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ADDENDUM NO. 04

Date: March 18, 2024

Issued by: Sacramento City Unified School District

Project: **Project #: 0004-468**
Alice Birney Waldorf TK-8 Campus Renewal

This addendum shall supersede the original Information, attachments, and specifications regarding Project No. 0004-468 where it adds to, deletes from, clarifies or otherwise modifies them. All other conditions and any previous addenda shall remain unchanged.

AD04.01 – Pre-bid RFI response:

RFI - *Attached sheet A141 Kitchen (addendum #3) calls out on the finish schedule trowelled epoxy o/ "single component modified cement bed" who is responsible for installation of cement bed? If flooring contractor is responsible can you please provide a specification?*

RESPONSE: Section 09 67 23 – Fluid Applied Flooring – Epoxy: Omit this section and replace with the attached **Section 09 67 23** – **Troweled Epoxy Flooring with Cementitious Underlayment**

END OF ADDENDUM NO. 04

Acknowledgement of this Addendum will be required at time of bid:

SECTION 09 67 23 – TROWELED EPOXY FLOORING WITH CEMENTIOUS UNDERLAYMENT – ADDENDUM # 4

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Trowel applied monolithic epoxy flooring.

2. Cementitious underlayment.

3. Perimeter edging and integral 6" high, 1/2-inch radius coved base.

4. Flooring must be acceptable and approved by the Sacramento County Health Department.

B. Related Sections:

1. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

2. Section 03 30 00 – Cast-in-Place Concrete.

3. Section 09 05 61 – Common Work Results for Flooring Preparation.

4. Section 09 65 00 – Resilient Luxury Vinyl Tile /Plank Flooring.

5. Section 11 40 00 – Foodservice Equipment.

6. Division 22 – Plumbing.

1.2 REFERENCES

A. ASTM D2240 – Standard Test Method for Rubber Property - Durometer Hardness.

B. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials

C. ASTM E648 – Critical Radiant Flux of Floor Covering Systems

D. ADA Standards – ADA Title [II] [III] Regulations and the ADA Standards for Accessible Design.

E. 2022 California Building Code (CBC):

1. Chapter 8, Interior Finishes

2. Chapter 11B, Access to Public Buildings, Public Accommodations, Commercial Facilities and Publicly Funded Housing.

F. California Fire Code (CFC).

G. NFPA 101 – Life Safety Code

H. NFPA 253 – Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source

I. SMAQMD – Sacramento Metropolitan Air Quality Management District Regulations.

1.3 SUBMITTALS

A. Action Submittals:

1. Product Data / Technical Data for each system component and accessory item, including application instructions and general recommendations for waterproof flooring.

a. Material certificates signed by manufacturer certifying that the polyacrylate resin composition underlayment complies with requirement specified herein.

2. Certified copies of Field Quality Assurance Test Reports.

3. Shop Drawings showing traffic areas that will receive non-slip finish and equipment and fixture layout that will receive standard smooth finish.

4. Samples:

a. Provide physical samples of full line of color options and textured finishes for epoxy flooring.

b. Provide 2-1/2" x 4" samples of underlayment.

B. Information Submittals:

1. Manufacturer’s Installation Instructions.

2. Certificates of Compliance regarding specified performance requirements.

C. Closeout Submittals: Manufacturer's Maintenance Instructions.

1.4 QUALITY ASSURANCE

A. Flooring system components shall be compliance with VOC content limits in SMAQMD.

B. Installed flooring system shall have ASTM C1028, Coefficient of Friction, as follows.

1. Dry/Level Surfaces: 0.6, minimum.

2. Wet/Sloped Surfaces: 0.8, minimum.

C. Installed flooring system shall be CBC Section 803.1, Class A interior finish with the following surface burning characteristics.

1. Flame Spread (ASTM E84): 25, maximum.

2. Smoke Developed (ASTM E84): 450, maximum.

3. Critical Radiant Flux (ASTM E648): NFPA 253, Class II, minimum 0.22 watts per square centimeter.

D. Manufacturer: Company with minimum 10 years' experience manufacturing poured epoxy flooring for commercial projects similar in scale and complexity to those required for this Project.

