

SECTION 09110

NON-LOAD BEARING WALL FRAMING SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, shall apply to this Section.

1.02 REFERENCE STANDARDS

- A. ASTM A653 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- B. ASTM A1003 - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
- C. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
- D. "Gypsum Construction Handbook" as published by United States Gypsum Company or "SFIA's Technical Guide for Cold-Formed Steel Framing Products" or a comparable manual as published by other acceptable manufacturer.

1.03 SUBMITTALS

- A. Materials Lists: Complete list of materials proposed to be furnished and installed, stating manufacturer's name and catalog number for each item.
- B. Product Data: For each product type.
- C. Manufacturer's Recommendations: Current recommended method of installation for each item. Recommendations shall be the basis for acceptance or rejection of actual installation methods used.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protection: Use means necessary to protect metal products from rusting and damage before, during and after installation and to protect the installed work and materials of other sections.
- B. Replacement: In event of damage, immediately make repairs and replacements necessary.
- C. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling as required by AISI's "Code of Standard Practice".

1.05 REQUIREMENTS OF REGULATORY AGENCIES

- A. Where fire-resistance classification is specified for walls or partitions with steel stud framing, provide steel studs and accessories of the type, which have been tested and listed for construction indicated.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. ClarkDietrich Building Systems (basis of specification), West Chester, OH (www.clarkdietrich.com).
- B. Directly comparable products of the following manufacturers:
 - 1. MBA Building Supplies, Inc. Frackville, PA 17931 (www.mbastuds.com)
 - 2. [Southeastern](http://www.sestud.com) Stud & Components, Inc., Montgomery, AL (www.sestud.com)
- C. Other manufacturers, pre-bid approved in accordance with Section 01630, shall be acceptable.

2.02 MATERIALS

- A. General: Items specified are products of ClarkDietrich Building Systems. All studs shall be fabricated from steel having 33KSI minimum yield strength or better.
- B. Protective Coating: Comply with ASTM C 645; roll-formed from hot-dipped galvanized steel; complying with ASTM A 1003/A 1003M and ASTM A 653/A 653M G40 (Z120) or having a coating that provides equivalent corrosion resistance. A40 galvanized products are not acceptable.
- C. Metal Studs: ClarkDietrich ProSTUD 20 (20 gauge) with 1-1/4" flange; thickness as indicated on Drawings; 16" o. c. unless denoted otherwise on Drawings.
- D. Ceiling and Floor Runner: ClarkDietrich ProTRAK to match studs with 1-1/4" flange.
- E. Furring Channels: ClarkDietrich metal furring channel, 25 gauge; 7/8" x 2-23/32".
- F. Metal Angle Runners: 24 gauge.
- G. Cold Rolled Channels: ClarkDietrich cold rolled channels, 16 gauge; 3/4" and/or 1-1/2" as required.

- H. All studs and accessories to be galvanized.
- I. Suspended Ceiling Grillage for Gypsum Board Ceilings:
 - 1. 8 gauge hanger wires at 48" o. c.
 - 2. 1-1/2" channels at 48" o. c.
 - 3. Metal furring channels at 16" o. c. anchored to 1-1/2" channels.
 - 4. Shall be in compliance with recommendations of USG's "Gypsum Construction Handbook."
- J. Backing Plate: Proprietary fire-resistance-treated blocking and bracing in width indicated.
 - 1. Product: Subject to compliance with requirements, provide ClarkDietrich Building Systems; Danback Fire-Treated Wood Backing Plate [D16F] [D24F], or a comparable product.
- K. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - 1. Product: Subject to compliance with design requirements provide ClarkDietrich Building Systems; [BlazeFrame DSL] [MaxTrak] [SLP-TRK] Slotted Deflection Track, or a comparable product.

2.03 FASTENERS

- A. Runner fasteners, power-driven type, to withstand 193 pounds single shear and 200 pounds bearing force when driven through structural head or base and without exceeding allowable design stress in runner, fastener or structural support.
- B. Screws: Pan self-drilling, self-tapping of size recommended by manufacturer for type of construction involved. See "Selector Guide for USG Screws" as printed in USG "Gypsum Construction Handbook."

2.04 AUXILIARY MATERIALS

- A. Isolation Strips at exterior walls: Provide one of the following:
 - 1. Asphalt-Saturated Organic Felt; ASTM D 226, Type I (No. 15 asphalt felt) nonperforated.

2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8" (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to work, carefully inspect installed work and verify work is complete to point where installation may commence.
- B. Verify that metal studs may be installed in accordance with original design and manufacturer's recommendations.
- C. In event of discrepancies, immediately notify Owner's Representative and Architect. Do not proceed with installation until discrepancies have been fully resolved.

3.02 PREPARATION

- A. Accurately lay out partitions and wall lines from dimensions given.

3.03 INSTALLATION

- A. Install metal studs and accessory items in accordance with manufacturer's instructions, anchoring member's securely in position.
- B. Align partitions and wall assemblies to a tolerance of 1/8 inch in 8 feet, maximum variation from plumb or level in exposed line or surface.
- C. Securely fasten floor and ceiling runners 24 inches o. c. with suitable fasteners or to suspended ceiling at 16 inches o. c.
- D. Installation, Standard Metal Studs: ASTM C 754.
 1. Position vertically in the runners, spaced 16 inches o. c.
 2. Anchor studs located adjacent to door frames, partition intersections and corners to runner flanges by positive screw engagement with panhead screws through each stud flange and runner flange.
 3. Splice, when necessary, by nesting two studs with a minimum lap of 8 inches and attaching flanges together with two screws in each flange.
 4. Locate studs not more than 2 inches from doorframe jambs, abutting partitions, partition corners and other construction.

5. Securely anchor to jamb and head anchor clips of each doorframe by bolt or screw attachment.
 6. Over metal door frames install a cut-to-length section of runner with flanges slit and web bent to allow flanges to overlap adjacent vertical studs and securely screw-attach to adjacent studs.
 7. Position a cut-to-length stud extending from doorframe header to ceiling runner at the vertical joint over the doorframe.
 8. When partitions abut an exterior wall, place an additional stud no greater than 6 in. from abutment.
 9. Extend and brace partitions to structure above ceiling as required and indicated on drawings.
 10. Install additional studs, blocking and/or headers to framing as necessary to provide for secure rigid attachment for doors, cabinets, fixtures and accessories.
 11. Reinforce partitions to support grab bars adequately for resisting 300 pounds shear. Install additional studs and/or blocking as necessary.
 12. Install continuous isolation strips at all exterior wall and metal framing junctures to fully isolate metal from contact with exterior wall construction.
- E. Isolation of Partitions from Structure: Where partitions abut ceiling or deck construction or vertical structural elements, provide slip or cushion-type joint between partition and structure as recommended by stud manufacturer to prevent the transfer of structural loads or movements to partitions.
- F. Extend partition framing full height to structural supports or framing above suspended ceilings, unless partitions are indicated to terminate at suspended ceilings.

END OF SECTION

SECTION 09205

FURRING AND LATHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Cement Plaster: Section 09220.

1.03 PRODUCT DELIVERY AND STORAGE

- A. Deliver materials in manufacturer's unopened containers, packages or bundles, fully identified with brand and manufacturer's name.
- B. Store materials inside in a dry, ventilated space, and off the ground.
- C. Protect metal accessories in a manner to prevent rusting and corrosion.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Furring Channels:
 - 1. Channels shall be hot rolled or cold rolled from 16-gauge copper-bearing open hearth steel weighing not less than the following per 1,000 lineal feet.
 - a. 1-1/2 inch depth: 475 pounds painted, 508 pounds galvanized.
 - b. 3/4 inch depth: 300 pounds painted, 316 pounds galvanized.
 - 2. Finish: Painted channels shall be shop-coated with rust-inhibitive paint. Fabricate galvanized channels from hot-dipped galvanized steel sheets.
- B. Metal Lath:
 - 1. Fabricate metal lath from copper alloy steel sheets.
 - 2. Diamond Mesh Lath: 3.4 pounds per square yard with protective coating or rust inhibitive paint or hot dipped galvanized.

- C. Tie Wire and Clips:
 - 1. Tie wire for tying metal lath to channels and furring to runner channels shall be 18- to 16-gauge galvanized soft annealed wire.
 - 2. Clips used in lieu of tie wire for securing furring channels to runner channels shall be hairpin clips formed of galvanized soft annealed steel wire 8-gauge minimum.
- D. Suspension Wire and Hanger Straps:
 - 1. Wire: Galvanized soft annealed wire 8-gauge minimum.
 - 2. Straps: Flat iron or steel at least 3/32 by 7/8 inch coated with zinc, cadmium or rust-inhibiting paint.
- E. Plaster accessories including metal corner beads, plaster stop beads, expansion beads and double base clips shall be fabricated with flanges from zinc-coated 26 gauge steel. Attachments shall permit complete embedment for the plaster thickness.

PART 3 - EXECUTION

3.01 INSPECTION AND INSTALLATION

- A. Examine areas where plaster and lath work shall be performed. Notify Architect and Owner's Representative if any adverse conditions are encountered that would interfere with proper installation. Do not proceed until such conditions have been corrected.
- B. Use galvanized materials for all exterior suspension systems and lathing.
- C. Suspended Work:
 - 1. Space main runner channels not more 4 feet on centers and 3 inches from parallel walls, support runner channels with hangers of No. 8-gauge zinc-coated steel wire. Secure to structure above in a manner that will develop full strength of hangers. The lower ends of wire hangers shall be saddle-tied or wrapped around the runner channels in a manner to develop the full strength of hanger and prevent turning or twisting. Where runner channels are spliced, overlap ends not less than 12 inches with flanges interlocked; secure splice near each end with 18-gauge tie wire.
 - 2. Attach cross furring channels to runner channels at right angles and securely saddle. Tie with No. 16 gauge galvanized annealed steel wire or secure with equivalent clips or attachments. Space furring channels 16 inches on centers. Provide framing around recessed lighting fixtures,

light covers, diffusers, access panels and other openings. Provide supports and anchorage at proper locations to receive tracks and other equipment indicated to be fastened to work. Where furring channels are spliced, overlap ends not less than 8 inches with flanges interlocked; secure splice near each end with 16-gauge tie wire.

- D. Metal Lath:
 - 1. Apply with the long dimension of sheet across metal supports and secured at intervals not exceeding 6 inches between supports. Tie wire: not less than 18 gauge.
 - 2. Lap wire lath 1/2 inch at sides and 1 inch at ends.
 - 3. Cut and fit lath neatly around all junction boxes, pipes, and other work projecting through the finish surface.
- E. Isolation: where lathing and supports abut adjacent work, isolate work from structural movement. Frame both sides of control and expansion joints separately; do not bridge joints with support framing.

3.02 PLASTER ACCESSORIES

- A. Metal plaster stops shall be installed at locations where plaster terminates against adjacent surfaces and at frames for light fixtures, access doors, expansion, and control joints.
- B. Expansion joints in wall and ceilings shall be installed as indicated on the Drawings.
- C. Set vertical beads plumb and horizontal beads level and true. Cut and miter ends accurately. Secure at ends and not more than 12 inches apart with galvanized staples, wire ties or concrete nails, staggered.
- D. Metal cornerite shall be provided full length on all interior plaster angles.
- E. All lathing and support system shall be installed as required and indicated.

3.03 CLEANING

- A. Remove all excess materials associated with plaster and lath installation from the work area, and dispose of legally.

END OF SECTION

SECTION 09220

PORTLAND CEMENT PLASTER

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Furring and Lathing: Section 09205.

1.03 DESCRIPTION OF WORK

- A. Provide in all locations of repair of existing cement plaster walls and ceilings. In areas of disruption due to damage, demolition or alignment with new work.

1.04 ALLOWABLE TOLERANCES

- A. For flat surfaces, maximum deviation from a true plane shall not exceed 1/8 inch in 10 feet as measured by a straight edge placed in any location on the surface.

1.05 SUBMITTALS

- A. Manufacturer's certificate that materials meet specification requirements.
- B. Manufacturer's written recommendations, proportion mixes, and installation instructions for factory-prepared finish materials.

1.06 PRODUCT DELIVERY AND STORAGE

- A. Deliver manufactured materials in original, unopened packages or containers, with manufacturer's label intact and legible.
- B. Keep cement and lime dry, stored off ground, under cover, and away from damp surfaces.
- C. Remove wet and deteriorated materials from project site.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Cold weather requirements:
 - 1. Do not use frozen materials in cement plaster mixes.
 - 2. Do not apply cement plaster to frozen surfaces or surfaces containing frost.

- 3. Do not apply cement plaster unless minimum ambient temperature of 40 degrees F has been maintained for minimum of 48 hours prior to application and until plaster is cured.
- B. Hot weather requirements:
 - 1. Protect cement plaster from uneven and excessive evaporation during hot, dry weather.

1.08 PROTECTION

- A. Protect finished surfaces installed prior to plastering by covering with plastic sheets or nostaing kraft paper.
- B. Maintain protection in place until completion of work of this section.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C150-72 Type 1 or 1A.
- B. Masonry Cement: ASTM C91-71.
- C. Special finishing hydrated lime: ASTM C206-49, Type S.
- D. Aggregates:
 - 1. ASTM C144-70.
 - 2. Graduation:

a. Base Coat:

U.S. Standard Sieve	Percent Weight Minimum	Retained (+2 Percent) Maximum
No. 4		0
No. 8	0	10
No. 16	10	40
No. 50	30	65
No. 50	70	90
No. 100	95	100

- E. Water: Potable, clean and free from substance harmful to plaster.

- F. Admixtures: Pure manila or glass fiber or polypropylene fiber ½ inch to 2 inches long, free from grease, oil, dirt and other impurities.
- G. Control joint: USG #100.
- H. Casing Bead: USG #66 square edge, solid flange.
- I. Plaster Molding: FPM-75-100; Fry Reglet Corp.
- J. Drip Screen: DS-875; Fry Reglet Corp.
- K. Corner Molding: FCM-75; Fry Reglet Corp.
- L. Channel Screed: PCS-75-V-300; Fry Reglet Corp.
- M. Vented reveal: PCZ-75-V-75, Fry Reglet Corp.

2.02 MIXES

- A. Mixing:
 - 1. General:
 - a. Accurately proportion materials for each plaster batch with measuring devices of known volume.
 - b. Size batches for complete use within maximum of one hour after mixing.
 - c. Retemper plaster stiffened from evaporation, but do not use or retemper partially hydrated cement plaster.
 - d. Do not use frozen, caked, or lumping materials and remove such materials from job site immediately.
 - e. Mix factory-prepared cement plaster in accordance with manufacturer's written instructions.
 - f. Use moist, loose sand in mix proportions.
 - g. Withhold 10 percent of mixing water until mixing is almost complete, then add as needed to produce necessary consistency.
 - 2. Mechanical Mixing:
 - a. Clean mixer of set or hardened materials before loading for new batch.
 - b. Maintain mixer in continuous operation while adding materials.

- c. Conform to mixing sequence, cycle of operations and time recommended by manufacturer of plastic materials.
- 3. Hand Mixing:
 - a. Do not hand-mix unless authorized by Architect.
- B. Mix Proportions:
 - 1. Scratch Coat:
 - a. 1 bag Portland cement.
 - b. 2 bags masonry cement.
 - c. 7-1/2 c.f. sand
 - 2. Brown Coat:
 - a. 1 bag Portland cement.
 - b. 2 bags masonry cement.
 - c. 9 c.f. sand
 - 3. Finish Coat:
 - a. As recommended by approved manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that surfaces to be plastered are free of dust, loose particles, oil and other foreign matter which would affect bond of plaster coats.
- B. Examine construction, grounds and accessories to insure that finished plaster surfaces will be true to line, level and plumb without requiring additional thickness of plaster.

3.02 APPLICATION

- A. General:
 - 1. Apply cement plaster by hand.
 - 2. Interrupt cement plaster only at junctions of plaster planes, at openings, or at control joints or at expansion joints. Provide control joints where:

- a. Plaster assemblies abut dissimilar construction.
 - b. At changes in construction or structure.
 - c. In partition runs exceeding 30 feet.
 - d. In ceilings where dimensions exceed 50 feet in any direction.
 - e. Other conditions where manufacturer specifically requires control or expansion joints.
3. Tool through second and finish coats to produce "V" joint at intersection of frames or other items of metal or wood which act as plaster grounds.
 4. Apply second coat to first coat, bringing out to grounds, flat to true surface, and free of imperfections which would reflect in finish coat.
 5. Reconsolidate second coat by floating, and roughen to assure bond with finish coat.
 6. Nominal plaster thickness:
 - a. First Coat: ½ inch.
 - b. Second Coat: 3/8 inch.
 - c. Third Coat: 1/8 inch.
 7. Measure thickness from back plane of metal lath.
- B. Base Coats:
1. Apply with sufficient material to form keys through metal lath.
 2. Embed and fill all spaces of lath and scratch horizontal surfaces in one direction only.
- C. Finish Coats:
1. Apply plaster to nominal thickness and fill out true even plane.
 2. Float finish to true even surface after moisture has left surface.
 3. Finish Surface: Smooth finish.
- D. Curing:
1. Maintain moist conditions by fine fog spray.
 2. Cure base coats minimum of 48 hours after application.

3. Cure proprietary finish in accordance with manufacturer's instructions.

3.03 ADJUST AND CLEAN

A. Patching:

1. Upon completion, point-up plaster around trim and other locations where plaster meets dissimilar materials.
2. Cut out and patch defective or damaged plaster.
3. Cut out and patch stained or discolored finished plaster not schedule to be painted.
4. Match patch of defective or damaged plaster to existing work in form, texture and color.

B. Cleaning:

1. Remove plaster and protective materials from expansion beads, perimeter beads and adjacent surfaces.
2. Remove stains from plaster surfaces that would adversely affect subsequent finishes.
3. Remove temporary protection from adjacent work; clean plaster splatters from adjacent surfaces. Make repairs to surfaces damaged by work of his section at no cost to Owner.
4. Promptly remove unused materials and equipment upon completion.
5. Protect plaster work from damage by subsequent work of other trades.

END OF SECTION

SECTION 09250
GYPSUM WALLBOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Section 09110: Non-Load Bearing Wall Framing System.
- B. Refer to Section 09251 for abuse-resistant gypsum wall board.
- C. Refer to Section 09252 for High impact gypsum wall board.

1.03 REFERENCE STANDARDS

- A. ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
- B. ASTM C 1396 - Standard Specification for Gypsum Board.
- C. ASTM E84 - Surface Burning Characteristics of Building Materials.
- D. ASTM E90 - Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions.
- E. ASTM E119 - Fire Test of Building Construction and Materials.
- F. FS HH-1-521 - Insulation Blankets, Thermal (Mineral Fiber, for Ambient Temperatures).

1.04 CONSTRUCTION STANDARDS

- A. "Gypsum Construction Handbook" as published by United States Gypsum Co. or handbook of other approved manufacturer's; maintain one copy on job site.
- B. ASTM C840 - Application and Finishing of Gypsum Wallboard.

1.05 SUBMITTALS

- A. Submit the following:

1. Fire test reports where fire-rated gypsum wallboard assemblies are indicated on the Drawings.
2. Fire hazard classification of gypsum wallboard.
3. Certified test reports of other acceptable testing agencies that perform testing in accordance with ASTM E119, E84, and E90 are acceptable.
4. Manufacturer's specifications and printed installation instructions for each type of installation.
5. Provide GREENGUARD Certification as a low emitting material that meets CHPS requirements.
6. Provide Data for the weighted average recycled-content value both in postconsumer and secondary.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Coordinate delivery with installation to minimum storage periods at project site. Deliver in manufacturer's unopened bundles or packages, fully identified with manufacturer's name, brand, type and grade.
- B. Protect from weather, soiling and damage, using handling equipment and storage techniques recommended by the manufacturer.
- C. Store wallboard, trim and other accessories in a dry location, protected from weather and physical damage.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. U.S. Gypsum Co. (Basis of Specification), Chicago, IL (www.usg.com).
- B. Products of the following manufacturers that meet or exceed the Specifications shall be acceptable:
 1. Temple-Inland Forest Products Corporation, Diboll, TX (www.templeinland.com).
 2. Gold Bond Building Products, National Gypsum Company, Charlotte, NC (www.nationalgypsum.com).
 3. Georgia Pacific, Corp., Atlanta, GA (www.gp.com).

4. Lafarge North America, Inc., Herndon, VA
(www.lafargenorthamerica.com).
5. CertainTeed, Valley Forge, PA (www.certainteed.com).
6. ClarkDietrich Building Systems, West Chester, OH
(www.clarkdietrich.com).

2.02 MATERIAL (Products of U. S. Gypsum Co. are specified below, except as noted)

A. Gypsum Board:

1. Regular Board: USG "Sheetrock" - 5/8" unless otherwise denoted on Drawings: Complies with ASTM C1396 and Fed. Spec. SS-L-30D, Type III, Grade "R", Class 1.
2. Fire Rated Board: USG Sheetrock Firecode "C" - 5/8" unless otherwise indicated on Drawings, at all fire rated construction: Complies with ASTM C1396 and Fed. Spec. SS-L-30D, Type III, Grade "X", Class 1.
3. Exterior Gypsum Ceiling Board: USG "Sheetrock" 5/8" thick with water repellent face paper surface; complies with ASTM C1396.
4. Gypsum Sheathing: "Gyp-Lap" sheathing, 5/8" thick with moisture resistant core and water repellent paper surfaces on face and back; complies with ASTM C1396.
5. Moisture-Resistant Board: Water resistant core; facing paper and back paper chemically treated to resist moisture penetration. Facing paper shall be light green color for identification. Complies with ASTM C1396.

B. Fasteners:

1. Screws: Self-drilling, self-tapping, bugle head, for use with power driver; minimum of Type S, 1 inch for single layer applications; 1-5/8 inch for two layer applications, in compliance with the recommendations of USG "Gypsum Construction Handbook."

C. Joint Treatment Materials:

1. Joint Tape: "Perf-A-Tape" perforated reinforcing tape.
2. Joint Compound: USG; ASTM C475, Ready-Mixed All Purpose Joint Compound.

D. Metal trim: (products of ClarkDietrich Building Systems)

1. ClarkDietrich 103 Deluxe Corner Bead.

2. ClarkDietrich 093 Zinc Control Joint.
 3. ClarkDietrich U-Trim M20A.
- E. Gasket:
1. Sponge neoprene strips as recommended by wallboard manufacturer, 75 maximum flame spread, ASTM E84.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Check framing for accurate spacing and alignment to product surfaces within specified tolerances.
- B. Verify that spacing of installed framing does not exceed maximum allowable for thickness of drywall to be used.
- C. Verify that frames are set for thickness of drywall indicated.
- D. Do not proceed with installation of drywall until deficiencies are corrected and surfaces to receive drywall are acceptable.
 1. Repair protrusions of framing, twisted framing members, or unaligned members before installation of drywall is started.

3.02 INSTALLATION

- A. Install panels to a tolerance of 1/8 inch in 8 feet, maximum variation from plumb, or level in exposed line or surface, and with vertical joints on bearing.
- B. Use panels of maximum size practical lengths to minimize end butt joints. Where unavoidable, locate end butt joints as far from center of walls or ceilings as possible and stagger in alternate courses.
- C. Install gypsum drywall panel with face side out. Do not install imperfect, damaged, damp or wet panels. Butt panels together for a light contact at edges or ends with not more than 1/16 in. open space between panels. Do not force into place.
- D. Locate edges or end joints over supports except in horizontal applications or where intermediate supports or gypsum board backblocking is provided behind end joints. Position panels so that tapered edge joints abut and mill-cut or field-cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partition/walls.

- E. Provide additional framing and blocking as required to support gypsum drywall at openings and cutoffs.
- F. Accurately measure and precut gypsum drywall units prior to installation. Make cuts from face side by scoring and snapping away from face side or by sawing. Completely cut paper on back face; do not break paper by tearing. Maintain close tolerances for accurate fit at joints between sheets and at framed openings and to allow for covering of edges of cutouts with plates and escutcheons. Cut edges smooth as required for neat and accurate fit.
- G. Power-drive screws with electric screwdriver. Set screw so that head provides a slight depression below surface of drywall without tearing face of paper.

3.03 METAL TRIM AND CORNER BEADS

- A. Carefully inspect Drawings and verify location of metal trim required.
- B. Install trim in accordance with the manufacturer's recommendations.

3.04 TAPING AND FINISHING

- A. Environmental conditions:
 - 1. Control heating and ventilating during finishing operations to ensure the maintenance of 55 degrees F. minimum temperature.
- B. First coat:
 - 1. Spread compound evenly over joints, using suitable tools designed for the purpose.
 - 2. Fill joint recesses and metal trim.
 - 3. Center the reinforcing tape on joint and press into fresh compound, wiping down with sufficient pressure to remove excess compound but leaving sufficient compound under the tape for proper bond.
 - 4. Feather edges and leave surface free from blisters and tape wrinkles.
 - 5. Apply compound to fastener recesses, leaving flush with adjacent surfaces.
 - 6. Fold reinforcing tape along centerline and apply to interior angles, following the same procedure as for joints.
- C. Second coat:
 - 1. Lightly sand dry compound with fine sandpaper to remove irregularities.

2. Apply a second coat of compound to joints, feathering approximately three inches beyond edges of tape.
 3. Apply second coat to fastener recesses; allow to dry.
- D. Third coat:
1. Lightly sand dry compound with fine sandpaper to remove all irregularities.
 2. Apply final skim coat, feathering out approximately two inches beyond second coat.
 3. Third coat fastener recesses and metal trim and interior angles; allow to dry.
- E. "Smooth" finish:
1. Carefully sand coat to uniformly smooth surface free from irregularities visible to unaided eye at distance of five feet.

3.05 CLEAN UP

- A. Do not allow accumulation of scraps and debris arising from work of this Section. Maintain the premises in a neat and orderly condition. In the event of spilling or splashing compound onto other surfaces, immediately remove spilled or splashed material and traces or residue.
- B. Remove all excess materials from the project area after completion of all work, and dispose of all materials legally. Do not leave any materials on the premises as "attic stock."

END OF SECTION

SECTION 09251

ABUSE RESISTANT GYPSUM WALLBOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to the Work of this Section.

1.02 SCOPE (Install Abuse Resistant Gypsum Wallboard at the following locations or as shown on the drawings)

- A. Library if shown on the drawings
- B. Administration Area if indicated on the drawings
- C. Lecture Hall if indicated on the drawings
- D. Or other areas as shown on the drawings

1.03 RELATED WORK

- A. Section 09110 - Non-load Bearing Wall Framing Systems
- B. Refer to Section 09250 for gypsum sheathing and regular, fire-rated, exterior ceiling and moisture-resistant gypsum wallboards.

1.04 REFERENCE STANDARDS

- A. U.S. Gypsum Company Guide SA929, "Abuse Resistant Systems."
- B. National Gypsum "Gypsum Wallboard Systems" Guide
- C. ASTM C36 - Gypsum Wallboard
- D. ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction
- E. ASTM E119 - Fire Test of Building Construction Materials
- F. ASTM C473 - Humidified Deflection
- G. ASTM D1037 - Linear Variation
- H. ASTM E72 - Racking Resistance
- I. Gypsum Association Manual GA-214, "Recommended Specifications for Levels of Gypsum Board Finish"

- J. Gypsum Association Fire Resistance Design Manual, GA-600
- K. ICC ES Legacy Report, NER-684.

1.05 CONSTRUCTION STANDARDS

- A. ASTM C840 – Standard Specification for Application and Finishing of Gypsum Wallboard
- B. Construction manual of approved gypsum manufacturer.

1.06 SUBMITTALS

- A. Submit the following:
 - 1. Fire test reports where fire rated gypsum wallboard assemblies are indicated on the Drawings.
 - 2. Fire hazard classification.
 - 3. Certified Test Reports for testing performed in accordance with Reference Standards.
 - 4. Wallboard Manufacturer's product specifications and printed installation instructions for each type of installation required for the Project.
 - 5. Provide GREENGUARD Certification as a low emitting material that meets CHPS requirements.
 - 6. Provide Data for the weighted average recycled-content value both in postconsumer and secondary.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wallboard, trim, and accessories in Manufacturer's unopened bundles or packaging, clearly identified by Manufacturer's name, brand, type, and grade.
- B. Protect materials from weather, soiling, and damage in accordance with manufacturer's recommendations.
- C. Store materials in a dry, secure location protected from physical damage. Store all panels flat (not vertically).

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. United States Gypsum Company, Chicago, IL, 1-800-USG-4YOU (874-4968) (www.usg.com).
- B. National Gypsum Company, Charlotte, NC, 1-800-NATIONAL (www.nationalgypsum.com).
- C. Other Manufacturers pre-bid approved in accordance with Section 01630, and complying with the requirements of this Section, shall be acceptable.

2.02 WALLBOARD

- A. Fiberock Aqua-Tough Interior Panel. Abuse-Resistant Gypsum Fiber Panels, 5/8" (15.9mm) thick. (Basis of Specification). Provide ASTM C36, Type "X" for fire rated assemblies, where shown on the Drawings.
- B. National Gypsum Gold Bond Hi-Abuse brand XP Gypsum Board, 5/8" (15.9 mm).
- C. Products Characteristics Gold Bond Hi-Abuse brand XP
 1. Type "X" gypsum core panel with white abrasion resistant paper on the finished side and liner paper on the concealed side. 0.20" "Lexan" shall be bonded to the back side. *(Note: this product is not recommended for use on the interior side of exterior walls).*
 2. Surface Abrasion (ASTM D4977): 0.015" at 50 cycles.
 3. Surface Indentation (ASTM D5420): 0.158".
 4. Hard Body Impact (Complete panel penetration by a 2 3/4" steel cylinder): 110 ft-lbs.
- D. Product Characteristics ("Abuse Resistant Sheetrock Moldtough AR"):
 1. Abuse Resistance Surface abrasion: Tested in accordance with ASTM C1629. Level 2.
 2. Surface indentation: Tested in accordance with ASTM C1629. Level 2.
 3. Soft-body impact test: Tested in accordance with ASTM C1629. Level 1.

2.03 ACCESSORIES

- A. Accessories listed in paragraphs B through E are products of U.S. Gypsum Co. Comparable products by National Gypsum and compatible with the "Hi-Impact" Fireshield panel shall be acceptable.
- B. Fasteners: Corrosion-resistant, ASTM C-840. Self-drilling, self-tapping, bugle head screws for use with power driver. Use type S, 1" long for single layer applications; 1-5/8" for two layer applications.
- C. Joint Tape: "Sheetrock Joint Tape", U. S. Gypsum Co., ASTM C475. Use of fiberglass tape is not acceptable.
- D. Joint Compound: "Sheetrock" Setting-Type ("Durabond") Joint Compound.
- E. Metal Trim (U. S. Gypsum Co.):
 - 1. Corner Bead: #103
 - 2. Control Joint: #093
 - 3. Casing Bead: #200A

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to installing wallboard panels, carefully inspect metal framing for accurate spacing and alignment.
- B. Verify that spacing of metal framing does not exceed that shown on Drawings and recommended for the thickness of wallboard to be installed.
- C. Verify that depth of doorframes is compatible with the finished thickness of wall.
- D. Do not proceed with wallboard installation until deficiencies are corrected and framing surfaces are acceptable for installation as recommended by Manufacturer.

3.02 INSTALLATION

- A. Comply with ASTM C840 and Manufacturer's wallboard installation instructions.

3.03 METAL TRIM AND CORNER BEADS

- A. Carefully inspect Drawings and verify location of metal trim required.
- B. Install trim in accordance with Manufacturer's recommendations.

3.04 TAPING AND FINISHING

A. Environmental conditions:

1. Control heating and ventilating during finishing operations to ensure the maintenance of 55 degrees F. minimum temperature, with a maximum range of 55 to 70 degrees F.
2. Fill joint recesses and metal trim.
3. Center the reinforcing tape on joint and press into fresh compound, wiping down with sufficient pressure to remove excess compound, but leaving sufficient compound under the tape for proper bond.
4. Feather edges and leave surface free from blisters and type wrinkles.
5. Apply compound to fastener recesses, leaving it flush with adjacent surfaces.
6. Fold reinforcing tape along centerline and apply to interior angles, following the same procedure as for joints.

B. Second Coat:

1. Light sand dry compound with fine sandpaper to remove irregularities.
2. Apply a second coat of compound to joints, feathering approximately three inches beyond edges of tape.
3. Apply second coat to fastener recesses; allow to dry.

