhere in this section.

C. Related work:

1. Division 6 for blocking for support of window shade brackets or pocket assemblies.

2. Division 9 for gypsum board substrate.

3. Division 16 for electrical power and motor control system.

1.2 REFERENCES

A. Manufacturer:

1. Underwriters Laboratories Inc.

2. Canadian Standards Association

3. NOM Certification Mark

4. American National Standards Institute

5. Institute of Electrical and Electronic Engineers

B. Fabrics:

1. Flame-retardant fabrics must meet or exceed requirements of NFPA test #701.

2. Provide shade fabrics tested in accordance with:

a. 1989 NFPA 701 small scale Vertical Burn Test and rated "PASS."

b. 1996 NFPA 701 small scale Vertical Burn (telephone booth test) and rated "PASS."

C. Electrical: All line voltage components of the system shall be either UL Listed or UL recognized. All low voltage components within the system shall be powered by UL listed or UL recognized class 2 transformers or power supplies and wired as NEC Class 2 circuits.

D. Electronic components within the system shall meet IEC801-2, tested to withstand a 15kV electrostatic discharge without damage or loss of memory.

E. Responsibility for window-treatment system:

1. Design, engineering, installation, and performance of manual and motorized window shade systems, motors, controls, low-voltage control electrical wiring specified in this Section shall be by a single manufacturer or authorized factory installer.

1.3 SYSTEM DESCRIPTION

A. Manual roller shade system shall provide manual control of window treatments.

B. Motorized shade system shall provide control of motorized window treatments with limit setting from the motors and trim hardware as specified for the project.

1.4 SUBMITTALS

A. Product data: Submit manufacturer's descriptive literature and installation instructions for each product type specified. Details shall include product brochures and technical documents indicating materials, finishes, construction, and mounting requirements. Also include installation, wiring, and operating instructions.

B. Shop drawings:

1. Indicate structural mounting requirements and installation methods.

2. Electrical:

a. Typical wiring diagrams shall also be provided for each product type.

b. System one-line wiring diagrams including connection details and overall arrangement of all shades and control locations supplied by this section for installation and connection by Division 16.

3. Provide shade schedule coordinating room number, opening size(s), quantities and key to details.

4. Drawings indicating seam/ batten locations.

5. Head, jamb, and sill details.

C. Samples:

1. One complete set of each type of shade operator.

2. 12 in. x 12 in. samples of each type of shade fabric.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer shall have 15 years minimum experience manufacturing products comparable to those specified in this section.

2. Manufacturer shall furnish all shading systems and electrical control equipment for a complete installation and single source responsibility of shading control where applicable.

3. Installer shall be qualified to install the specified products by prior experience, demonstrated performance, and acceptance of any requirement of the manufacturer, subsidiary of the manufacturer, or licensed agent.

1.6 HANDLING

A. Do not deliver items to the project until all concrete, masonry, plaster, painting and other wet work has been completed and is dry.

B. Deliver shades to project in protective packaging, uniquely labeled to identify each shade for each opening. Schedule delivery to prevent delays to completion of work, but to minimize on-site storage time.

C. Store materials in a dry, secure place. Protect from weather, surface contaminants, corrosion, construction traffic, and all other potential damage.

1.7 SITE CONDITIONS

A. Electronic components shall operate in an ambient temperature range of 32 deg. F to 104 deg. F and 90 percent non-condensing relative humidity.

1.8 WARRANTY

A. Manufacturer to provide written limited warranty of not less than 8 years.

1. The limited warranty shall cover 100 percent of the parts and manufacturer's labor costs required over the first two years.

2. The limited warranty shall also entitle the end user to a credit against the purchase price upon return of defective goods for 8 years.

a. 100 percent for years 1 and 2.

b. 50 percent for years 3, 4, and 5

c. 25 percent for years 6, 7, and 8

B. Warranty coverage shall begin on the date of Substantial Completion.

1.9 MAINTENANCE

A. Furnish extra materials for each type of roller shade described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

B. Before installation begins, deliver full-size units equal to 5 percent of quantity, but not less than 4, installed for each operation, size, color, texture, and pattern indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. To establish the standard of quality, design, and function desired, drawings and specifications are based on products by Lutron Shading Solutions by VIMCO or equal by Mecho Shade.

2.2 MANUAL SHADE SYSTEM

A. Drive mechanism / operator:

1. Clutch brake manual shade system:

a. General:

1) Clutch Roller Shades shall be a ball chain-operated system utilizing a bidirectional wrap spring clutch.

2) The system must be capable of smoothly raising and lowering the shade to any desired height and maintaining that position without slippage.

3) The shade cannot be operable by any other means other than the chain. Pulling on the hem bar will not disengage the clutch.

4) The system will provide a maximum fabric gap of 0.75 in. per side.

b. Clutch and tube specifications:

1) System shall incorporate a bi-directional wrap spring clutch and never require any adjustment of the shade.

2) Shade shall stop upon release of clutch. Systems that slide to a stop are not acceptable.

3) Clutch may be mounted on either the right or left end of the roller tube and fabric may be forward or reverse rolled.

4) The clutch shall be made of high-strength fiberglass reinforced polyester with high carbon steel springs.

5) Manufacturer shall identify appropriate shade tube and clutch size based on shade size, fabric type, and application requirements.

a) Shades using a V24 clutch will be used with a 1.375" or 1.75" diameter, .03" enameled, roll-formed steel tube or a 2" or 2.5" diameter, 0.62" extruded aluminum tube. The appropriate tube will be used to prevent excessive deflection along its length.

6) Fabric shall be connected to tube with double-sided adhesive strip applied for exact and firm mounting of the fabric and for easy adjustment of fabric to prevent telescoping.

a) A minimum of one turn of fabric will be placed on the roller before the working section of fabric starts to protect the fabric and smooth out the starting seam.

c. Clutch Control Loop:

1) Chain will be made of #10 stainless steel 90-pound test ball chain.

2) Chain will be provided with connector and upper and lower ball stops.

d. Clutch Idle End Cap:

1) Two-piece unit consisting of an outside sleeve and center bearing shaft made of high-strength fiberglass reinforced polyester.

a) The outside sleeve shall be free to rotate on the shaft, providing the bearing surfaces on which the roller rides in order to provide a smooth and quiet rotation without wearing on the system.

e. Clutch Mounting Brackets:

1) Shall be .072" galvanized steel

2) Shall be universally applicable for mounting inside, outside or to the ceiling, with the clutch on either the right or left side of the roller.

3) The clutch mounts flush to the face of the bracket resulting in the smallest possible light gap between fabric and window frame.

f. Lift Assist Spring:

1) General:

a) Depending upon shade weight and size, manufacturer may require a lift assist spring to prevent excessive deflection along the length of the tube.

b) Spring shall be a torsion roller spring with a polymer injection molded tube fitting and ball bearing stops used to maintain shade position.