E. Single Source Responsibility: Obtain epoxy flooring and cementitious underlayment from a single manufacturer.

F. Installer: Company with minimum five (5) years' experience installing poured epoxy flooring for commercial DSA inspected projects similar in scale and complexity to those required for this Project.

1. Installer: Approved by the materials manufacturer.

2. Installer shall have completed at least five (5) comparable projects that are more than two (2) years old; submit list with names and telephone numbers of knowledgeable client contacts.

G. Field Sample: For each color and finish of epoxy flooring, install a Field Sample with one corner as an exploded view showing each step in the process of surface preparation and installation, including cementitious underlayment.

1. Size: Minimum 4- by 5-feet.

2. Location: Acceptable to Architect.

3. Modify materials and methods of installation for each Field Sample as required to obtain Architect's approval.

4. Document materials and methods used to obtain Architect's approval of each Field Sample. Maintain at least one copy of these documents in a readily accessible location on Site while this work is in progress.

5. Maintain access to and protect Field Sample from damage while this work is in progress.

6. Upon acceptance of related work, Field Sample that remains in acceptable condition may remain as part of the work if approved by Owner.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in un-opened containers, factory mixed and packaged.

B. Store materials in a dry, secure area.

1.6 PROJECT REQUIREMENTS

A. Do not install flooring when temperature is below 60°F or above 90°F.

B. Maintain this temperature range, 24 hours before, during and 72 hours after installation of flooring.

C. Restrict traffic from area where flooring is being installed or is curing.

1.7 WARRANTY

A. Manufacturer shall warrant installed flooring to be and to remain free from defect for a minimum period of one (1) year (and up to 3 years depending on manufacturer and product) from Date of Substantial Completion. Upon written notice from Owner, manufacturer shall promptly, without cost, and with least practicable inconvenience to Owner correct such defects.

B. Evidence of defect in material, installation or both shall be delamination from substrate or degradation of surface finish individually or in combination.

PART 2 – PRODUCTS

2.1 MANUFACTURERS / PRODUCTS – TROWELED EPOXY FLOORING

A. Products of the following manufacturers form the basis of design and quality intended for this Project.

1. Dex-O-Tex, manufactured by Crossfield Products Corp., Compton, CA.

2. Stonhard, Inc., Maple Shade, NJ

3. Tera-Lite, Inc., San Jose, CA.

4. Sherwin Williams.

5. Or equal, approved in accordance with Division 01 requirements for substitutions.

B. Provide epoxy flooring system that meets or exceed the listed minimum physical property requirements when tested according to the referenced standard test method in parentheses.

1. Tera-Gem III DQ, manufactured by Tera-Lite:

a. Thickness: 1/4 inch.

b. Compressive Strength (ASTM C579): 10,500 psi.

c. Tensile Strength (ASTM C307): 2,500 psi.

d. Flexural Strength (ASTM C580): 4,700 psi.

e. Water Absorption (C413): 0.25% max.

f. Surface Hardness (ASTM D2240): Shore D – 83.

g. Abrasion Resistance (ASTM D4060): 1000 cycles, wt. loss (gm), .037gm.

h. Impact Resistance (MIL-D-3134F, Section 4.7.3): No cracking or delamination at 16 ft. lbs.

i. Adhesion Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination and not more than 0.014" indentation Adhesion (A.C.I. Comm. No. 503.1): 400 psi (100% failure in concrete)

j. Electrical Conductivity (NFPA 56A): Di-electric

k. Flammability (ASTM E635): Self-extinguishing

l. Colors: As selected by Architect and Owner from manufacturer's full range of available colors. Grouted with selected variegated aggregates, top coated with clear finish coat.

m. Quartz decorative finish: ColorQuartz for Tera-Gem III DQ, color or blend as selected by Architect.

n. Primer: Two-component moisture tolerant epoxy primer.

o. Basecoat: Three-component, troweled polymer composite consisting of epoxy resin, curing agent, and choice of colorquartz, dolo aggregate blend, Tera-Blend aggregate blend, or Natural Sand aggregate.

p. Sealer: Consists of the Tera-Gem III DQ clear liquid components. Two coats to be applied.

q. Anti-skid: No. 70 mesh silica sand or Flintshot. Applied to second seal coat.