C. Third coat:

1. Lightly sand dry compound with fine sandpaper to remove all irregularities.
2. Apply final skim coat, feathering out approximately two inches beyond second coat.
3. Third coat fastener recesses and metal trim and interior angles; allow to dry.

D. "Smooth" finish:

1. Carefully sand coat to uniformly smooth surface free from irregularities visible to unaided eye at distance of five feet.

3.05 CLEAN UP

- A. Do not allow accumulation of scraps and debris. Maintain the premises in a neat and orderly condition. In the event of spilling or splashing compound onto other surfaces, immediately remove spilled or splashed material and traces of residue.
- B. Remove all excess materials from project area after completion and dispose of legally.

END OF SECTION

SECTION 09252

HIGH IMPACT GYPSUM WALLBOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to the Work of this Section.

1.02 SCOPE (Install High Impact and Abuse Resistant Gypsum Wallboard at the following locations or as shown on the drawings)

- A. Classroom interior partitions if shown on the drawings
- B. Corridors if shown on the drawings
- C. Storage Rooms
- D. Underneath staircase
- E. Or other areas as shown on the drawings

1.03 RELATED WORK

- A. Section 09110 - Non-load Bearing Wall Framing Systems
- B. Refer to Section 09250 for gypsum sheathing and regular, fire-rated, exterior ceiling and moisture-resistant gypsum wallboards.

1.04 REFERENCE STANDARDS

- A. U.S. Gypsum Company Guide SA929, "Abuse Resistant Systems."
- B. National Gypsum "Gypsum Wallboard Systems" Guide
- C. ASTM C36 - Gypsum Wallboard
- D. ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction
- E. ASTM E119 - Fire Test of Building Construction Materials
- F. ASTM C473 - Humidified Deflection
- G. ASTM D1037 - Linear Variation
- H. ASTM E72 - Racking Resistance

- I. Gypsum Association Manual GA-214, "Recommended Specifications For Levels of Gypsum Board Finish"
- J. Gypsum Association Fire Resistance Design Manual, GA-600
- K. ICC ES Legacy Report, NER-684.

1.05 CONSTRUCTION STANDARDS

- A. ASTM C840 – Standard Specification for Application and Finishing of Gypsum Wallboard
- B. Construction manual of approved gypsum manufacturer

1.06 SUBMITTALS

- A. Submit the following:
 - 1. Fire test reports where fire rated gypsum wallboard assemblies are indicated on the Drawings.
 - 2. Fire hazard classification.
 - 3. Certified Test Reports for testing performed in accordance with Reference Standards.
 - 4. Wallboard Manufacturer's product specifications and printed installation instructions for each type of installation required for the Project.
 - 5. Product data and actual 12" sample.
 - 6. Provide GREENGUARD Certification as a low emitting material that meets CHPS requirements.
 - 7. Provide Data for the weighted average recycled-content value both in the postconsumer and secondary.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wallboard, trim, and accessories in Manufacturer's unopened bundles or packaging, clearly identified by Manufacturer's name, brand, type, and grade.
- B. Protect materials from weather, soiling, and damage in accordance with manufacturer's recommendations.
- C. Store materials in a dry, secure location protected from physical damage. Store all panels flat (not vertically).

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Georgia-Pacific Gypsum Atlanta, GA 30303 1-800-225-6119
www.gpgypsum.com
- B. Other Manufacturers pre-bid approved in accordance with Section 01630, and complying with the requirements of this Section, shall be acceptable.

2.02 WALLBOARD

- A. "DensArmor Plus Fireguard Impact-Resistant 5/8" thick panels. (Basis of Specification). Provide ASTM C36, Type "X" for fire rated assemblies, where shown on the Drawings.
- B. "DensArmor Plus High performance Interior Panel":
- C. Impact-Resistant Gypsum Board: :
 - 1. ASTM E-136 (non-combustibility)
 - 2. ASTM E-84: Flame Spread 5, Smoke Developed 0 (both faces of panels)
 - 3. ASTM C-1278
 - 4. ASTM D-3273) Mold Resistance
 - 5. Description: Type X: ASTM 1396/C 1396M DensArmor Plus Fireguard resistance type gypsum-based panels.
 - a. Exposed face: High Strength Gypsum and cellulose fibers.
 - b. Core: Perlite.
 - c. Unexposed face: Glass fiber-mesh scrim embedded in high strength gypsum & cellulose fibers.
 - d. Long Edges: Tapered.
 - e. Thickness: 5/8 inch.
 - f. 95% recycled content material. Green Cross Certified by Scientific Certification Services (SCS).

- D. Performance properties:
 - 1. Surface Abrasion: Level 3 Tested in accordance with ASTM C1629
 - 2. Surface Indentation: Level 1 Tested in accordance with ASTM C1629
 - 3. Soft-body Impact: Level 3 Tested in accordance with ASTM C1629
 - 4. Hard-body Impact: Level 2 Tested in accordance with ASTM C1629
- E. Primer Finish – 40% weight solids content.
 - 1. S-W HIGH BUILD Interior Latex Primer B28W08601 by Sherwin Williams (Basis of Design)
 - a. Comply with manufacturers recommendations on surface preparation and application.
 - 2. Pre-bid approved manufacturer in accordance to this section and section 01630.

2.03 ACCESSORIES

- A. Accessories listed in paragraphs B through E are products of U.S. Gypsum Co. Comparable products by Georgia-Pacific Gypsum and National Gypsum and compatible with the “Hi-Impact” Fireshield panel shall be acceptable.
- B. Fasteners: Corrosion-resistant, ASTM C-840. Self-drilling, self-tapping, bugle head screws for use with power driver. Use type S, 1” long for single layer applications; 1-5/8” for two layer applications.
- C. Joint Tape: “Sheetrock Joint Tape”, U. S. Gypsum Co., ASTM C475. Use of fiberglass tape is not acceptable.
- D. Joint Compound: “Sheetrock” Setting-Type (“Durabond”) Joint Compound.
- E. Beadex Metal Trim (U. S. Gypsum Co.):

2.04 Corner Bead and Trim:

- A. Sheetrock Brand Paper Faced Metal Drywall Bead and Trim Paper-Faced Metal Trim for Gypsum Board:
 - 1. Conform to profile and dimensions indicated.
 - 2. Material for interior work: Comply with ASTM C1047.
 - 3. Outside corners: Paper Faced Metal Bead and Trim B1W series by USG.

4. Outside Bullnose corners: Paper Faced Metal Bead and Trim [SLOC] [Danish] by USG.
5. Inside corners: Paper Faced Metal Bead and Trim [B2] [SLIC] by USG.
6. Trims: L shape – [B4 SERIES] [Premasked L series] [B8 series] by USG;
J shape: B9 SERIES by USG.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to installing wallboard panels, carefully inspect metal framing for accurate spacing and alignment.
- B. Verify that spacing of metal framing does not exceed that shown on Drawings and recommended for the thickness of wallboard to be installed.
- C. Verify that depth of doorframes is compatible with the finished thickness of wall.
- D. Do not proceed with wallboard installation until deficiencies are corrected and framing surfaces are acceptable for installation as recommended by Manufacturer.

3.02 INSTALLATION

- A. Comply with ASTM C840 and Manufacturer's wallboard installation instructions.

3.03 METAL TRIM AND CORNER BEADS

- A. Carefully inspect Drawings and verify location of metal trim required.
- B. Install trim in accordance with Manufacturer's recommendations.

3.04 TAPING AND FINISHING

- A. Environmental conditions:
 1. Control heating and ventilating during finishing operations to ensure the maintenance of 55 degrees F. minimum temperature, with a maximum range of 55 to 70 degrees F.
 2. Fill joint recesses and metal trim.
 3. Center the reinforcing tape on joint and press into fresh compound, wiping down with sufficient pressure to remove excess compound, but leaving sufficient compound under the tape for proper bond.
 4. Feather edges and leave surface free from blisters and type wrinkles.

5. Apply compound to fastener recesses, leaving it flush with adjacent surfaces.
 6. Fold reinforcing tape along centerline and apply to interior angles, following the same procedure as for joints.
- B. Second Coat:
1. Light sand dry compound with fine sandpaper to remove irregularities.
 2. Apply a second coat of compound to joints, feathering approximately three inches beyond edges of tape.
 3. Apply second coat to fastener recesses; allow to dry.
- C. Third coat:
1. Lightly sand dry compound with fine sandpaper to remove all irregularities.
 2. Apply final skim coat, feathering out approximately two inches beyond second coat.
 3. Third coat fastener recesses and metal trim and interior angles; allow to dry.
- D. "Smooth" finish:
1. Carefully sand coat to uniformly smooth surface free from irregularities visible to unaided eye at distance of five feet.
- 3.05 CLEAN UP

- A. Do not allow accumulation of scraps and debris. Maintain the premises in a neat and orderly condition. In the event of spilling or splashing compound onto other surfaces, immediately remove spilled or splashed material and traces of residue.
- B. Remove all excess materials from project area after completion and dispose of legally.

END OF SECTION

INSTRUCTIONS FOR EDITING AND COORDINATION
SECTION 09310
CERAMIC TILE AND QUARRY TILE

1. New schools and additions (where applicable):
 - A. Provide ceramic floor tile in the following areas:
 1. Showers and Locker Rooms
 2. Toilet rooms (student and individual)
 3. Janitor closets
 4. Kitchens-provide quarry tile.
 - B. Provide ceramic wall tile in the following areas:
 1. Kitchen (full height), kitchen toilet/locker room, dry food storage (full height)
 2. Showers and Locker Rooms (full height)
 3. Janitor closets: 5'-4" wainscot at service sinks (three sides)
2. Renovations:
 - A. Provide ceramic floor tile in the following areas:
 1. Student and individual toilet rooms: Overlay tile in existing student toilet rooms. Where vinyl tile exists in individual toilets, tile shall be removed, and ceramic tile shall be installed.
 2. Showers and Locker Rooms: Overlay tile in existing areas depending upon condition of tile and disturbance due to renewal modifications.
 3. Janitor closets: Where vinyl tile exists, tile shall be removed, and ceramic tile shall be installed.
 4. Kitchens: Provide quarry tile.
 - B. Provide ceramic wall tile in the following areas:
 1. Student toilets: Overlay existing ceramic tile or structural glazed tile wainscots.
 2. Janitor closets: Provide 5'-4" high ceramic tile wainscots at service sink locations, if no wainscot exists. (three sides)
 3. Inspect all existing wall tile to be overlaid to make sure the existing wall tile support the new overlay tile work.

SECTION 09310

CERAMIC TILE AND QUARRY TILE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.
- B. Summary of Work:
 - 1. Provide ceramic tile per Finish Schedule. Provide cement backer board behind ceramic tile, at in-fill of existing walls of corridors.
 - 2. Provide quarry tile with base for kitchen only.

1.02 REFERENCE STANDARDS

- A. ANSI A108.5 – Ceramic Tile Installed with Dry-Set Mortar or Latex–Portland Cement Mortar.
- B. ANSI A108.10 – Installation of Grout in Tilework.
- C. ANSI A118.4 – Latex – Portland Cement Mortar.
- D. ANSI A118.6 – Standard Cement Grouts for Tile Installation.
- E. ANSI A118.7 – Polymer Modified Cement Grouts for Tile Installation.
- F. ANSI A118.8 – Modified Epoxy Emulsion Mortar/Grout.
- G. ANSI A118.9 – Ceramic Tile Installed with Modified Epoxy Emulsion Mortar/Grout.
- H. TCA Handbook; (Tile Council of America), Anderson, SC (www.tileusa.com).

1.03 SUBMITTALS

- A. Submit 4 samples of each type of base and floor tile and threshold scheduled to be used on the project.
- B. Submit tile manufacturers recommended installation procedures.
- C. Submit manufacturer's technical data and installation instructions for tile grout. Technical data shall indicate compliance with applicable reference standards listed in 1.02.

- D. Submit product data on PVC Shower Pan Liner as specified for Manufacturer's Installation instructions.

PART 2 - PRODUCTS

2.01 CERAMIC TILE

- A. Floors: 2" x 2" or 2 1/16" x 2 1/16" ceramic mosaic, unglazed.
 - 1. Matching base: 2" x 2" matching unglazed coved base, with 2" x 2" bullnose cap, of same color as floor tile, or
 - 2. Scored 4 1/4" x 4 1/4" coved base with bullnose top, to match 2 1/16" x 2 1/16" mosaic.
 - 3. Minimum wet Dynamic Coefficient of Friction (DCOF), a CU test value of 0.42 for ceramic tiles installed in level interior spaces expected by be walked upon when wet.
- B. Walls: 4 1/4" x 4 1/4".
 - 1. Matching base: Where wall tile is scheduled, provide coved, 4 1/4" x 3 7/8", to match wall.
- C. Trim Units: As required by installation, to match characteristics of field tile or adjoining tile, provide cove bases and rounded caps and round external corners where needed for finished appearance.
- D. Colors: Only group (1) one or group (2) one standard colors shall be used; except for accent tiles. Accent tiles shall be groups (3) and (4).
- E. Approved Manufacturers:
 - 1. Dal-Tile Corporation, Dallas, TX (www.daltile.com)
 - 2. American Olean Tile Company
 - 3. Other Pre-bid approved manufacturer (See Section 01630).

2.02 QUARRY TILE FLOOR FOR KITCHEN

- A. Quarry Tile: Unglazed, relieved edge flat tile.
 - 1. Approved Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Dal Tile Corporation (Quarry Textures), Dallas, TX (www.daltile.com)
 - b. American Olean Tile Company.
 - c. Other Pre-bid approved manufacturer (see Section 01630).
2. Face Size: Nominal 8 by 8 inches; actual 7-5/8 by 7-5/8 inches.
 3. Thickness: 1/2 inch.
 4. Wearing Surface: ASTM C501; abrasion resistance index 35 or better.
 5. Tile Color and Pattern: As selected by Architect from manufacturer's full range. Refer to Drawings for pattern.
 6. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable.
 7. Colors: Only group (1) one or group (2) two colors shall be used.
 8. Quarry tile flooring systems shall provide a minimum Dynamic Coefficient of Friction (DCOF) factor as noted below.
 - a. 0.42 for leveled and accessible floors and corridors.
 - b. Provide a minimum slip coefficient of 0.8 for inclined floors and ramps.
- B. Provide shapes as follows, selected from manufacturer's standard shapes:
1. Base: Coved with surface bullnose top edge, face size 5 by 8 inches.

2.03 SETTING MATERIALS FOR CERAMIC TILE AND QUARRY TILE

- A. Portland Cement: ASTM C150 Type 1.
- B. Sand: ASTM C144.
- C. Water: Potable.
- D. Mortar: 1 part portland cement, 6 parts damp sand by volume.
- E. Dry Set Mortar: ANSI 118.1 or ANSI A118.4.
 1. Mortars:

- a. Ardex L.P. "X7 ShearFlex" High Performance Commercial Tile Mortar. (Note: For non-porous tile, Ardex "701 Porcelain ShearFlex" Thin-Set Mortar.)
- b. Bostik "Hydroment ReFlex" High Performance Mortar

2.04 GROUTING MATERIAL FOR CERAMIC TILE AND QUARRY TILE

A. Approved Manufacturers:

1. Ardex Engineered Cements, Inc.
2. Bostick Findley, Inc. ("Hydroment")
3. Other manufacturers of comparable products meeting the requirements of this Section.

B. Wall Grout:

1. Ardex FL or FS High Performance Polymer Cement Tile Grout
2. Bostick Findley "Hydroment Ceramic Tile Grout" (Sanded) with 425 Multi-Purpose Acrylic-Latex Admixture.

C. Floor Grout for ceramic tile and quarry tile:

1. Hydroment Ceramic Tile Grout (sanded) with "Hydroment 1900" epoxy modified grout and mortar admixture.

D. Mix grout/joint filler and additive in proportions as recommended in writing by manufacturer.

2.05 MARBLE THRESHOLDS

- A. White, Honed Italian Marble of sizes and profiles indicated; handicap accessible threshold at all locations; Dal-tile product, or American-Olean Tile Co., Dallas, TX (www.aotile.com), or comparable.

2.06 SEALANTS

- A. Dow-Corning T84; one-part silicone rubber, match color and grout.

2.07 PVC SHOWER PAN LINER AT ALL SHOWER LOCATIONS

- A. Provide a PVC 40 mil shower liner by Oatey; Cleveland, OH; (www.oatey.com) Liners shall be a minimum of 0.040 inch thick, and shall meet the requirements of ASTM D 4551. Turn up on all sides at least 2 inches above the finished threshold level and must be recessed so as not to occupy the space required for wall

covering. Sheets shall be joined by solvent welding in accordance with the manufacturer's installation instructions. Liners shall be pitched one-fourth unit vertical in 12 units horizontal (2-percent slope) and shall be sloped toward the fixture drains.

2.08 CEMENT BACKER BOARD

- A. Basis of Design: Hardie Backer 1/4" (0.25") as manufactured by James Hardie.
- B. Other manufacturers, pre-bid approved in accordance with Section 01630, shall be acceptable.
- C. Install as infill of existing walls in areas scheduled to receive Ceramic Tile Overlay.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine surfaces to receive tile, setting beds or accessories before tile work begins for defects or conditions adversely affecting quality and execution of tile installation. Notify Architect and Owner's Representative if adverse conditions are encountered.
 - 1. Substrates shall be structurally sound, clean, and free of dust, dirt, oil, grease, curing compounds, or other contaminants.
 - 2. New concrete slabs: Verify that concrete has cured for a minimum of 30 days.
- B. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 ENVIRONMENTAL LIMITATIONS

- A. Do not perform work in areas where temperatures are below 50° F.
- B. Do not install tile work over building control joints or expansion joints.

3.03 INSTALLATION

- A. Install tile in accordance with the following methods listed in the TCNA Handbook (latest edition), with grout as specified above.
 - 1. Floors F113 (thinset)
 - 2. Floors (renovation; over existing tile): TR712

3. Floors F125A (where crack isolation membrane is required)
 4. Walls (renovation; over existing tile): TR713, Case II
 5. Walls (renovation; over existing SGFT): TR711
- B. Follow TCNA recommendation for preparation of existing surfaces scheduled to be re-tiled.

3.04 LAYOUT

- A. Lay out tile to minimize cuts less than one-half tile.
- B. Locate cuts in walls and floors to be inconspicuous.
- C. Align wall joints to give straight uniform grout lines, plumb and level.
- D. Align floor joints to give straight uniform grout lines parallel with walls.
- E. Where new wall tile abuts existing wall tile align joints in wall tile vertically and horizontally to match existing patterns. Maintain full height courses and cut tile only as indicated or required to accommodate existing conditions; cutting shall be neatly and cleanly done. Cut edges shall be free of burrs, or chips.
- F. Provide expansion joints in accordance with TCA Method EJ171

3.05 REGROUTING

- A. Clean out existing joints and regrout where existing grout is deteriorated, cracked or missing. Match existing grout color and texture.

3.06 PROTECTION AND CLEANING

- A. Clean tile surfaces thoroughly on completion of grouting.
- B. Remove grout haze; follow tile manufacturers written recommendations regarding use of acid and chemical cleaners.
- C. Rinse tile thoroughly with clean water before and after using chemical cleaners.
- D. Polish surface of tile with soft cloth
- E. Prohibit traffic on newly installed tile flooring until assembly has fully cured; or provide plywood over Kraft paper to protect tile where traffic is unavoidable.
- F. Remove all excess materials, packaging and other debris resulting from ceramic tile installation from the work area, and dispose of legally.

END OF SECTION

SECTION 09400

TERRAZZO (REPAIR)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 SUBMITTALS

- A. Product Data: Submit Manufacturer's technical information and installation instructions for each type of terrazzo, accessory items, and materials.
- B. Certification: Submit manufacturer's written certification that terrazzo materials meet or exceed specified NTMA properties.
- C. Samples: Match existing adjacent terrazzo in pattern and color; submit two 6" square samples of each pattern of terrazzo.

1.03 QUALITY ASSURANCE

- A. NTMA Standards: Comply with specified provisions and recommendations of National Terrazzo and Mosaic Association, Inc. (NTMA), as outlined in the "Terrazzo Specifications and Design Guide" (available at www.ntma.com).

PART 2 - PRODUCTS

2.01 CEMENTITIOUS TERRAZZO MATERIALS

- A. Portland Cement: ASTM C 150, Type I, except as modified to comply with NTMA requirements for compressive strength. Obtain cement from a single source for each required color.
 - 1. Provide non-staining white cement for terrazzo matrix.
 - 2. Provide standard gray cement for underbed.
- B. Sand: Comply with ASTM C 33.
- C. Water: Clean, potable, free of oil, soluble salts or other deleterious substances.
- D. Aggregate: Natural, sound, crushed marble chips without excessive flats or flakes, complying with NTMA requirements.

1. Colors and gradation of aggregate sizes, as required, to match the existing terrazzo.
- E. Matrix Pigments: Pure mineral or synthetic pigments, resistant to alkalis and non-fading. Mix pigments with matrix to provide required colors.
 - F. Underbed Reinforcement: Galvanized welded wire fabric, 2" X 2" WO.3 X WO.3 (16 ASW gage or 0.0625" diameter); comply with ASTM A 185 and ASTM A82, except for minimum wire size.
 - G. Curing Compound: Liquid-membrane-forming compound, ASTM C 309, Type 1.

2.02 TERRAZZO ACCESSORIES

- A. Divider Strips: Depth and style required for terrazzo type and thickness. Width, material and color as indicated. Angle or "T"-type for adhesive bonding to substrate.
 1. Unless otherwise indicated, use white zinc alloy divider strips with 1/4" wide top.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Clean and prepare substrate to comply with NTMA specifications for type of terrazzo application indicated. Clean substrate of loose chips and foreign matter. Grind concrete substrate to provide surfaces within tolerances required by NTMA for type of terrazzo application.

3.02 INSTALLATION, GENERAL

- A. For cementitious terrazzo, comply with NTMA recommendations for proportioning mixes, installation of strips, and for placing, curing, grinding, grouting and finishing.
- B. Place and finish terrazzo around obstructions to achieve continuous color, pattern and finish.
- C. Install divider and accessory strips in adhesive setting bed, in accordance with manufacturer's instructions, without voids below strips. Provide mechanical anchorage as required for adequate attachment of strips to substrate.

3.03 CEMENTITIOUS TERRAZZO

- A. Sand Cushion Terrazzo: Comply with NTMA Technical Manual and "Guide Specification for Sand Cushion Terrazzo". Prepare sub-slab surfaces to insure positive bonding with underbed. Thoroughly clean areas of foreign matter immediately before placing bond coat. Place underbed while bond coat is still plastic.
- B. Surfacing: Grout cured terrazzo topping in accordance with NTMA specifications. Delay grinding and finishing until heavy trade work is completed and construction traffic through the area is restricted. Finish by fine grinding with abrasive grit of size specified by NTMA, or as otherwise required to match existing adjacent terrazzo.

3.04 CLEANING, SEALING, AND PROTECTION

- A. Clean terrazzo after installation and finishing operations are completed, complying with sealer manufacturer's instructions.
- B. Apply sealer to cleaned terrazzo surfaces to comply with sealer manufacturer's instructions.
- C. Protect terrazzo from damage and wear during construction operations and until formally accepted by owner.

3.05 FINAL CLEANING

- A. Clean terrazzo as recommended by manufacturer of sealer and machine buff when area is ready for occupancy.

END OF SECTION

SECTION 09401

EPOXY TERRAZZO FLOORING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:

1. Thin-set Epoxy Terrazzo Flooring including preparation of substrates.
2. Related accessories.

- B. Related Sections:

1. Section 03300, Cast In Place Concrete.
2. Section 04200, Unit Masonry.
3. Section 07260, Under-slab Vapor Retarder/Barrier.
4. Section 07900, Sealants.
5. Section 09900, Painting.

1.03 SUBMITTALS

- A. Manufacturer's product data for each type of terrazzo and accessory. System will be evaluated on the basis of standards. For tests not listed in published data, manufacturer shall supply missing data according to standard referenced.

1. Physical properties.
2. Performance properties.
3. Specified tests.
4. Material Safety Data Sheet.
5. Manufacturer's standard warranty.

- B. Shop Drawings. Include terrazzo installation requirements. Include plans, elevations, sections, component details and attachments to other work. Show layout of the following:
1. Divider strips.
 2. Control- and expansion-joint strips.
 3. Base and border strips.
 4. Abrasive strips.
 5. Precast terrazzo jointing and edge configurations including anchorage details.
 6. Terrazzo patterns.
 7. <Insert requirements>
- C. Samples for Initial Selection [NTMA] [Manufacturer's] color plates showing the full range of colors and patterns available for each terrazzo type indicated.
- D. Samples for Verification: Match Architect's samples for each type, material, color and pattern of terrazzo and accessory required showing the full range of color, texture and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes and proportions. Prepare samples of same thickness and from same material to be used for the Work in size indicated below:
1. Epoxy Terrazzo: minimum 6" x 6" (152.4 mm x 152.4 mm) sample of each color and type of terrazzo.
 2. Precast Epoxy Terrazzo: minimum 6" x 6" (152.4 mm x 152.4 mm) sample of each color and type of terrazzo.
 3. Accessories: 6" length (152.4 mm) of each kind of divider strip, stop strip and control joint strip required.
- E. Manufacturer Experience:
1. Submit proof of Associate membership in NTMA.
 2. Furnish a list of at least five (5) epoxy terrazzo projects using material being submitted for this project installed during the last five (5) years of the same scope, complexity and at least 50 percent of the square footage.

- F. Qualification Data: For qualified Installer.
 - 1. Submit proof of Contractor membership in NTMA. Must prequalify membership prior to bidding.
 - 2. Furnish a list of at least five (5) epoxy terrazzo projects using material being submitted for this project installed during the last five (5) years of the same scope, complexity and at least 50 percent of the square footage.
- G. Material Test Reports: For moisture and/or relative humidity of substrate.
- H. Maintenance Data: Submit 3 copies of NTMA maintenance recommendations and 3 copies of manufacturer's instructions

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is acceptable to architect and epoxy terrazzo manufacturer to install manufacturer's products.
 - 1. Engage a terrazzo contractor with at least five (5) years of satisfactory experience in installation of epoxy terrazzo. Terrazzo contractor shall demonstrate experience during last five (5) years of at least (5) projects of comparable scope and complexity of at least 50 percent of the total square footage of this project
 - 2. Engage an installer who is a contractor member of NTMA.
- B. Source Limitations:
 - 1. Obtain primary Epoxy Terrazzo Flooring System materials including membranes, primers, resins and hardening agents from a single manufacturer with proof of NTMA membership.
 - 2. Obtain aggregates, divider strips, sealers, cleaners from source recommended by primary materials manufacturer.
- C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Section 01200 – Project Meetings. Review methods and procedures related to terrazzo including, but not limited to, the following:
 - 1. Inspect and discuss installation procedures, joint details, jobsite conditions, substrate specification, vapor barrier details and coordination with other trades.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment and facilities needed to make progress and avoid delays.

3. Review special terrazzo designs and patterns.
 4. Review dust control procedures.
 5. Review plans for concrete curing and site drying to enable timely achievement of suitable slab moisture conditions.
- D. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Build mockups for terrazzo including accessories.
 - a. Size: Minimum 100 sq. ft. (9.3 sq. m.) of typical poured-in-place flooring condition for each color and pattern [in locations directed by Architect] at main lobby.
 2. Approved mockups may become part of the completed Work if undistributed at time of Substantial Completion.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name and lot number if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures and humidity.
1. Storage temperatures should be between 60°F to 80°F.

1.06 PROJECT CONDITIONS

- A. Terrazzo contractor shall, prior to surface preparation:
1. Evaluate slab condition, including slab moisture content and extent of repairs required, if any.
 2. Maintain the ambient room and floor temperature at 60°F or above for a period extending 72 hours before, during and after floor installation. Concrete to receive epoxy terrazzo shall have cured for at least 28 days and be free of all curing compounds. Test concrete substrate to determine acceptable moisture levels prior to installation. Testing should

be conducted according to ASTM F2170 (determining relative humidity in concrete slabs using in situ probes). An effective in situ probe for relative humidity testing is the Rapid RH available from T&M Supply.

- B. Prior to and during each day of installation, the terrazzo contractor shall verify that the dew point is at least 5°F (-15°C) less than the slab and air temperature.
- C. Acceptable Substrates:
 - 1. Level tolerance: Concrete sub-floor shall be level with a maximum variation from level of 1/4" in 10 feet. Any irregularity of the surface requiring patching and/or leveling shall be done using Terroxy® Fill and selected aggregates as recommended by Terroxy® Resin Systems.
 - 2. Concrete floor shall be prepared mechanically by **shot blasting with no other method to be used.**
 - 3. Concrete floor shall receive a steel trowel finish.
 - 4. Concrete shall be cured a minimum of 28 days. No curing agents are to be used in areas to receive terrazzo.
 - 5. Concrete slab shall have an efficient moisture vapor barrier (suggested minimum: 15 mils thickness) directly under the concrete slab. Moisture barrier shall NOT be punctured.
 - 6. Saw cutting of control joints must be done between 12 and 24 hours after placement of the structural concrete and at a frequency compatible to ACI recommendations.
- D. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.
- E. Provide protection from other trades prior to final acceptance by owner.
- F. Provide manufacturer's crack isolation membrane for an area equal to 5% of the entire slab area to receive epoxy terrazzo. Include treatment of any cracks in both existing and new slabs to receive terrazzo with the isolation membrane.

PART 2 – PRODUCTS

2.01 EPOXY TERRAZZO

- A. Products: Systems Overview: The basis of Design is Terroxy® Resin Systems Epoxy Matrix by Terrazzo & Marble Supply Companies, Wheeling, IL (www.tmsupply.com).

B. Materials:

1. Primer: Terroxy® Primer or Terroxy® Moisture Vapor Primer (for slabs on-grade or light-weight and green concrete).
 - a. Physical properties of moisture mitigating primer shall have a maximum of 0.3 perms with 100% RH.
2. Flexible Reinforcing Membrane: Terroxy® Iso-Crack Epoxy Membrane, for substrate crack preparation and reflective crack reduction.
 - a. Reinforcement: Fiberglass scrim.
3. Epoxy Matrix: Terroxy® Epoxy Matrix and in color required for mix indicated.
 - a. Physical properties without aggregates. All specimens cured for 7 days at 75°F plus or minus 2°F and 50 percent plus or minus 2 percent RH. This product shall meet the following requirements:

Property	Test Method	NTMA Requirements	Terroxy® Thin-set Epoxy Terrazzo Typical Results
Hardness	ASTM D-2240 using Shore-D Durometer	60-85	75-85
Tensile Strength	ASTM D-638	3,000 psi min.	4,800 psi min.
Compressive Strength	ASTM D-695 Specimen B cylinder	10,000 psi min.	12,000 psi min.
Flexural Strength	ASTM D-790	Not specified	4,500 psi min.
Chemical Resistance	ASTM D-1308 seven days at room temperature by immersion method	No deleterious effects: <ul style="list-style-type: none"> ▪ Distilled Water ▪ Mineral Oil ▪ Isopropanol ▪ Ethanol ▪ 0.025 Detergent Solution ▪ 1% Soap Solution ▪ 10% Sodium Hydroxide ▪ 10% Hydrochloric Acid ▪ 30% Sulfuric Acid ▪ 5% Acetic Acid 	No deleterious effects: <ul style="list-style-type: none"> ▪ Distilled Water ▪ Mineral Oil ▪ Isopropanol ▪ Ethanol ▪ 0.025 Detergent Solution ▪ 1% Soap Solution ▪ 10% Sodium Hydroxide ▪ 10% Hydrochloric Acid ▪ 30% Sulfuric Acid ▪ 5% Acetic Acid

- b. Physical properties with aggregates. For Epoxy Matrix blended with three volumes of Georgia White marble blended 60% #1 chip and 40% #0 chip, ground and grouted with epoxy resin according to Installation Specifications, finishing to a nominal 1/4" thickness.