2) List Assist Spring Mounting Brackets:

a) Shall be .060" galvanized steel.

b) Shall be universally applicable for mounting inside, outside or to the ceiling.

c) Shall have a locking device that provides safe retention of the spring end in its bracket.

3) Lift Assist Spring Idle End Cap:

a) Shall be a polymer injection molded insert.

b) Shall have a protruding galvanized steel roller pin that engages the bracket.

2.3 AC MOTOR SHADE EQUIPMENT

A. System specifications:

1. Motor allows full open, full close, and infinite stop positions in between.

2. Shade roller will be supplied to site with motor and idler bearings installed.

3. The system will provide a maximum fabric gap of 1.5" per side (1.25" per side is typical).

B. Motor drive system:

1. General: Motor shall operate at 110-127 VAC, 50-60 Hz with a maximum current draw of 1.6A. Rotation speed of motor shall be determined by manufacturer, depending on shade size and torque requirements.

2. Power supply: Electrical connection to shade motor shall have a 6-foot pigtail containing 4 electrical conductors (Hot, Hot, Neutral, and Ground). Motors shall not be parallel wired (only 1 driver per shade).

   a. Quick disconnect plug is available upon request.

3. Brackets and mounting:

   a. Mounting brackets will accommodate a ceiling-, wall- or end-mount and will be mounted to substrate with 1/4" diameter minimum steel fasteners.

   b. Intermediate Brackets or Couplers allow one motor to lift up to three shade panels dependent upon application and panel size.

4. Shade tube:

   a. Manufacturer shall identify appropriate shade tube based on shade size, fabric type, and application requirements.

      1) Window Shade Contractor shall coordinate with Base Building Contractor regarding mounting, space requirements, and shade pocket housing details based on tube size required.

5. Key switch: (Lutron P/N 6120199).

   a. Shall only operate only when key is maintained in the switch.

   b. The shade will rise while the key is turned to the up position and lower when the key is turned to the down position. When the key is released, it will return to center and stop movement of the shade.

   c. Shall operate up to two shades in a SPDT output.

2.4 FABRICS

A. General:

1. Where applicable, shade fabric will be ultrasonically cut and friction sealed to minimize fraying.

2. Woven yarn fabrics will be interlocking and heat-treated so that all material is securely bonded.

3. All material options to be offered in a variety of colors.

B. Material:

1. RS-1: Bone, SD-7101.

a. Openness factor: 10 percent.

b. Fabric composition: 100 percent polyester PLF.

2. RS-2: White/Pearl, SXL-WL.

a. Openness factor: 5 percent.

b. Fabric composition: Glass yarn coated with PVC.

3. RS-3: Graphite, BP-V39-0.

a. Openness factor: 0%.

b. Fabric composition: 100 percent polyester with acrylic foamed backing.

2.5 TRIM

A. General: Upon complete installation, there shall be no fasteners visible along the trim.

B. Top treatments:

1. Manual operation:

a. Fascia Panel shall be installed to conceal the roller tube and mounting hardware. Fascia shall hook onto the top of the bracket and snap in place, remaining firmly attached. 4 in. high fascia panel shall be made of .075" extruded aluminum and shall be painted with a high quality baked enamel finish.

1) Fascia Mounting Brackets shall support both the roller tube and the fascia panel and be capable of mounting inside, outside or to the ceiling, with the operator on either the right or left side of the roller. All fascia brackets will be made of .075" zinc coated steel.

a) Brackets are designed to snap into the Top/Back Cover

2) Top/Back Cover shall be .085" extruded aluminum with baked enamel finish that fits over fascia brackets and completely covers the top and back sides of the roller shade. 4" Top/Back cover has a channel, which allows the fascia interlock.

2. Motorized fascia panel: Fascia panel dimensions shall be 4"x4" and made of 0.075" extruded aluminum with a baked enamel finish.

C. Side treatments: Side Channels shall be one piece, each 2.5" deep by 1.032" wide, and 0.060" extruded aluminum with "T" slots to receive wool-pile light seal on both leading edges.

D. Bottom treatments:

1. Exposed Hem Bar shall be a 1.375" high by .375" wide aluminum extrusion containing a spline groove at the top to receive and secure the fabric and a "T" slot at the bottom for wool-pile light seal if desired. Gray end caps will be furnished.

2. Where applicable, shade material will be ultrasonically-welded for reinforced strength around sealed hem bar.

3. Sill Angle shall be 1" by 1.5", .062" extruded aluminum angle. Angle shall be installed to aid light seal along window sill if needed.

2.6 FINISHES

A. Metal finishes: Except for shade pockets, all aluminum extrusions with clear anodized finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Refuse delivery of any damaged packaging.

B. Ensure all parts match specified bill of materials and purchase order.

3.2 INSTALLATION

A. Install shades in windows level and plumb to provide smooth operation.

B. Install in accordance with manufacturer's product data and approved shop drawings.

C. Field measurement and installation shall be performed by a Factory-Trained technician.

3.3 ADJUSTING

A. Adjust fabric on tube using shims to prevent telescoping of fabric over time.

3.4 CLEANING

A. Touch up damaged finishes and repair minor damage in order to eliminate evidence of repair. Remove and replace work that cannot be satisfactorily repaired.

B. Clean exposed surfaces, including metal and shade fabric, using non-abrasive materials and methods recommended by the manufacturer. Remove and replace work that cannot be satisfactorily cleaned.

3.5 DEMONSTRATION

A. Demonstrate operation method and instruct District's personnel in the proper operation and maintenance of the window shade systems.

END OF SECTION

SECTION 15140

DOMESTIC AND NON-POTABLE (INDUSTRIAL) WATER PIPING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes the potable water and non-potable (industrial) water piping as shown within the building and to points 5 feet (1.5 m) outside the building wall. Section Includes:

1. Pipe and pipe fittings, valves.

2. Complete domestic water system, including tempered water, from point of connection as shown on the drawings to all fixtures and items of equipment requiring domestic or tempered water. Make all final connections.

3. Complete non-potable (industrial) water piping system from point of connection to domestic water system to all fixtures and items of equipment requiring industrial water. Provide backflow preventers and final connection to all equipment.

B. Related Work Specified Elsewhere:

1. Refer to Section 15050 and all sections in DIVISION 0, REFERENCE, and Division 1, GENERAL REQUIREMENTS.

2. Hangers and Supports: Section 15060.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. It is the intent of this Specification that all Work is to be acceptable under an applicable standard stated or cited in the (California Plumbing Code) or accepted as suitable for the proposed use under procedures and powers of the authority having jurisdiction.