2. Terracolor, manufactured by Dex-O-Tex:

a. Thickness: 1/4 inch

b. Compressive Strength: 10,000 psi (ASTM C579); 11,000 psi (ASTM D695).

c. Tensile Strength: 1,400 psi (ASTM C307); 5,000 psi (ASTM D638)

d. Surface Hardness (ASTM D2240): Durometer "D" 81.

e. Abrasion Resistance (ASTM D4060): 0.04 gr.

f. Indentation (MIL-D-3134): >1.0 percent

g. Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination

h. Adhesion (A.G.I. Comm. No. 503.1): >400 psi (100% concrete failure)

i. Electrical Conductivity (NFPA 56A): Di-electric

j. Flammability: Self-extinguishing, 0.6" (ASTM D635); Critical Radiant Heat Flux > 1.07 watts/cm² (ASTM E648 / NFPA 253 / FTMS 372 / PA 253 / NBSIR 75-950)

3. Stonclad GR, manufactured by Stonhard:

a. Thickness: 1/4 inch.

b. Compressive Strength (ASTM C579): 10,000 psi.

c. Tensile Strength (ASTM C307): 1,750 psi.

d. Flexural Strength (ASTM C580): 4,000 psi.

e. Surface Hardness (ASTM D2240): Durometer "D" 85-90.

f. Abrasion Resistance (ASTM D4060): 0.1 gm max weight loss.

g. Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination

h. Adhesion (A.G.I. Comm. No. 503.1): >400 psi (100% concrete failure)

i. Electrical Conductivity (NFPA 56A): Di-electric

j. Flammability (ASTM D635): Class 1.

4. Stonshield HRI, manufactured by Stonhard:

a. Thickness: 3/16 inch, nominal.

b. Compressive Strength (ASTM C579): 10,000 psi.

c. Tensile Strength (ASTM C307): 2,000 psi.

d. Flexural Strength (ASTM C580): 4,300 psi.

e. Surface Hardness (ASTM D2240): Durometer "D" 85-90.

f. Abrasion Resistance (ASTM D4060): 0.06 gm max. weight loss.

g. Indentation (MIL-D-3134): >1.0 percent

h. Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination

i. Electrical Conductivity (NFPA 56A): Di-electric

j. Flammability: Class 1 (ASTM D635).

5. Resuflor Aqua Deco Quartz DB, manufactured by Sherwin-Williams:

a. Thickness: 3/16 inch, nominal.

b. Compressive Strength (ASTM C579): 12,000 psi.

c. Tensile Strength (ASTM C307): 2,500 psi.

d. Flexural Strength (ASTM C580): 4,500 psi.

e. Surface Hardness (ASTM D2240): Durometer "D" 70.

f. Abrasion Resistance (ASTM D4060): 70-90 mgs lost.

g. Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination

h. Adhesion (A.G.I. Comm. No. 503.1): >300 psi (100% concrete failure)

i. Electrical Conductivity (NFPA 56A): Di-electric

j. Flammability (ASTM D635): Class 1.

2.2 MANUFACTURERS / PRODUCTS – CEMENTITIOUS UNDERLAYMENT

A. Basis of Design: The Basis of Design product is listed below. This is an underlayment for Dex-O-Tex products. Flooring subcontractor to either verify this product is acceptable for use with the specific epoxy flooring selected or provide an appropriate underlayment product per flooring manufacturer's recommendations that meets all of the criteria listed below.

1. Trowel applied polyacrylate resin composition underlayment shall be Dex-O-Tex A-81 as manufactured by Crossfield Products Corp located in Rancho Dominguez, California and Roselle Park, New Jersey.