All specimens cured for 7 days at 75°F plus or minus 2°F and 50 percent plus or minus 2 percent RH. This finished Epoxy Matrix shall meet the following requirements:

Property	Test Method	NTMA Requirements	Terroxy® Thin-set Epoxy Terrazzo Typical Results
Flammability	ASTM D-635	Self-extinguishing, extent of burning 0.25 inches max.	Self-extinguishing, extent of burning 0.25 inches max.
Thermal Coefficient of Linear Expansion	ASTM D-696	25×10^{-6} inches per inch per degrees to 140°F	25×10^{-6} inches per inch per degrees to 140°F
Bond Strength	ACI COMM 403, Bulletin 59-43 (pages 1139-1141)	300 psi (100% concrete failure)	300 psi (100% concrete failure)

4. Aggregates: Marble, Glass, Mother of Pearl. Complying with NTMA gradation standards for mix indicated and containing no deleterious or foreign matter.
 - a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
 - b. 24-Hour Absorption Rate: Less than 0.74 percent.
 - c. Dust Content: Less than 1.0 percent by weight.
 - d. Postindustrial Recycled Content: <Insert Value> percent.
 5. Finishing Grout: Terroxy® Epoxy Matrix or Terroxy® Clear Resin as recommended by Terroxy® Resin Systems.
- C. Mix: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and aggregate proportions and mixing.
1. Color and Pattern Schedule: Where the following designations are indicated, provide specified terrazzo matrices matching architect's samples:
 - a. TZ1: Color #1 (color to match existing school terrazzo).
 - b. TZ2: Color #2
 - c. TZ3: Color #3
 - d. TZ4: Color #4
 - e. TZ5: Color #5
 - f. TZ6: Color #6 (color to match existing school terrazzo).

2.02 STRIP MATERIALS

A. Thin-set Divider Strips: L-type.

1. Material ,aluminum, in color selected from manufacturer's full range to match existing school.
2. Guide for commonly used L-type divider strips for Thin-set Epoxy Terrazzo Systems:

System Height	Strip Height	Strip Width
1/4" System	1/4"	16 gauge
3/8" System	3/8"	1/8"
		1/4"

- B. Control-Joint Strips: Separate double L-type angles back to back with minimum 1/8" width between. Fill joint and area between strips with semi-flexible joint filler. Match material, thickness and color of divider strips and depth required for topping thickness indicated.
- C. Construction-Joint (Cold-Joint) Strips: Separate double L-type angles back to back with minimum 1/8" width between. Fill joint and area between strips with semi-flexible joint filler. Match material, thickness and color of divider strips and depth required for topping thickness indicated.
- D. Expansion-Joint Strips: Separate double L-type angles, positioned back to back with minimum 1/8" width between. Fill area between strips with semi-flexible joint filler. Match material, thickness and color of divider strips and depth required for topping thickness indicated.
- E. Accessory Strips: Match divider strip width, material and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:
 1. Base-bead strips for exposed top of terrazzo base.
 2. Edge-bead for exposed edges of terrazzo.

2.03 MISCELLANEAOUS ACCESSORIES

- A. Strip Adhesive: 100% solids epoxy resin adhesive recommended by Terroxy® Resin Systems.
 1. Use adhesive that has a VOC content of 50g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

- B. Anchoring Devices:
 - 1. Strips: Provide mechanical anchoring devices for strip materials as required for secure attachment to substrate.
 - 2. Precast Terrazzo: Provide mechanical anchoring devices as recommended by Terrazzo Contractor for proper anchorage and support of units for conditions of installation and support.
- C. Patching and Fill Material: Terroxy® Fill and selected aggregates as recommended by Terroxy® Resin Systems.
- D. Joint Compound: Terroxy® Joint Filler, color to be selected by architect to match/compliment terrazzo.
- E. Cleaner: Terroxy® Terra Clean, a neutral cleaner with pH factor between 7 and 10 specifically designed for terrazzo.
- F. Surface Finish System: Terroxy® Natural Finish System, level of polish to be specified by architect in accordance with desired appearance and level of reflectivity.
- G. Sealer: Slip- and stain-resistant sealer that is chemically neutral with a pH factor between 7 and 10, a standard coefficient of friction of 0.6 or higher, does not affect physical properties of terrazzo and complies with NTMA's "Terrazzo Specifications and Design Guide."
 - 1. Terroxy® Acrylic Sealer, high performance, high gloss acrylic sealer.
- H. Provide manufacturer's crack isolation membrane for an area equal to 5% of the entire slab area to receive epoxy terrazzo. Include treatment of any cracks in both existing and new slabs to receive terrazzo with the isolation membrane.

2.04 PRECAST TERRAZZO

- A. Precast Terrazzo Units: Precast epoxy terrazzo [base] [stair tread] [threshold] [bench] [and] [planter] <Insert requirements> units.
 - 1. Manufacturers: Subject to compliance with requirements, provided products acceptable to architect.
 - a. <Insert manufacturer's name>.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates and areas, with Terrazzo Contractor present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions, including level tolerances, have been corrected.

3.02 PREPARATION

- A. Clean substrates of substances, including oil, grease and curing compounds, that might impair terrazzo bond. Provide clean, dry and neutral substrate for terrazzo application.
- B. Concrete Slabs:
 - 1. Provide sound concrete surface free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil and other contaminants incompatible with terrazzo.
 - a. Prepare concrete mechanically by shot blasting or by grinding with Wolverine Scarifying Diamonds. Surface preparation results should achieve a CSP3-CSP5 profile according to International Concrete Repair Institute Guideline No. 03732.
 - b. Repair or level damaged and deteriorated concrete according to Terroxy® Resin Systems Technical Bulletin 008 Substrate Leveling Requirements for Terroxy® Thin-Set Epoxy Terrazzo
 - c. Repair cracks and non-expansion joints greater than 1/16" (1.6 mm) wide according to Terroxy® Resin Systems Technical Bulletin 009 Crack Detailing and Joint Treatments for Terroxy® Resin Thin-set Epoxy Terrazzo.
 - 2. Verify that concrete substrates are visibly dry and free of moisture.
 - 3. Moisture Testing:
 - a. Test for moisture according to ASTM F2170 (determining relative humidity in concrete slabs using in situ probes). An effective in situ probe for relative humidity testing is the Rapid RH available from Terrazzo & Marble Supply.

- b. Proceed with installation only after substrates have a maximum relative humidity measurement reading less than 80%. If relative humidity measurement reading is greater than or equal to 80%, Terroxy® Moisture Vapor Primer is recommended. Apply to terrazzo substrates according to Terroxy® Resin Systems Moisture Vapor Primer Product Data Sheet.
- C. Protect other work from dust generated by grinding operations. Control dust to prevent air pollution and comply with environmental protection regulations.
 1. Erect and maintain temporary enclosures and other suitable methods to limit dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.03 EPOXY TERRAZZO INSTALLATION

- A. General:
 1. Comply with NTMA's written recommendations for terrazzo and accessory installation.
 2. Place, rough grind, grout, cure grout, fine grind and finish terrazzo according to Terroxy® Resin Systems Epoxy Matrix Product Data Sheet and NTMA's "Terrazzo Specifications and Design Guide."
 3. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
 4. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.
- B. Thickness: 3/8" (9.5 mm).
- C. Flexible Reinforcing Membrane
 1. Membrane application for isolated cracking. Route out all cracks and fill with semi-flexible Terroxy® Joint Filler. Apply Terroxy® Iso-Crack Epoxy Membrane (spread at 40 mils thickness) across the crack allowing 12 inches on either side. Imbed fiberglass scrim into wet membrane and saturate with additional membrane.
- D. Primer: Apply to terrazzo substrates according to Terroxy® Resin Systems Primer Product Data Sheet.
- E. Strip Materials:
 1. Divider and Accessory Strips:

- a. Install strips in adhesive setting bed without voids below strips or mechanically anchor strips as required to attach strips to substrate.
 - b. Control-Joint Strips: Separate double L-type angles back to back with minimum 1/8" width between. Fill joint and area between strips with semi-flexible Terroxy® Joint Filler. Match material, thickness and color of divider strips and depth required for topping thickness indicated.
 - c. Construction-Joint (Cold-Joint) Strips: Separate double L-type angles back to back with minimum 1/8" width between. Fill joint and area between strips with semi-flexible Terroxy® Joint Filler. Match material, thickness and color of divider strips and depth required for topping thickness indicated.
 - d. Expansion-Joint Strips: Separate double L-type angles, positioned back to back with minimum 1/8" width between. Fill area between strips with semi-flexible Terroxy® Joint Filler. Match material, thickness and color of divider strips and depth required for topping thickness indicated.
- F. Placing Terrazzo:
1. Mix epoxy matrix with chips and fillers in ratios directed by Terroxy® Resin Systems.
 2. Trowel apply terrazzo mixture over epoxy primer to provide a dense flat surface to top of divider strips. Allow to cure per Terroxy® Resin Systems recommendations before rough grinding.
- G. Rough Grinding: Grind with 24 grit silicon carbide or D-36 Diamond matrix stones until all terrazzo strips and marble chips are uniformly exposed.
- H. Grouting:
1. Cleanse floor with clean water and rinse.
 2. Remove excess rinse water by wet vacuum, dry and fill voids with Terroxy® Resin Systems Epoxy Matrix or Clear Resin.
 3. Allow grout to cure. Grout may be left on terrazzo until other trades work is completed.
- I. Polishing: Grind with 120 grit or finer stones until all grout is removed from surface. Repeat rough grinding, grout coat and polishing if large terrazzo chip

voids exist after initial polishing. Produce surface with a minimum of 70 percent aggregate exposure.

J. Surface Finishing:

1. Flood mop and wet vac all slurry from surface, using Terroxy® Terra Clean per Terroxy® Resin Systems recommendations insuring all latency and particulate matter is removed.
2. Continue grinding process with Genesis diamond grits 220, 400 and 600. Repeating Step #1 between steps insuring all previous grit latency and particulate matter is removed.
3. Inspect entire surface for consistent appearance, manifesting no abrasion scratches from previous grits. Readdress any area manifesting previous grit scratch pattern not matching 600 grit finish before continuing.
4. Mechanically polish surface using 1,000 grit Ceramica diamond pads as supplied by Terrazzo & Marble Supply. Surface shall have uniform reflective appearance showing no high or low sheen variances.
5. Flood mop and wet vac as described in Step #1 insuring no presence of any particulate matter or other trades' dirt or oils.
6. Final polish surface using Terroxy® Terra Polish in per Terroxy® Resin Systems recommendations using 3M or equal white polishing pad quipped on a 175 rpm floor machine with solution tank and standard pad driver as supplied by Terrazzo & Marble Supply.
7. Thoroughly scrub and agitate entire surface using Terroxy® Terra Clean per Terroxy® Resin Systems recommendations, wet vac scrub from surface insuring all final chemistry is removed.
8. Once surface is entirely dry, allowing four hours minimum, impregnate and seal surface with per Terroxy® Terra Tight Impregnator as needed per Terroxy® Resin Systems recommendations. Following directions, remove any excess.
9. Allow 24 hours before use or open traffic. Maintain surface with per Terroxy® Terra Clean as daily maintenance cleaner. Periodically spot polish high-traffic areas with per Terroxy® Terra Polish as needed to maintain uniform appearance. Bi-annually impregnate surface to preserve per Terroxy® Natural Finish System (as needed).

3.04 PRECAST TERRAZZO INSTALLATION

- A. Install precast units using method recommended by NTMA and manufacturer unless otherwise indicated.

- B. Seal joints between units with joint sealants.

3.05 CLEANING AND PROTECTION

- A. Cleaning: Remove grinding dust from installation and wash all surfaces with Terroxy® Terra Clean.
- B. Protection: Upon completion, the Work shall be ready for final inspection and acceptance by the owner or his agent. Provide final protection and maintain conditions, in a manner acceptable to Terrazzo Contractor, that ensure terrazzo is without damage or deterioration.

END OF SECTION

INSTRUCTIONS FOR EDITING AND COORDINATION

SECTION 09500

ACOUSTICAL WALL PANELS

1. Install acoustical wall assemblies in the following locations:
 - A. Cafeterias: From door head height (6'-10" above finish floor) to ceiling.
 - B. Physical education areas: From 10'-0" above finish floor to bottom of exposed joists.
 - C. Music and Practice rooms: Specify wall panels in accordance with recommendations by acoustical Consultant retained by FCPS and as follows:
 1. Band and Orchestra: Acoustical wall panels to cover approximately 25-30% of wall surface.
 2. Band and Orchestra Practice Rooms: From 3' – 6" above finish floor to ceiling on two walls. Incorporate chair rail to terminate the low edge of the panels.

SECTION 09500

ACOUSTICAL WALL PANELS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work under this section shall include all labor, materials and services required, including but not limited to proper adhesives, insulation, etc., sufficient to produce a complete installation in accordance with project requirements.

1.03 RELATED WORK

- A. Section 06100, Rough Carpentry (fire retardant treated interior wood furring)
- B. Section 06400, Architectural Woodwork (chair rail trim)
- C. Section 09900, Painting

1.04 SUBMITTALS

- A. Provide California Air Quality Test Results that meet the Standard method for the testing and evaluation for emission of VOCs as approved by CHPS.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store panels in a secure, dry location, away from contact with floors or walls, in manufacturer's original packaging, with all identification labels intact. Protect from construction damage and abuse.

PART 2 - PRODUCTS

2.01 ACOUSTICAL WALL PANELS

- A. Basis of Specifications: Armstrong World Industries, Tectum Direct-attach walls, standard wall panel, coarse texture, beveled edges.
- B. Panels shall consist of wood fibers and a hydraulic cement binder formed under controlled conditions of heat and pressure. Weight of panels: 1.63 PSF minimum for 1" thickness.

- C. The panels shall be Class A/Class 1 for flame spread and smoke development requirements as classified by Underwriters Laboratories, Inc., guide No. BVRT (Structural Cement-Fiber Units).
- D. Panels shall be one inch (1") thick and shall have beveled long edges. The panels shall have minimum noise reduction coefficient of .80 (utilizing the C-20 mounting system).
- E. Finish: "Natural" for painting in the field. Minimum light reflectance for natural finish: .60.

2.02 Approved Manufacturers

- A. Tectum by Armstrong, World Industries ("Tectum" Wall Panels) (www.tectum.com).
- B. Other Manufacturers pre-bid approved in accordance with Section 01630, and complying with the requirements of this Section, shall be acceptable.

2.03 INSULATION

- A. Fiberglass sound attenuation insulation shall be placed directly under acoustical wall panels, and between furring strips. Owens Corning "703 Insulation" or comparable products of other manufacturers, capable of being compressed to the required thickness, shall be acceptable.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Inspect wall surfaces scheduled to receive wall panel mounting. Notify Architect and Owner's Representative of any conditions that would adversely affect installation. Do not proceed until such conditions are corrected.

3.02 INSTALLATION

- A. Mechanically fastened wood fire retardant treated furring (1" x 3") shall be provided for permanent panel support under work of Section 06100. Mounting assembly shall comply with manufacturer's wall mounting detail C-20.
- B. Continuous 3/8" diameter beads of contact adhesive shall be applied between furring and acoustical panels.
- C. Panels shall be temporarily nailed or braced to maintain contact until adhesive sets.

- D. Install sound attenuation fiberglass insulation directly beneath acoustical panels, temporarily held in place with adhesive until panels are installed.
- E. Panels shall be painted as specified under the work of Section 09900, using spray application (roller application shall not be allowed). Color shall be as selected by Architect.

3.03 CLEAN UP

- A. Remove all excess materials, trash, and debris from the work area and dispose of legally.

END OF SECTION

INSTRUCTIONS FOR EDITING

SECTION 09510

ACOUSTICAL TILE CEILINGS

1. Paragraphs 1.10 and 1.11: These paragraphs refer to renewal work only; delete these items if the Project involves only new work.
2. 2.02, Lay-In Panels: Edit as required for project requirements. Delete products not applicable. General guidelines are as follows:
 - A. Type 1 panels (standard): Use in instructional classrooms, administrative and guidance areas, workrooms and other areas where abuse is not a concern.
 - B. Type 2 panels (impact resistant): Use in corridors, physical education spaces, toilets, and locker rooms.
 - C. Type 3 panels (washable): Kitchen, serving areas, locker room and dry food storage.
 - D. Type 4 panels (enhanced acoustics): Use in Middle School and High School Music Rooms in accordance with recommendations by acoustical consultant. Retained by FCPS.
 - E. Refer to the Educational Specifications for type of panels required for specific spaces.

SECTION 09510

ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 REFERENCE STANDARDS

- A. ASTM A366 - Standard Specification for Steel, Carbon Cold-Rolled Sheet, Commercial Quality.
- B. ASTM A641 - Standard Specification for Zinc-Coated (galvanized) Carbon Steel Wire.
- C. ASTM C635 - Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- D. ASTM C636 - Standard Practice For Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E1264 - Classification for Acoustical Ceiling Products.
- G. Provide data that the products meet or exceed the VOC content requirements of CHPS and GreenGuard certification.

1.03 WORK EXCLUDED

- A. Bulkheads (for changes in ceiling elevations greater than 8") and moisture resistant ceiling systems are covered elsewhere in applicable sections of Division 9.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical literature and installation instructions for each type of panel and grid suspension system specified in this section.
- B. Samples: Provide 6" x 6" samples of each type of specified panel, and 12" long samples of exposed grid system (main runner, cross tee, and wall molding). Provide four (4) samples of each component specified.

C. Certifications:

1. Provide manufacturer's certifications indicating compliance with specified requirements, including laboratory test reports conducted in accordance with specified tests and standards.
2. Provide VOC Emission Test Certificate in compliance with California Department of Public Health (CDPH).
3. Provide data information of the Recycled Content.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated and overhead mechanical work is completed, tested and approved and until ceiling concealment inspection has been satisfactorily completed.
- B. Allow wet work to dry thoroughly prior to commencement of installation.
- C. Maintain uniform temperature of minimum (61 degrees F) and humidity of 20 percent to 40 percent prior to, during and after installation.

1.06 WARRANTIES

- A. Provide manufacturer's 10 year limited warranty against visible sag of panels when subjected to environmental conditions of 104°F and 90% relative humidity.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened packaging with all identification labels intact. Store in a dry; secure area, protected from exposure to moisture, sunlight, surface contamination, construction damage and other harmful conditions.
- B. Handle components to prevent damage to panel edges, grid components and panel and grid finishes.

1.08 FIRE RATED SYSTEM (*WHERE APPLICABLE*)

- A. See Drawings for location and hourly rating.
 1. UL rated ceiling/roof design: UL Design shall be strictly adhered to for all aspects of assembly design and UL classified components.
 2. UL rated ceiling/floor design: Strictly comply with all aspects of UL assembly design, including required UL classified components.

3. Fire classified panels shall have the embossed label indicating UL classification for suitability of use in the rated assembly.

1.09 CEILING CONCEALMENT INSPECTION

- A. See Section 01700 for inspection that is to be conducted prior to installation of ceiling panels.

1.10 REPLACEMENT OF EXISTING ACOUSTICAL TILE CEILING (*RENOVATIONS*)

- A. Work shall include removal and replacement of existing acoustical tile ceilings (panels and grid) where called for on the drawings.
- B. Remove and replace acoustical tile ceilings (panels only) where called for on the drawings.

1.11 REMOVAL, STORAGE, AND REPOSITIONING OF EXISTING TILE CEILING (*RENOVATIONS AND ALTERATIONS*)

- A. Where panels and/or grid members must be removed to accommodate work in existing ceiling space, carefully remove, store and protect such items from construction damage. Prior to removing, tag any panels or grid that are damaged, and notify Architect and Owner's Representative. Carefully reposition panels and grid once overhead work in ceiling is completed.

PART 2 - PRODUCTS

2.01 SUSPENSION SYSTEM

- A. Acceptable System: ASTM C-635 heavy duty system, double web exposed main runners and cross tees. Intermediate duty shall not be acceptable. Approved manufacturers shall be as follows:
 1. Standard of Quality: Chicago Metallic Series 200 main runners and Series 229 cross tees, at 24" and 209 at 48".
 2. Armstrong "Prelude XL": Series 7301 for main runners and Series 7328 for 24" cross tees (Series XL 7348 for 48" cross tees).
 3. Pre-bid approved manufacturer in accordance with Section 01630.
- B. Standard Grid: Non-fire rated, 15/16" exposed face, with components die cut and interlocking. Where indicated on Drawings, provide fire rated grid in compliance with UL Design Assembly.
- C. Accessories: Splices, and edge moldings as required to complete and compliment suspended ceiling grid system.

- D. Materials/Finish: Commercial quality rolled steel with galvanized coating; white baked enamel finish on exposed surfaces.
- E. Hangers: Minimum 12 gauge (0.106") galvanized carbon steel wire per ASTM A641 (Class 1); soft temper, pre-stretched with a yield stress load of at least 3 times design load; size and type to suit application and to rigidly secure complete acoustic unit ceiling system, with maximum deflection of 1/360.
- F. Retention clips: for fire resistive ceiling/floor and ceiling/roof assemblies, and for ceiling areas adjacent to exterior doors in corridors; provide spring steel clips as required by rated assemblies, and as recommended by manufacturer for impact resistance.
- G. Fascia Mouldings: For changes in ceiling elevations that are 8" or less:
 - 1. Material/Finish: Commercial quality rolled steel with galvanized coating; white baked enamel finish (to match grid components) on exposed surfaces.
 - 2. Approved Manufacturers:
 - a. Armstrong #7814 (4" height), #7816 (6" height) or #7818 (8" height) depending on change in elevation. Flange width: 1".
 - b. Comparable products of other ceiling system manufacturers approved under 2.01A of this Section shall be acceptable.

2.02 LAY-IN PANELS

- A. Standard Acoustical Panels (Type 1)
 - 1. General characteristics: Mineral fiber composition, wet formed, factory applied white finish, class A flame spread, Type III, Form 2 per ASTM E1264; square edge design. Surface pattern shall be available in Fire Rated panels where rated assemblies occur.
 - a. Pattern: Fissured, non-directional surface
 - b. Light Reflectance: 0.70 - 0.81
 - c. NRC: .70
 - d. CAC: 40
 - e. Size: 24" x 48" x 5/8" thick
 - 2. Approved Manufacturers

- a. Armstrong World Industries, Inc., "School Zone Fine Fissured" with "HumiGuard Plus" #1714
 - b. United States Gypsum Company (USG) "Radar Clima Plus," #2444
 - c. Certain Teed "Fine Fissured" (HHF-497 DP)
 - d. Pre-bid approved Manufacturer in accordance with Section 01630
- B. Impact Resistant Acoustical Panels (Type 2)
1. General Characteristics: ASTM E1264, Type III, Form 2, Class A (25 or less). Impact resistant in accordance with Gardner Impact Test or other comparable test procedure. Square edge design. Surface pattern shall be available in Fire Rated Panels where rated assemblies occur.
 - a. Pattern: medium coarse, or lightly perforated/lightly textured, non-directional texture
 - b. Light Reflectance: 0.75 to 0.85
 - c. NRC: 0.50 or better
 - d. CAC: 35 to 39
 - e. Size: 24" x 48" x 5/8"
 2. Approved Manufacturers
 - a. Armstrong "School Zone Fine Fissured" with "HumiGuard Plus" #466
 - b. USG "Rockface Clima Plus"
 - c. Certain Teed "School Board" (SB-197)
 - d. Pre-bid approved manufacturer in accordance with Section 01630
 3. Impact resistant panels shall be used at corridors, locker rooms, student toilets, individual toilets, and janitor closets. Refer to Drawings for individual space requirement.
- C. Washable Acoustical Panels (Type 3)
1. General characteristics: Class A, ASTM E1264, Type IV, Form 2, water felted, mineral base with membrane faced overlay. Square edge.

- a. Pattern: Non-perforated surface. Surface pattern shall be available in fire rated panels where rated assemblies occur.
 - b. Finish: Vinyl faced white
 - c. Light Reflectance: 0.80 - 0.88
 - d. Size: 24" x 48" x 5/8" or 3/4" thick
 - e. USDA approved for incidental food contact.
2. Approved Manufacturers
 - a. Armstrong "Clean Room VL" with HumiGuard Plus" (non-perforated)
 - b. USG "Clean Room Clima Plus" (Class 100)
 - c. Capaul "Vinylshield A" with "HUM 90" Humidity Rating
 - d. Pre-bid approved manufacturer in accordance with Section 01630
- D. Enhanced Acoustical Panels (Type 4):
1. General Characteristics: Square edge design, mineral fiber composition, wet formed, factory applied white finish. ASTM E1264 Classification: Type III, Form 2. Class A flame spread.
 - a. Pattern: Fissured, non-directional surface.
 - b. Light Reflectance: 0.78 – 0.85.
 - c. NRC: 0.70
 - d. Size: 24" x 48" x 3/4"
 2. Approved Manufacturers:
 - a. Armstrong "Fine Fissured High NRC/High CAC" with "Humigard Plus," #1811.
 - b. U.S. Gypsum Company, "Radar Clima Plus High HRC," #22311.
 - c. Celotex "Baroque High NRC" (BET-497 DP)
 - d. Pre-bid approved manufacturer in accordance with Section 01630.

- E. Fire Rated Acoustical Boards: Of same manufacturer as standard and impaction Acoustic Boards and in same surface pattern and size. See plans for locations of areas requiring fire rated board. Fire rated boards shall be embossed to provide evidence of classification.
- F. "Attic Stock": Provide extra ceiling panels of each type specified, in quantities equal to 2% of the total square footage of each type installed. All attic stock shall be clearly marked to indicate type of panel.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas where Work of this Section shall be installed. Notify the Architect and Owner's Representative of any adverse conditions encountered that would interfere with the proper installation of acoustical ceiling systems. Do not proceed until such conditions have been corrected. Work shall not commence until the work of "wet" trades has been finished and is thoroughly dry, and all major above-ceiling work is complete.

3.02 INSTALLATION

- A. Install acoustical ceiling systems in accordance with ASTM C-636 and manufacturer's written instructions to produce finished ceiling true to lines and levels, free from warped, soiled or damaged grid or lay-in panels.
- B. Install ceiling systems in a manner capable of supporting superimposed loads, including light fixtures, with maximum permissible deflection of 1/360 of span and maximum surface deviation of 1/8 inch in 20 feet.
- C. Coordinate the location of hangers with other installed work. Ensure hangers are located to accommodate fittings and units of equipment placed after installation of ceiling grid systems.
- D. Suspend main runners from overhead structure with hanger wires spaced 4'-0" on center along the length of the runner. Hanger wire shall be plumb and straight.
- E. Where ducts or other equipment prevent regular spacing of hangers, provide additional hangers to adequately support ceiling.
- F. Hang suspension system independently of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of the longitudinal axis or face plane of adjacent members.
- G. Center ceiling systems on room axis leaving equal borders unless indicated otherwise by reflected ceiling plan shown on drawings.

- H. Install edge moldings at intersection of ceiling and vertical surfaces, using maximum lengths, straight, true to line and level. Miter corners. Provide edge moldings at junctions with other ceiling finishes. Where bullnose concrete block corners occur, provide preformed closers to match edge molding.
- I. Fit acoustic lay-in panels in place, free from edge damage or other defects detrimental to appearance and function. Fit border units neatly against abutting surfaces.
- J. Install lay-in panels level, in uniform plane and free from twist, warp and dents.

3.03 ADJUSTMENTS

- A. Adjust sags or twists which develop in the ceiling systems and replace parts that are damaged or faulty. Remove and replace damaged components that cannot be successfully adjusted or restored.

3.04 CLEANING

- A. Clean acoustical ceilings, including trim, edge moldings and suspension members in accordance with manufacturer's written recommendations.
- B. Remove all excess materials, packaging, installation debris, and other rubbish associated with the work of this Section from the work site and dispose of legally.

END OF SECTION

INSTRUCTIONS FOR EDITING

SECTION 09515

RECLAMATION OF ACOUSTICAL CEILING PANELS

Discuss with the Owner on when and how to use this.

SECTION 09515

RECLAMATION OF ACOUSTICAL CEILING PANELS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Reclamation Plan for acoustical ceiling panels.
- B. Related Sections:
 - 1. Section 01505 – Construction Waste Management.
 - 2. Section 09510 – Acoustical Tile Ceilings.

1.03 DEFINITIONS

- A. Armstrong: Armstrong World Industries, Inc.
- B. Recycler/Consolidator/C&D Processor: The entity providing palletized/baled reclaimed ceilings to Armstrong.
- C. Contractor: Entity removing ceilings for reclamation.
- D. Common Carrier: Independent carrier utilized by Armstrong for delivering full trailers of reclaimed ceiling panels to Armstrong.

1.04 SUBMITTALS

- A. Incorporate ceilings into the project site Waste Management Plan as a material to be recycled.

1.05 QUALITY ASSURANCE

- A. Materials Acceptable for Recycling:
 - 1. All brands of dry, pulpable mineral fiber ceiling panels or tiles. All metal splines must be removed from tiles (12"x12").

2. All brands of dry fiberglass panels (foil-back case by case). Facing must be easily removable.
 3. Any vinyl or scrim-faced mineral fiber panels.
- B. Materials Acceptable for Recycling Case-by Case: (Contact the Armstrong Recycling Center at 877-276-7876 option 1,8)
1. Foil-backed ceiling tiles.
 2. Any vinyl or scrim-faced fiberglass panels.
 3. Ceiling tiles with dark or metallic paint (applied by manufacturer).
 4. Ceiling tiles with paint not applied by manufacturer.
 5. Armstrong Woodworks Ekos Wall Panels.
 6. Armstrong Soundsoak mineral fiber or fiberglass wall panels.
 7. Fabric-faced ceiling tiles.
 8. Cast ceiling panels (with or without foil).
 9. Armstrong Sanserra.
 10. Armstrong Mylar.
 11. Fully packaged ceiling tiles meeting the above criteria.
- C. Materials Not Acceptable for Recycling:
1. Asbestos containing ceiling tiles, Ceiling tiles installed below friable asbestos or contaminated with any other hazardous material.
 2. Red or pink-backed ceiling tiles.
 3. Wet, moldy or weathered ceiling tiles.
 4. Ceiling tiles or pallets/boxes/bales which contain visible debris (garbage, construction waste).
 5. Ceiling tiles not packaged according to Armstrong Specifications.
 6. Any gypsum ceiling or board.
 7. Ceiling tiles with visible wood pulp.

8. Armstrong Artran (cardboard like face).
 9. Armstrong Ceramaguard.
 10. Glue-up or adhesive ceiling tiles.
 11. Roll-offs which contain debris.
 12. Baled fiberglass, vinyl-faced, fabric, scam faced or foil-backed ceiling tiles.
- D. Call the Armstrong Recycling Center at 877-276-7876, select option 1, then option 8 to review the building where the ceilings will be removed, verify the material meets our requirements and for assistance to facilitate recycle. We are continually updating the types of ceiling panels we can recycle and methods we can receive them in.
- E. Ceiling material being reclaimed may not come into contact with asbestos containing material, hazardous waste materials or special waste.
- If the area where ceilings are being removed is or has gone through abatement procedures, verification that ceilings did not come in contact with asbestos containing material is required.
- F. Ceiling material being reclaimed must be kept dry and free from debris.
- G. Coordination of Work: Coordinate acoustical ceiling demolition work with contractors doing related work in the building including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.06 PROJECT AND MATERIAL APPROVAL

- A. Register Your Recycle Project: Contact the Armstrong Ceiling Recycling Center at 877-276-7876 option 1,8.
- B. Required Information to Approve your project for recycling:
1. Contact information for the recycle project.
 2. Building information (Year of Building Construction, GC or Demo Contractor, Building use, copy of an asbestos survey, details on any prior or current abatement where ceiling is removed).
 3. Ceiling Information – Material type, quantity, timing

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION**3.01 SCHEDULING, PACKAGING AND SHIPPING PROCEDURES**

- Receive final project approval for recycling by the Armstrong Recycling Center.
 - Contractor will remove ceiling tiles to be recycled from grid.
 - Contact the Armstrong Recycling Center (877-276-7876 option 1,8) to schedule a pick up. There are several return options available (see A, B, C)
- A. Full Truckload Palletized Procedure:
1. Contractor to supply pallets, metal bands, stretch wrap.
 2. Approved ceiling materials will be palletized in a manner allowing both secure shipment by trailer and the ability of Armstrong employees to safely inspect and unload the trailers' contents. For this reason, all approved ceiling materials sent to Armstrong must be neatly stacked as follows:
 - a. 4' x 4' pallets stacked with ceiling materials to 4 feet tall each and then stacked on top of each other in the trailer. This method is preferred but proper loading equipment must be available at the job site.
 - b. 4' x 4' pallets stacked with ceiling materials to 6 feet tall each.
 - c. Some combination of 2'x4' and 4'x4' pallets that are agreed upon in advance, in writing to accommodate special building circumstances. This option would be available if building elevators do not accommodate larger size pallets. When 2' x 4' pallets are used place onto 4' x 4' pallets to stabilize two 2' x 4' pallets. Use stretch wrap to secure pallets together.
 3. Contractor will neatly stack ceiling panels on 4' x 4' wooden pallets and secure them with metal bands or stretch wrap for stable shipment. Any variation from pallet size must be pre-approved by Armstrong.
 4. Pallets must be kept dry. Wet material is not acceptable and will be returned. Pallets must be labeled per Armstrong requirements.
 5. Pallets must be secured within trailers to prevent shifting in transit. Carriers will provide load stabilizers.