2. Finish Work shall conform as nearly as practicable to the essential requirements of this Section. Connection to sewers shall be as required by local authorities. Where existing utilities are shown to be abandoned or removed, perform all Work required and remove or close off as required by local codes.

3. All pipe, pipe fittings valves, or fixtures for Domestic (Potable) Water systems shall be lead-free in accordance with the California Health & Safety Section 116875.

1.3 SUBMITTALS

A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.4 QUALITY ASSURANCE

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Welding Materials and Procedures: Conform to ASME Code and applicable state labor regulations.

C. Welders Certification: In accordance with ASME Sec 9 or NCPWB Standard Procedure Specifications.

D. Maintain one copy of each document on site.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing the work of this section with minimum three years documented experience.

1.6 REGULATORY REQUIREMENTS

A. Perform Work in accordance with State and local plumbing code.

B. Conform to applicable code for installation of backflow prevention devices.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of installation of backflow prevention devices.

D. Exposed piping, valve boxes, vaults, control valves, quick coupling valves, outlets and related appurtenances shall be color coded and labeled or tagged to differentiate between recycled wastewater, potable water and non-potable water systems, ie.,

1. Caution Recycled Water Do Not Drink" in black or white contrasting lettering on a purple background.

2. "Potable Water" in white lettering on a blue background.

3. "Non-Potable Water - Do Not Drink" In contrasting lettering from the background.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not install underground piping when bedding wet or frozen.

PART 2 PRODUCTS

2.1 PIPING

A. Water Piping, Buried

1. Copper:

a. Tubing: ASTM B88, Type K, annealed, 2 1/2" and smaller.

b. Fittings: ASME B16.18, cast bronze or ASTM B16.22 wrought copper and bronze.

c. Joints: AWS A5.8, BCuP silver braze.

B. Water Piping, Above Grade

1. Copper Tubing: ASTM B88, Type L, hard drawn.

a. Fittings: ASME B16.18, cast bronze, or ASME B16.22, wrought copper and bronze.

b. Joints: ASTM B32, solder, Grade 95TA.

C. All exposed finish piping shall be I.P.S. brass pipe and fittings, polished chrome plated.

2.2 FITTINGS

A. Flanges, Unions, and Couplings

1. Pipe Size 2 Inches and Under:

a. Ferrous pipe: 150 psig malleable iron threaded unions.

b. Copper tube and pipe: 150 psig bronze unions with soldered joints.

2. Pipe Size Over 2 Inches:

a. Ferrous pipe: 150 psig forged steel slip-on flanges; 1/16 inch thick preformed neoprene gaskets.

b. Copper tube and pipe: 150 psig slip-on bronze flanges; 1/16 inch thick preformed neoprene gaskets.

3. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.3 VALVES

A. Ball Valves

1. General. Valves shall be non-blowout stem design. Quarter turn of handle shall fully open or close valve. Handle position shall indicate whether valve is open or closed. Handle stops shall be a permanent, integral part of the body. Packing nut shall be adjustable.

2. Size 2 Inches (50 mm) and Smaller.

a. Valves shall be full port, 2-piece construction with screwed ends. Valves shall be designed for 400 psig (2760 kPa) WOG working pressure at 150 degrees F. (65 degrees C.).

b. Valves shall have bronze or brass body, hard chrome plated forged brass, or stainless steel ball, steel handle with vinyl grip, and replaceable teflon seats. Ball shall be vented.

c. Manufacturers and Figure Numbers.

1) Apollo 77-100

2) Nibco T-585-70

3) Milwaukee BA-125

4) Kitz 68

B. Butterfly Valves.

1. Furnish valves designed for 150 psig (1029 kPa) and 250 degrees F (120 degrees C.) water service. Valves shall have extended necks. Operator shall be 10-position lever lock for sizes 2 through 5 inches (50 - 125 mm) and totally enclosed and sealed worm gear actuators with 4-arm or wheel handle for sizes 6-inch (150 mm) and larger. (Infinite adjustment and memory stop options shall be provided where specified or shown on the Drawings). Valves shall be bi-directional suitable for drop-tight shut-off at full rated pressure with flow in either direction.

2. Materials.

a. Body: Cast or ductile iron.

b. Disc: Bronze, aluminum bronze, or stainless steel.

c. Stem - Type 416 stainless steel.

d. Seat - Ethylene Propylene Diene Terpolymer (EPDM).

3. Manufacturers and Model Numbers.

a. Lug Type. Valves shall be full lug type drills and tapped, designed for dead end service.

1) Sizes 2 ½" through 4"inches

a) Centerline 32-061-05

b) Nibco LD2000

c) Milwaukee ML-233-E

C. Flow Control

1. Manufacturers

a. Griswold; Model 3771 or 3531J.

b. B & G, Model CB-3/4.

c. Armstrong Flow Control Valve.

2. Construction: Brass or bronze body with union on inlet, and outlet, temperature and pressure test plug on inlet.

3. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, 2-34 psid range.

D. Swing Check Valves

1. Manufacturers

a. Milwaulke Model 507 up to 2", 2974A over 2".

b. Lukenheimer Model 2144 over 2".

c. Nibco; Model T-413 up to 2", F918 over 2".

d. Walworth Model 3420 up to 2", 8928 over 2".

E. Water Pressure Reducing Valves (Pilot-Operated)

1. Manufacturers

a. CLA-VAL #90G-01.

b. Watts; AVC-115

F. Relief Valves

1. Approved Manufacturers

a. Bailey, Model 30A.

b. Watts, Model 140XL.

2. Bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated, capacities ASME certified and labeled.

2.4 PIPING SPECIALTIES

A. Strainers

1. Manufacturers

a. Watts, Model 77S.

b. Wilkins, Model YSBR.

2. Size 2 inch and Under: Screwed brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.

3. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.

B. Water Hammer Arrestors

1. Water hammer arrestors shall be J.R. Smith Hydrotrol 5000 or Zum 1700 Series. Provide access panels.

C. Backflow Preventers

1. Backflow preventers shall be of the type required for each application. As scheduled on the Drawings.

D. Flow Regulators

1. All hot water risers and circulating loops shall have the circulating flow rate automatically regulated using a Griswold flow control valve Model 3771 or 3531J with 0.5 gpm flow rate or greater as noted on the drawings at 1 to 14 or 2-32 psi pressure differential.

E. Warning Signs

1. Permanent warning signs with 2" high block letter shall be provided at each location as follows:

a. Each outlet of non-potable water. Sign shall read "DANGER-UNSAFE WATER."

b. Each outlet where hot water source is 140°F system. Sign shall read "DANGER - HOT WATER."

2.5 PIPE WRAPPING

A. Polyethylene: IAPMO approved; 10 mil minimum thickness; wrapped with minimum ½ overlap.

B. Polyvinyl Chloride (PVC) Sleeve: Minimum 27 mil thickness; flexible.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify trench excavations under provisions of Division 2, SITE CONSTRUCTION.