2. Physical Properties: Provide polyacrylate system that meets or exceeds the listed minimum physical property requirements when tested according to the referenced standard test method in parentheses.

a. Compressive Strength (ASTM C109): 5,140 psi.

b. Flexural Strength (ASTM C78): 1,268 psi

c. Flexural Modulus of Elasticity (ASTM C580): 2,415 psi.

d. Indentation (MIL-PRF-3134): 0.005" max.

e. Impact Resistance (Gardner Impact Tester): No chipping, cracking, or delamination and not more than 0.014" indentation.

f. Adhesion (A.C.I. Comm. No. 503.1): >400 psi (100% failure in concrete).

g. Shear Bond Strength (ASTM C882): 410 psi.

2.3 ACCESSORIES

A. Waterproofing Membrane: Type recommended or produced by manufacturer for flooring system, for type of service and floor condition indicated. Fluid-Applied, Dex-O-Tex Cheminert SC Membrane or equal (not needed for Tera-Lite III).

1. Primer: Manufacturer's standard.

B. Anti-Microbial Additive: Incorporate antimicrobial chemical additive to prevent growth of most bacteria, fungi, algae and actinomycetes.

C. Vapor Control System: Refer to Section 09 05 61 Common Work Results for Flooring Preparation. Provide and install per manufacturer's requirements and recommendations.

D. Primer: Manufacturer's bond coat.

E. Floor transitions: Saw cut concrete and chamfer (key in edge) to match level of existing flooring, Specified in Section 09 65 13.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify Site conditions are ready for the work of this Section. Notify Architect and Inspector of Record at least 48-hours prior to installation of testing and at conclusion of tests.

1. Concrete shall be cured minimum 28 days prior to application of sealer.

2. Conduct ASTM F1869 calcium chloride dome tests to verify that concrete floors are dry within moisture vapor emissions limits of flooring system manufacturer. Set one test for each 1,000 sf. of floor area but at least in four (4) in each different areas or location.

3. Conduct ASTM F710 alkalinity testing of concrete substrate; pH levels shall not exceed the recommendations of the floor coating manufacturer, the adhesive manufacturer, or both.

4. Conduct Relative Humidity Test Method in accordance with ASTM F2170 with a Wagner Rapid RH probe to verify relative humidity and surface pH, ASTM F710, of concrete floor slabs, the method requires drilling holes at diameter not to exceed outside diameter of probe by more than 0.04 inch to depth equal to 40 percent of slab's thickness (elevated structural slab shall be tested at depth equal to 20 percent of slab thickness).

a. Place probe to full depth of test hole, place cap over probe.

b. Permit test site to acclimate, or equilibrate, for 72 hours prior to taking relative humidity readings.

c. Remove cap and press button on the probe to obtain reading.

d. Relative humidity readings for substrates receiving non-permeable flooring are 75 percent or lower.

e. Testing shall require three (3) tests in first 1,000 square feet, with one additional test per each additional 1,000 square feet of concrete slab surface.

f. Alkalinity Testing: follow procedures per ASTM F710, ranges shall not exceed those recommended by the flooring manufacturer.

B. Do not begin installation until unsatisfactory conditions are corrected. Beginning installation means acceptance of existing conditions and preparatory work of others.

3.2 PREPARATION

A. Substrate: Perform preparation and cleaning procedures according to cementitious underlayment manufacturer's instructions for particular substrate conditions involved, and as specified. Provide clean, dry, and neutral substrate for underlayment application.

B. Concrete Surfaces: Shot-blast, acid etch or power scarify as required to obtain optimum bond of cementitious underlayment to concrete. Remove sufficient material to provide a sound surface free of laitance, glaze, efflorescence, and any bond-inhibiting curing compounds or form release agents. Remove grease, oil, and other penetrating contaminate. Remove damaged and deteriorated concrete. Leave surface free of dust, dirt, laitance, and efflorescence.

C. Materials: Mix resin catalyst and aggregate when required and prepare materials according to cementitious underlayment system manufacturer's instructions.