6. Armstrong will pay for the return freight of full trailers of approved material, all of which are defined as a minimum of 30,000 square feet as follows:
 - a. Forty-four 4' x 4' pallets stacked with ceiling material to 4 feet tall each and then stacked on top of each other in the trailer. This method is preferred but proper loading equipment must be available at the job site.
 - b. Twenty-two 4' x 4' pallets with ceiling material stacked to 6 feet tall each.
 7. It is recycler's responsibility to ensure that only full trailer loads of approved ceiling materials are shipped.
- B. Less Than Full Truckload Palletized Procedure:
1. Where the amount of approved ceiling materials from a site is insufficient for a full trailer load, a local recycler/consolidator may elect to consolidate approved ceiling materials in a secure and dry location, until a full trailer load is ready for shipment. The recycler/consolidator will ensure that all such aggregate shipments are and remain clearly labeled as to their origin and date of approval by an Armstrong employee. Go to www.armstrong.com/recycling to find a local consolidator.
 2. Recycler/consolidator/C&D Processor may assist in supplying pallets, metal bands, and stretch wrap.
 3. Handling will then comply with full truckload procedure. Coordinate with recycler/consolidator on best pallet stacking option (4'X4'X4' or 4'X4'X6') depending on job site loading conditions and equipment available.
 4. When local consolidation is not available a LTL pick up may be arranged in some areas for five (5) pallets (7,000 sq. ft.) or more of approved ceiling materials. Armstrong will pay the return freight of these LTL pickups. LTL pickup must be pre-approved by Armstrong when other options are not available.
 5. The recycler/consolidator/C&D Processor retains ownership of approved ceiling materials until it is received and accepted at the destination, the Armstrong Plant, as defined by the terms of shipment, F.O.B. (Free on board) destination, despite Armstrong's payment of the freight costs for full trailer loads. While the Armstrong approved common carrier is not a party to this agreement, the following describes their responsibilities. The common carrier that Armstrong has selected is responsible for the transport of the approved ceiling materials from the pick up location to Armstrong's plant. This carrier is an independent contractor utilized by

Armstrong and required to demonstrate general liability insurance coverage that meets or exceeds industry standards.

- C. On-site Roll-Off Procedure (Bulk Return to C&D Processor):
1. Material must be clean and dry.
 2. No wood, metal, construction debris, trash or hazardous materials of any kind can be included.
 3. Material should be placed in a roll-off container. This container must have a water impermeable cover such that material inside do not get wet. Material should not be loaded above the top of the container
 4. Container should have visible Armstrong RA label attached.

Work with an Armstrong approved C&D processor to return ceilings to their location. Go to www.armstrong.com/recycling to find a local C&D processor. Ceilings will then be processed and returned to Armstrong.

END OF SECTION

INSTRUCTIONS FOR EDITING AND COORDINATION

SECTION 09560

WOOD FLOORING - ATHLETIC

1. 1.02 Summary of Work: Edit Scope of Work to fit project requirements.
2. 2.01 (C) Flooring Systems: Delete system types which are not appropriate to required application(s).
3. 3.01 Preparation: Edit based on type of substrate present on project site.
 - A. 3.01 (C): It shall be the responsibility of the Project Architect to arrange a field inspection with a representative of an approved flooring manufacturer and Fairfax County Public Schools representative during the design phase. The purpose of this inspection shall be to determine whether or not a new wood floor can be satisfactorily adhered to the existing flooring. If not, removal of the existing synthetic floor shall be included in the Work of the contract documents.

SECTION 09560

WOOD FLOORING - ATHLETIC

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Division 1 Specification sections, apply to work of this section, including Section 03300, Cast In Place Concrete (concrete slabs) and Section 03650, Cementitious Underlayment.

1.02 REFERENCED STANDARDS

- A. Published standards of the Maple Flooring Manufacturers Association (MFMA) (www.maplefloor.org), Northbrook, Illinois.

1.03 SUMMARY OF WORK

- A. Extent of wood flooring is indicated on drawings and in schedules.
- B. Types of wood flooring required include the following:
 - 1. High Schools: New floors and replacement of existing wood surfaced sleeper floors (Type I).
 - 2. High Schools and Middle Schools: Replacement floors where existing synthetic (urethane) floors shall be removed (Type II).
 - 3. High Schools and Middle Schools: Replacement floors where existing V.A.T. or V.C.T. tile shall be removed (Type III).
 - 4. Middle Schools: New floors (Type III).
 - 5. High Schools and Middle Schools: New floor adhered to existing synthetic (urethane) floor (Type III).

1.04 SUBMITTALS

- A. Comply with applicable provisions of Section 01340.
- B. Samples: Submit samples for each type of wood flooring system to be used, with grade, species and appearance/finish clearly indicated.
- C. Product Data: Submit the following:
 - 1. Materials list for all materials to be provided.

2. Manufacturer's product data for all materials, indicating compliance with this Section.
3. Manufacturer's written recommended installation procedures that shall be the basis for accepting or rejecting the flooring installation.
4. Manufacturer's written maintenance procedures.

1.05 QUALITY ASSURANCE

- A. Installer qualifications: Flooring installer shall be a firm experienced in installing athletic maple flooring for a minimum of five (5) years, and shall be certified by the approved manufacturer as a qualified installer.
- B. Single Source: The Approved Manufacturer shall be the single source for all wood strip flooring, specialty items and accessories, and adhesives.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Moisture Content: After manufacture, limit average moisture content from 6% minimum to 9% maximum. At time of delivery, limit average moisture content of wood flooring to 12%.
- B. Protect wood flooring from excessive moisture in shipment, storage, and handling. Deliver in unopened cartons or bundles and store in dry place, with adequate air circulation. Do not deliver material to building until "wet work" such as concrete and plaster have been completed and cured to a condition of equilibrium.
- C. Environmental Conditions: Maintain room temperature of 55°-80° (13-27°C) and relative humidity of 35%-50%.
- D. Do not store materials in installation location or other location where concrete slab vapor transmission exceeds 4.5 pounds per 1,000 square feet. Do not store directly on a concrete slab.

1.07 WARRANTY

- A. The Manufacturer shall warranty the flooring materials to be free of manufacturing defects for a period of two (2) years.
- B. The installer shall warranty the floor system against defects in materials and workmanship for a period of two (2) years.

1.08 JOB AND ENVIRONMENTAL CONDITIONS

- A. The installation area shall be permanently enclosed and weather tight.

1. All masonry shall be complete and cured.
 2. All painting shall be complete and all surfaces shall be dry.
 3. All lighting, electrical power, and HVAC systems shall be complete and functioning.
 4. All overhead work, including athletic equipment installation, shall be complete.
- B. Maintain ambient temperature between 55°F and 80°F, and relative humidity between 35% and 50%, before, during and after installation.
- C. Condition the wood flooring materials by placing the materials in the installation area at least seven (7) days prior to commencing installation. Open sealed packages, separate bundles, and loosely stack the flooring in order to naturally acclimate the material to moisture conditions of the space.
- D. Concrete slab conditions:
1. New Slab: Do not begin installation until the concrete slab has been allowed to cure for at least 60 days.
 2. Flatness: Slab shall be smooth and flat to a tolerance of 1/8" in a 10' radius.
 3. Vapor transmission: Conduct slab moisture testing (new and existing slabs) at several locations to determine moisture emission rate. Installation shall not proceed if emission rate exceeds 4.5 pounds per 1,000 square feet of slab area. Testing shall be conducted using one of the following procedures (use of electronic meters to measure moisture content only, in lieu of the recommended tests, shall not be acceptable):
 - a. Polyethelene Film Test
 - b. Phenolphthalein Test
 - c. Calcium Chloride Test (per ASTM F1869-98).

PART 2 - PRODUCTS

2.01 WOOD STRIP FLOORING

- A. Species, Grade, and Cut: Provide the following wood wherever strip type flooring is indicated:
1. Species: Northern Hard Maple

Grade: 2nd and better
Cut: Square edge or tongue and groove, depending on system type, grain kiln dried
Thickness: As indicated for each individual flooring system

2. Comply with MFMA Grading Rules for above species, grade and cut. Flooring shall be grade marked and stamped as produced by an MFMA member manufacturer.

B. Approved Manufacturers (for flooring systems indicated)

1. Robbins, Inc. "Sportwood" (basis of specification for Types I, II, and III)
2. Superior Floor Company (Types I, II, and III)
3. Connor Sports Flooring Corporation, "PermaFlex" (Type I) and "Sport Bond" (Types II and III)
4. Pre-bid approved manufacturer in accordance with Section 01630.

C. Flooring Systems

1. Type I:
 - a. Robbins "Bio-Channel" Classic" sleeper system with steel anchors; Tongue and Groove wood strip flooring, 25/32" thick x 2 1/4" DIN Certified.
 - b. Superior "Scissor - LOC DC," DIN Certified.
2. Type II: "SportwoodPlus"; wood flooring over "blanketseal" foam pad (no load distribution subfloor); parquet panels, 7/16" thick.
3. Type III: "Sportwood"; wood flooring adhered to concrete subfloor or synthetic (urethane) floor; parquet panels, 7/16" thick.

2.02 ACCESSORY MATERIALS FOR WOOD FLOORING

A. Adhesive/Mastic: Special mastic of type provided by manufacturer of flooring, and complying with flammability and environmental control restrictions.

1. Robbins adhesive: "Sportwood" one-component elastomeric adhesive.

B. Subfloor: Plywood of thickness and specie required by floor system.

1. Robbins "Bio-Channel": 23/32" structural rated sheathing, CD-X.

C. Fasteners:

1. Flooring: 1 3/4" barbed cleats or equivalent.
 2. Sub-flooring: 1 5/8" to 1 3/4" subflooring nails or staples.
 3. Channel Anchors: 1 1/4" long steel powder – actuated or pneumatic anchors.
- D. Primer: Robbins, Inc. "Sportwood Primer" or equivalent product by approved flooring manufacturer.
- E. Wood Filler: Paste type wood filler, pigmented if necessary to match Architect's sample.
- F. Floor Sealer: Penetrating type, pliable, wood-hardening finish/sealer; provide Robbins, Inc. "Miracle Sealer" or equivalent sealer by approved flooring manufacturer.
- G. Polyurethane Finish: Robbins, Inc. "Miracle Finish", Moisture curing type polyurethane finish, specially compounded for multiple-coat application on wood floor; FS TT-C-542.
- H. Floor Wax: Liquid, solvent-type, slip-resistant, FS P-W-158, Type I, Class 2.
- I. Trim (plate type perimeter floor covers): Aluminum, smooth type, for 2" joints where floor adjoins wall surfaces. Acceptable products:
1. MM Systems Corporation X-W4
 2. Balco, Inc. GC-2
- J. Leveling compound: Ardex K-15 or equivalent.
- K. Line Paint: Hillyard "Gym Line Marking Paint" or equivalent line paint, compatible with floor finish (Hillyard, Inc. St. Joseph, MO, 1-800-365-1555, www.hillyard.com)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Concrete subfloor inspection:
1. Check slab for required level tolerance as specified in Part 1.08. Non-conforming low areas shall be corrected with approved leveling compound; high areas shall be ground down.
 2. Test slabs for vapor transmission in accordance with the requirements of this section.

3. Notify Architect and Owner's Representative of any deficiencies encountered. Do not proceed with installation until level tolerance has been corrected, and vapor transmission does not exceed recommended maximum.
- B. Preparation of existing concrete subfloor: Existing concrete subfloor shall be clean, dry and free of adhesives or other foreign material that would impair the level tolerance of the surface. Gouges, holes, chips or other such areas shall be corrected as indicated in Paragraph 3.01A. Edges of patched areas shall be feathered for a smooth, uniform surface.
- C. Inspection and preparation of existing synthetic flooring: Evaluate bond strength of existing flooring to concrete subfloor. Remove all areas of membrane that are loose and or blistered. Inspect condition of floor in the presence of the manufacturer's representative. Prepare floor for installation in accordance with recommendations based on representative's field inspection.
 1. Sand the existing synthetic floor to insure that the surface is free of surface coatings that are not compatible with adhesives.
 2. Conduct one or more "patch tests" as appropriate to ensure that proper adhesion of the floor system to the existing synthetic floor can be obtained.

3.02 INSTALLATION

- A. General: Comply with flooring manufacturer's written instructions and recommendations, but not less than those recommended by MFMA
- B. Install flooring system in strict accordance with Manufacturer's detailed instructions and methods, including, but not limited to the following; as appropriate:
 1. Proper spacing of pads, blankets and/or sleepers.
 2. Proper type and spacing of fasteners.
 3. Proper application rates of approved adhesives.
 4. Proper expansion voids at perimeter walls and at other penetrations.
 5. Where concrete slabs have been adjusted for level, ensure that fasteners are properly secured through the leveling compound to the slab substrate. Do not begin floor installation before the time period recommended by the manufacturer of the leveling compound.

3.03 SANDING AND FINISHING

- A. Sanding: Sand installed floor using a drum sander, edger and buffer and hand scraper. Workers shall be familiar with the sanding guidelines recommended by the manufacturers of the sanding equipment.
- B. Sand floor by performing three different passes using three different grades of sandpaper. After sanding with a drum sander, buff entire floor using 100 grit "screenback" or equal grit sandpaper for the final pass. Final sanding shall provide a smooth surface, exhibiting no drum marks, gouges, streaks or "shiners".
- C. Vacuum the floor surface with a heavy duty, commercial grade vacuum to remove sanding dust and grit before commencing finishing operations.
- D. Finishing: Apply one (1) coat of sealer and two (2) coats of finish. Screen or steel wool and vacuum between each coat; each coat shall be dry before performing the operation.
- E. Court Game Lines and Logo(s): Apply game lines in accordance with court line layouts or drawings, and in colors and line thicknesses indicated. Use precision taping machines or striping tools, to provide straight lines with sharp edges. Apply lines and logo(s) between the first two coats of finish, and after the first coat has been screened and vacuumed.
- F. Wax and buff completed finish before permitting floor traffic.
- G. During finish operations, maintain indoor temperatures and humidity conditions in accordance with manufacturers recommendations. Provide adequate ventilation to ensure proper drying of each coat.

3.04 PROTECTION

- A. Protect completed wood flooring during remainder of construction period with heavy Kraft paper with taped joints, or other suitable covering, so that flooring and finish will be without damage or deterioration at time of owner acceptance.

3.05 CLEANING

- A. Remove all excess materials, tools, packaging and other debris from the work site and dispose of legally. Do not leave any excess flooring materials, adhesive, stains, sealers, paints or other such materials on site as "attic stock".

3.06 MAINTENANCE

- A. Instruct Owner's school-based personnel in the care and maintenance procedures recommended in writing by the flooring manufacturer. Provide school based personnel with copies of care and maintenance instructions.

END OF SECTION

SECTION 09622

RESILIENT ATHLETIC FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes adhered sheet vinyl flooring for gymnasium.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show installation details including layout, colors, widths, and dimensions of game lines and locations of athletic equipment floor inserts.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and patterns available for flooring.
- D. Maintenance Data: For each type of flooring indicated to include in maintenance manuals.
- E. Provide certification of testing per ASTM F2772-11 and the product being furnished complies with the ASTM Indoor Sport Floor Classification specified.
- F. Provide FloorScore® certification in compliance with the VOC emissions criteria of the California Department of Public Health's (CDPH) that the products have low emissions of VOCs as approved by CHPS.
- G. FloorScore® documentation must include certificate number for specific product.

1.04 QUALITY ASSURANCE

- A. Sheet Vinyl Installer Qualifications: An experienced installer who has completed sheet vinyl athletic flooring installations with welded seams similar in material, design, and extent to that indicated for this Project, who is acceptable to manufacturer, and whose work has resulted in installations with a record of successful in-service performance.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storing.
- B. Store materials to prevent deterioration. Store rolls upright.
- C. Move products into spaces where they will be installed at least 48 hours before installation, unless longer conditioning period is recommended in writing by manufacturer. Do not install products until they are at the same temperature as the space where they are to be installed.

1.06 PROJECT CONDITIONS

- A. Install products after other finishing operations, including painting, are completed.
- B. Adhesively Applied Products: As follows:
 - 1. Maintain a temperature of not less than 70 deg F or more than 95 deg F in installation spaces for at least 48 hours before installation, during installation, and for at least 48 hours after installation, unless manufacturer's written recommendations specify longer time periods. After postinstallation period, maintain a temperature of not less than 55 deg F or more than 95 deg F.
 - 2. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.
 - 3. Do not install products over concrete slabs until slabs have cured and are dry enough to bond with adhesive, as determined by flooring manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS**2.01 SHEET VINYL ATHLETIC FLOORING**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Gerflor USA, Inc.; TaraFlex Sport M Plus-(Basis of Design)
 - 2. Tarkett Sports Omnisports
 - 3. Architect approved substitute prior to bid per Section 01630 and this Section.

- B. Provide products and materials that have low VOCs as approved by CHPS.
- C. At Middle School Only: Coordinate with section 12760 (telescoping bleachers and drawings and provide adequate bleacher block or required substrate and finish prior to bleacher installation to avoid dents/depressed surface on the floor.
- D. Materials and Construction: Smooth-surface flooring, complying with ASTM F 1303, Type I (minimum binder content of 90 percent) requirements, with Class B (nonfoamed plastic) or Class C (foamed plastic) backing.
- E. Backing: Foam with fiberglass grid and fiberglass veil interlayer.
- F. Applied Finish: Factory-applied UV urethane.
- G. Roll Size: Not less than 48 inches wide by manufacturer's standard length.
- H. Overall Thickness 7.0mm
- I. Wear layer 2.1 mm minimum thickness
- J. Seaming Method: Heat welded.
- K. Minimum shock absorption Class 2 (22% - 33%): Pass
- L. Coefficient of friction 80 – 110 ASTM F2772: Pass
- M. Ball bounce greater than 90 ASTM F2772: Pass
- N. Vertical Deformation maximum 3.5mm ASTM: Pass
- O. Resistance to a rolling load equal or greater than 1500
- P. Abrasion Resistance: EN ISO 5470; Pass.
- Q. Adhesive Method: Full-spread adhesive to completely adhere flooring to substrate. Partial adhesion or floating installation is not approved. Loose lay or perimeter adhesive installation method is not approved.
- R. Color and Pattern: As selected by Architect from manufacturer's full range.

2.02 ACCESSORIES

- A. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by flooring manufacturer.
- B. Adhesives: Water-resistant type recommended by manufacturer for substrate and conditions indicated.

- C. Heat-Welding Bead: Solid-strand product of flooring manufacturer matching field color of floor.
- D. Game-Line and Marker Paint: Enamel, compatible with flooring and recommended by flooring and paint manufacturers for use indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions where installation of products will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements.
- B. Concrete Substrates: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond, moisture, and pH tests recommended in writing by flooring manufacturer.
 - 2. Substrate finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving resilient flooring.
 - 3. Substrates are free of cracks, ridges, depressions, scale, and foreign deposits.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
- B. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 FLOORING INSTALLATION, GENERAL

- A. Scribe, cut, and fit flooring to butt neatly and tightly to vertical surfaces, equipment anchors, floor outlets, and other interruptions of floor surface.
- B. Extend floor coverings into toe spaces, door reveals, closets, and similar openings, unless otherwise indicated.
- C. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating subfloor markings on finish flooring. Use nonpermanent, nonstaining marking device.
- D. Adhere products to substrates using a full spread of adhesive applied to substrate to comply with adhesive and flooring manufacturers' written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.
 - 1. Provide completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- E. Mask flooring at game lines and markers, and apply paint to produce sharp edges.

3.04 SHEET FLOORING INSTALLATION

- A. Lay out sheet flooring to comply with the following requirements:
 - 1. Maintain uniformity of flooring direction.
 - 2. Arrange for a minimum number of seams and place them in inconspicuous and low-traffic areas, and not less than 6 inches from parallel joints in flooring substrates.
 - 3. Match edges of sheet flooring for color shading and pattern at seams.
 - 4. Avoid cross and butt seams.
- B. Heat-Welded Seams: Rout joints and heat weld with welding bead, permanently fusing sections into a monolithic floor finish. Prepare, weld, and finish seams according to manufacturer's written instructions and ASTM F 1516 to produce surfaces flush with adjoining floor covering surfaces.

3.05 CLEANING AND PROTECTING

- A. Perform the following operations immediately after installing flooring products:

1. Remove adhesive and other surface blemishes using cleaner recommended in writing by flooring manufacturer.
 2. Sweep and vacuum floor thoroughly.
 3. Do not wash floor until after waiting period recommended in writing by flooring manufacturer.
 4. Damp mop floor to remove marks and soil using method and cleaner recommended in writing by flooring manufacturer.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended in writing by flooring manufacturer.
1. Do not move heavy or sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.

END OF SECTION

SECTION 09640

WOOD STAGE FLOORING (HIGH SCHOOL AUDITORIUM & MIDDLE SCHOOL STAGE)

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Solid-wood strip flooring for the Auditorium stage, attached to a wood screed nailing base over concrete slab.
- B. Related Sections include the following:
 - 1. Division 6 Section “Rough Carpentry” for wood substrates (wood screeds).

1.03 REFERENCE STANDARDS

- A. “A guide to Southern Pine Flooring”, Southern Pine Council, Kenner, LA (www.southernpine.com).
- B. “Standard Grading Rules for Southern Pine Lumber”, Southern Pine Council.

1.04 SUBMITTALS

- A. Product Data: Submit for each type of product indicated in Part 2.
- B. Samples for Initial Selection: Provide manufacturer’s samples of wood flooring.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed wood flooring similar in material, design, and extent to that indicated for this Project and whose work has resulted in wood flooring installations with a record of successful in-service performance.
- B. Southern Pine Flooring: Comply with Southern Pine Inspection Bureau (SPIB) grading rules for species, grade, and cut.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood flooring materials in unopened cartons or bundles. Deliver to job site under dry weather conditions.
- B. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until concrete, masonry, plaster, ceramic tile, and similar wet-work is complete and dry.
- C. Store wood flooring materials in a dry, warm, well-ventilated, weather tight location. Stack in intact bundles; use clean, dry spacer sticks between each bundle and dispose of bundle wrappings in order to allow air circulation.
- D. Move wood flooring into space where it will be installed, at least seven days before installation. Interior of space shall be thoroughly dry and fully enclosed with all doors installed. HVAC system shall be operational and capable of attaining space conditioning requirements indicated below in 1.07

1.07 PROJECT CONDITIONS

- A. Space Conditioning: Maintain relative humidity planned for building occupants and an ambient temperature between 65 and 75 degrees F (18 and 24 degrees C) in spaces to receive wood flooring for at least seven days before installation, during installation and for at least seven days after installation. After post-installation period, maintain relative humidity and ambient temperature planned for building occupants.
 - 1. Do not install flooring until it adjusts to the relative humidity and is at the same temperature as the space where it is to be installed. Perform moisture meter readings in accordance with Southern Pine Council flooring guide.
 - 2. Close spaces to traffic during flooring installation and protect flooring until space is ready for owner use.

PART 2 – PRODUCTS

2.01 SOLID-WOOD STRIP FLOORING

- A. Strip flooring: Provide kiln-dried wood flooring as follows
 - 1. Species: Southern Pine, Grade “C” or better.
 - 2. Grain: Vertical.
 - 3. Thickness: 1 ¼ inch (19 mm) actual thickness

4. Face Width: 2-1/2 inches (64 mm) actual thickness.
 5. 2 x 3 sleepers, 12 inches o.c. or as shown on drawings
 6. Matching: Tongue and groove, and end matched.
 7. Backs: Channeled (kerfed) for stress relief.
 8. Random Lengths: Provide standard random-length strips complying with applicable grading rule.
- B. Sub Floor: $\frac{3}{4}$ " thick plywood on wood joist @ 12" o.c. or as shown on the drawings.

2.02 FINISHING MATERIALS

- A. Urethane Finish System: Complete system of compatible components that is recommended by finish manufacturer for application indicated.
1. Type: Water based.
 2. Stain: Penetrating and nonfading type. Oil based or oil modified.
 - a. Color: Black
 3. Floor Sealer: Pliable, penetrating type.
 4. Finish Coats: Formulated for multicoat application on wood flooring, satin finish.
 5. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Basic Coatings (www.basiccoatings.com).
 - b. BonaKemi USA, Inc. (www.bonakemi.com)
 - c. Dura Seal (Division of Sherwin-Williams, Co.), Water Based Finish (www.duraseal.com).
 - d. Hillyard Floor Treatments (www.hillyard.com).
- B. Wood Filler: Formulated to fill and repair seams, defects, and open-grain hardwood floors; compatible with finish system components and recommended by filler and finish manufacturers for use indicated. If required to match approved samples, provide pigmented filler.

2.03 ACCESSORY MATERIALS

- A. Screeds: 2x4 nominal lumber, pressure treated and kiln dried after treatment (KDAT) cut in length varying from 18" to 48" ..
- B. Felt Underlayment: ASTM D 226, Type I, 15lb or 30lb, asphalt-saturated felt, depending on type of installation utilized (double layer or single layer).
- C. Fasteners: As recommended the Southern Pine Council flooring guide.
- D. Vented Base: 4"x 3" vented base, molded rubber. Provide matching molded outside corners, where required by wall configuration.
- E. Mastic: Cold cutback asphalt adhesive, for attaching wood screeds to concrete slab substrate.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, in the presence of the installer and the Owner's Representative, for compliance with requirements, installation tolerances, and other conditions affecting performance of wood flooring. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Install screeds in bed of adhesive 12" on center and perpendicular to direction of flooring. Use screeds of varying lengths, except that screeds shall be continuous at end walls.
- C. Concrete Slabs: Verify that concrete substrate is clean and level.
- D. Conduct moisture meter readings of flooring material, concrete substrate, and walls to determine moisture content and to verify equilibrium moisture content. See Southern Pine Council flooring guide.

3.02 INSTALLATION

- A. General: Comply with flooring manufacturer's written instructions, but not less than recommendations in Southern Pine Council flooring guide.
- B. Pattern: Lay wood flooring in pattern indicated on Drawings or, if not indicated, as directed by Architect and Owner's Representative.
- C. Expansion Space: Provide expansion space at walls and other obstructions and terminations of flooring of not less than $\frac{3}{4}$ inch, unless otherwise indicated on Drawings.

- D. Felt Underlayment: Install flooring over two layers of 15lbs asphalt-saturated felt, or one layer of 30 lbs asphalt felt.
- E. Solid-Wood Strip Flooring: Blind nail or staple flooring to substrate according to Southern Pine Council written recommendations.

3.03 SANDING AND FINISHING

- A. Machine-sand flooring to remove offsets, ridges, cups, and sanding-machine marks that would be noticeable after finishing. Vacuum and tack with a clean cloth immediately before applying finish.
- B. Apply filler according to manufacturer's written instructions.
 - 1. Fill and repair seams and defects.
- C. Apply stain to match approved Sample if required.
- D. Apply floor sealer according to finish manufacturer's written instructions.
- E. Apply floor finish according to finish manufacturer's written instructions. Apply in number of coats recommended by finish manufacturer for application indicated, but not less than three.
- F. For water-based finishes, use finishing methods recommended by finish manufacturer to minimize grain rise.

3.04 PROTECTION

- A. Cover installed wood flooring to protect it from damage or deterioration, before and after finishing, during remainder of construction period. Use heavy kraft-paper or other suitable covering. Do not use plastic sheet or film that could trap moisture and cause condensation.
 - 1. Do not cover site-finished floors with kraft paper, or any other material, until finish reaches full cure, but not less than seven days after applying last coat.

3.05 CLEANING

- A. Remove all excess flooring material, screeds, adhesive, packaging, and other trash and debris resulting from activities of this Section, and provide legal disposal off-site.

END OF SECTION

SECTION 09652

RESILIENT SHEET FLOORING, BASE AND ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Conditions of Contract, including Division 1 Specification Sections, apply to the Work of this Section.
- B. Cement-Based Floor Underlayment: Section 03650

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Homogenous sheet vinyl floor covering shall meet or exceed standards of ASTM F1913, "Standard Specifications for Vinyl Sheet Floor Covering without Backing".
- B. Flammability: 0.45 watts per sq. cm. or greater when tested in accordance with ASTM E648, "Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source".
- C. Smoke Density: Less than 450 when tested in accordance with ASTM E662, "Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials".
- D. Homogeneous sheet vinyl flooring shall meet or exceed Static Coefficient of Friction per ASTM D2047, "Standard Test Method for Static Coefficient of Friction".

1.03 WORK INCLUDED

- A. All resilient bases, including base installed at cabinet bases, shall be part of the work of this Section. See Section 12302 Wood Casework, Section 12304, Plastic Laminate Faced Casework, and Section 12360, Library Casework.
- B. Flash patching and skim coating of underlayments.

1.04 WORK EXCLUDED

- A. Removal of existing vinyl asbestos tile (VAT), if required, shall be performed by a licensed asbestos contractor retained by the Owner. This work shall be completed prior to beginning flooring work in areas affected by VAT removal. Refer to preparation instructions in this Section, and Section 02070, Selective Demolition.
- B. Floor leveling is covered under Section 03650.

1.05 QUALITY ASSURANCE

- A. Installer shall provide evidence of a minimum of five (5) years successful experience in installation of resilient flooring and base.

1.06 SUBMITTALS

- A. Samples: Provide samples of each type of flooring material, welding rods and miscellaneous accessories in manufacturer's range of colors and patterns for each grade indicated.
- B. Manufacturer's Literature: Include descriptive information, installation, maintenance and cleaning instructions for each type of material specified in this Section.
- C. Primer and Adhesive: Provide specifications data and MSDS information for the type and brand that shall be used for installation, and which is recommended by floor covering manufacturer for the specific application.

1.07 ENVIRONMENTAL CONDITIONS

- A. Maintain minimum 65°F temperature in the work area for at least 48 hours prior to, during, and after installation.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver flooring, adhesives and other accessories in original unopened packaging with identification labels intact, and store in a secure, dry location. Protect adhesive from freezing temperatures. Materials shall be allowed to reach and maintain the same temperature as the work area at least 48 hours prior to installation.

PART 2 - PRODUCTS**2.01 HOMOGENOUS SHEET VINYL FLOOR COVERING**

- A. Provide rolls in either nominal 6'-7", 6"-6" or 6'-0" width, based on manufacturer's standard roll width.
 - 1. Colors and patterns shall be selected from the manufacturer's standard palette for each grade specified (minimum number of standard color and pattern selections available: 15)
 - 2. Refer to Drawings for special flooring features such as borders, accent designs and/or tile patterns

3. Product shall be non-layered and non-backed, having a nominal thickness of .080 inches, heat welded as specified in Part 3 of this specification. Sheet vinyl shall be polyurethane reinforced, or have a urethane coating. Provide manufacturer's standard weld rods, color matched to sheet vinyl, for heat welding of seams.
- B. Approved Manufacturers:
1. Marley Floors (www.marleyfloors.com), as represented by Stanley Stevens Co., Inc. 1-800-523-5200, shall be the Basis of Specification.
 - a. "Eclipse PUR"
 2. Armstrong World Industries, Inc. (www.armstrong.com), 1-877-ARMSTRONG.
 - a. "Medinpoint"
 3. Tarkett/Johnsonite (www.tarkettna.com), Solon, OH 1 800.899.8916
 - a. "Melodia 2.0"
 - b. "Aria 2.0"
 4. Other pre-bid approved substitutions in accordance with Section 01630.
- C. Locations: Provide flooring selection for all classrooms, labs and other instructional spaces indicated on the Drawings. Flooring for all other spaces scheduled to receive floor covering shall be selected from the manufacturer's standard palette, except where borders, accents or patterns are indicated on the Drawings.