B. Verify that trench excavations are to required grade, dry, and not over-excavated.

3.2 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION GENERAL

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever joining dissimilar metals. For exterior pipes rising from below ground, provide Dielectric union at 6 inches above grade wherever joining dissimilar metals.

C. Route piping in orderly manner and maintain gradient.

D. Install piping to conserve building space and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

G. Provide clearance for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed. Coordinate size and location of access doors with Division 8, DOORS AND WINDOWS.

I. Establish elevations of buried piping outside building to ensure not less than 3 feet of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.

K. Provide support for utility meters in accordance with requirements of utility companies.

L. Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting in accordance with Division 9, FINISHES.

M. Trench and backfill in accordance with Division 2, SITE CONSTRUCTION.

N. Install valves with stems upright or horizontal, not inverted.

O. Do not sleeve structural members without consent of Architect.

P. Maintain maximum 1 inch clearance from adjacent work including insulation except as noted or approved.

Q. Install piping concealed above ceilings or in walls unless otherwise indicated.

R. Do not spring or force piping during installation.

S. Do not bend piping without use of pipe bending machine.

T. Copper:

1. Crimping of copper tubing prohibited.

2. Isolate copper piping and tubing from contact with steel.

3. For branch drops and rises to plumbing fixtures, anchor branch to wall with drop-ear ell or tee.

U. Coatings:

1. Reapply coal-tar coating on buried piping after installation to surface from which coating has been removed or scraped.

V. Care of Floors:

1. Do not set pipe vises or threading machines on unprotected concrete floors.

2. Cover floors when making plumbing connections to avoid staining floors with oil, white or red lead, or other substances.

3. Bear cost of removing any stains.

W. Strainers:

1. Install at following locations:

a. Ahead of control and regulatory valves.

b. Elsewhere as indicated on drawings.

X. Water Hammer Arrestors

1. Furnish and install water hammer arrestors on hot and cold water lines serving fixtures trimmed with single lever faucets, self closing faucets, faucets equipped with 1/4 turn or wrist blade handles, and flushometer valves. Additionally, arrestors shall also be provided at each fixture and all equipment fitted with solenoid valves, quick closing or self closing valves.

a. At fixtures in battery served by a header, install in header immediately upstream of last downstream fixture supply.

b. At individual fixtures not in battery, install in wall or partition immediately upstream of fixture stop.

2. Arrestors shall be provided whether or not shown on the drawings in compliance with the above.

3. Arrestors shall be located and sized in compliance with P.D.I. Standard WH-201.

Y. Access Panels

1. Each shut off valve and water hammer arrestor shall be made accessible for removal by means of a lift off hinged access panel equal to J.R. Smith Figure 4760 for painted surfaces or Figure 4762 for tile surfaces. Valves located above removable ceilings which are readily accessible, will not require an access panel.

3.4 APPLICATION

A. Install unions downstream of valves and at equipment and apparatus connections.

B. Install brass male adapters each side of valves in copper piped system. Sweat solder adapters to pipe.

C. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.

1. Shut-off valves shall be provided at the following locations whether or not shown on the drawings:

   a. On each floor branch served from a riser.

   b. On each branch off a main serving one or more outlets and fixtures.

   c. On each header or manifold, within a partition, serving a battery of fixtures.

D. Fixture Supply Stub-outs

   1. All fixture supply stub-outs shall be secured within the partition with drop eared tees or ells, with I.P.S. outlets.

E. Install ball valves for throttling, bypass, or manual flow control services.

F. Provide spring loaded check valves on discharge of water pumps.

G. Provide flow controls in water recirculating systems where indicated.

3.5 SYSTEMS INSTALLATION

A. Water:

   1. Connect copper tubing to fixtures with hard brass fittings.

   2. Chrome plated where exposed.

      a. Prevent damaged to chrome-plated surfaces.

3.6 PIPE JOINTING

A. Fittings:

   1. Provide standard manufacturing fittings in all cases.

   2. Prohibited fittings:

      a. Field fabricated.

      b. Bushings on pressure piping.

      c. Clamp-on branch connections.

   3. Provide insulating couplings or dielectric unions at connections of ferrous piping to non-ferrous piping.

   4. Branch connections, steel piping:

      a. Equal to main and to two pipe sizes smaller: weld tees same weight as piping.

      b. Three or more pipe sizes smaller than main but 2-1/2 inches and larger: Bonney Weld-o-lets.

      c. To two inches and smaller: Bonney Weld-o-lets, Thread-o-lets, Threaded Nip-o-lets, or steel couplings.

B. Unions: Provide unions or flanges to render all items in systems easily removable, including:

1. Valves.

2. Piping specialties.

3. Both sides of equipment.

C. Pipe Ends:

1. Perform pipe cuttings and end preparation to result in clean ends with full inside diameter.

2. Grind and ream as necessary.

D. Nipples:

1. Close nipples not permitted.

2. Provide extra heavy pipe for nipples where unthreaded portion is less than 1-1/2 inch long.

E. Threaded Joints:

1. Sealed with sealant compounds or Teflon tape.

2. Sealant compounds: John Crane or Rector Seal or equal.

a. General service: John Crane JC-40 or equal.

F. Welded Joints:

1. Welding of pressure piping shall be done by welders who have been qualified by a recognized agency within 6 months prior to date of contract.

a. Perform welding in accordance with provisions of latest issue of all applicable codes including:

1) ASME Boiler Construction Code

2) ANSI Code for Pressure Piping Standard Procedure Specifications of, and operators qualified by National Certified Pipe Welding Bureau, will be considered as compliance with requirements of Specifications.

2. Where required, peen and wheel-grind welds.

3. Ends of pipe may be burned for welding:

a. Grind level and remove scale between welding joint.

b. Ragged edges with metal beads, poor alignment, other inferior work will be rejected.

4. Perform welding with oxyacetylene or electric process.

G. Soldered and Brazed Joints:

1. Use Silfos or Silvaloy 15 silver solder (brazing) with 14 percent silver, 80 percent copper and 5 percent phosphorous for these pipes:

a. Copper piping below grade.

2. Use 95-5 tin-antimony solder for other copper piping.

3. Clean surfaces to be jointed of all, grease, rust and oxides.

a. Remove grease from fittings by washing in solution of 1/16 sodium carbonate and three gallons hot water.

b. Clean socket of fitting and end of pipe thoroughly with emery cloth to remove rust and oxides.

3.7 ADJUSTMENT AND CLEANING

A. General:

1. During construction:

a. Keep openings in piping closed to prevent entrance of foreign matter.

b. Clean pipe, fittings and valve internally.

c. Hammer welds to remove slag and weld beads.