D. Follow manufacturer’s instructions (and per Section 09 05 61) for resolution and remediation where tests reveal presence of more than acceptable moisture level in accordance with Test Method ASTM F1869 and ASTM F2170.

E. Clean substrate; remove dirt, oil, grease, construction markings, and foreign matter that could adversely affect floor coating appearance or performance.

1. Surface shall be free of soil, dust, base material, oil, grease, paint, curing compounds and other foreign matter.

2. Surface shall be cleaned and allowed to dry thoroughly. Cleanse dirty or contaminated floors with approved cleaner as per manufacturer’s instructions. Rinse thoroughly with clean water.

3. Contaminated Concrete Surfaces: Clean concrete surfaces by sandblasting, steel shot-blasted, scarified, water blasted, or other approved technique by the flooring manufacturer.

F. Repair minor defects. The substrate was prepared under this section; remove ridges, fill depressions and repair cracks as required by floor coating manufacturer to execute specified warranty.

1. Apply, trowel and float filler to leave a smooth, flat, hard surface, free of bumps or depressions of any size.

2. Prohibit traffic from area until filler is cured.

G. Vacuum clean substrate.

H. Apply primer as recommended by the materials manufacturer.

I. Install waterproof membrane per manufacturer’s recommendations, if / as required.

3.3 INSTALLATION

A. Cementitious Underlayment:

1. General: Apply each component of cementitious underlayment system according to manufacturer's directions to produce a uniform monolithic surface of thickness indicated.

2. Bond Coat: Apply bondcoat/primer over prepared substrate at manufacturer's recommended spreading rate.

3. Body Coat: Over fresh bondcoat/ primer, trowel apply cementitious underlayment mortar mix at nominal thickness as specified; hand or power trowel. When cured, sand or grind if necessary to remove trowel marks or roughness.

4. Refer to plans for required thickness.

5. Curing, protecting, and cleaning: Cure cementitious underlayment materials according to manufacturer's directions, taking care to prevent contamination during application stages and before completing curing process. Close application area for a minimum of 24 hours.

B. Troweled Epoxy Flooring:

1. Mix components according to manufacturer's recommendations.

2. Apply primer (bonding coat) per manufacturer’s recommendation.

3. Trowel apply 1/4 inch thick body coat. Build-up in minimum of two (2) coats, or as recommended by manufacturer.

4. Body Coat: Over prepared surface, screed mortar mix at nominal ¼ inch thickness. Allow material flow out and being to settle. Back roll with a spike roller or looped roller to distribute material smooth even finish.

5. Slip Resistant Finish:

   a. Broadcast slip resistant finish into wet coating at rate recommended by manufacturer to achieve specified coefficient of friction. Backroll to encapsulate and distribute aggregate.

   b. Remove Excess Aggregate: Remove all loose or unsound aggregate from the cured surface. Vacuum up all dust and fine particles from the surface, remove any ridge lines and detail all imperfection in the textured surface.

   c. In kitchen and food service areas, scheduled for this flooring, apply slip resistant finish only in traffic areas of floor. Do not apply slip resistant finish in locations that will be under equipment, furnishings or fixtures and similar difficult to clean locations.

   d. Power sand to remove trowel marks.

6. Sealer: Apply two (2) seal coats using the base coat liquid components. Sand between coats. Apply the first seal coat. Let the surface set. Mix and place the second seal coat similarly to the first coat, application rate approximately 125 sq. ft. per gallon. During second seal coat broadcast a graded silica aggregate for anti-skid and backroll.

7. Pigmented Sealer (if required for product used), apply over slurry mortar.

8. Integral Base Application: Apply vertical areas with same materials or base material specified. Height of integral base application: 6 inches, including ½ inch coved radius, unless otherwise indicated. Mask off base to provide a straight, neat, level top edge.

9. Apply clear sealer, or pigmented where scheduled, top coat per manufacturer’s instructions.

3.4 PROTECTION

A. Protect finished installation from traffic until curing is complete.

END OF SECTION.

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