2.02 RUBBER STUDED FLOORING AND TREADS

- A. Locations
1. All ramps.
 2. Stair landings, treads, and nosings.
- B. Round stud, low profile; tile size 18" x 18" or 36" x 36", .125" - .156" thick, stud height .025" - .031".
- C. Acceptable manufacturer/product:
1. "Endura", Rubber Flooring (A Division of Burke Industries) San Jose, CA, 1-800-447-8442 (www.endura-flooring.com) (Basis of Specification)

2. "Radial", Flexco, Tuscumbia, AL, 1-800-633-3151 (www.flexcofloors.com)
3. "Disc-O-Tile" and "Disc-o-tread" No. 788, R.C. Musson Rubber Co., Inc., Akron, OH, 1-800-321-3151
4. R.C.A Rubber Co., Inc., Akron, OH, 1-800-321-0240 (www.rcarubber.com).
5. "Mondo" (Mondo America, Inc.), Laurel, QC, Canada 1-800-361-3747 (www.mondousa.com).
6. "Tarkett/Johnsonite", (www.tarkettna.com), Solon, OH 1 800.899.8916
7. Other pre-bid approved manufacturer(s) in accordance with Section 01630.

2.03 BASE MATERIALS

A. General:

1. Uniform in thickness
2. Base material shall be supplied in rolls.

B. Standard rubber base:

1. FS SS-W-40a, Type 1, 1/8" thick
2. 4-inch high; coved style for resilient flooring and carpet
3. Color shall be as selected by the Architect from manufacturer's standard colors

C. Basis of Specification: Armstrong World Industries, Inc.

"Tarkett/Johnsonite", (www.tarkettna.com), Solon, OH 1 800.899.8916

- a. DC-XX, Type 1, 1/8" thick
- b. 4-inch high; coved style for resilient flooring and carpet

2.04 FLOORING ACCESSORIES

A. Provide at junctions of flooring materials of differing thickness in order to provide a smooth transition. Refer to drawings in order to identify flooring junctions.

1. Include reducers/transition joinery at carpet and sheet flooring junctions.

B. Acceptable Manufacturers

1. Burke Mercer Flooring Products (A Division of Burke Industries), San Jose, CA 1-800-669-7010 (www.burkemercer.com).
2. Flexco
3. Tarkett/Johnsonite", (www.tarkettna.com), Solon, OH 1-800-899-8916.
4. Roppe Corp., Fostoria, OH, 1-800-537-9527.
5. Other pre-bid approved manufacturer(s) in accordance with Section 01630.

2.05 APPLICATION MATERIALS**A. General:** Provide type and brands of adhesives as indicated below for the covering materials, substrate conditions and times of installations:

1. Sheet Vinyl Adhesive:
 - a. For work performed adjacent to occupied areas during school operating hours (Additions and Renovations):
 - 1) W.W. Henry, "556 VinylPro" Adhesive (water-based, acrylic). Suitable for use over existing cutback adhesives. (www.wwhenry.com).
 - 2) Armstrong "S-575" Flooring Adhesive. Suitable for use over existing cutback adhesives. Solvent free.
 - 3) Resilient Flooring Manufacturer's privately labeled, solvent free adhesive, suitable for installation over existing substrates and existing cutback adhesive.
 - b. For work performed after school operating hours (Additions and Renovations), or new schools:
 - 1) All adhesives listed in 1(a) above.
 - 2) Tarkett "925 Resilient Flooring Adhesive, 975 Two-Part Urethane Adhesive, or 901 SpraySmart Resilient Flooring Adhesive".
2. Wall Base Adhesives:

- a. W.W. Henry, "595" Cove Base Adhesive. Zero VOC content; water based, rubber resin.
 - b. Armstrong S-725 Wall Base Adhesive. Low VOC content; water based, rubber resin.
 - c. Tarkett, "960 Wall Base Adhesive"
- B. Primer: Type and brand recommended by floor covering manufacturer.
- C. Finishing and Patching Compounds for Floors: (Products of ARDEX, Inc., Aliquippa, PA, 1-724-203-5000 (www.ardex.com)).
1. Finishing Underlayment: ARDEX L.P., "SD-F Feather Finish" Cement-Based Finishing Underlayment.
 2. Patching Compound: ARDEX L.P., "SD-P Instant Patch" Concrete Underlayment Patch.

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES

- A. Examine substrate for evidence of excessive moisture content, residues, contaminants, and unevenness that would prevent execution and quality of resilient flooring assembly as specified.
- B. Verify that new concrete substrates have been cured for at least 30 days. Verify that no chemical curing compounds have been used or are present on surface of substrates.
- C. Notify Owner's Representative and Architect if any adverse conditions are encountered during examination of substrate. Do not proceed with installation of resilient flooring until defects have been corrected except where correction is indicated under PREPARATION in this Section.

3.02 PREPARATION

- A. Comply with the flooring manufacturer's written recommendations for existing and new substrate preparation as applicable.
- B. Remove dirt, oil, grease, or other foreign matter from surfaces to receive floor-covering materials.
- C. Broom clean or vacuum surfaces to be covered.
- D. Remove substrate ridges and bumps.

- E. Use finishing underlayment to fill small cracks and depressions in substrates. Apply finishing underlayment in accordance with manufacturer's written instructions.
- F. Except as noted on the drawings, existing tile shall remain and shall be covered with new vinyl flooring. In the event of loose or broken tile, notify Owners Field Representative. Remove only non-asbestos tile where scheduled on the drawings.

3.03 APPLICATION OF ADHESIVES

- A. Mix and apply adhesives in accordance with manufacturer's instructions.
- B. Provide safety precautions during mixing and applications as recommended by adhesive manufacturer.
- C. Apply uniformly over surfaces.
 - 1. Cover only that amount of area that can be covered by flooring material within the recommended working time of the adhesive.
 - 2. Remove any adhesive that dries or films over.
 - 3. Do not soil walls, bases or adjacent areas with adhesives.
 - 4. Promptly remove any spillage.
- D. Apply adhesives with notched trowel or other suitable tool recommended by adhesive manufacturer.

3.04 INSTALLATION OF VINYL FLOORING

- A. Comply with the flooring manufacturer's written installation instructions. Lay flooring in pattern to reduce number of seams. Roll with a 100 lb. roller in field areas, and hand roll edges and seams.
- B. Fit flooring material neatly and tightly into breaks and recesses, against bases, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.
- C. Lay vinyl flooring parallel to room axis in straight courses with cross-joints perpendicular.
- D. Install reducers/transition joinery at flooring terminations and junctions.
- E. Strictly adhere to manufacturer's installation instructions for heat welding of seams.

3.05 INSTALLATION OF BASE

A. General:

1. Install base around perimeter of room and columns.
2. Unroll material and cut into accurate lengths as desired or as required for minimum number of joints.
3. Match edges at all seams or double cut adjoining lengths.
4. Install with tight butt joints with no joint widths greater than 1/64 inch.

B. Topset base:

1. Apply adhesive and firmly adhere to surfaces, utilizing hand roller.
2. Press down so that bottom cove edge follows floor.
3. Form internal and external corners by using premolded corners.
4. Scribe material accurately to abutting materials.

3.06 FINISHING, CLEANING AND PROTECTION

- A. Upon completion of the installation of floor covering, adjacent work, and after materials have set, clean surfaces with a neutral cleaner as recommended by the manufacturer for the type of floor covering material installed. Do not wash floors prior to setting of adhesive (consult manufacturer's literature for setting time).
- B. Protect completed work from traffic and damage until acceptance by the Owner.
- C. Remove all debris and excess material from the project site.
- D. Do not include surplus tile adhesives, primers, or patching compounds as part of extra stock described above.

END OF SECTION

SECTION 09660

RESILIENT TILE FLOORING, BASE AND ACCESSORIES (VCT)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Conditions of Contract, including Division 1 Specification Sections, apply to the Work of this Section.
- B. Cement-Based Floor Underlayment: Section 03650

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. VCT: Meet or exceed standards of ASTM F1066-95, Composition I, non-asbestos formulated, class 2 "through" pattern.
- B. Flammability: 1.0 critical radiant flux or higher when tested in accordance with ASTM E648, flooring radiant panel test.
- C. Smoke Density: Less than 450 when tested in accordance with ASTM E662.

1.03 WORK INCLUDED

- A. All resilient base, including base installed at cabinet bases, shall be part of the work of this Section. See Section 12302 Wood Casework, Section 12304, Plastic Laminate Faced Casework, and Section 12360, Library Casework. All VCT floor tile and all rubber studded flooring and treads.
- B. Flash patching and skim coating of underlayments.

1.04 WORK EXCLUDED

- A. Floor leveling is covered under Section 03650.

1.05 QUALITY ASSURANCE

- A. Installer shall provide evidence of a minimum of five (5) years successful experience in installation of resilient flooring and base.

1.06 SUBMITTALS

- A. Samples: Provide samples of each type of flooring material and accessory in manufacturer's range of colors and patterns for each grade indicated.

- B. Manufacturer's Literature: Include descriptive information, installation, maintenance and cleaning instructions for each type of material specified in this Section.
- C. Primer and Adhesive: Provide specifications data and MSDS information for the type and brand that shall be used for installation, and which is recommended by floor covering manufacturer for the specific application.

1.07 ENVIRONMENTAL CONDITIONS

- A. Maintain minimum 65°F temperature in the work area for at least 48 hours prior to, during, and after installation.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver flooring, adhesives and other accessories in original unopened packaging with identification labels intact, and store in a secure, dry location. Protect adhesive from freezing temperatures. Materials shall be allowed to reach and maintain the same temperature as the work area at least 48 hours prior to installation.

PART 2 - PRODUCTS

2.01 PREMIUM VINYL COMPOSITION TILE - VCT

- A. VCT shall be 12"x12"x.125" (1/8") thick uniform in size; with edges cut accurately and square.
 - 1. Colors and patterns shall be selected from the manufacturer's color palette for Premium VCT.
 - 2. Refer to Drawings for special flooring features such as borders, accent designs and/or tile patterns.
- B. Approved Manufacturers:
 - 1. Armstrong (Basis of Specification)
 - a. Excelon "Stonetex"
 - 2. Tarkett
 - a. "Azrock VCT"
 - 3. Mannington
 - a. "Progressions"

4. Other pre-bid approved substitutions in accordance with Section 01630.

C. Locations: Provide the manufacturer's Premium Grade for VCT at all locations.

2.02 RUBBER STUDED FLOORING AND TREADS

A. Locations

1. All ramps.

2. Stair landings, treads, and nosings.

B. Round stud, low profile; tile size 36" x 36", .130" - .156" thick, stud height .025" - .031".

C. Acceptable manufacturer/product:

1. "Endura", American Builtrite, Inc. (Basis of Specification)

2. "Radial", Marley Flexco (Marley Floors USA) Inc.

3. "Disc-O-Tile" and "Disc-o-tread" No. 788, R.C. Musson Rubber Co., Inc.

4. R.C.A. Rubber Co., Inc.

5. "Mondo" (Mondo Rubber International, Inc.)

6. Other pre-bid approved manufacturer(s) in accordance with Section 01630.

2.03 BASE MATERIALS

A. General:

1. Uniform in thickness

2. Base material shall be supplied in rolls.

B. Standard rubber base:

1. FS SS-W-40a, Type 1, 1/8" thick

2. 4-inch high; coved style for resilient flooring and carpet

3. Color shall be as selected by the Architect from manufacturer's standard colors

C. Basis of Specification: Armstrong World Industries, Inc.

2.04 FLOORING ACCESSORIES

- A. Provide at junctions of flooring materials of differing thickness in order to provide a smooth transition. Refer to drawings in order to identify flooring junctions.
 - 1. Include reducers/transition joinery at carpet and VCT junctions.
- B. Acceptable Manufacturers
 - 1. Mercer Products Company
 - 2. Flexco
 - 3. Johnsonite
 - 4. Roppe
 - 5. Other pre-bid approved manufacturer(s) in accordance with Section 01630.

2.05 APPLICATION MATERIALS

- A. General: Provide type and brands of adhesives as indicated below for the covering materials, substrate conditions and times of installations:
 - 1. VCT Adhesive:
 - a. For work adjacent to occupied areas during school operating hours:
 - 1) Henry, L.P., "530 TilePro" No Solvent, "Fast Track" Adhesive (water-based, acrylic). Suitable for use over existing cutback adhesives.
 - 2) Armstrong "S-700 Thin Spread" Floor Tile Adhesive. Suitable for use over existing cutback adhesives. Solvent free.
 - 3) Tarkett "100 Clear Thin Spread Adhesive", "975 Two-Part Urethane Adhesive" or "901 SpraySmart Resilient Flooring Adhesive".
 - 4) Resilient Tile Manufacturer's privately labeled, solvent free adhesive, suitable for installation over existing substrates and existing cutback adhesive.
 - b. For work in unoccupied areas after school operating hours:

- 1) Armstrong "S-89" Asphalt Cutback Adhesive (solvent based).
 - 2) Resilient Tile Manufacturer's privately labeled asphalt cutback adhesive.
2. Wall Base Adhesives:
- a. Henry, L.P., "595" Cove Base Adhesive. Zero VOC content; water based, rubber resin.
 - b. Armstrong S-725 Wall Base Adhesive. Low VOC content; water based, rubber resin.
- B. Primer: Type and brand recommended by floor covering manufacturer.
- C. Leveling and Patching Compounds for Floors:
1. Finishing Underlayment: ARDEX L.P., "SD-F Feather Finish" Cement-Based Finishing Underlayment.
 2. Patching Compound: ARDEX L.P., "SD-P Instant Patch" Concrete Underlayment Patch.

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES

- A. Examine substrate for evidence of excessive moisture content, residues, contaminants, and unevenness that would prevent execution and quality of resilient flooring assembly as specified.
- B. Verify that new concrete substrates have been cured for at least 30 days. Verify that no chemical curing compounds have been used or are present on surface of substrates.
- C. Notify Owner of any adverse conditions encountered during examination of substrate. Do not proceed with installation of resilient flooring until defects have been corrected except where correction is indicated under PREPARATION in this Section.

3.02 PREPARATION

- A. Comply with the flooring manufacturer's written recommendations for existing and new substrate preparation as applicable.

- B. Remove dirt, oil, grease, or other foreign matter from surfaces to receive floor-covering materials.
- C. Broom clean or vacuum surfaces to be covered.
- D. Remove substrate ridges and bumps.
- E. Use finishing underlayment to fill small cracks and depressions in substrate. Apply finishes underlayment in accordance with manufacturers written instructions.

3.03 APPLICATION OF ADHESIVES

- A. Mix and apply adhesives in accordance with manufacturer's instructions.
- B. Provide safety precautions during mixing and applications as recommended by adhesive manufacturer.
- C. Apply uniformly over surfaces.
 - 1. Cover only that amount of area that can be covered by flooring material within the recommended working time of the adhesive.
 - 2. Remove any adhesive that dries or films over.
 - 3. Do not soil walls, bases or adjacent areas with adhesives.
 - 4. Promptly remove any spillage.
- D. Apply adhesives with notched trowel or other suitable tool recommended by adhesive manufacturer.

3.04 INSTALLATION OF VCT

- A. Comply with the flooring manufacturer's written installation instructions. Roll tile with a 100 lb. roller if recommended by the flooring manufacturer.
- B. Mix tiles from cartons to minimize shade variations.
- C. Lay tile beginning from center of room or space; work toward perimeter.
- D. Do not lay tile less than 1/2 the width of a field tile except where accepted by Architect or irregularly shaped rooms or spaces.
- E. Cut border tile neatly and accurately to fit within 1/64 inch of abutting surfaces.

- F. Fit flooring material neatly and tightly into breaks and recesses, against bases, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.
- G. Lay tile parallel to room axis in straight courses with cross-joints perpendicular.
- H. Install reducers/transition joinery at flooring terminations and junctions.

3.05 INSTALLATION OF BASE

A. General:

- 1. Install base around perimeter of room and columns.
- 2. Unroll material and cut into accurate lengths as desired or as required for minimum number of joints.
- 3. Match edges at all seams or double cut adjoining lengths.
- 4. Install with tight butt joints with no joint widths greater than 1/64 inch.

B. Topset base:

- 1. Apply adhesive and firmly adhere to surfaces, utilizing hand roller.
- 2. Press down so that bottom cove edge follows floor.
- 3. Form internal and external corners by using premolded corners.
- 4. Scribe material accurately to abutting materials.

3.06 FINISHING, CLEANING AND PROTECTION

- A. Upon completion of the installation of floor covering, adjacent work, and after materials have set, clean surfaces with a neutral cleaner as recommended by the manufacturer for the type of floor covering material installed. Do not wash floors prior to setting of adhesive (consult manufacturer's literature for setting time).
- B. Protect completed work from traffic and damage until acceptance by the Owner.
- C. Remove all debris and excess material from the project site.
- D. Do not include surplus tile adhesives, primers, or patching compounds as part of extra stock described above.

END OF SECTION

SECTION 09662

RESILIENT TILE FLOORING, BASE AND ACCESSORIES (VCT)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Conditions of Contract, including Division 1 Specification Sections, apply to the Work of this Section.
- B. Cement-Based Floor Underlayment: Section 03650

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. VCT: Meet or exceed standards of ASTM F1066 Class 2 “through” pattern.
- B. Flammability: 1.0 critical radiant flux or higher when tested in accordance with ASTM E648, Flooring Radiant Panel Test.
- C. Smoke Density: Less than 450 when tested in accordance with ASTM E662 Smoke Chamber Test.
- D. Standard method for the testing and evaluation for emission of VOCs of concern with respect to chronic inhalation exposures of adhesives to comply with the specifications of the current version of the California Department of Public Health's (CDPH).
- E. SCAQMD Rule 1168- Adhesive shall meet the VOC content requirements of South Coast Air Quality Management District and tested and third party certified (FloorScore) to comply with the CDPH standard.

1.03 WORK INCLUDED

- A. All resilient base, including base installed at cabinet bases, shall be part of the work of this Section. See Section 12302 Wood Casework, Section 12304, Plastic Laminate Faced Casework, and Section 12360, Library Casework. All VCT floor tile and all rubber studded flooring and treads.
- B. Flash patching and skim coating of underlayments.

1.04 WORK EXCLUDED

- A. Floor leveling is covered under Section 03650.

1.05 QUALITY ASSURANCE

- A. Installer shall provide evidence of a minimum of five (5) years successful experience in installation of resilient flooring and base.or installer shall be a certified installer by the manufacturer

1.06 SUBMITTALS

- A. Samples: Provide samples of each type of flooring material and accessory in manufacturer's range of colors and patterns for each grade indicated.
- B. Manufacturer's Literature: Include descriptive information, installation, maintenance and cleaning instructions for each type of material specified in this Section.
- C. Primer and Adhesive: Provide specifications data and MSDS information for the type and brand that shall be used for installation, and which is recommended by floor covering manufacturer for the specific application.
- D. Provide data that the products meet or exceed the VOC content requirements of South Coast Air Quality Management District (SCAQMD) Rule 1168, Adhesive and Sealant Applications or current version.

1.07 ENVIRONMENTAL CONDITIONS

- A. Maintain minimum 65°F and a maximum of 100 F temperature in the work area for at least 48 hours prior to, during, and after installation.
- B. Areas to receive resilient flooring shall be clean, fully enclosed, weather tight with permanent HVAC in operation.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver flooring, adhesives and other accessories in original unopened packaging with identification labels intact, and store in a secure, dry location. Protect adhesive from freezing temperatures. Materials shall be allowed to reach and maintain the same temperature as the work area at least 48 hours prior to installation.

1.09 WARRANTY

- A. Provide a minimum five (5) year full unconditional warranty, starting on effective date of warranty of commencement. The manufacturer shall warrant the floor will be free from manufacturing defects and will not:
 - 1. Permanently indent
 - 2. Rip, tear or gauge

3. Permanently stain from normal household stain.
4. Yellow from exposure to rubber backed mats.
5. Permanently discolor from mold or mildew growth in the vinyl when installed directly over a concrete subfloor.
6. Permanently scuff from shoe soles.
7. Wear through the wearlayer so that the printed pattern or design of the floor is altered.

PART 2 - PRODUCTS

2.01 STANDARD VINYL COMPOSITION TILE - VCT

- A. VCT shall be 12"x12"x.125" (1/8") thick uniform in size; with edges cut accurately and square.
 1. Colors and patterns shall be selected from the manufacturer's color palette for Standard VCT.
 2. Refer to Drawings for special flooring features such as borders, accent designs and/or tile patterns.
- B. Approved Manufacturers:
 1. Armstrong (Basis of Specification)
 - a. Standard Excelon "Imperial Texture or MultiColor"
 2. Tarkett
 - a. "Azrock VCT"
 3. Other pre-bid approved substitutions in accordance with Section 01630.
- C. Locations: Provide the manufacturer's Standard Grade for VCT at all locations.

2.02 RUBBER STUDED FLOORING AND TREADS

- A. Locations
 1. All ramps.
 2. Stair treads, and nosings.

3. Provide visually impaired contrast- 2" strip at the tread close to the nose.
- B. Round stud, low profile; tile size 18" x 18" or 24" x 24" or 36" x36", .155" - .130" thick, stud height .025" - .031".
- C. Acceptable manufacturer/product:
1. "Color Scape", Burke Flooring (Basis of Specification)
 2. "Radial", Flexco Inc.
 3. "Disc-O-Tile" and "Disc-o-tread" No. 788, R.C. Musson Rubber Co., Inc.
 4. R.C.A. Rubber Co., Inc.
 5. Tarkett/Johnsonite
 6. "996 Vantage" Raised Circular (Roppe) and #96
 7. Other pre-bid approved manufacturer(s) in accordance with Section 01630.

2.03 BASE MATERIALS AND FLOORING ACCESSORIES

- A. General:
1. Uniform in thickness
 2. Base material shall be supplied in rolls.
- B. Standard rubber base:
1. ASTM F 1861, Type TP – Thermoplastic, Group 1 – Solid, Style B Cove
 2. 4-inch high; coved style for resilient flooring and carpet
 3. Color shall be as selected by the Architect from manufacturer's standard colors
- C. Provide flooring accessories at junctions of flooring materials of differing thickness in order to provide a smooth transition. Refer to drawings in order to identify flooring junctions.
1. Include reducers/transition joinery at carpet and VCT junctions.
- D. Acceptable Manufacturers
1. Burke Flooring

2. Flexco
3. Tarkett/Johnsonite
4. Roppe
5. Armstrong Flooring (Basis of Specifications)
6. Other pre-bid approved manufacturer(s) in accordance with Section 01630.

2.05 APPLICATION MATERIALS

A. General: Provide type and brands of adhesives as indicated below for the covering materials, substrate conditions and times of installations:

1. VCT Adhesive:
 - a. For work adjacent to occupied areas during school operating hours:
 - 1) Henry, L.P., "530 TilePro" No Solvent, "Fast Track" Adhesive (water-based, acrylic). Suitable for use over existing cutback adhesives.
 - 2) Armstrong S-515 Clear Thin Spread VCT Adhesive. VOC content 0 g/l calculated & reported SCAQMD 1168.
 - 3) Tarkett "100 Clear Thin Spread Adhesive", "975 Two-Part Urethane Adhesive" or "901 SpraySmart Resilient Flooring Adhesive".
 - 4) Resilient Tile Manufacturer's privately labeled, solvent free adhesive, suitable for installation over existing substrates and existing cutback adhesive.
 - b. For work in unoccupied areas after school operating hours:
 - 1) Resilient Tile Manufacturer's privately labeled asphalt cutback adhesive.
2. Wall Base Adhesives:
 - a. Henry, L.P., "595" Cove Base Adhesive. Zero VOC content; water based, rubber resin.
 - b. Armstrong S-725 Wall Base Adhesive. Low VOC content; water based, rubber resin.

- B. Primer: Type and brand recommended by floor covering manufacturer.
- E. Leveling and Patching Compounds for Floors:
 - 1. Finishing Underlayment: ARDEX L.P., "SD-F Feather Finish" Cement-Based Finishing Underlayment.
 - 2. Patching Compound: ARDEX L.P., "SD-P Instant Patch" Concrete Underlayment Patch.
 - 3. Finishing Underlayment and Patching Compound: Armstrong S-194 Patch, Underlayment and Embossing Leveler / S-195 Underlayment Additive

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES

- A. Examine substrate for evidence of excessive moisture content, residues, contaminants, and unevenness that would prevent execution and quality of resilient flooring assembly as specified.
- B. Verify that new concrete substrates have been cured for at least 30 days. Verify that no chemical curing compounds have been used or are present on surface of substrates.
- C. Notify Owner of any adverse conditions encountered during examination of substrate. Do not proceed with installation of resilient flooring until defects have been corrected except where correction is indicated under PREPARATION in this Section.

3.02 PREPARATION

- A. Comply with the flooring manufacturer's written recommendations for existing and new substrate preparation as applicable.
- B. Remove dirt, oil, grease, or other foreign matter from surfaces to receive floor-covering materials.
- C. Broom clean or vacuum surfaces to be covered.
- D. Remove substrate ridges and bumps.
- E. Use finishing underlayment to fill small cracks and depressions in substrate including uneven existing glue residue that may telegraph through the new tile flooring. Assume finishing underlayment is required at 100 percent of all existing floor areas where new vinyl composition is scheduled. Provide at all locations

where uneven existing floor slab conditions are not satisfactory for the application of the scheduled new floor finish. Apply finish underlayment in accordance with manufacturers written instructions.

3.03 APPLICATION OF ADHESIVES

- A. Mix and apply adhesives in accordance with manufacturer's instructions.
- B. Provide safety precautions during mixing and applications as recommended by adhesive manufacturer.
- C. Apply uniformly over surfaces.
 - 1. Cover only that amount of area that can be covered by flooring material within the recommended working time of the adhesive.
 - 2. Remove any adhesive that dries or films over.
 - 3. Do not soil walls, bases or adjacent areas with adhesives.
 - 4. Promptly remove any spillage.
- D. Apply adhesives with notched trowel or other suitable tool recommended by adhesive manufacturer.

3.04 INSTALLATION OF VCT

- A. Comply with the flooring manufacturer's written installation instructions. Roll tile with a 100 lb. roller if recommended by the flooring manufacturer.
- B. Mix tiles from cartons to minimize shade variations.
- C. Lay tile beginning from center of room or space; work toward perimeter.
- D. Do not lay tile less than 1/2 the width of a field tile except where accepted by Architect or irregularly shaped rooms or spaces.
- E. Cut border tile neatly and accurately to fit within 1/64 inch of abutting surfaces.
- F. Fit flooring material neatly and tightly into breaks and recesses, against bases, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.
- G. Lay tile parallel to room axis in straight courses with cross-joints perpendicular.
- H. Install reducers/transition joinery at flooring terminations and junctions.

- I. Tiles should not be exposed to rolling load traffic for at least 72 hours after installation to allow setting and drying of the adhesives.

3.05 INSTALLATION OF BASE

A. General:

1. Install base around perimeter of room and columns.
2. Unroll material and cut into accurate lengths as desired or as required for minimum number of joints.
3. Match edges at all seams or double cut adjoining lengths.
4. Install with tight butt joints with no joint widths greater than 1/64 inch.

B. Topset base:

1. Apply adhesive and firmly adhere to surfaces, utilizing hand roller.
2. Press down so that bottom cove edge follows floor.
3. Form internal and external corners by using premolded corners.
4. Scribe material accurately to abutting materials.

3.06 FINISHING, CLEANING AND PROTECTION

- A. Upon completion of the installation of floor covering, adjacent work, and after materials have set, sweep or vacuum thoroughly to remove all loose dust and dirt. Damp mop the floor with a neutral cleaner as recommended by the manufacturer for the type of floor covering material installed. Do not wet wash, scrub, or strip the floors prior to setting of adhesive (consult manufacturer's literature for setting time and maintenance recommendations).
- B. Apply two coats of high-quality commercial floor polish. The use of a high quality stain-resistant sealer beneath the polish should be considered in areas of high traffic, high soil load and areas where staining potential is high.
- C. Protect completed work from traffic and damage until acceptance by the Owner.
- F. Remove all debris and excess material from the project site.

END OF SECTION

SECTION 09680

MODULAR AND BROADLOOM CARPET

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, (including General and Supplementary Conditions and Division 1 Sections) apply to the Work in this Section only.

1.02 RELATED WORK

- A. Wall base: Section 09660 - Resilient Tile Flooring and Base.
- B. Section 03650 - Cement-Based Floor Underlayment

1.03 QUALITY ASSURANCE

- A. Installer qualifications: Installer shall be certified by the carpet manufacturer as an approved installer.
- B. Installer shall have a minimum of five (5) years successful experience in carpet installation.

1.04 REQUIREMENTS OF REGULATORY AGENCIES

- A. Flame spread rate shall not exceed 25 and smoke density factor shall not exceed 150 when tested under the ASTM E 84 Steiner Tunnel Test.
- B. Critical radiant flux value shall not be lower than .45 watts per square centimeter when tested under the ASTM E 648 Flooring Radiant Panel Test.
- C. Smoke development shall not exceed 450 when tested under the NBS Smoke Chamber Test.
- D. Standard method for the testing and evaluation for emission of VOCs of concern with respect to chronic inhalation exposures of adhesives to comply with the specifications of the current version of the California Department of Public Health's (CDPH)
- E. SCAQMD Rule 1168 – Adhesive shall meet the VOC content requirements of South Coast Air Quality Management District and tested and third party certified (FloorScore®) to comply with the CDPH standard.

1.05 MANUFACTURERS REPRESENTATIVE

- A. When requested, the carpet manufacturer shall send a qualified technical representative to the site to advise the installer of proper procedures.

1.06 SUBMITTALS

- A. Samples: Review will be for color and textures only.
 - 1. Modular and Broadloom Carpet: 24" x 24" samples of each type, color, and pattern to be used on the project. Each piece shall be labeled to show manufacturers' name, carpet, type, and color.
 - 2. Edge Strips: Two pieces 6" long.
- B. Manufacturer's Literature: Installation instructions, including the allowable temperature and humidity range of work area.
- C. Maintenance and cleaning instructions, including solvents required for spot treating of carpet during installation.
- D. Manufacturer's ten (10) year guarantee with evidence of all provisions as outlined in 1.09.
- E. Manufacturer's privately labeled primer, adhesive and seam sealer; include product data for each.
- F. Patching and leveling compound: As recommended by carpet manufacturer; provide product data and evidence of approval.
- G. Seaming Diagrams
- H. Provide data (ANSI-NSF 140 Gold)-Platinum certified that have low emission of VOCs as approved by CHPS.
- I. Provide CRI Green Label plus certification for carpet and adhesive.

1.07 TEST REPORTS AND CERTIFICATIONS

- A. Fire hazard classification:
 - 1. Passes DOC-FF-1-70 Pill Test (ASTM D-2589)
 - 2. Meets NFPA Class 1 when tested under ASTM E-648 (glue down)
 - 3. Flaming mode: NFPA 258-450 or less (ASTM E 662)
- B. Static Control
- C. Provide manufacturer's certification that the rolls furnished for this project were manufactured in accordance with specification requirements. Statement shall

include the trade name and manufacturer of the face yarn and type of secondary backing; attached to the statement shall be the tuft bind guarantee.

- D. Provide certification of non-toxicity, as tested under the Federal Hazardous Substance Act, for floor covering adhesives.
- E. Provide evidence of CRI "Green Label" certification for carpet, indicating testing and compliance with the Indoor Air Quality (IAQ) Carpet Testing Program.

1.08 MAINTENANCE MATERIAL

- A. Attic Stock: Furnish to Owner 12 square yards overage of each color of carpet for future repairs. Do not include excess adhesives or seaming cements as attic stock.

1.09 WARRANTIES

- A. Provide a minimum ten (10) year, full unconditional warranty, starting on effective date of warranty commencement, against wear, failure of static protection, and delamination of secondary backing and edge ravel as follows:
 - 1. Wear: The carpet shall lose no more than 10% by weight of pile face fiber during the 10 year period.
 - 2. Static Protection: The carpet shall give protection from static discharges in excess of 3.0 kV when tested under the Standard Shuffle Test Method (at 70° and 20% RH) during the ten (10) year period.
 - 3. Backing Lamination: The secondary backing of the carpet shall not delaminate during the ten (10) year period.
 - 4. Tuft Bind: The carpet shall have an average tuft bind of 20 pounds for the ten (10) year period.
 - 5. Edge ravel/zippering warranty: No edge ravel during the warranty period.
 - 6. Minimum 10 year warranty on dimensional stability
- B. Two (2) year Installation Guarantee: During guarantee period and within 15 days of written notice, restretch carpet, repair seams and edges.
- C. Antimicrobial protection for the life of the carpet, tested in accordance with AATCC 174.