3.8 FLUSHING AND DISINFECTION WORK WATER

A. General:

1. Perform initial service leak test per applicable requirements of ANSI/ASME B31.1 Code for Power Piping on all piping systems.

2. Prior to acceptance of the WORK, pressure test from the existing systems connections completed systems in the presence of the Owner Representative and authorities having jurisdiction.

3. Test piping systems per their respective and applicable governing codes and the requirements specified. Pressure test the pressure piping systems at 1-1/2 times maximum operating pressure except as otherwise specified.

4. Provide necessary equipment and materials and make necessary test connections required to properly execute tests. Make tests before piping surfaces are concealed.

B. Water Systems Flushing:

1. Flush water systems after successful hydrostatic and leak testing and cleaning operations per the following procedure:

   a. Open valves and pipe plugs at all system levels.

   b. Clean system storage vessels, return tanks, sumps and basins.

   c. Protect pumping equipment from damage.

   d. Install temporary flushing filters or strainers.

   e. Remove or disconnect system items which may be damaged during flushing.

   f. Open and close valves to remove debris from body.

   g. Drain system disassemble, inspect, clean, repair and reassembles critical sectionalizing valves, especially gate valves, expansion provisions and permanent and temporary strainers.

   h. Adjust control valves.

   i. Close-up system for disinfection of specified service.

      1) Prior to starting work, verify system is complete, flushed and clean.

      2) Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).

      3) Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.

      4) Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.

      5) Maintain disinfectant in system for 24 hours.

      6) When final disinfectant residual tests less than 25 mg/L, repeat treatment.

      7) Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.

      8) Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

   j. De-water storage vessels and water heaters. Remove debris and deleterious substances. Inspect and repair equipment used for flushing operations.

   k. Remove temporary strainers after systems have been in normal operation for not less than 2 weeks.

l. Clean system by blowing out with nitrogen.

m. Protect or disconnect system components which may sustain damage.

3.9 GENERAL PIPING SYSTEMS TESTING REQUIREMENTS.

A. Prior to acceptance of Work, test piping systems in the presence of the Owner's Representative and authorities having jurisdiction per respective and applicable governing codes and requirements of this Section. Conduct tests prior to concealing piping. Backfill buried piping to extent required to prevent movement.

B. Provide necessary equipment and materials and make necessary test connections required to properly execute tests.

C. Use only potable water for hydrostatic testing.

D. Obtain water from point(s) designated by the Owner's Representative. Promptly remove temporary connections upon completion of testing or when directed by the Owner's Representative.

E. Remake leaking gasket joints with new gaskets and new flange bolting. Destroy old bolting. Where welded joints fail, submit proposed method of repair for approval by the Owner's Representative. Testing shall take place during steady state ambient temperature conditions.

F. Other than standard piping flanges, plugs, caps and valves, use only commercially manufactured expandable elastomer plugs for sealing off piping for test purposes. The safe test pressure rating of any plug shall be not less than two times the actual test pressure being applied. Do not use expandable elastomer plugs for piping which could develop sufficient reactive force to cause damage to a structure, other piping, or cause moving of thrust or anchor provisions in case of blow-out.

G. Remove components from piping systems during testing whenever the component may sustain damage tie to test pressure or test media. After completion of the test, reinstall the component and retest at the component pressure rating with suitable media.

H. Check system components such as valves for functional operation under system test pressure. Do not add test media to a system during a test for a period as specified or to be determined by Owner's Representative. Duration of test shall be as specified.

I. Prepare and maintain records of piping systems tests. Record Architect's and Contractor's personal responsibilities, dates, test gauge identification numbers, ambient temperature, pressure ranges, rates of pressure drop and leakage rates.

J. In the event testing demonstrates leakage rates in excess of specified limits, determine source(s) of leakage, repair of replace defective materials and workmanship and retest installation until compliance with specified requirements.

3.10 ACCEPTANCE PRESSURE TESTING

A. Take necessary precautions to vent the expansion force of compressed air trapped during high pressure hydrostatic pressure testing to preclude injury and damage. The Owner's Representative may require the removal of any system component including plugs and caps to ascertain whether the water has reached all parts of the system if purging or vent valves are not provided during construction.

B. Perform acceptance pressure testing as follows.

SERVICE		TEST MEDIUM/PSIG	TEST PRESS. PERMISSIBLE PRESS. DROP & HOLD PERIOD
Water	Hydrostatic Hot & Cold1-1/2 x times the working pressure or 150 psig whichever is greater.	Water/150psig min	None/30 min

3.11 CLEANING AND FINISHING

A. Upon completion of work in each respective area, clean and protect work. Just prior to final acceptance, perform additional cleaning as necessary to provide clean equipment and areas to the Owner's Representative.

END OF SECTION

SECTION 15410

PLUMBING FIXTURES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

A. Provide all Work as necessary for the complete installation of the plumbing fixtures and trim.

B. Related Work Specified Elsewhere:

1. Refer to Section 15050 and all sections in Division 0, REFERENCE and Division 1, GENERAL REQUIREMENTS.

2. Hangers and Supports: Section 15060.

1.2 QUALITY ASSURANCE

A. Source Quality Control:

1. Plumbing fixtures and trim specified hereinafter shall be furnished free of flaws and defects of any sort in material and workmanship and shall operate perfectly when installed in accordance with manufacturer's directions. The manufacturer shall agree to replace all or any part of the fixtures which show flaw or defect due to faulty manufacture.

B. Reference Standards:

1. Fixtures shall conform to current commercial standards for sanitary cast iron enameled ware and staple vitreous china plumbing fixtures and trim recommended by the U.S. Department of Commerce.

2. All pipe, pipe fittings valves, or fixtures for Domestic (Potable) Water systems shall be lead-free in accordance with the California Health & Safety Section 116875.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Protection of Fixtures and Trim:

1. Adequately protect the plumbing fixtures and accessories during construction. Replace at no cost to the Owner any fixture or accessory that is marred, scratched, defaced, or broken.

PART 2 PRODUCTS

2.1 MATERIALS

A. General:

1. Fixtures specified hereinafter shall be the standard product of one of the manufacturers listed below comparable to models listed for each fixture. Acorn, Haws, Kohler, Bradley, T/S Brass, American Standard,Just, Halsey Taylor, Josam, Symmons, Brass Craft, Zurn, Speakman, Powers, Lawler Chicago.

2. Flush valves shall be Sloan or Zurn comparable to models listed.

3. All plumbing fixtures shall be provided complete with all necessary trim and accessories to insure the proper installation and operation of each fixture. Trim and accessories shall include but not limited to supply pipes, stops, drains, strainers, tailpieces, P-traps and bolt caps. .N Note: Change color as necessary on specific Projects. This Spec. needs considerable revision for hospitals. Check all selections with Client and Architect to avoid surprises or shock. Especially true for trim and trim finish, lavatories, and sinks.