PART 2 - PRODUCTS

2.01 BROADLOOM CARPET AND MODULAR CARPET

- A. Broadloom Carpet to be used only at the aisles-runner (ramps) in auditorium with continuous edge band on both sides. Modular Carpet to be used everywhere else as indicated on the drawings
- B. Approved Modular Manufacturers:
1. "Motorsport Collection II: Product-Photofinish II" "Class Act Collection: Product- By theBook" Product: Flamestitch III, "Product Colorbeat (for borders and Insets Only) Mohawk Group Calhoun, Ga, 1-800-523-5647 www.mohawkgroup.com (Basis of Design)
 2. "Visual Energy" collection, styles; Vivid and Vim, and "Work.Study.Play" Collection, style Work.Study.Play. (for borders and insets) Patcraft Commercial Carpet, Dalton, GA, 1-800-241-4014, (www.patcraft.com).
 3. No Rules Collection; styles: "Captivate and Intrigue" & "Kinetic and Color Play" ; Tru Colours Tile, (for borders and Insets only), Shaw Contract Group, Dalton,GA 804-683-6455 (www.shawcontractgroup.com)
 4. Winning Team Collection, styles:" The Standard & Icebreaker team". Aerial Collection, styles: "AE311, AE315, AE317", Honor Roll Collection, styles: "Cubic and Cubic Colors", Viva Colores Collection (for borders and insets) Interface, Atlanta, GA 1-800-634-6032 (www.interface.com)
- C. Approved Broadloom Manufacturers:
1. "Motorsport Collection II: Product-Photofinish II" "Class Act Collection: Product- By the Book" Product: Flamestitch III, Mohawk Group Calhoun, Ga, 1-800-523-5647 www.mohawkgroup.com (Basis of Design)
 2. Styles; Vivid and Vim, and "Work.Study.Play" Collection, style Work.Study.Play. (for borders and insets), Patcraft Commercial Carpet, Dalton, GA, 1-800-241-4014, (www.patcraft.com).
 3. "Graphic Nature Collection; Style, Meadow" Shaw Contract Group, Dalton, GA 804-683-6455 (www.shawcontractgroup.com)
- D. Manufacturing Specifications (Modular Carpet) (Motorsport Collection II Photofinish II)
1. Type: Textured Patterned Loop

2. Face Yarn: Duracolor Premium Nylon
 3. Coloration: Solution Dyed/Yarn Dyed
 4. Gauge: 1/12
 5. Stitches per Inch: 10.8
 6. Face Weight: 22 oz.
 7. Primary and Secondary Backing: Primary- Synthetic, Secondary EcoFlex ICT
 8. Static Protection: Less than 3.5 KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC- 174 requirements
 10. Pile Height: .125" (3.18mm)
 11. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per ASTM E 662
- E. Manufacturing Specifications (Modular Carpet) (Flamestitch III)
1. Type: Textured Patterned Loop
 2. Face Yarn: Duracolor Premium Nylon
 3. Coloration: Solution Dyed/Yarn Dyed
 4. Gauge: 1/12
 5. Stitches per Inch: 9.6
 6. Face Weight: 20 oz.
 7. Primary and Secondary Backing: Primary-Synthetic, Secondary EcoFlex ICT
 8. Static Protection: Less than 3.5 KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC- 174 requirements
 10. Pile Height .129" (3.28 mm)

11. Flammability:
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per ASTM E 662
- F. Manufacturing Specifications (Modular Carpet) (By the Book)
 1. Type: Textured Multi Colored Loop
 2. Face Yarn: Duracolor Premium Nylon
 3. Coloration: Solution Dyed/Yarn Dyed
 4. Gauge: 1/12
 5. Stitches per Inch: 9.8
 6. Face Weight: 17 oz.
 7. Primary and Secondary Backing: Primary- Synthetic, Secondary EcoFlex ICT
 8. Static Protection: Less than 3.0 KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC- 174 requirements
 10. Pile Height: .084" (2.13 mm)
 11. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- G. Manufacturing Specifications (Modular Carpet) (ColorBeat)- FOR BORDERS AND INSERTS ONLY
 1. Type: Textured Solid Loop
 2. Face Yarn: Duracolor Premium Nylon
 3. Coloration: Solution Dyed
 4. Gauge: 1/10
 5. Stitches per Inch: 13.2
 6. Face Weight: 22 oz.

7. Primary and Secondary Backing: Primary- Synthetic, Secondary EcoFlex ICT
 8. Static Protection: Less than 3.5 KV
 9. Antimicrobial Protection: Meets AATCC- 174 Requirements
 10. Pile Height: .087" (2.21mm)
 11. Flammability
 - a. Class 1 Under ASTM E 648
 - b. Less than 450 Smoke Density per ASTM E 662
- H. Manufacturing Specifications (Modular Carpet) (Visual Energy)(Vivid and Vim)
1. Type: Vivid: Multi-Level Pattern Loop, Vim: Level Loop
 2. Face Yarn: Eco Solution Q Nylon
 3. Coloration: Solution Dyed
 4. Gauge: 1/10 inch
 5. Stitches per inch: Vivid: 12, Vim: 11.5
 6. Face Weight: Vivid: 18 oz, Vim 15 oz
 7. Primary and Secondary Backing: Primary – Woven Synthetic, Secondary: Ecoworx® Modular
 8. Static Protection: Less than 3.5KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC-174 requirements
 10. Pile Height: Vivid: 4/32" low – 6/32" high, Vim: 5/32"
 11. Flammability
 - a. Passes DOC-FF-1-70 Pill Test.
 - b. Floor Radiant Panel: Meets class I when tested under ASTM E648.
 - c. Smoke Development: Less than 450 when tested under ASTM E662.
- I. Manufacturing Specifications (Modular Carpet) (Work.Study.Play)
(Work.Study.Play)

1. Type: Graphic Loop
 2. Face Yarn: Solution Q Extreme Nylon
 3. Coloration: Solution Dyed
 4. Gauge: 1/8
 5. Stitches per inch: 10.5
 6. Face Weight: 20oz
 7. Primary and Secondary Backing: Primary – Woven Synthetic, Secondary: Ecoworx® Modular
 8. Static Protection: Less than 3.5KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC-174 requirements
 10. Pile Height: 4/32”
 11. Flammability
 - a. Passes DOC-FF-1-70 Pill Test.
 - b. Floor Radiant Panel: Meets class I when tested under AST E648.
 - c. Smoke Development: Less than 450 whtestedE66
- J. Manufacturing Specifications (Shaw Contract Group, Captivate/Intrigue)
1. Type: Textured Patterned Loop
 2. Face Yarn: Eco Solution Q
 3. Coloration: Solution Dyed
 4. Gauge: 1/12 inch
 5. Stitches Per Inch: 9
 6. Face Weight: 19 oz.
 7. Density: 7355 oz./sy
 8. Primary and Secondary Backing: Primary – Woven Synthetic, Secondary: Ecoworx Modular
 9. Static Protection: Less than 3.5KV per AATCC-134

10. Antimicrobial Protection: Meets AATCC-174 requirements
 11. Flammability
 - a. Passes DOC-FF-1-70 Pill Test
 - b. Floor Radiant Panel: Meets class I when tested under ASTM E648.
 - c. Smoke Development: Less than 450 when tested under ASTM E662.
- K. Manufacturing Specifications (Shaw Contract Group, Color Play/Kinetic)
1. Type: Textured Patterned Loop
 2. Face Yarn: Eco Solution Q
 3. Coloration: Solution Dyed/Yarn Dyed
 4. Gauge: 1/12
 5. Stitches Per Inch: 9
 6. Face Weight: 18 oz
 7. Density: 7624 oz./sy
 8. Primary and Secondary Backing: Primary – Woven Synthetic, Secondary: Ecoworx Modular
 9. Static Protection: Less than 3.5KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC-174 requirements
 11. Flammability
 - a. Passes DOC-FF-1-70 Pill Test.
 - b. Floor Radiant Panel: Meets class I when tested under ASTM E648.
 - c. Smoke Development: Less than 450 when tested under ASTM E662.
- L. Manufacturing Specification Broadloom (Flamestitch III) Mohawk Group
1. Product Type: Textured Patterned Loop
 2. Face Yarn: Duracolor Premium Nylon

3. Gauge: 1/12
 4. Stitches Per Inch: 10.4
 5. Coloration: Solution Dyed/ Yarn Dyed
 6. Backing: Unibond Flex
 7. Static Control: Less than 3.5 Kv per AATCC- 134
 8. Pile Thickness: .141" (3.58mm)
 9. Flammability:
 - a. Class 1 per ASTM E 648
 - b. Less than 450 smoke density per ASTM E 662
- M. Manufacturing Specification Broadloom ("Class Act Collection"- Product By the Book) Mohawk Group
1. Product Type: Textured Multi Colored Loop
 2. Face Yarn: Duracolor Premium Nylon
 3. Gauge: 1/12
 4. Stitches per Inch: 10.3
 5. Coloration: Solution/Yarn Dyed
 6. Backing: Unibond Flex
 7. Static Control: 3.0 per AATCC- 134
 8. Pile Thickness: .118"(3.00mm)
 9. Flammability:
 - a. Class 1 per ASTM E 648
 - b. Less than 450 Smoke Density per ASTM E 662
- N. Manufacturing Specifications (Modular Carpet) (Winning Team: Standard & Icebreaker)
1. Type: Tufted Textured Loop
 2. Face Yarn: Universal Premium Nylon

3. Coloration: 100% solution dyed
 4. TARR Rating: Severe (Standard) Heavy (Icebreaker)
 5. Gauge: 1/12
 6. Stitches per Inch: 7.7 in Standard 9.0 in Icebreaker
 7. Face Weight: 17 oz.
 8. Primary and Secondary Backing: GlasBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: .12" (Standard) .13" (Icebreaker)
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- O. Manufacturing Specifications (Modular Carpet) (AE311, AE3115, AE317)
1. Type: Tufted Textured Loop
 2. Face Yarn: Aquafil 100% Recycled Nylon
 3. Coloration: 100% solution dyed
 4. TARR Rating - Heavy
 5. Gauge: 1/12
 6. Stitches per Inch: 9.0 in (AE311) 8.3 in (AE315)
 7. Face Weight: 17 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: 0.12" (Standard) 0.13" (Icebreaker)

12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- P. Manufacturing Specifications (Modular Carpet) (Cubic and Cubic Colors)
 1. Type: Tufted Textured Loop
 2. Face Yarn: Aquafil 100% Recycled Nylon
 3. Coloration: 100% solution dyed
 4. TARR Rating - Severe
 5. Gauge: 1/12
 6. Stitches per Inch: 8.2
 7. Face Weight: 18 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: 0.14"
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- Q. Manufacturing Specifications (Modular Carpet) (Viva Colores, Borders and Inserts only)
 1. Type: Tufted Textured Loop
 2. Face Yarn: Universal Premium Dyed
 3. Coloration: 100% solution dyed
 4. TARR Rating - Heavy
 5. Gauge: 1/12

6. Stitches per Inch: 10
 7. Face Weight: 18 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: 0.15"
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- R. Manufacturing Specifications (Broadloom) (Visual Energy) (Vivid and Vim):
1. Type: Vivid: Multi-Level Pattern Loop, Vim: Level Loop
 2. Face Yarn: Eco Solution Q Nylon
 3. Coloration: Solution Dyed
 4. Gauge: 1/10 inch
 5. Stitches per inch: Vivid: 12, Vim: 11.5
 6. Face Weight: Vivid: 18 oz, Vim 15 oz
 7. Secondary Backing: Primary- UltraLoc
 8. Static Protection: Less than 3.5KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC-174 requirements
 10. Pile Height: Vivid: 4/32" low – 6/32" high, Vim: 5/32"
 11. Flammability
 - a. Passes DOC-FF-1-70 Pill Test.
 - b. Floor Radiant Panel: Meets class I when tested under ASTM E648.
 - c. Smoke Development: Less than 450 when tested under ASTM E662.

- S. Manufacturing Specifications (Broadloom Carpet) (Work.Study.Play)
(Work.Study.Play)
1. Type: Graphic Loop
 2. Face Yarn: Solution Q Extreme Nylon
 3. Coloration: Solution Dyed
 4. Gauge: 1/8inch
 5. Stitches per inch: 10.5
 6. Face Weight: 20oz
 7. Secondary Backing: Primary – Ultraloc
 8. Static Protection: Less than 3.5KV per AATCC-134
 9. Antimicrobial Protection: Meets AATCC-174 requirements
 10. Pile Height: 4/32”
 11. Flammability
 - a. Passes DOC-FF-1-70 Pill Test.
 - b. Floor Radiant Panel: Meets class I when tested under ASTM E648.
 - c. Smoke Development: Less than 450 when tested under ASTM E662.
- T. Manufacturing Specifications Broadloom (Shaw Contract Group, Meadow)
1. Face Yarn: ECO Solution Q
 2. Coloration: Yarn Dyed / Solution Dyed
 3. Gauge: 1/10
 4. Stitches Per Inch: 12.0
 5. Density: 8920 oz./sy
 6. Primary Backing: Woven Polypropylene
 7. Secondary Backing: Ecoworx Performance Broadloom

8. Static Protection: Less than 3.5 KV
 9. Antimicrobial Protection: Meets AATCC-174 requirements
 10. Flammability
 - a. Passes Methenamine Pill Test (ASTM D-2859)
 - b. Floor Radiant Panel: Meets class I when tested under ASTM E648
 - c. Smoke Chamber (ASTM-E662) Less than 450
 - d. Width of rolls: 12 feet.
- U. Manufacturing Specifications (Roll Goods) (Winning Team: Standard & Icebreaker)
1. Type: Tufted Textured Loop
 2. Face Yarn: Universal Premium Nylon
 3. Coloration: 100% solution dyed
 4. TARR Rating: Severe (Standard) Heavy (Icebreaker)
 5. Gauge: 1/12
 6. Stitches per Inch: 7.7 in Standard 9.0 in Icebreaker
 7. Face Weight: 17 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: .12" (Standard) .13" (Icebreaker)
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- V. Manufacturing Specifications (Roll Goods) (AE311, AE3115, AE317)
1. Type: Tufted Textured Loop

2. Face Yarn: Aquafil 100% Recycled Nylon
 3. Coloration: 100% solution dyed
 4. TARR Rating - Heavy
 5. Gauge: 1/12
 6. Stitches per Inch: 9.0 in (AE311) 8.3 in (AE315)
 7. Face Weight: 17 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: 0.12" (Standard) 0.13" (Icebreaker)
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- W. Manufacturing Specifications (Roll Goods) (Cubic and Cubic Colors)
1. Type: Tufted Textured Loop
 2. Face Yarn: Aquafil 100% Recycled Nylon
 3. Coloration: 100% solution dyed
 4. TARR Rating - Severe
 5. Gauge: 1/12
 6. Stitches per Inch: 8.2
 7. Face Weight: 18 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements

11. Pile Height: 0.14"
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258
- X. Manufacturing Specifications (Roll Goods) (Viva Colores)
1. Type: Tufted Textured Loop
 2. Face Yarn: Universal Premium Dyed
 3. Coloration: 100% solution dyed
 4. TARR Rating - Heavy
 5. Gauge: 1/12
 6. Stitches per Inch: 10
 7. Face Weight: 18 oz.
 8. Primary and Secondary Backing: GlassBac
 9. Static Protection: Less than 3.0 KV per AATCC-134
 10. Antimicrobial Protection: Meets AATCC- 174 requirements
 11. Pile Height: 0.15"
 12. Flammability
 - a. Class 1 under ASTM E 648
 - b. Less than 450 Smoke Density per NFPA-258

2.02 ADHESIVE/SEAMING CEMENT

- A. Modular Floor adhesive: Carpet Manufacturer's privately labeled, "premium" (highest grade) solvent free adhesive with both "wet state" and "dry state" antimicrobial protection. Filler materials shall not exceed 35%; total solids shall not exceed 65%. Adhesive shall comply with flame spread rating required for the carpet installation. Follow the manufacturers written installation instructions.
1. Mohawk Group: EnPress Pressure Sensitive Adhesive.
 2. Patcraft Carpet: 3500D or 3600D EPBL carpet adhesive

3. Interace Carpet: Gridset 2000
- B. Broadloom Floor adhesive:
1. Mohawk Group: NuBroadlock Premium Multi Purpose Adhesive
 2. Patcraft Carpet: 1000D, 1200D, or 3800D Premium Multi-Purpose Adhesive
 3. Henry, L. P. "Greenline GL62" High Performance Carpet Adhesive
- C. Seaming Cement:
1. Hot melt seaming adhesive or similar product privately labeled by carpet manufacturer.
 2. Patcraft Broadloom Seam Sealer 8300D
 3. Henry, L.P.: "248 Seam Pro" Carpet Seam Adhesive"
- D. All adhesive and seaming cement shall be delivered to the site in unopened, original containers, shall be clearly labeled, and shall be the submitted and approved material.

2.03 MISCELLANEOUS MATERIALS

- A. Seaming tape, thread, nails, adhesives, edge strips and other accessory items recommended and approved in writing by the carpet manufacturer for the condition of installation and use.

2.04 PILE YARN

- A. Yarn shall be spun in the manner recommended by the yarn manufacturer and carpet manufacturer as required to achieve the texture of pattern indicated.

2.05 INSTALLATION MATERIALS

- A. Vinyl edge strips: Extruded or molded heavy duty vinyl or rubber edge guards with 2" wide minimum flange. Color selected from standard colors.
- B. Miscellaneous accessories: Provide heavy duty vinyl or rubber reducing strips, tile and carpet joiners, and nosings as indicated by drawings and to meet project requirements.

2.06 SKIM COATING AND PATCHING COMPOUND

- A. Subject to carpet manufacturer's approval, provide one of the following:

1. Cement-based finishing underlayment: ARDEX L.P., "SD-F Feather Finish," Cement-Based Finishing Underlayment.
2. ARDEX L.P., "SD-P Instant Patch" Concrete Underlayment Patch.
3. Carpet Manufacturer's approved patching compound.

PART 3 - EXECUTION

3.01 INSPECTION OF FLOOR SURFACE

- A. Examine and verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are dry enough and ready for flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.
- E. Verify that required floor-mounted utilities are in correct location.
- F. Notify Owner's Representative and Architect of any adverse conditions discovered during inspection.

3.02 ENVIRONMENTAL REQUIREMENTS AND CONDITION OF SURFACES

- A. Do not start work until unsatisfactory conditions are corrected.
- B. Verify that new concrete substrates have been properly cured for at least 30 days. Verify that no chemical curing compounds have been used or are present on the surface of the substrate.
- C. Install carpeting prior to installation of movable partitions, fixtures, and telephone and electrical trim plates for floor outlets.
- D. Do not install carpet until "wet" work such as masonry and plastering is completed.
- E. Do not begin Work until rooms or spaces designated to receive carpet have been stabilized for temperature and humidity, and the heating and air conditioning

systems are fully functional. Install carpet only within allowable temperature range stated by manufacturer.

3.03 PREPARATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. SURFACE PREPARATION: Dust, dirt, debris and non-compatible adhesive must be removed before the installation begins. Surfaces must be smooth and level with all holes and cracks filled with Portland cement-based patch reinforced with polymers. Vacuum substrate immediately prior to carpet installation.
- C. Non-adhesive backed carpet shall be completely cemented in place, in accordance with the recommendations of manufacturer.
- D. Wall base shall be installed AFTER completion of the carpet installation.
- E. Areas where carpeting is to be installed may be currently occupied by students or school staff. Installation shall be scheduled and coordinated with Owner and school staff to minimize disruption of normal school activities.

3.04 INSTALLATION

- A. Install Carpet in strict accordance with the finish drawings, manufacturer's instructions, and CRI 104 Carpet Installation Standard. Comply with the carpet manufacturer's instructions and recommendations for adhesive installation. Install carpet in accordance with approved seaming diagram.
 - 1. Comply with manufacturer's written recommendations for proper setting time of adhesive.
- B. Carpet
 - 1. Maintain direction of pattern and texture, including lay of pile. Fit sections of carpet into space prior to applying adhesive.
 - 2. Extend carpet under open-bottomed and raised bottom obstructions, and under removable flanges of obstructions. Extend carpet under all movable furniture and equipment. Fit carpet neatly into breaks and recesses, against bases, around pipes and penetrations, under saddles and thresholds, and around permanent cabinets and equipment unless otherwise indicated on the Drawings.
 - 3. Provide cutouts as necessary for removable access devices in the substrate. Bind edges as neatly as possible and secure both sides of cuts to the substrate.

4. Install carpet edge strip at every location where edge of carpet is exposed to traffic.
 5. Butt carpet edges tightly together to form seams without gaps.
- C. Seaming:
1. Seam Layout
 - a. Seams shall run the length of the carpet roll.
 - b. Locate seams so that traffic patterns run with the seam, not across.
 - c. Carpet in all rooms 12' and under shall be installed in one piece.
 2. Ensure that carpet patterns are compatible at seams.
 3. Carefully and accurately trim seams.
 4. Coat trimmed edges with seam adhesive.
- D. Adhesive:
1. Ensure adequate ventilation during application of adhesive, in accordance with Manufacturers handling precautions.
 2. Apply adhesives in accordance with Manufacturer's instructions.
 3. Apply adhesive uniformly.
 4. Cover only that amount of area that can be covered by carpet with the recommended working time of adhesive.
 5. Do not soil walls, bases, or adjacent areas with adhesives.
 6. Promptly remove spillage.
 7. Apply adhesives with notched trowel. Use only the proper trowel size recommended in writing by manufacturer of the adhesive.
 8. Clean trowel and rework patches to assure an even application.
- E. Broom or roll carpet to remove air bubbles and insure bond.
- F. Install edge strips, moldings, binder bars, and carpet grippers following manufacturer's written instructions.

- G. Carpet shall not be removed and reinstalled if disapproved for either poor workmanship or improper or defective materials. New materials and required labor shall be supplied by the Contractor at no additional cost to the Owner.

3.05 CLEANING

- A. Installed carpet shall be free of all spots, smears, and stains. All seam and floor cement shall be removed at once with solvent furnished by the carpet manufacturer and approved for use.
- B. All rubbish, paper, and salvages shall be removed from the job site. Do not leave excess seaming cement or carpet adhesive on the job site.
- C. Upon completion, vacuum with a commercial beater bar type vacuum cleaner.
- D. After each area of carpet has been installed, protect from soiling and damage in accordance with Manufacturers recommendations.

3.06 MAINTENANCE

- A. Carpet manufacturer's representative shall schedule an on-site training session in order to instruct school staff in the proper methods and procedures for cleaning and maintenance.

END OF SECTION

SECTION 09685

RUBBER ATHLETIC FLOORING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Provide the specified athletic floor surface in the Weight Room area as indicated.

1.03 QUALITY ASSURANCE

- A. The specification standard for design, quality, function, and appearance for the athletic floor surface: "Tuflex" rubber tile, recreational-type flooring system, as manufactured by Rubber Products, Inc., 4521 West Crest Avenue, Tampa, Florida, 33641, 1-800-543-0390 (www.tuflex.com).
- B. Rubber tile flooring shall not be installed until all other work has been completed.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's detailed technical data for materials and installation.
- B. Samples: Submit material sample approximately 27" x 27" in size and color as selected.
- C. Maintenance Booklet: At project closeout, provide three copies of a maintenance booklet containing maintenance procedures and stain removal chart.

1.05 WARRANTY

- A. The completed rubber tile flooring shall have a written warranty covering defects in material and workmanship for a period of two (2) years.
- B. Furnish copies of the warranty in accordance with Section 01740.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Rubber tile floorcovering: "Spartus" Tuflex rubber flooring system.

- B. Flexco "Force" Tuflex
 - 1. Rubber laminate with a composite nominal thickness of 3/8 inches and a calculated density of 2.05 pounds per square foot.
 - 2. Size: Square tiles, 27"x27".
 - 3. Coloring matter shall be insoluble in water and non-bleeding.
 - 4. The flooring shall have a hardness not to exceed 70 when tested by the Shore A Durometer Test (ASTM D2240).
- C. Tarkett "Triumph Sports & Multi-Functional Rubber Tile"
 - 1. Size: Square tiles, 24" x 24"
- D. Provide the manufacturers privately labeled, two-part epoxy adhesive as recommended for the specific installation, delivered to the project in the manufacturer's sealed packages with labels intact, ready for use without adulterating or reducing.
- E. Provide reducer strip where flooring abuts differing floor finishes: Tuflex TRS-11.
- F. Cleaner: Tuflex TC-1 Cleaner after installation.
- G. Sealer: TF-2 Tuflex Finish after cleaning, 2 light coats

PART 3 - EXECUTION

3.01 PREPARATION

- A. Concrete slab surfaces to receive rubber tile flooring surface shall be thoroughly cured, cleaned, and prepared in accordance with manufacturer's recommendations before installation of new rubber tile flooring.
- B. Do not proceed with installation on the floor covering until preparation is complete and the bearing surface meets the requirements of the flooring manufacturer.

3.02 INSTALLATION

- A. Contractor shall employ installation crews endorsed by the floor covering manufacturer, and shall furnish Architect documentation of such endorsement.
- B. All other trades shall have completed their work, prior to the start of installation of the rubber tile flooring, except as otherwise specified.

- C. No other trades and/or personnel other than those working on the installation shall be permitted in the area of application from the start of the work.
- D. Contractor shall be responsible for the protection of the floor covering during and after completion of the installation until project closeout.
- E. A minimum of 70 degrees F and a maximum of 90 degrees F shall be maintained in the area for the duration of the installation.
- F. The bearing surfaces shall be clean, smooth, and dry in accordance with manufacturer's recommended procedure.
- G. Installation shall be in accordance with the manufacturer's printed instructions.
- H. All excess pieces of usable rubber tile flooring shall be packaged, labeled, and left with the Owner as "attic stock". Do not include excess adhesives with "attic stock".

3.03 CLEANING AND PROTECTION

- A. Upon completion of installation, thoroughly clean athletic floor surface to remove all adhesive, sealer, dirt, and other stains, using Manufacturer's privately labeled cleaner.
- B. No traffic of any kind shall be allowed for a minimum of 24 hours after installation. After the initial 24 hour period, limit traffic for an additional 24 hours.
- C. Prior to final inspection, replace all damaged, loose, or otherwise defective tiles.

END OF SECTION

INSTRUCTIONS FOR EDITING

SECTION 09800

SPECIAL COATINGS – WATER BASED EPOXY WALL COATING

1. 3.02 Surface Preparation and 3.06 Painting Schedule: Edit to fit project scope for new and/or existing surfaces.

SECTION 09800

SPECIAL COATINGS – WATER BASED EPOXY WALL COATING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Section 09900: Painting

1.03 QUALITY ASSURANCE

- A. Job Mock-Up:

1. Perform a minimum 6 feet x 6 feet application of specified coating systems on each type of surface indicated to be coated.
2. Approved mock-ups shall serve as standard of quality for acceptance of work.
3. Mock-ups may be left in place as part of completed work.

1.04 STANDARDS

- A. Performance Standards: Meet requirements of ASTM D3730 for corrosion and chemical resistance, and impact and abrasion resistance.
- B. Physical Properties Standards:
 1. Abrasion resistance: ASTM D4060
 2. Impact resistance: ASTM G14
 3. Adhesion: ASTM D4541
 4. Moisture condensation resistance: ASTM D2247
 5. Pencil Hardness: ASTM D3363
 6. Scrub resistance: ASTM D2486
 7. Surface Burning Characteristics: ASTM E84
 8. No mercury or lead content

1.05 SUBMITTAL

- A. Color samples: Submit coating manufacturers color swatches for selection by Architect.

- B. Coating Manufacturer's Literature: Submit descriptive data and recommendations for mixing, reducing, surface preparation, application, curing and safety precautions.
- C. Certificates:
 - 1. Provide special coating manufacturer's certified test reports showing compliance to specification requirements under Paragraphs 1.03 and 2.02.
 - 2. Provide special coating manufacturer's certification that the special coatings provided under this section do not contain mercury or lead.

1.06 WARRANTY

- A. Provide written warranty from special coating manufacturer that special coating system(s) as applied will, for a period of five (5) years, be free from the following defects.
 - 1. Peeling, cracking, delamination, uneven change of gloss, or other deterioration of the surface resulting from defects in materials. Provided, however, that this warranty shall not extend to such deterioration as is caused by structural faults, normal wear and tear, negligence, vandalism, accidents, acts of God or other causes not related to the materials used or to the workmanship provided in applying the special coating system(s).
- B. Provide written guarantee of workmanship under which the sub-contractor agrees to furnish all labor related to any remedial requirements that might arise under the warranty, at no cost to the Owner.

1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened containers with special coating manufacturer's identification labels intact.
- B. Store materials in protected area at a temperature not to exceed maximum and minimum temperature as recommended by the special coating manufacturer.

1.08 JOB CONDITIONS

- A. Apply coating only under the following prevailing conditions:
 - 1. Air and space temperatures are not below 55 degrees F or above 100 degrees F.
 - 2. Relative humidity is not above 85% and the surface temperature is at least 5% above the dew point.
 - 3. Protect adjacent surfaces not to be coated.

PART 2 - PRODUCTS

2.01 ACCEPTABLE SPECIAL COATING MANUFACTURERS

- A. 16-510 PPG Pitt Glaze WB1 Pre Catalyzed Single Component Semi Gloss Epoxy (PPG Architectural Coatings), Pittsburgh, PA 1-800-PPG-IDEA (www.ppgpro.com) (Basis of Specification)
- B. Pro Industrial "Pre catalyzed Water Based Catalyzed Epoxy" by Sherwin Williams, Cleveland, OH 1-800-524-5979 (www.sherwin-williams.com)
- C. Benjamin Moore P43 SUPER SPEC HP Waterborne Acrylic Epoxy Semi Gloss Enamel www.benjaminmoore.com
- D. Pre-bid approved substitution in accordance with Section 01630.

2.02 PRODUCT REQUIREMENTS

- A. Low odor, high solids water based, VOC content requirement of SCAQMD Rule 1113; two components, gloss epoxy wall coating:
 - 1. Minimum Solids by Volume: 40% ± 2%
 - 2. Minimum solids by weight: 50% ± 2%
 - 3. Weight per Gallon: 10.1 ± .15 pounds mixed.
 - 4. Resistance to Chemicals and Cleaning Agents: Tested for resistance to fumes, splash and spillage in accordance with ASTM D3912.
 - 5. Impact: 15 in pounds minimum per ASTM G14.
 - 6. Stain Removal: Maximum 25 cycles for ink, lipstick, coffee and grape juice.
 - 7. Scrub resistance: 4800 cycles per ASTM D2486.

2.03 MATERIAL PREPARATION

- A. Mix and thin materials according to manufacturer's latest printed instructions.
- B. Do not use mixed material beyond manufacturer's recommended pot life (36 hours at 77° F).

PART 3 - EXECUTION

3.01 PRE-WORK INSPECTION

- A. Examine surfaces to receive special coating(s) and notify Architect and Owner's Representative in writing of any conditions that would adversely affect the appearance or performance of the coating system(s), and which cannot be put into an acceptable condition by the preparatory work specified in paragraph 3.02.
- B. Do not proceed with surface preparation and application until the surface is acceptable or authorization to proceed is given by the Architect and Owner's Representative.
- C. Do not begin application until proper ventilation, as recommended by coating manufacturer, has been provided.

3.02 SURFACE PREPARATION

- A. General:
 - 1. Dislodge dirt, plaster nibs, mortar spatter and other dry material by scraping or brushing. Remove dust and loose material by brushing, sweeping, vacuuming, or blowing high-pressure air.
 - 2. Remove oil, wax and grease by scraping off heavy deposits and cleaning with mineral spirits or a hot trisodium phosphate solution followed by a water rinse.
 - 3. Verify that surfaces to be coated are dry, clean and free of dust, dirt, oil, wax, grease or other contaminants.
- B. Previously Painted Surfaces:
 - 1. A representative from the approved paint manufacturer shall visit the site and, together with the Owner's Representative, Architect and Contractor shall inspect existing painted surfaces prior to preparation and repainting.
 - 2. Thoroughly clean all surfaces in accordance with paragraph A(2) above, and the recommendations of the Paint Manufacturer's representative.
 - 3. Remove all loose or peeling paint by scraping or by means of low or non-VOC containing stripping system approved by the Owner's Representative and Architect.
 - 4. Prepare existing epoxy surfaces by scuff sanding. Remove all loose particles.

5. All previously painted surfaces shall be completely re-primed, using a primer recommended by Paint Manufacturer for type of substrate and compatible with new topcoats.
 - a. Prior to re-priming, perform a "patch test" covering approximately 2 to 3 square feet in area, by applying recommended primer and specified topcoats. Allow patch to dry thoroughly, and test for adhesion in the presence of Manufacturer's Representative, Owner's Representative, Architect and Contractor.
- C. CMU:
 1. Scrape or grind fins and protrusions flush with the surface.
 2. Patch holes and cracks flush with the surface.
 3. Rake mortar joints clean.
 4. Remove surface laitance or efflorescence by acid etching or whip sandblasting.
- D. Gypsum Board:
 1. Tape and finish gypsum board.
 2. Apply epoxy wall finish over Level 3 or 4 finish.

3.03 APPLICATION

- A. Existing Building: No spray application shall be allowed during occupied hours.
- B. Thoroughly mix "A" and "B" components in ratio recommended by coating manufacturer. Allow "sweat-in" time as specified by coating manufacturer.
- C. Apply materials at specified film thickness by method recommended by the coating manufacturer.
- D. Allow each coat to dry thoroughly before recoating.
- E. Cut in edges clean smooth, uniform in color, and free of brush marks, laps, runs, dry spray, overspray, and skipped or missed areas.
- F. Make finish coats smooth, uniform in color, and free of brush marks, laps, runs, dry spray, overspray, and skipped or missed areas.
- G. Comply with coating manufacturers recommended safety precautions in handling and application of coatings.

3.04 INSPECTION

- A. Request approval of each coat from Architect and Owner's Representative before applying succeeding coats.
- B. Touch-up and repair all work that is not acceptable and request final acceptance.

3.05 CLEANING

- A. Remove paint spatters from glass, plumbing fixtures and all adjoining surfaces.
- B. Repair any damage to coatings or surfaces caused by cleaning operations.
- C. Remove debris from job site and leave storage area clean.
- D. Do not leave excess coating materials, whether in opened or unopened containers, on the premises after completion of the work.

3.06 PAINTING SCHEDULE

- A. CMU - Corridors, toilets, janitor closets, cafeteria, gymnasium and physical education areas and locker rooms (do not paint tile or structural glazed tile wainscots, or acoustical wall panels). See Drawings for additional locations:

1. New Surfaces:

1 Coat: PPG Glidden Professional 3010 Concrete Coatings Block Filler Interior Exterior Primer Spray or roller applied, minimum dry film thickness (DFT) of 10 mils.

2. Coats: 16-510 PPG Pitt Glaze WB1 Pre Catalyzed Single Component Semi Gloss Epoxy, minimum DFT of 3 mils per

2. Existing Surfaces:

Primer: Glidden Professional 3210 Gripper Interior/Exterior Primer Sealer

2 coats: 16-510 PPG Pitt Glaze WB1 Pre Catalyzed Single Component Semi Gloss Epoxy, DFT of 3 mils per coat.

3. New Surfaces: Gypsum Board

1 Coat: PPG Glidden Seal Grip 17-921-Xi Interior Primer Spray or roller applied, minimum dry film thickness (DFT) of 1.5-2 mils.

2 Coats: 16-510 PPG Pit Glaze WB1 Pre-Catalyzed Single Component Semi-Gloss Epoxy, minimum DFT of 3 mils per coat.

END OF SECTION

SECTION 09810

SPECIAL COATINGS – WATER BASED EPOXY FLOOR COATING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Section 01630: Substitutions and Product Options
 - 2. Section 01340: Submittals

1.02 DESCRIPTION OF WORK

- A. This Section includes all necessary labor and materials required for installation of a thin mill, epoxy traffic coating including floor surface preparation, on concrete floors. Refer to Drawings for extent of coating required and for locations to receive coating in addition to the following:
 - 1. Boiler Room
 - 2. Main Electrical Room

1.03 RELATED WORK

- A. Section 09800: Special Coatings - Water Based Epoxy Wall Coating
- B. Section 09820: Special Coatings – Multi-Colored Interior Wall Coatings
- C. Section 09900: Painting

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Comply with applicable provisions of section 01340.
- B. Submit sample charts illustrating manufacturer's standard color selections for ready-mixed paint.
- C. Product Literature: Submit the following:
 - 1. Manufacturer's Technical data including information about product type, recommended use, performance characteristics, substrate preparation, application recommendations, and safety precautions.
 - 2. Material Safety Data Sheets (MSDS) indicating ingredients, VOC (Volatile Organic Content), fire and explosion hazard data, health hazard data, first aid procedures, reactivity data, and other special precautions.

3. Evidence that the coating has no lead-containing ingredients.
4. Evidence of Taber Abrasion Testing.

1.05 REFERENCE STANDARDS

- A. CPSC 16CFR1303 (Ban of Lead-containing Paint).
- B. ASTM D4060 (Taber Abrasion Test).
- C. ASTM D1640 (Drying Time).
- D. ASTM D4263 – Standard Test Method for Indicating Moisture in Concrete.

1.06 WARRANTY

- A. Provide manufacturer's standard warranty for replacement of defective coatings for a minimum period of one (1) year from effective date of warranty commencement. See Section 01740.

1.07 PRODUCT, DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in sealed, unopened containers with coating manufacturer's labels intact.
- B. Store materials in protected area at a temperature not to exceed maximum and minimum temperature as recommended by manufacturer. Protect from freezing.

PART 2 - PRODUCTS

2.01 ACCEPTABLE COATING MANUFACTURERS

- A. Akzo Nobel (Glidden Professional and Devco Coatings)
(www.gliddenprofessional.com)
(basis of Specification).
- B. "Aquapon WB" Waterborne Epoxy, 98-1 Series by Pittsburgh Paints, Pittsburgh, PA 1-800-PPG-IDEA (www.ppg.com)
- C. "Dur-a-poxy" High Gloss (pigmented), Dur-a-flex Inc., East Hartford, CT 1-800-528-9838 (www.dur-a-flex.com).
- D. Other manufacturers, pre-bid approved in accordance with Section 01630, and meeting the requirements of this Section shall be acceptable.

2.02 PRODUCT DESCRIPTION AND REQUIREMENTS ("ICI 4408 Tru-Glaze WaterBorne Epoxy Gloss Coating")

- A. Low VOC (shall meet or exceed the VOC content requirements of SCAQMD Rule 1113), two component, Polyamide Epoxy; water-borne.
- B. Percent of solids by weight: 51.8% (+/- 2%) for ready-mixed colors.
- C. Percent solids by volume: 37.8% (+/-2%) for ready-mixed colors.
- D. Volatile Organic Content: 2.26 lbs/gal (271.00g/l), not to exceed 2.83 lbs/gal (340g/l).
- E. Drying Time (at 77°F and 50% relative humidity):
 - 1. To Touch: 1 hour.
 - 2. To Handle: 7 hours.
 - 3. To Recoat: 16 hours.
- F. Dry Film Thickness per coat: 2.0 to 3.0 mils.
- G. Pot Life: 6 hours maximum at 77°F and 60% Relative Humidity.

PART 3 - EXECUTION

3.01 PRE-APPLICATION INSPECTION

- A. Examine surfaces to be coated. Notify the Architect and Owner's Representative in writing of any conditions that would adversely affect the appearance or performance of the coating.
- B. Do not proceed with surface preparation until observed adverse conditions have been corrected.

3.02 SURFACE PREPARATION

- A. General
 - 1. All floor surfaces shall be clean, dry and free from loose and peeling paint, dirt, grease and other contaminants.
 - 2. Sand all patched, raised and uneven surfaces.
 - 3. Follow manufacturer's written recommendations for surface preparation.
- B. Unpainted Concrete
 - 1. New concrete shall be allowed to cure at least 28 days before applying floor coating. Test new concrete for moisture content in accordance with ASTM D4263.

2. Remove dirt and other debris by sweeping and/or scraping.
3. Remove contaminants such as grease or oil by use of solvents or detergents. Thoroughly rinse to remove residue and allow surface to dry completely.
4. Where surface coatings such as hardeners and sealers have been applied, remove by means of acid etching, followed by a thorough rinsing. Allow surface to dry completely.

C. Previously Painted Concrete

1. Test old coatings for adhesion to substrate and for lifting by the proposed topcoat. Consult manufacturer's representative.
2. Application over existing epoxy: sand surface to dull the gloss, then completely clean with detergent; rinse, and allow to dry.
3. Remove dirt, oil, grease and other contaminants in accordance with procedures indicated for unpainted surfaces.

3.03 ENVIRONMENTAL CONDITIONS

- A. Apply coating only when ambient, floor surface, and coating material temperatures are above 50°F. In addition, floor surface temperature shall be at least 5°F above the dew point. Permissible temperature ranges are as follows:
1. Ambient: 50°F to 100°F
 2. Coating Material: 50°F to 90°F
 3. Substrate (Floor): 50°F to 130°F

3.04 PATCH TEST

- A. Prior to application, select a small, properly prepared portion of floor surface and apply a "patch" area of coating. Allow area to dry thoroughly prior to testing. Test surface for compatibility and adherence in accordance with Manufacturer's recommendations. Conduct test in the presence of the Owner's Representative and the Architect.

3.05 MATERIAL PREPARATION

- A. Blend components "A" and "B" together in accordance with Manufacturer's written instructions and recommended mixing rate. Do not use mixed material beyond recommended Pot Life.

3.06 SAFETY PROCEDURES

- A. Carefully follow all manufacturer's written recommendations and precautionary information regarding safe application of coating.
- B. Maintain adequate ventilation during application. If ventilation is restricted or cannot be maintained, workmen shall wear NIOSH/MSHA approved respirators.
- C. Contractor's personnel shall be familiar with potential health hazards associated with application of coating.

3.07 CLEAN-UP

- A. Promptly remove all excess materials associated with the coating application from the premises and dispose of legally.
- B. Remove coating splatters from all adjoining surfaces not scheduled to be coated.
- C. Repair damage to adjacent coatings surfaces, materials and/or equipment, where such damage has been caused as a result of the coating application.

3.08 COATING SCHEDULE

- A. Concrete Floors (all surfaces) shall be prepared in accordance with paragraph 3.02):

2 Coats: Devoe Coatings; Tru-Glaze-WB 4428 Waterborne Epoxy Gloss Coating

END OF SECTION

SECTION 09815

SPECIAL COATINGS – NON-SLIP EPOXY FLOOR COATING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Section 01630: Substitutions and Product Options (Pre-bid approval)
 - 2. Section 01340: Submittals

1.02 DESCRIPTION OF WORK

- A. This Section includes all necessary labor and materials required for installation of non-slip epoxy traffic coating for concrete slabs, including floor surface preparation. Refer to Drawings for complete extent of coating required in the following space:
 - 1. Auto Tech Lab.

1.03 RELATED WORK

- A. Section 09900: Painting

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Comply with applicable provisions of section 01340.
- B. Submit sample charts illustrating manufacturer's standard color selections for ready-mixed paint.
- C. Product Literature: Submit the following:
 - 1. Manufacturer's Technical data including information about product type, recommended use, performance characteristics, application recommendations, and safety precautions.
 - 2. Material Safety Data Sheets (MSDS) indicating ingredients, VOC (Volatile Organic Content), fire and explosion hazard data, health hazard data, first aid procedures, reactivity data, and other special precautions.
 - 3. Evidence that the coating has no lead-containing ingredients.
 - 4. Evidence of abrasion resistance, coefficient of friction, and impact resistance.

1.05 REFERENCE STANDARDS

- A. CPSC 16CFR1303 (Ban of Lead-containing Paint).
- B. ASTM D1640 (Drying Time).
- C. ASTM D4060 (Taber Abrasion Test)
- D. International Concrete Repair Institute, Inc. (ICRI), "Concrete Repair Manual", Second Edition, 2003.

1.06 WARRANTY

- A. Provide manufacturer's standard warranty for replacement of defective coatings for a minimum period of one year from the effective date of warranty commencement. Refer to Section 01340.

1.07 PRODUCT, DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in sealed containers with coating manufacturer's labels intact.
- B. Store materials in protected area at a temperature not to exceed maximum and minimum temperature as recommended by manufacturer.

PART 2 - PRODUCTS**2.01 ACCEPTABLE COATING MANUFACTURERS**

- A. ICI Paints/Devoe High Performance Coatings, Cleveland, OH, 1-800-654-2616, www.devoecoatings.com.
- B. Comparable products of other coating manufacturers, pre-bid approved in accordance with Section 01630, and meeting the requirements of this specification, shall be acceptable.

2.02 SYSTEM DESCRIPTION

- A. Surface Preparation: Devfloor 528.
- B. Epoxy Primer: Devran 201.
- C. Epoxy Non-Slip Floor Coating: AS-250.

PART 3 - EXECUTION**3.01 PRE-APPLICATION INSPECTION**

- A. Examine surfaces to be coated. Report any conditions that would adversely affect the appearance or performance of the coating.
- B. Do not proceed with surface preparation until adverse conditions have been corrected.

3.02 SURFACE PREPARATION

- A. General
 - 1. All floor surfaces shall be clean, dry and free from loose and peeling paint, dirt, grease and other contaminants.
 - 2. Blast track entire floor surface to within a C.S.P. rating of between 4 and 5, as per ICRI standards.
 - 3. Spot touch-up any remaining areas of oil residue with Devfloor 528.
 - 4. Follow manufacturer's written recommendations for surface preparation.

3.03 MATERIAL PREPARATION

- A. Blend components "A" and "B" together in accordance with Manufacturer's written instructions and recommended mixing rate. Do not use mixed material beyond Pot Life.

3.04 PATCH TEST

- A. Prior to application, select a small, properly prepared portion of floor surface and apply a "patch" area of coating. Allow area to dry thoroughly prior to testing. Test surface for compatibility and adherence in accordance with Manufacturer's recommendations. Conduct test in the presence of the FCPS representative.

3.05 SAFETY PROCEDURES

- A. Carefully follow all manufacturer's written recommendations and precautionary information regarding safe application of coating.
- B. Maintain adequate ventilation during application. If ventilation is restricted or cannot be maintained, workmen shall wear NIOSH/MSHA approved respirators.
- C. Contractor's personnel shall be familiar with potential health hazards associated with application of coating.

3.06 CLEAN-UP

- A. Promptly remove all excess materials associated with the coating application from the premises and dispose of legally.
- B. Remove coating splatters from all adjoining surfaces not scheduled to be coated.
- C. Repair damage to adjacent coatings surfaces, materials and/or equipment, where such damage has been caused as a result of the coating application.

END OF SECTION

SECTION 09820

SPECIAL COATINGS – MULTI-COLORED INTERIOR WALL COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Section 03300: Cast-in-Place Concrete
- B. Section 04200: Masonry
- C. Section 09310: Ceramic Tile
- D. Section 09250: Gypsum Wallboard
- E. Section 09251: Abuse Resistant Gypsum Fiber Panels

1.03 WORK EXCLUDED

- A. Epoxy wall coatings are covered under Section 09800.
- B. Epoxy floor coatings are covered under Section 09810.
- C. Painting is covered under Section 09900.

1.04 DESCRIPTION OF WORK

- A. Provide all materials, tools, equipment and labor required for application of special coating over existing ceramic tile and structural glazed facing tile wainscots in corridors, and other wall surfaces as indicated. See Drawings for exact extent of the work of this Section.
- B. Renovations and Alterations: Application shall be done during weekends, school breaks or summer recess when the building is not occupied by students. Coordinate the work of this Section with the Construction Phasing Plan for the project (refer to Drawings and Section 01010, Summary of Work).

1.05 REFERENCES

- A. ASTM Standards
 - 1. C 297: Test Method for Tensile Strength of Flat Sandwich Constructions in Flatwise Plane

2. C 840: Standard Specification for Application and Finishing of Gypsum Board
3. C 841: Standard Specification for Installation of Interior Lathing and Furring
4. C 842: Standard Specification for Application of Interior Gypsum Plaster
5. D 412: Test Methods for Rubber Properties in Tension
6. D 522: Test Method for Elongation of Attached Organic Coatings with Conical Mandrel Apparatus
7. D 1308: Effect of Chemicals on Clear and Pigmented Organic Finishes.
8. D 1653: Test Method for Water Vapor Permeability of Organic Coating Films
9. D 2486: Standard Test Method for Scrub Resistance.
10. D 3274: Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation
11. D 3359: Test Methods for Measuring Adhesion by Tape Test
12. D 4060: Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
13. D 4258: Standard Practice for Surface Cleaning Concrete for Coating
14. D 4261: Standard Practice for Surface Cleaning Concrete Unit Masonry for Coating
15. D 4541: Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
16. E 84: Test Method for Surface Burning Characteristics of Building Materials
17. G 21: Recommended Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
18. G 53: Recommended Practice for Operating Light- and Water- Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials

1.06 PERFORMANCE REQUIREMENTS

A. Acrylic based textured coating (Sto Decocoat)

TEST	METHOD	CRITERIA	RESULT
FIRE PERFORMANCE			
Surface Burning	ASTM E-84	Less than 25 flame spread Less than 450 smoke developed	0 5
PHYSICAL PROPERTIES			
Flexibility	ASTM D-522	1/8" (3 mm) mandrel bend	Pass @ 40° F (4.4°C)
Water Vapor Transmission	ASTM D-1653	28 days	28 US Perms
Volatile Organic Content (VOC)			Less than 3.85 oz/qt (100 gm/L)
Mildew Resistance	ASTM G-21	No growth @ 14 days	Pass
STRENGTH & DURABILITY			
Abrasion Resistance	Taber Abrader	Seventeen 20 hour cycles	1.5% weight loss
Adhesion	ASTM C-297	28 days (modified)	Greater than 15 psi (103 kPa) to drywall (substrate failure) Greater than 125 psi (862 kPa) to concrete Greater than 100 psi (689 kPa) to primed metal
Impact Resistance	ASTM D-2796	28 days	No failure up to 70 in-lbs. (7.91 J)
Tensile Strength	ASTM D-412	28 days	Greater than 25 psi (207 kPa)
Abrasion Resistance	Taber Abrader	Seventeen 20 hour cycles	1.5% weight loss
Adhesion	ASTM C-297	28 days (modified)	Greater than 15 psi (103 kPa) to drywall (substrate failure) Greater than 125 psi (862 kPa) to concrete Greater than 100 psi (689 kPa) to primed metal
Impact Resistance	ASTM D-2796	28 days	No failure up to 70 in-lbs. (7.91 J)
Tensile Strength	ASTM D-412	28 days	Greater than 25 psi (207 kPa)

1.07 SUBMITTALS

- A. Provide submittals in accordance with Section 01340, Shop Drawings, Product Data and Samples.
- B. Provide samples of coating manufacturer's full range of custom and standard colors and textures for selection and approval.
- C. Product Data: Submit coating manufacturer's product data sheets and Material Safety Data Sheets (MSDS) for each component of the wall finish system.
- D. Submit coating manufacturer's written installation instructions. Submit evidence in writing from coating manufacturer that applicator has successfully completed the manufacturer's training program. Submit applicator certifications as described in 1.08B below.
- E. Upon selection and approval of color/finish samples, submit a "spray out" with each batch of selected finish coat, demonstrating that batches match the approved samples. Sample: minimum 8 by 8 inch (200 x 200 mm) hardboard of coating texture and color.
- F. Prepare and submit project specific details and shop drawings.

1.08 QUALITY ASSURANCE

- A. Manufacturer Requirements:
 - 1. Member in good standing of SWRI (Sealant Waterproofing and Restoration Institute).
 - 2. Manufacturer of coatings for a period of at least fifteen (15) years.
 - 3. Single source manufacturer of surface preparation and coating materials.
- B. Applicator Requirements:
 - 1. Engaged in application of special coatings for a minimum of three (3) years.
 - 2. Employ skilled applicators to execute work with minimum three (3) years of experience with the materials, methods and requirements of the specified work.
 - 3. Successful completion of a minimum of three (3) projects of similar size and complexity to the specified work.
 - 4. Applicator shall certify in writing that technicians utilized for this work have been trained by the coating manufacturer or its representative. Applicator shall include in his certification that specialized equipment as required by the coating manufacturer shall be used for work in this section.

5. Provide the equipment, manpower and supervision on the job site to install coatings in compliance with Manufacturer's published specifications and details, and the project plans and specifications.
- C. Job Mock-Up:
1. Apply a minimum of 100 square foot mock-up of each type of specified coating system on each type of substrate.
 2. Upon approval from the Architect and Owner's Field Representative, mock-up(s) shall serve as the standard of quality for the Work of this Section.
 3. Approved mock-up(s) may be left in place as finished construction.
- D. Fire Ratings:
1. Class A Fire Hazard Classification
 2. Test Procedure: ASTM E84
- E. Single Source Coating Manufacturer
1. Manufacturer shall certify that it makes all materials listed in the specification.
 2. All materials provided and installed under this Section shall be supplied by one manufacturer.
- 1.09 DELIVERY, STORAGE AND HANDLING
- A. Deliver materials in their original sealed containers bearing manufacturer's name and identification of product.
 - B. Protect acrylic based materials (pail products) from both freezing and temperatures in excess of 90° F (32° C). Store away from direct sunlight.
 - C. Protect Portland cement based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.
- 1.10 PROJECT/SITE CONDITIONS
- A. Maintain ambient and surface temperatures above 40° F (4° C) during application and drying period, for a minimum of 24 hours after application of coating.
 - B. Provide supplementary heat for installation in temperatures less than 40° F (4° C).
 - C. Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.11 SEQUENCING

- A. Install finish coating in sequence to prevent damage from other trades.

1.12 WARRANTY

- A. See Section 01740 for warranty requirements.

1.13 COLOR SELECTION

- A. Prior to beginning work, the Architect will select sample color selections from manufacturer's full range of color options including premium pricing options for use by the General Contractor in preparation for the jobsite mock-up.
- B. Proprietary names of the specified manufacturer used to designate colors or materials are not intended to imply that products of the specified manufacturer are required to the exclusion of equivalent approved colors or materials of other approved manufacturers.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide basecoats produced by same manufacturer as finish coats. Use only thinners approved by coating manufacturer, and use only within recommended limits.
- B. Basis of Specification: Sto "Decocoat" F100DC, Sto Corporation, Atlanta, GA, 1-800-221-2397 (www.stocorp.com).
 - 1. Local Distributor: Kenseal Construction Products Corporation
Mr. John Ryder
(703) 467-5988
13968 Park Center Rd.
Herndon, VA 20171
 - 2. Other manufacturers, pre-bid approved in accordance with Section 01630, and meeting the requirements of this Section, shall be acceptable.

2.02 MATERIALS LIST

A. SURFACE PREPARATION

- 1. Crack Repair (for cracks up to 1/16 inch (1.6 mm) wide)
 - a. Sto RFP - acrylic based fiber reinforced plaster.
 - b. Sto BTS-Plus – one component polymer modified cement based crack repair material with fiber reinforcement).

2. Patching and Leveling:
 - a. Sto Leveler - one component polymer modified cement based leveler with fiber reinforcement (*for applications up to 1/4 inch [6 mm] thick*).
 3. Primer
 - a. Sto Primer - acrylic based tinted primer.
- B. FINISH COATINGS
1. Sto Decocoat - acrylic based textured wall coating with 1/64 in. (.4-.5 mm) ceramic coated aggregate.
- C. WATER
1. Water: Clean and drinkable.
- D. MIXING
1. Sto Plex W: Add water as directed on labeling.
 2. Sto RFP: Mix to a uniform consistency. A small amount of clean water may be added to aid workability.
 3. Sto BTS-Plus: Mix ratio with water: 7 - 9 quarts (6.6 - 8.5 L) of water per 60 lb. (27.3 kg) bag of Sto BTS-Plus. Pour water into a clean mixing pail. Add Sto BTS-Plus, mix to a uniform consistency and allow to set for approximately five minutes. Adjust mix if necessary with additional Sto BTS-Plus or water and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent.
 4. Sto Leveler: Mix ratio with water: 6 - 7 quarts (5.7 - 6.6 L) of water per 60 lb. (27.3 kg) bag of Sto Leveler. Pour water into a clean mixing pail. Add Sto Leveler, mix to a uniform consistency and allow to set for approximately five minutes. Adjust mix if necessary with additional Sto Leveler or water and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent.
 5. Sto Primer: Mix to a uniform consistency.
 6. Sto Decocoat: Mix to a uniform consistency. A small amount of water may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.
 7. Mix all materials with a clean, rust-free, high speed mixer in a clean mixing pail.

8. Mix only as much material as can readily be used.
9. Do not use anti-freeze compounds or other additives.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which coating work shall be performed. Examine surfaces to receive coating systems in accordance with written recommendations of the coating manufacturer. Report any conditions that would adversely affect the appearance or performance of the coating systems, especially those that cannot be put into acceptable condition by specified surface preparation. Notify Owner's Representative and Architect, in writing, of conditions detrimental to proper execution of the work. Do not proceed with work until unsatisfactory conditions have been corrected to the satisfaction of the Owner's Representative.
- B. Starting of coating work shall be construed as acceptance of surfaces within the work area by the coating applicator.
- C. Do not apply coating over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.02 SURFACE PREPARATION FOR CONCRETE, MASONRY AND PLASTER

- A. Remove surface contaminants (refer to ASTM D 4258 and D 4261).
- B. Remove loose, damaged or deteriorated materials.
- C. Repair surface defects with patching material.
- D. Repair surface cracks:
 1. 1/16-1/8 inch (1.6-3mm) wide static cracks--remove surface contaminants and embed 6 inch (152mm) wide reinforcing fabric in trowel applied crack repair material centered over the crack and feather along edges.
- E. Apply surface conditioner by rolling or with spray equipment to chalking or absorbent surfaces.
- F. Skim coat or level the surface to required tolerance and fill all voids.

3.03 SURFACE PREPARATION FOR PREVIOUSLY PAINTED AND/OR EXISTING SURFACES

- A. A representative from the coating manufacturer shall visit the site and, together with the Owner's Representative, Architect and Contractor shall inspect existing painted surfaces prior to surface preparation and coating operations.

- B. Thoroughly clean all surfaces in accordance with this Section, and the recommendations of the Coating Manufacturer's Representative.
 - C. Remove all loose or peeling paint by scraping or by means of low or non-VOC containing stripping system approved by the Owner's Representative and Architect.
 - D. Prepare existing epoxy surfaces by scuff sanding. Remove all loose particles.
 - E. Where new coatings shall be applied over existing oil-based paint, the surface shall be scrubbed clean and dried. The gloss shall be dulled using sandpaper or wire brushing. Remove all dust or other loose particles.
 - F. Prior to beginning coating application, perform a "patch test" covering approximately 2 to 3 square feet in area, by applying recommended basecoat and specified topcoats. Allow patch to dry thoroughly, and test for adhesion in the presence of Coating Manufacturer's Representative, Owner's Representative, Architect and Contractor.
- 3.04 SURFACE PREPARATION FOR CERAMIC TILE, STRUCTURAL GLAZED FACING TILE, GLAZED BRICK AND GLASS BLOCK
- A. Make sure that the surface is clean, dry and free of any contaminants that may affect the adhesion of the Sto Classic System.
 - B. Dilute Sto Dispersion Adhesive 10 % with clean, potable water and apply this slurry to the wall surface with brush, 3/8" nap roller or appropriate spray equipment. Allow this application to dry before moving to the next procedure.
 - C. If the mortar or grout joint appearance is to remain, roller apply Sto Primer and allow to dry, then spray apply the selected Sto Finish.
 - D. If the mortar or grout joints are to be leveled to a relatively smooth flat surface, Sto Base coats listed below can be applied to level the substrate.
 - 1. Sto BTS-Plus, 60 lb. Bag applied from a 1/16" - 1/8" thick. 2 coats may be needed.
 - 2. Sto Leveler, 60 lb. Bag applied from 1/8" - 1/4" thick. Can be achieved in one pass.
 - 3. Sto RFP, 65 lb. Pail, can be tinted to match finish color. Applied to 1/16" thickness. 2 coats may be needed.
 - E. After the Base Coats have fully dried, apply Sto Primer using a 3/8" nap roller. Sto Primer must be applied to a uniform color consistent coat. Two coats of Sto Primer may be needed to achieve color consistence. (Sto Primer not required if Finish is applied over tinted Sto RFP).
 - F. Prior to the above application, Sto recommends an adhesion test be performed

to ensure desired results.

3.05 PRIMING

- A. Apply primer uniformly to prepared dry surfaces with brush, roller or spray equipment.

3.06 FINISH COAT INSTALLATION

- A. Apply finish coat to dry primed surface to a uniform thickness in accordance with the following procedures:
 - 1. Apply with stainless steel trowel or spray equipment.
 - 2. Apply in a continuous application and work to a wet edge.
 - 3. Coordinate work to protect work from damage by other trades.
 - 4. Apply material to match approved sample or field mock-up.
 - 5. Do not apply separate batches side-by-side.
 - 6. Do not apply over irregular or unprepared surfaces or surfaces not in compliance with the project specifications.

3.07 INSPECTION

- A. Request acceptance of each coat from Architect and Owner's Representative before applying succeeding coats.
- B. Touch-up and repair all work that is not acceptable to the Architect and Owner's Representative. Request final acceptances after deficiencies have been corrected.
- C. Service Time:
 - 1. Coating assembly shall be complete for a minimum of 15 days prior to acceptance and use of space by the Owner.

3.08 CLEANING

- A. Remove coating spatters from glass, plumbing fixtures and adjoining surfaces.
- B. Repair any damage to coatings or surfaces caused by cleaning operations.
- C. Remove debris from job site and leave storage area clean.

3.09 PROTECTION

- A. Provide protection of installed coating from dust and dirt, freezing, continuous high humidity, and damage from other trades or building components.

END OF SECTION

SECTION 09825

SPECIAL COATINGS – POLYURETHANE FLOOR RESURFACING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Section 01630: Substitutions and Product Options (Pre-bid approval)
 - 2. Section 01340: Submittals

1.02 DESCRIPTION OF WORK

- A. This Section includes all necessary labor and materials required for installation of non-slip polyurethane floor finish for concrete slabs, including floor surface preparation. Refer to Drawings for complete extent of coating required in the following spaces:
 - 1. Kitchens
 - 2. Student Toilets
 - 3. As indicated elsewhere on the drawings

1.03 RELATED WORK

- A. Section 03300: Cast in Place Concrete

1.04 SHOP DRAWINGS AND PRODUCT DATA

- A. Comply with applicable provisions of section 01340.
- B. Submit sample charts illustrating manufacturer's standard color selections.
- C. Product Literature: Submit the following:
 - 1. Manufacturer's Technical data including information about product type, recommended use, performance characteristics, application recommendations, and safety precautions.
 - 2. Material Safety Data Sheets (MSDS) indicating ingredients, VOC (Volatile Organic Content), fire and explosion hazard data, health hazard data, first aid procedures, reactivity data, and other special precautions.
 - 3. Evidence that products have no lead-containing ingredients.

4. Evidence of abrasion resistance, coefficient of friction, and impact resistance.

1.05 REFERENCE STANDARDS

Physical Properties

Compressive Strength:	9000psi	(ASTM C-579A)
Flexural Strength:	5100 psi	(ASTM C-580)
Coefficient of Thermal Expansion:	1.1×10^{-5} in./in./°F	(ASTM D-696)
Abrasion Resistance:	100 mgs./1000 cycles	(ASTM D 4060)
(CS-17 Wheels Taber Abraser 1000 gm. load per wheel)		
Tensile Strength:	2500 psi minimum	(ASTM C 370)
Flammability:	Self-extinguishing	(ASTM D-635)
Adhesion - Concrete:	>400 psi (2.4 MPa) concrete failure	(ASTM D 4541)
Water Absorption:	<0.15%	(ASTM D 570)
Antimicrobial resistance:	Passes	(ASTM G21)

1.06 WARRANTY

- A. This contractor, jointly with the manufacturer, shall furnish a guarantee of the flooring system for a period of one (1) year after installation. This material and labor guarantee includes loss of adhesion and damage due to normal wear and tear.