B. Plumbing Fixture

1. For model and type, refer to the Plumbing Fixture Schedule.

PART 3 EXECUTION

3.1 INSTALLATION/APPLICATION/PERFORMANCE/ERECTION

A. Installation:

1. Plumbing fixtures shall be installed in a neat and workmanlike manner with proper connections to supply and drainage piping. Provide proper grounds for all fixtures requiring same.

2. Mounting heights. Wall hung fixtures mounting heights will be as follows (These heights shall be verified with Architect during course of construction.):

LAVATORIES	34 inches (787 mm) rim to floor - Accessible
DRINKING FOUNTAINS	36 inches (914 mm) bubbler to floor - Accessible
URINALS	24 inches (610 mm) floor to rim.
	17 inches maximum floor to bottom of rim - Accessible
WALL HUNG WATER CLOSET	13 inches from floor to lip.
	18 inches from floor to lip of seat - Accessible

3.2 FIELD QUALITY CONTROL

A. Plumbing Fixture Tests.

1. Water shall be turned on to all supply lines and all fixtures shall be demonstrated to operate properly. Flush valves shall be tested and adjusted to flush efficiently without undue noise.

END OF SECTION

SECTION 16722
ACCESS CONTROL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. This performance specification provides the minimum requirements for the Electronic Access Control System. The System shall include, but not be limited to all equipment, materials, software, labor, documentation, training and services necessary to install a complete, operational system.

B. Provide an extension of the existing Campus-wide Ingersoll Rand (IR) Schlage Electronic Access Control and Security Management System (SMS) managed by the Offices of Maintenance/Operations using IP network protocol from their offices. The SMS shall be capable of expansion to include local management of all campus buildings with distributed client workstations as required.

C. This system shall be an Electronic Access Control Management and Security Management System, integral in nature, such that all capabilities utilize a single, industry standard Microsoft SQL relational database management system for the storage and manipulation of related data. The system shall have the capability to provide the following services from this integral database:

1. Electronic Access Control.
2. Alarm Management.
3. Dynamic Graphic Maps.
4. Remote Site Monitoring and Control.
5. CCTV and Digital Video Recording.
6. Photo ID and Badging.
7. Management Reports.
8. Management of off-line Schlage CM Locks and Networked, Wireless or Wired Schlage Access Control from the same SMS Software and Database.

1.2 WORK INCLUDED

A. The work shall include furnishing all labor, materials, tools, training, database input, assistance to the District for Cardholder programming, equipment, software and documentation required for a complete and fully functional Access Control and Security Management System as specified in this Section. The System shall comply in all respects with all pertinent codes, rules, regulations, and laws of the local jurisdiction.

B. The Contractor shall provide an extension of the existing Antelope Valley College (AVC) Schlage Security Management System (SMS). Schlage SMS Premier Version, with 5 Client workstation capability is existing on Campus and is the Campus Standard for electronic access control.

C. The Schlage SMS software shall be capable of managing and integrating the existing Schlage CM Locksets and the specified on-line electronic access control devices from within the same SMS database.

D. The Contractor shall be responsible for all database programming of Controllers, Doors, Monitoring Inputs, Time Scheduled Programmed Doors; and shall provide assistance to the District with cardholder data entry for a full and completely operational system.

E. The Contractor shall be responsible for creating a dynamic graphic map for the building in the project. The District will provide Building Floor Plans in a digital format and the Contractor shall create and implement icons for monitored doors, programmed doors, and card reader access doors to dynamically display system status for the building.

F. The Contractor shall be responsible for coordinating with Section 08710, Finish Hardware. Section 08710 shall provide some items of door hardware for use by the System, including certain door position switches, power transfer hinges, power supplies, electric locks, electric trim, electric panic hardware, power supplies for electric latch retraction panic hardware (EL) and request-to-exit switches as required. The Contractor shall be responsible for reviewing and coordinating with the Finish Hardware Section and Architectural Door Schedule to provide a complete, functioning installation.

G. The SMS shall manage District provided HID compatible 125khz proximity access cards.

H. The SMS system shall provide free egress from access-controlled areas with no special knowledge or skill required for exiting the controlled space.

I. The Contractor shall provide and install a proximity card reader at each of the doors as shown on the Construction Drawings and / or as described and specified in these documents, Section 08710, and the Architectural Door Schedule.

J. The Contractor shall wire and integrate all door position switches, request-to-exit devices, electrified locking devices, and accessories devices provided by Section 08710 for a complete operational installation.

K. The Contractor shall provide a minimum of 8 hours of System Administration / Operator training for AVC personnel.

L. The Contractor shall be a Certified Ingersoll Rand System Integrator certified to the appropriate Level for the specified system.

M. The Contractor shall be responsible for all low voltage electrical installation required for a complete and operational system. All required 120 VAC wiring and conduit shall be furnished and installed by the Project Electrical Contractor.

N. Access Control Panels shall be mounted in selected IDF/Data Rooms. The Project Electrical Contractor shall provide a 120 VAC circuit and a Network Data Drop for each Access Control Panel.

1.3 RELATED WORK

A. General Terms and Conditions under Section 1 of the Contract Documents.

B. Section 08710 Door Hardware.

1.4 QUALITY ASSURANCE

A. The equipment supplied shall be a standard labeled product of the equipment manufacturer, bearing the company name and having their exclusive model numbers. This company must be of established reputation and experience, regularly engaged in the manufacture, supply and support of such systems. This company shall have a fully staffed office of IR Certified technical support representatives within four hours travel time to the project.

1.5 REFERENCES

A. Design and operation of the system shall conform to the following referenced codes, regulations and standards as applicable.

1. California Electrical Code (CEC).
2. UL 294.
3. FCC Rules and Regulation.
4. Part 15, Radio Frequency Devices.
5. National Electrical Manufacturers Association (NEMA).
6. Section 250 Enclosures for Electrical Equipment.
7. Applicable Federal, State, and Local laws, regulations, and codes.

1.6 ABBREVIATIONS

A. The following abbreviations are used in this document:

1.	ANSI	American National Standards Institute.
2.	ASCII	American Standard Code for Information Interchange.
3.	AWG	American Wire Gauge.
4.	CEC	California Electrical Code.
5.	FCC	Federal Communications Commission.
6.	ID	Identification.
7.	IEEE	Institute of Electrical Code.
8.	NEMA	National Electrical Manufacturers Association.
9.	WS SMS	Client Operator Workstation.
10.	SMS	Security Management System.
11.	UL	Underwriters' Laboratories.

1.7 RESPONSE TO SPECIFICATION

A. The Contractor shall submit a point-by-point statement of compliance with all relevant sections defined herein. Where the proposed system complies fully with all numbered paragraphs as written, such shall be indicated by placing the statement "fully complies, plans and specifications complete" on the statement of compliance.

B. Where the proposed system does not comply with the paragraph as written, but the Contractor feels it will accomplish the intent of the paragraph in a manner different from that described, a full description of the intent perceived by the Contractor shall be provided as well as a full description of how the proposal will meet its perceived intent.

C. Where a full description is not provided, it shall be assumed that the proposed system does not comply with the paragraph in question.

D. Documentation in support of substitute equipment shall qualify all parameters with tangible values and benefit to Antelope Valley College in the response notations or on the manufacturer's original data sheets. Submissions documents not using this type of statement shall be considered non-compliant.

1.8 SUBMITTALS

A. Contractor shall submit all items in accordance with the requirements of Section 01300, "Submittal Procedures", and shall include, but not be limited to the following:

1. Model numbers of all components furnished on the job.

2. Manufacturer's catalog data sheets for all components.

3. Input power requirements for all components.

4. Complete engineered drawings indicating:

   a. Manufacturer model numbers and specifications.

   b. Dimensions, layouts, installation details.

   c. Point-to-point wiring diagrams for all devices.

   d. Termination details for all devices.

B. Single-line system architectural drawings representing the entire system.

C. AVC acceptance form with a check box associated with each card reader and input point to indicate that each point was checked off as properly installed and reporting back to the control panel and the host computer prior to District acceptance of the system.

D. 2 sets of the Manufacturer's User's Manuals and Installation Manuals.

PART 2 - PRODUCTS

2.1 SUMMARY

A. The Schlage Security Management System (SMS) shall be capable of integrating multiple building functions including access control, alarm management, intrusion detection, CCTV and digital video recording, and Photo ID badging.

B. The system shall be at the time of bid, listed by Underwriters Laboratories for UL 294 Access Control Systems. Unlisted systems are unacceptable. All control panels furnished on the job shall carry the UL 294 labels.

C. The system shall be modular in nature, and shall permit expansion of both capacity and functionality through the addition of control panels, card readers, and sensors.

2.2 OPERATIONAL REQUIREMENTS

A. Scope of Work:

1. General:

a. All Schlage SMS software required to provide the specified system functions is currently existing on the AVC Campus.

b. Schlage SMS Software, Premier Level, 5-Client version, Schlage Part No. SPRE-SFT-5 is the Campus Standard for Electronic Access Control.

c. The Contract shall furnish and install Client Workstation Software on District provided Workstations, at locations determined by AVC.

d. The Contractor shall furnish all labor required to create a dynamic graphic map for each building within the project. The District will provide the Contractor with a digital graphic floor plan of each building and the Contractor shall create and implement graphical icons to represent card reader, monitored and programmed doors and their individual status, and integrate the graphics into the SMS.

2. Database Management: The system shall create and maintain a master database of all cardholder records and all system activity for all connected points.

3. Audit Trail: The system shall maintain an audit trail file of operator activity. Provide the ability to generate a report by operator, time and data, and type of activity (audit code). The system shall allow the operator to direct the audit trail report to screen, printer, or file.

4. Input point monitoring: Collect and process status information from all monitored points.

5. Alarm annunciation: Audibly and visually annunciate all alarm, tamper and trouble conditions, and advisories.

6. Input point supervision: The system shall electrically supervise all 2-state and 4-state input point circuits as specified or shown on the Drawings.

7. Reports: The Schlage SMS shall be equipped with a fully integrated, dynamic report writer module that shall have access to the SMS database fields to allow users to create

custom reports without the need for computer programming skills. The Schalge SMS shall be provided with a complete library of standard reports.

8. On-line help system: The system shall provide on-line, context sensitive help that shall be available at anytime and from any screen.

9. Passwords: The operator password function shall control which menu items and cardholder database fields that the individual operator may access. It shall be possible to restrict access to individual cardholder database fields such that certain operators may view and edit individual fields while other operators may only view the fields. It shall also be possible to restrict password holders such that certain specified fields and/or menu commands do not appear on the screen, or are grayed-out (disabled) for a given password.

10. Alarm Input Point Reporting Delay: The system shall allow the operator to apply an input point reporting delay period from 0 – 60 seconds for each input point terminal. The default setting for each input point reporting delay shall be 0 seconds.

11. Alarm Input Point Suppression: The system shall provide an alarm input point suppression facility such that the operator may define a time zone suppression period for each individual input point. Alarm conditions for suppressed input points shall not be recorded or archived by the system.

B. Time Zones:

1. The SMS shall provide the capability for the user to define time zones with the following identification and configuration parameters.

   a. Name.

   b. Description.

   c. Allowance for any number of time zone periods, during each day of the week and each of the different holiday types.

   d. Any number of days of the year may be designated as a holiday, each defined as one of any holiday types.

C. Communications:

1. Should the controller lose communications with the Host Server or Network, the controllers shall continue to control access and monitor inputs for all connected points. Local history of all transactions shall be buffered at the controller and automatically uploaded to the Schlage SMS Server for alarm reporting and long-term historical storage once communications are re-established.

2. In the event of a total failure of the controller, the connected card readers shall continue to operate and make access control decisions based on a common facility code encoded in each access control card for the given facility.

3. User defined cardholder database fields: The system shall support unlimited user defined data fields that may be used to store information for each cardholder. The SMS shall provide standard menu items that shall allow the operator to define these cardholder database field at anytime. The system shall remain on-line while user defined cardholder database fields are added or edited. It shall be possible, using standard SMS system menu commands to search and report on all user defined cardholder fields.

4. Event and Transaction History: The SMS shall maintain a record of all alarm, card transaction, and system exceptions which take place, and provide a means for a user to access this information. It shall be possible to print information in the log in real-time or by a report.

5. Anti-Passback Control: The SMS shall provide the capability to prevent more than one person from gaining access to a controlled area by recognizing when a cardholder who is granted access is passing back the card to another person to use the same card to gain access. An alarm shall be generated if the cardholder violates the anti-passback rules. It shall be possible to define on a reader-by-reader basis, which readers are subject to anti-passback rules.

6. Entry/Exit Control: The SMS shall provide the capability to control a card's entry into or exit from an area based on the cards previous transaction status.

7. Cardholder Definition: The SMS shall provide the capability for the user to define Cardholders with the following identification and operating parameters.

   a. Cardholders name (first, middle, last).

   b. Cardholders address.

   c. Cardholder phone number.

   d. Activation period using start and end dates.

   e. Trace enabled or disabled.

   f. Override enabled or disabled,

   g. PIN code.

   h. Assigned access cards.

   i. Unlimited user defined cardholder fields. The SMS shall provide the capability to use these fields in filtering reports.

8. System Status Display: The SMS shall provide a dynamic system status summary display that graphically indicates the status information filtered by communications loop, controller, or Workstation. All status display information shall be summarized in a single window.

9. Alarm routing: The SMS shall provide the ability for the user to define which input points or groups of input points are routed to each SMS Operator Workstation (WS) computer. The system shall provide a report showing which input points are routed to each WS.

10. Control points: The SMS shall provide the ability to define input points as control points to be used in input/output linking and event processing sequences of operation. Control points shall not enter the alarm queue and shall not require that an operator acknowledge them when they change state. The control point activity will however, be automatically logged to the history file.

2.3 SOFTWARE REQUIREMENTS

A. The Client WS operating system shall be Microsoft Windows 2000 or XP Professional software.

1. The SMS software features shall be fully documented in the form of a complete user's manual including operation and installation sections, and a detailed description of the major SMS functions.

2. The Contractor shall load SMS Client software on District provided workstations as directed by the Office of Maintenance and Operations.

2.4 INTEGRATION REQUIREMENTS

A. The card access system must be compatible with off-line, battery-powered Schlage CM Locks, Schlage Wireless Access Modular Locksets, Schlage VIP Locksets and hardwired, networked HID compatible card readers, all managed from a common SMS database.

2.5 HARDWARE REQUIREMENTS

A. The SMS Client workstation computer shall be an District provided standard personal computer with proper capacity for the intended purpose. The SMS software shall be loaded, configured, and tested by the Contractor.

B. Controllers shall be IR Schlage-SRCNX Access Controller with SRINX reader interfaces as required.

1. The Controller shall be a fully stand-alone processor capable of making all access control decisions without the involvement of the host computer.

2. The Controller shall support up to 16 card readers in addition to auxiliary input points and output points.

3. Memory Requirements:

a. Minimum number of cards: 20,000.

b. Minimum number of historical transactions: 10,000.

c. The controller(s) shall be provided with an IP-Addressable module to connect to the AVC Campus network for communication. A network drop for Controller connection to the system shall be provided for the Contractor at the designated location for installation of the Controller. Schlage Part No. SIPNX-100 IP Addressable Module.

d. A SPDT tamper switch shall be attached to the inner surface of the controller enclosure. The tamper switch shall change state whenever the enclosure door is opened to signal the SMS of the condition. The tamper switch input shall be user programmable to be suppressed, to be recognized as an input point to be processed by the alarm queue at the host computer.

e. The standard AC linear power supply version of the controller shall include a battery module to back-up the controller's applications programs and database upon the failure of the primary AC power service. Additionally, the Contractor shall provide a minimum of 4 hours of stand-by battery operation for the controller.

f. The controller shall provide built-in LED's that indicate whether or not the controller is continuing to process event activity, card transactions, and record history transactions.

g. Provide the controllers and associated accessory devices in sufficient quantities to manage all card readers and monitoring inputs required for the project.

h. Controllers shall be mounted in designated building IDF/Communication Rooms.

C. Card Readers: All card access controlled doors shall be configured with a proximity card reader at each door as shown or described within the Construction Documents and the Architectural Door Schedule.

D. Proximity Technology Card Readers:

1. Proximity technology card readers shall be HID compatible, operate at 125 KHZ, with a read-range of 2"-4" on center and shall be manufacturer certified for an ambient operating environment of –22 to 150 deg. F and 0 to 95% RH, non-condensing.

2. The reader shall contain tri-color LED to indicate valid and invalid card reads and shall be weatherized for outdoor use.

3. The College shall provide all required HID compatible proximity cards for use by the system.

4. The Contractor shall furnish and install low voltage door lock power supplies in sufficient quantity and size, to power all electric door locks and electric panic hardware trim (E-Trim) supplied by Section 08710. Manufacturer shall be Altronix, Schlage Electronic, or equal.

5. Power Supplies (PS-873) for the electric latch (EL) retraction panic hardware shall be furnished by Section 08710.

6. Proximity Card Readers shall be provided by this Section for the locations shown on the Construction Drawings and as specified in Section 08710 and this Section. To include but not be limited to:

a. Card Reader/Programmed Doors (CR): All doors designated on the Architectural Door Schedule to be equipped with a card reader and operate on a time schedule shall be hardwired and integrated into the SMS by this Section. The Contractor shall furnish and install Model: Schlage Model SXF 1500 Multi-technology Wall Mount Reader. For doors with limited mounting space, the Contractor shall furnish and install a mullion style reader. Schlage Model No. SXF1100 Multi-Technology Mullion Reader. Refer to Section 08710 for details and door locations.

b. Monitoring (M): All doors designated to be monitored by the Architectural Door Schedule shall have a door position switch provided by Section 08710 and shall be wired and integrated into the SMS for monitoring by this Section. Refer to Section 08710 and the Architectural Door Schedule for details and door locations.

c. Programmed (P): All doors designated as Programmed on the Architectural Door Schedule shall have an electrical locking device provided by Section 08710 and shall be wired and integrated into the SMS for locked/unlocked Time Schedule Programming by this Section. Refer to Section 08710 and the Architectural Door Schedule for details and door locations.

2.6 DELIVERY, STORAGE AND HANDLING

A. SMS components shall be shipped to the job-site in original manufacturer's shipping containers.

B. All shipping and handling costs shall be paid for by the Contractor.

C. All equipment stored on the job site shall be secured in a locked storage area as designated by the Contractor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All electronic equipment, terminals, and controllers shall be factory wired prior to shipment to the jobsite.

B. The Project Electrical Contractor shall provide all required conduit and 120 VAC for the system.

C. Provisions shall be made for field wiring to enter the cabinet via standard knockouts at the top and bottom of controller cabinets.

D. All exposed wiring within the cabinets, consoles, and terminals shall be formed neatly with wires grouped in bundles using non-metallic, flame-resistant wiring cleats or wire ties.

3.2 TESTING AND COMMISSIONING

A. The Contractor shall be responsible for testing and commissioning of the installation in accordance with all applicable documents in the Contract set.

1. Testing shall be comprehensive and sufficient to demonstrate compliance with each requirement.

2. A proposed test plan shall be submitted to AVC for approval prior to commencement of final test.

B. Final Tests shall be conducted in the presence of the Contractor and the District's Administration and Facilities personnel.

3.3 TRAINING AND INSTRUCTION

A. Operator training shall consist of 8 hours of training conducted on-site by a factory trained professional instructor.

B. Additional equipment and training sessions shall be made available to the District, if necessary, at additional cost.

3.4 WARRANTY

A. All equipment furnished under this contract shall be warranted for a period of 12 months from the date of final acceptance of the system. The warranty shall include all material, labor, and travel expenses to:

1. Respond to service requests on-site, within 24 hours.

2. Replace or repair defective components as required.

END OF SECTION