1.07 PRODUCT, DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in sealed containers with coating manufacturer's labels intact.
- B. Store materials in protected area at a temperature not to exceed maximum and minimum temperature as recommended by manufacturer.
- C. Obtain primary flooring system materials including primers, resins and hardening agents from a single manufacturer.

1.08 QUALIFICATIONS

- A. This contractor shall be an established company regularly engaged in the installation of polymer flooring systems, and be certified by the manufacturer as an approved applicator.
- B. This contractor shall furnish documentation regarding the successful completion of projects of similar magnitude and complexity.
- C. A qualified representative from Crawford Laboratories shall be available at the site during the beginning of the work specified and at other times as may be requested by the owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Installed system shall consist of the following products manufactured by Crawford Laboratories, **4165 S. Emerald Ave. Chicago**, Illinois; 1-804-739-7319 This specification covers the application of FLOROCRETE SL Polyurethane Resurfacer, a 3-component polyurethane, semi-rigid, heat resistant, flooring system designed for protection against thermal shock from steam cleaning and hot water decontaminations.
- B. Comparable products of other Manufacturers, Pre-bid approved in accordance with section 01630, and meeting the requirements of this specification, shall be acceptable.

PART 3 - EXECUTION

3.01 PRE-APPLICATION INSPECTION

- A. Before applying materials, this contractor shall inspect all surfaces to receive new materials, and report any unsatisfactory conditions to the Owner. Absence of any such report shall constitute this contractor's acceptance of the surfaces as satisfactory for installing materials.
- B. Do not proceed with surface preparation until adverse conditions have been corrected.

3.02 SURFACE PREPARATION

- A. General
 - 1. Follow manufacturer written recommendations for surface preparation.
 - 2. All floor surfaces shall be clean, dry and free from loose and peeling paint, dirt, grease and other contaminants.
 - 3. All concrete floor surfaces to receive resurfacing shall be cleaned with dry and dust-free shot-blasting equipment, removing all contaminating substance, including but not limited to dust, patching materials, laitance, oil and grease. The perimeter of the floor shall be keyed with a ½ inch by ½ inch saw cut. Areas not accessible to this equipment shall be mechanically prepared by smaller tools.
 - 4. All vertical surfaces shall be either hand scarified or sandblasted to achieve a clean rough profile.

3.03 APPLICATION

A. Resurfacer

1. The properly mixed polyurethane resurfacer (FloroCreteSL) shall be applied to the properly prepared concrete. Material shall be installed at a total thickness of 3/16 inch.
2. To achieve durable, consistent non-slip finish, apply a topcoat of floropoxy 4805 at 15 mil as grout coat, and Florothane HW 7100 topcoat at 3mils.

B. Coves and Vertical Surfaces

1. The properly mixed polyurethane coving material (Florock CV) shall be applied to the properly prepared cured surface. Material shall be spread at 3/16" with a hand trowel to level the material evenly. The use of coving J and L channel should be used to form the cove to the proper geometry.

3.04 QUALITY ASSURANCE

- A. All chemical resistant construction involving chemical curing toppings, linings, coatings and joint compounds shall be performed under cover from the elements, and at a minimum temperature of 50°F and a maximum of 90°F unless specific arrangements for exceptions are made. The temperature limitations apply not only to the air, but to all structures or slabs with which the systems will be in contact.
- B. All materials to be used must be kept dry and within this temperature range for not less than 48 hours prior to use. All work shall be kept dry until the installation has reached the point of cure designated by Crawford Laboratories.
- C. The completed installation must be allowed to cure fully in accordance with Crawford Laboratories written instructions for the specific products dictated by chemical exposure of the specific application.

3.05 SAFETY PROCEDURES

- A. Carefully follow all manufacturers' written recommendations and precautionary information regarding safe application of coating.
- B. Maintain adequate ventilation during application. If ventilation is restricted or cannot be maintained, workmen shall wear NIOSH/MSHA approved respirators.
- C. Contractor's personnel shall be familiar with potential health hazards associated with application of products under this section.

3.06 CLEAN-UP

- A. Promptly remove all excess materials associated with the product application from the premises and dispose of legally.
- B. Remove product splatters from all adjoining surfaces not scheduled to be coated.
- C. Repair damage to adjacent surfaces, materials and/or equipment, where such damage has been caused as a result of the product application.

3.07 MAINTENANCE

- A. Provide manufacturer's written instructions for recommended maintenance practices.

END OF SECTION

INSTRUCTIONS FOR EDITING

SECTION 09900

PAINTING

1. General: This Specification applies to new work and renewals, additions and alterations. Edit specification to comply with project requirements and as listed below.
2. PARAGRAPH 1.07: Edit "Description of Work" as appropriate for new school or addition/renewal work.
3. PARAGRAPH 3.02: Delete paragraph "B" if work involves only new school construction.
4. PARAGRAPH 3.05: Edit "Painting Schedule, Exterior", to delete or add painting instructions per project requirements.
5. PARAGRAPH 3.06: Edit "Painting Schedule, Interior", to delete or add painting instructions per project requirements.
6. General Note: Alkyd based paints shall not be applied in interior spaces of renovations, alterations, or similar situations when exposure of building occupants to paint fumes is a likely possibility. See Section 01010, Summary of Work.
7. General Note: Excess paint materials shall not be left on the job site as "attic stock" once the work is completed.

SECTION 09900

PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Section 15050: Basic Materials and Methods. (Mechanical Color Coding).

1.03 WORK EXCLUDED

- A. Interior epoxy wall coatings are covered under Section 09800.
- B. Interior epoxy floor coatings are covered under Sections 09810 and 09815.

1.04 PRODUCT HANDLING

- A. Deliver materials to the site in original, new and unopened packages and containers bearing manufacturer's name and label.
- B. Provide paint manufacturer's printed label on each container with the following information:
 - 1. Name or title of material
 - 2. Manufacturer's stock number
 - 3. Manufacturer's name
 - 4. Analysis of major pigment and vehicle constituents
 - 5. Thinning instructions
 - 6. Application instructions
 - 7. Color name or number
 - 8. Manufacturer's recommended wet and dry film thickness in mils

1.05 COLOR SELECTION

- A. Prior to beginning work, the Architect will furnish sample color chips with a color schedule for surfaces requiring painting.
- B. Proprietary names of a specified manufacturer used to designate colors or materials are not intended to imply that products of the specified manufacturer are required to the exclusion of equivalent approved colors or materials of other manufacturers.

1.06 PAINT COORDINATION

- A. Provide finish coats compatible with prime paints used. Review other sections of specifications in which prime coats are specified to ensure compatibility of the total coating system.

1.07 DESCRIPTION OF WORK (EXISTING CONSTRUCTION ONLY)

- A. Addition and Alterations in Existing Building: All painting and staining required for all new work and existing surfaces affected by such work shall be as specified in the following painting schedule.
- B. Sitework: Where noted on the drawings, paint existing and new equipment (except for prefinished items) and new and existing site structures as specified in 3.05, Painting Schedule, Exterior.
- C. Mechanical Equipment: Paint all exposed and concealed piping, valves, and pumps as scheduled in this Section for mechanical color coding.

1.08 DESCRIPTION OF WORK (NEW SCHOOL ONLY)

- A. Extent of painting is indicated on drawings and specified in the work of this Section.
- B. The work includes painting of both interior and exterior exposed items and surfaces included in the scope of work, except where otherwise indicated. Surface preparation priming and finish coats for such surfaces are included herein, except for items that are shop-primed or factory finished.
- C. Mechanical Equipment: Paint all exposed and concealed piping, valves and pumps as scheduled in this Section for mechanical color-coding.
- D. Sitework: Where noted on the drawings, paint new equipment (except for prefinished items) and new site structures as specified in 3.05, Painting Schedule Exterior.

1.09 WARRANTY

- A. See Section 01740 for warranty requirements.

1.10 SUBMITTALS

- A. Provide data that the products shall meet or exceed the VOC content requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide materials that meet or exceed the VOC content requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113.
- B. Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.
- C. Painting materials scheduled are products of Akzo Nobel (Glidden Professional and Devoe Coatings) (www.gliddenprofessional.com), except as otherwise noted. Comparable products produced by the following manufacturers are acceptable alternates to those scheduled:
 - 1. Sherwin-Williams Co., (www.sherwin-williams.com)
 - 2. Benjamin Moore and Company (www.benjaminmoore.com)
 - 3. PPG Paints-PPG Architectural Coatings (www.ppg.com)
 - 4. Duron Paints and Wallcoverings (www.duron.com)
 - 5. Comparable products of other manufacturers, pre-bid approved in accordance with Section 01630, shall be acceptable.
- D. Paint materials specified in the Painting Schedules of Part 3 are compliant with the Ozone Transport Commission (OTC) Regulations, as required by the Federal Clean Air Act. Comparable materials by other approved manufacturers shall be compliant with these regulations.
- E. Renovations and Alterations: Oil-based paints shall not be applied on interior building surfaces, or other areas when exposure of occupants to fumes is a possibility. Coordinate performance of this work with the Construction Phasing Plan for the Project

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas and conditions under which painting work will be performed. Notify Architect, in writing, of conditions detrimental to proper execution of the work. Do not proceed with work until unsatisfactory conditions have been corrected.
- B. Starting of painting work will be construed as acceptance of surfaces within particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.02 SURFACE PREPARATION

A. General:

1. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions for each substrate condition.
2. Remove hardware, hardware accessories, machine surfaces, plates, lighting fixtures and similar items in place and not to be finish painted, or provide surface applied protection prior to surface preparation and painting operations. Following completion of painting of each space or area, reinstall removed items.
3. Clean surface to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that dust and other contaminants from the cleaning process will not settle on to wet, newly painted surfaces.
4. Dislodge dirt, mortar splatters, and other dry materials from surfaces by scraping and brushing. Remove loose material by brushing, sweeping and vacuuming.

B. Previously Painted Surfaces:

1. A representative from the approved paint manufacturer shall visit the site and, together with the Owner's Representative, Architect and Contractor, shall inspect existing painted surfaces prior to preparation and repainting.
2. Thoroughly clean all surfaces in accordance with this Section, and the recommendations of the Paint Manufacturer's Representative.
3. Remove all loose or peeling paint by scraping or by means of low or non-VOC containing stripping system approved by the Owner's Representative and Architect.
4. Prepare existing epoxy surfaces by scuff sanding. Remove all loose particles.
5. Where new coatings are to be applied over existing oil-based paint, the surface shall be scrubbed clean and dried. The gloss shall be dulled using sandpaper or wire brushing. Remove all dust or other loose particles.
6. All previously painted surfaces shall be completely re-primed, using a primer recommended by Paint Manufacturer for type of substrate and compatible with new topcoats.

- a. Prior to re-priming, perform a "patch test" covering approximately 2 to 3 square feet in area, by applying recommended primer and specified topcoats. Allow patch to dry thoroughly, and test for adhesion in the presence of Manufacturer's Representative, Owner's Representative, Architect and Contractor.

3.03 MATERIALS PREPARATION

- A. Mix and prepare paint materials in accordance with manufacturer's directions.
- B. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary strain the material before using.

3.04 APPLICATION

- A. General:
 1. Apply paint by brush, roller, or spray in accordance with manufacturer's directions and paragraphs E and F. Use brushes best suited for type of material being applied. Use roller of carpet, velvet back or high pile sheep's wool as recommended by paint manufacturer for material and texture required. Spray paint uniformly with suitable equipment.
 - a. Spray applications shall not be allowed when adjacent areas are occupied.
 2. Number of coats and paint film thickness required is same regardless of application method.
 3. Apply additional coats when undercoats, stains, or other conditions show through the final coat of paint, until paint film is of uniform finish, color and appearance.
 4. "Exposed surfaces" shall mean areas visible when permanent or built-in fixtures, convector covers, grilles, etc., are in place in areas scheduled to be painted.
 5. Paint interior surfaces of ducts, where visible through registers, grilles, decorative ceiling, with flat, non-specular black paint.
- B. Minimum Coating Thickness:
 1. Apply each material at not less than manufacturer's recommended spreading rate, to provide a total wet and dry film thickness of not less than that indicated on manufacturer's printed label.

- C. Pigmented (Opaque) Finishes:
 - 1. Cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage.
- D. Transparent (Clear) Finishes:
 - 1. On exposed portions, use multiple coats to produce glass-smooth surface film continuity of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.
 - 2. Provide satin finish for final coats, unless otherwise indicated.
- E. Brush Application:
 - 1. Brush-out and work brush coats onto surface in an even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- F. Mechanical Applications:
 - 1. Limit roller applications to interior wall and ceiling finish coats. Apply each roller coat to provide equivalent hiding as brush-applied coats.
 - 2. Confine spray application to metal framework, siding, decking, wire mesh, and similar surfaces where hand brush work would be inferior.
 - 3. Wherever spray application is used, apply each coat to provide the equivalent hiding of brush-applied coats. Do not double back with spray equipment for the purpose of building up film thickness of two coats in one pass.
 - a. Do not use spray applications at acoustical concrete block units.
- G. Complete Work:
 - 1. Match samples for color, texture and coverage. Remove finish, or repaint work not in compliance with specified requirements.

3.05 PAINTING SCHEDULE, EXTERIOR (Existing and New)

- A. Metal:
 - 1 coat: PPG Paints: 90-912 Pitt Tech Plus WB DTM Metal Primer
 - 2 coats: PPG Paints; 90-1210 Series Pitt Tech Plus WB DTM S/G Enamel
 - 1 coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
 - 2 coats: S-W Pro Industrial DTM Acrylic Semi-Gloss Coating, B66 -1150 Series

B. Plaster, Gypsum Wall Board:

1 coat: PPG Paints; 17-921 Seal Grip Universal WB Acrylic Primer
2 coats: PPG Paints; Fortis 350 Exterior Flat Paint 2200V Series
1 coat: S-W Multi-Purpose Primer.
2 coats: S-W A-100 Exterior Latex Flat A6-100 Series.

C. CMU:

1 coat: PPG Paints; 3010-1200 Int/Ext Acrylic Block Filler
2 coats: PPG Paints; Fortis 350 Exterior Flat Paint 2200V Series
1 coat: S-W PreRite Latex Block Filler B25W00025 (new block).
2 coats: S-W A-100 Exterior Latex Flat A6-100 Series.

D. Concrete:

1. 1 coat: PPG Paints; 17-921 Seal Grip Universal WB Acrylic
2 coats: PPG Paints; Fortis 350 Exterior Flat Paint 2200V Series
1 coat: S-W Loxon Concrete & Masonry Primer (new concrete).
2 coats: S-W A-100 Exterior Latex Flat A6-100 Series.
2. All concrete light pole bases that are located within areas of vehicular travel and edges of loading docks shall be painted YELLOW. Coordinate with owner prior to painting.

3.06 PAINTING SCHEDULE, INTERIOR (See paragraph 3.02 for Surface preparation of existing surfaces; all existing surfaces shall be re-primed)

A. Metal:

1 coat: PPG Paints; 90-912 Pitt Tech Plus WB DTM Metal Primer (eliminate on shop primed items).
2 coats: PPG Paints; 90-1210 Series Pitt Tech Plus WB DTM S/G Enamel
1 coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
2 coats: S-W Pro Industrial DTM Acrylic Semi-Gloss Coating, B66 -1150 Series

B. Hollow Metal Frames:

1 coat: PPG Paints; 90-912 Pitt Tech Plus WB DTM Metal Primer
2 coats: PPG Paints; 90-1210 Series Pitt Tech Plus WB DTM S/G Enamel
1 coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
2 coats: S-W Pro Industrial DTM Acrylic Semi-Gloss Coating, B66 -1150 Series

C. CMU:

1 coat: PPG Paints; Professional: Block Filler Interior/Exterior Primer 3010-1200
2 coats: PPG Paints; 6-4510X series SPEEDHIDE zero Interior Zero-VOC Latex Semi-Gloss

- 1 coat: S-W PreRite Latex Block Filler B25W00025 (new block).
- 2 coats: S-W Pro Mar 200 Zero VOC Int. Latex Semi-Gloss B31-2600 Series.

D. CMU - Epoxy Paint - See Special Coatings, Section 09800.

E. Wood - Transparent (wood surfaces):

- 1. 1 coat: PPG Olympic 42784; Water Based Gloss Varnish
- 2 Coats: S-W Pro Classics Int. WB Polyurethane Varnish, Satin or Gloss
- 1 coat: PPG Olympic 42786; Water Based Satin Varnish

- 2. Sand prior to application of first coat, and between coats, using #220 grit sandpaper

F. Wood – Transparent (Doors):

- 1 coat: PPG Olympic 42786; Water Based Satin Varnish, over factory finish (refer to Section 08211, Part 2.02).

- 1 Coat: S-W Pro Classics Int. WB Polyurethane Varinis, Satin.

G. Acoustical Wall Panels (spray application):

- 2 coats: PPG Paints; 6-4110XI Series SPEEDHIDE zero Interior Zero VOC Latex Flat

- 2 coats: S-W Pro Mar 200 Zero VOC Int. Latex Flatl B320-2600 Series

H. Gypsum Wallboard:

- 1 coat: PPG Paints; 6-4900XI SPEEDHIDE zero Interior Zero-VOC Latex Sealer

- 2 coats: PPG Paints; 6-4310XI Series SPEEDHIDE zero Interior Zero VOC Latex Eggshell

- 1 coat: S-W Multi-Purpose Primer (repaint) or, Pro Mar Zero VOC Primer (new).

- 2 coats: S-W Pro Mar 200 Zero VOC Int. Latex Eg-Shel B20-2600 Series

I. Metal (Exposed Ceilings)

- 2 coats: PPG Paints; 6-7xx series SPEEDHIDE Super Tech® WB Interior 100% Acrylic Flat Dry-Fog

- 2 coats: S-W Pro Industrial WB Acrylic Dryfall Flat, B24-181 Series

J. Fire walls:

- All fire walls shall be labeled with a minimum of 2" high RED letters 12" above the finished ceiling with the rating of the assembly and the type of the assembly (for example, TWO HOUR FIRE WALL) at horizontal intervals no more than 8' on center per 2015 VUSBC 703.7.

1. Where firewalls change direction provide on both sides along the change of direction and then 8' on center maximum.
 2. Provide at all fire wall penetrations along the accessible route only.
- K. Concrete
1. All equipment pads in mechanical, electrical, and utilities rooms, as well as edges of stairs servicing mechanical, electrical and utilities rooms shall be painted YELLOW. Coordinate with owner prior to painting.
- L. Planetarium Dome
- 1 coat: PPG Paints; Speedhide Super Tech WB Interior Dry-Fog Latex 6-725XI

3.07 PAINTING SCHEDULE - MECHANICAL

- A. Mechanical Equipment: (eliminate on pre-finished items)
- 1 coat: PPG Paints; 90-912 Pitt Tech Plus WB DTM Metal Primer (eliminate on shop primed items) or
2 coats: PPG Paints; 90-1210 Series Pitt Tech Plus WB DTM S/G Enamel
1 coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series.
2 coats: S-W Pro Industrial DTM Acrylic Semi-Gloss Coating, B66 -1150 Series
- B. Mechanical Color Coding:
1. Overflow and blowoff pipes to be painted LIGHT GREEN except as noted for boiler blowdown pipes. DO NOT PAINT motors, gauges, nameplates, A.S.M.E. labels, water gauge, and main operating control mechanism. Paint all valves with a color to match the pipe to which it is attached.
 2. All exposed Fire Protection piping to be painted RED
 3. All exposed Gas piping (indoor and outdoor) to be painted YELLOW
 4. Direction arrows and letters, size proportioned to pipe size, shall be painted on all water, steam (if any), condensate (if any oil and gas piping, whether covered or uncovered, to indicate the direction of flow and pipe type. Direction arrows over painted pipe shall be black or white and located where it can be easily read from the floor and spaced at each change of direction and not more than 20 feet apart on any one pipe. Direction arrows and letters on piping concealed within the ceiling or crawl space (if any) shall be in the same color as the color code and not more than 20 feet apart on any one pipe.
 5. Size of arrow and letters proportioned according to size of pipe or covering as follows:

<u>Diameter of Pipe or Covering</u>	<u>Size of Letter and Length of Arrow</u>
Less than 1-1/4"	1/2" - 6"
1-1/2 to 2"	3/4" - 6"
2-1/2 to 3"	7/8" - 8"
3-1/2 to 4"	1-1/4" - 12"
4-1/2 to 5"	1-1/2" - 12"
6"	1-3/4" - 12"
7"	2" - 12"
8 to 9"	2-1/2" - 12"
10 to 1	3" - 12"
12" and over	3-1/2" - 12"

6. Colors: Safety Colors Conforming to OSHA and ANSI Standards

Cold Water (Domestic)	Dark Blue
Hot Water 140 ⁰ (Domestic)	Orange
Hot Water Recirc. 140 ⁰ (Domestic)	Orange with Black Banding
Tempered Water (Domestic)	Beige
Tempered Water Recirc. (Domestic)	Beige with Black Banding
Gas	Yellow
Steam	Red
Condensate	Black with Red Banding
Condensate Pump and Receiver	Black with Blue Banding
Receiver (Vac) Condensate	Black
Vacuum Pump and Air Separator (but not motor)	Green
Boiler Feed Pump and Piping (but not motor)	Light Blue
Chilled Water Supply	White
Hot Water Supply	Red with White Banding
Chilled Water Return	White with Black Banding
Hot Water Return	Black with Red Banding
Unloading Pump Overflow Pipe	Light Green
Burner Plate	Black
Boiler Blowdown, Pipes and Valves	Orange
Oil Lines	Brown
Oil Heater and Piping	Brown
Hot Water Heater Storage Tank	Light Gray
Boiler	Medium Gray - Lt.
Lines to Cooling Tower	Aluminum

7. Letters shall be provided for piping as shown in symbols list on drawings.

C. All equipment shall be labeled with a minimum of 4" high letters.

3.08 PAINTING SCHEDULE – MAIN COMMUNICATIONS ROOM

A. Plywood Backboards

- 1 coat: PPG Paints; 17-921 Seal Grip Universal WB Acrylic Primer
- 2 coats: PPG Paints; 6-4510X series SPEEDHIDE zero Interior Zero-VOC Latex Semi-Gloss
- 1 coat: S-W Multi-Purpose Primer.
- 2 coats: S-W Pro Mar 200 Zero VOC Int. Latex Semi-Gloss B31-2600 Series

B. Plywood Backboard Color Coding

1. Fire Alarm: Red
2. Security: Gray
3. Telecommunications: Yellow
4. Sound: Blue
5. CATV: Tan
6. Emergency Panels: White

C. Coordinate locations of required painting with electrical work.

3.09 CLEANING

- A. Touch-up and restore where finish is damaged.
- B. Remove spilled, splashed, or splattered paint from all surfaces
- C. Remove all debris, painting accessories, paint cans, and other associated equipment from the premises and legally dispose of off-site. Do not leave surplus painting materials on the premises as "attic stock."

END OF SECTION

SECTION 09960

HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes surface preparation and field application of high-performance coating systems to items and surfaces scheduled at main entrance only.
- B. Related Sections:
 - 1. Section 05120 Structural Steel
 - 2. Section 09900 Painting

1.03 DEFINITIONS

- A. Standard coating terms defined in ASTM D 16 apply to this Section.
- B. Gloss ranges used in this Section include the following:
 - 1. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
 - 2. Gloss refers to high-sheen finish with a gloss range between 66 and 74 when measured at a 60-degree meter.
 - 3. High gloss refers to very high-sheen finish with a gloss range of no less than 75 when measured at a 60 degree meter.

1.04 SUBMITTALS

- A. Product Data: For each coating system indicated.
 - 1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference the specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each material specified.
- B. Certification by manufacturer that products supplied comply with requirements indicated that limit the amount of VOCs in coating products.
- C. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.
1. Provide stepped Samples defining each separate coat. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
 2. List of material and application for each coat of each sample. Label each sample for location and application.
 3. Submit samples on the following substrates for Architect's review of color and texture:
 - a. Ferrous and Nonferrous Metal: Provide two 4-inch square samples of flat metal and two 8-inch long samples of solid metal for each color and finish.
- D. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed high- performance coating system applications similar in material and extent to those indicated for Project and whose work has a record of successful in-service performance.
- B. Source Limitations: Obtain primers and undercoat materials for each coating system from the same manufacturer as the finish coats.
- C. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample of each type of coating and substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved Sample Submittals. Benchmark finish shall be applied by the Subcontractor responsible for the Project Work.
1. Architect will select one area or surface to represent surfaces and conditions for application of each type of coating and substrate.
 - a. Small Areas and Items: Architect will designate items or areas required.

2. After permanent lighting and other environmental services have been activated, apply coatings in each area or to each surface as specified. Provide the required sheen, color, and texture of each surface.
 - a. After finishes are accepted, Architect will use the benchmark area and/or surface samples to evaluate subsequent applications of similar high-performance coatings on the Project.
3. Final approval of colors and glosses will be from benchmark samples.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label with the following information:
 1. Name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume, for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
 8. Handling instructions and precautions.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 1. Protect materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying coatings.

1.07 PROJECT CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 45 and 95 deg F.
- B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 1. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before proceeding with or continuing coating operation.

PART 2 – PRODUCTS**2.01 MANUFACTURERS**

- A. Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the products indicated in other Part 2 articles.
- B. Manufacturers' Names: The following manufacturers are referred to in other Part 2 articles by shortened versions of their names shown in parenthesis:
 - 1. Ameron Coatings (A PPG Industries, Inc. Company) (AC) www.ameroncoatings.com
 - 2. Glidden Professional (Glidden) www.gliddenprofessional.com
 - 3. International Protective Coatings (International) www.international-pc.com
 - 4. Keeler & Long, Inc. (K&L) www.ppg.com/ppgaf/k&l/index.htm
 - 5. PPG Industries, Inc. (PPG Pittsburgh Paints) www.pittsburghpaints.com
 - 6. The Sherwin-Williams Company (Sherwin-Williams) www.sherwin-williams.com
 - 7. Tnemec Company, Inc. (Tnemec) www.tnemec.com

2.02 COATINGS MATERIALS, GENERAL

- A. Material Compatibility: Provide primers, undercoats, and finish-coat materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's highest grade of the various high-performance coatings specified. Materials not displaying manufacturer's product identification are not acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. VOC Classification: Provide high-performance coating materials, including primers, undercoats, and finish-coat materials, that have a VOC classification of 450 g/L or less.

2.03 COLORS AND GLOSSES

- A. Colors and Glosses: As indicated using manufacturer's designations in Color Schedule on the Drawings or, if not indicated, as selected by Architect from

manufacturer's full range for these coating characteristics.

2.04 EXTERIOR HIGH-PERFORMANCE COATING SYSTEMS

A. Metal: Provide the following finish systems over exterior ferrous-metal surfaces:

1. Semigloss Finish: One finish coat over an (2) intermediate coats and a primer.
 - a. Primer: Epoxy primer applied at spreading rate recommended by manufacturer.
 - 1) Glidden: Devran 205 Epoxy Primer.
 - 2) International: Intergard 251 Epoxy with zinc phosphate inhibitor.
 - 3) PPG Pittsburgh Paints: 95-245 Series Pitt-Guard Rapid Coat DTR Polyamide Epoxy Coating.
 - 4) Sherwin-Williams: Recoatable Epoxy Primer B67 Series/B67V5.
 - 5) Tnemec: Series 27 F. C. Typoxy Polyamide Epoxy.
 - b. Intermediate Coat: Epoxy applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 8.0 mils (0.076 to 0.203 mm).
 - 1) Sherwin-Williams: Heavy Duty Epoxy B67W300 Series.
 - 2) Tnemec: Series 66 Hi-Build Epoxoline Polamidoamine Epoxy.
 - 3) International: Interseal 670 HS Polyamide epoxy.
 - c. Intermediate Coat: Aliphatic polyurethane enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 1.5 to 4.0 mils (0.038 to 0.102 mm).
 - 1) Glidden: Devthane 378 Aliphatic Urethane Semi-Gloss Enamel.
 - 2) PPG Pittsburgh Paints: 95-88XX Series Pitthane High Build Acrylic-Aliphatic Urethane Enamel.
 - d. Topcoat: Aliphatic polyurethane enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 1.5 to 4.0 mils (0.038 to 0.102 mm).

- 1) Glidden: Devthane 378 Aliphatic Urethane Semi-Gloss Enamel.
- 2) PPG Pittsburgh Paints: 95-88XX Series Pitthane High Build Acrylic-Aliphatic Urethane Enamel.
- 3) Sherwin-Williams: Corothane II Satin B65W400 Series.\
- 4) Tnemec: Series 75 Endura-Shield.
- 5) International: Interthane 870 Polyurethane-Semi-gloss.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. With Applicator present, examine substrates and conditions under which high-performance coatings will be applied, for compliance with coating application requirements.
 1. Apply coatings only after unsatisfactory conditions have been corrected and surfaces to receive coatings are thoroughly dry.
 2. Start of application is construed as Applicator's acceptance of surfaces within that particular area.
- B. Coordination of Work: Review other Sections in which primers or other coatings are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of specified finish materials to ensure compatible primers.
 1. If a potential incompatibility of primers applied by others exists, obtain the following from the primer Applicator before proceeding:
 - a. Confirmation of primer's suitability for expected service conditions.
 - b. Confirmation of primer's ability to be top coated with materials specified.
 2. Notify Architect about anticipated problems before using the coatings specified over substrates primed by others.

3.02 PREPARATION

- A. General: Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.

1. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.
- B. Cleaning: Before applying high-performance coatings, clean substrates of substances that could impair bond of coatings. Remove oil and grease before cleaning.
- C. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's printed instructions for each substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
 2. Ferrous-Metal Substrates: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC recommendations.
 - a. Blast-clean steel surfaces as recommended by coating manufacturer and according to SSPC-SP 6/NACE No. 3.
 3. Nonferrous-Metal Substrates: Clean nonferrous and galvanized surfaces according to manufacturer's printed instructions for the type of service, metal substrate, and application required.
- D. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's printed instructions.
1. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.
 2. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
 3. Use only the type of thinners approved by manufacturer and only within recommended limits.

3.03 APPLICATION

- A. General: Apply high-performance coatings according to manufacturer's printed instructions.
1. Use applicators and techniques best suited for the material being applied.
 2. Do not apply high-performance coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable

- coating film.
3. Provide finish coats compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convactor covers, grilles, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 - a. Coat surfaces behind movable equipment and furniture the same as similar exposed surfaces.
- B. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required is the same regardless of application method.
 - a. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
 - b. Where manufacturer's printed instructions require sanding, sand between applications to produce a smooth, even surface.
 - c. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause undercoat to lift or lose adhesion.
 2. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance. Give special attention to edges, corners, crevices, welds, exposed fasteners, and similar surfaces to ensure that they receive a dry film thickness equivalent to that of flat surfaces.
- C. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's printed instructions.
1. Brush Application: Use brushes best suited for material applied and of appropriate size for the surface or item being coated.
 - a. Apply primers and first coats by brush unless manufacturer's printed instructions permit using roller or mechanical applicators.

- b. Brush out and work brush coats into surfaces in an even film.
 - c. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.
 - 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for the material and texture required.
 - 3. Spray Equipment: Use mechanical methods to apply coating if permitted by manufacturer's printed instructions and governing regulations.
 - a. Use spray equipment with orifice size recommended by manufacturer for material and texture required.
 - b. Apply each coat to provide the equivalent hiding of brush-applied coats.
 - c. Do not double back with spray equipment building-up film thickness of two coats in one pass, unless recommended by manufacturer.
- F. Minimum Coating Thickness: Apply each material no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.
- G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by manufacturer, to material required to be coated or finished that has not been prime coated by others.
 - 1. Recoat primed and sealed substrates if there is evidence of suction spots or unsealed areas in first coat, to ensure a finish coat with no burn-through or other defects caused by insufficient sealing.
- H. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

3.04 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when coatings are being applied:
 - 1. Owner may engage the services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.

2. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with specified requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. If necessary, Contractor may be required to remove rejected materials from previously coated surfaces if, on recoating with specified materials, the two coatings are not compatible.

3.05 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 1. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.06 PROTECTION

- A. Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.
 1. Provide "Wet Paint" signs to protect newly coated finishes. After completing coating operations, remove temporary protective wrappings provided by others to protect their work.
 2. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION