SECTION 096700

FLUID APPLIED COATINGS

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\*\* NOTE TO SPECIFIER \*\* Garland Company, Inc. (The);

1. GENERAL
   1. SECTION INCLUDES: Floor coatings for the following applications:
      1. High-performance floor coating system designed for traffic, chemical resistance, and abrasion resistance – including all necessary surface preparation, primer(s), build coat(s), topcoat(s), and aggregates.
   2. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Division 3 Section “Concrete Restoration”.
    2. Division 3 Section “Cast-In-Place Concrete”.
    3. Division 7 Section “Joint Sealants”.
    4. Division 7 Section “Thermal and Moisture Protection”.
    5. Division 32 Section "Pavement Markings”.
  1. SUBMITTALS
     1. Product Data: Submit manufacturer's standard submittal package including specification, installation instructions, and general information for each product indicated. For coatings, indicate VOC content in g/L.
     2. Shop Drawings: Show extent of each floor coating system. Include details for treating substrate joints, cracks, slab penetrations, and other termination conditions.
     3. Samples for Initial Selection: For each type of finish/system indicated.
     4. Sample Warranty: For Manufacturer's Warranty.
  2. QUALITY ASSURANCE
     1. Primary floor coating system requirements:
        1. Single manufacturer. Manufacturer shall have a minimum of ten (10) years experience in the manufacture of materials of this type.
        2. Applicators shall have a minimum of five (5) years of experience in the application of floor coating materials of the type specified. Applicator shall possess a current "Qualified Applicator" certificate from the specified floor coating manufacturer.
     2. Materials other than specified shall be submitted to the architect/owner for approval no later than ten (10) days prior to bid date. In requesting prior approval, it shall be necessary to submit:
        1. A letter of certification, signed by an officer of the manufacturer, stating that the alternative material is equal to or better than the specified product.
        2. Independent laboratory test data giving physical property values in comparison to the specified material.
     3. The static coefficient shall exceed the minimum recommendations of the American Disability Act (ADA), for accessible routes, for wet and dry surfaces, and for leather and rubber heel materials.
     4. Single Source Responsibility for Floor Coating Materials: Obtain floor coating materials from a single manufacturer for each different product required.
     5. Vapor Emission Testing: Where vapor emission may be a concern, perform testing to determine vapor emission utilizing a calcium chloride vapor emission test kit (<https://www.humboldtmfg.com/vapor-emission-test-kit.html>) per ASTM F1869. Record results and contact your Garland representative to determine whether a vapor tolerant primer will be necessary.
  3. PRE-INSTALLATION CONFERENCE
     1. Convene a pre-installation conference approximately two weeks before scheduled commencement of sealant installation and associated work.
     2. Require attendance of installers of floor coating products and other associated work which must precede or follow floor coating work as well as, Architect, Owner, and floor coating manufacturer's representative.
     3. Objectives include:
        1. Review foreseeable methods and procedures related to floor coating work, including set up and mobilization areas for stored material, and phasing.
        2. Review safety concerns related to the work including traffic control methods.
        3. Tour representative areas of concrete substrates, inspect and discuss condition of substrate and preparatory work.
        4. Review Drawings, Specifications and other Contract Documents.
        5. Review and finalize schedule related to sealant work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
        6. Review required inspection, testing, certifying procedures.
        7. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary weather protection.
        8. Record conference including decisions and agreements reached. Furnish a copy of records to each party attending.
     4. Mock-Ups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged and should be applied as follows:
        1. After surface prep and/or coating removal, one representative area will be identified for the floor coating mock-up. Apply floor coating to at least 100 sq. ft. to demonstrate surface preparation, joint and crack treatment, thickness, texture, color, and standard of workmanship.
        2. Remove and re-apply mock-ups until they are approved by product rep.
        3. Approved mock-up may become part of the completed Work if undisturbed at time of Substantial Completion.
  4. DELIVERY, STORAGE, AND HANDLING
     1. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
     2. Store all coating materials in clean, dry location protected from exposure to direct sunlight. Store materials in the original unopened containers at 50° to 80°F (10° to 27°C) until ready for use.
     3. Store and handle materials in compliance with manufacturer's recommendations to prevent deterioration or damage due to moisture, high/low temperatures, contaminants, or other causes.
     4. Safety: Refer to all applicable data, including, but not limited to safety data sheets, technical data sheets, product labels and specific instructions for specific personal protection requirements.
  5. PROJECT CONDITIONS
     1. Environmental Conditions: Proceed with work of this section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the manufacturer's recommendations.
     2. New concrete must be cured for at least 30 days prior to applying flooring system.
     3. Maintain surface and ambient temperature according to manufacturer’s recommendations. Surface temperature must be at least 5°F above dew point.
     4. Concrete must be free of hydrostatic, capillary, or moisture pressure. Substrates in contact with the ground must have a properly installed, functioning, and effective moisture vapor barrier to help prevent potential problems resulting from hydrostatic, capillary or moisture vapor pressure. Concrete must contain less than 3.0 pounds per 1,000 square feet per 24 hours when tested per ASTM F-1869.
     5. Concrete should have been designed and installed as approved by architect/engineer to minimize random cracking, curling, and slab deflections and shall contain well-designed control and isolation joints as approved by architect/engineer.
     6. Do not apply sealers or membrane curing agents to concrete. Moisture curing is recommended. If said agents have been placed, they are to be removed prior to application of any part of this system.
     7. Surfaces are to be kept free of traffic and no trades shall be permitted in areas during the preparation of the floor surface, the application of the coating system, or the curing cycle of the coating system.
  6. WARRANTY
     1. Installer Warranty: The contractor shall guarantee that all work performed will be free from defects in materials and workmanship for a period of two (2) years from the date of Substantial Completion. Upon notice of defect in writing to the contractor within two years after completion of work, the contractor shall, at his own expense, make necessary repairs or replacements of the defective work in question.
     2. Manufacturer’s Warranty: Manufacturer's standard form in which floor coating manufacturer agrees to furnish floor coating products to repair or replace those that do not comply with performance and other requirements specified in this section within specified warranty period.
        1. Warranty Period:
           1. Tread-Shield Floor Coating System: Five (5) Year Material Warranty
           2. ChemScreen Floor Coating System: Five (5) Year Material Warranty
     3. Garland Floor Coating Systems are available for commercial projects only. Contractor must be eligible for, and make application to, The Garland Company, prior to the start of work under this section.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Garland Company, Inc. (The), which is located at: 3800 E. 91st St.; Cleveland, OH 44105; Toll Free Tel: 800-321-9336; Tel: 216-641-7500; Fax: 216-641-0633; Email:[request info (jbosl@garlandind.com)](mailto:request%20info%20(jbosl@garlandind.com)); Web:<http://www.garlandco.com>
   2. MATERIALS, GENERAL
      1. Compatibility: Provide floor coating, joint sealants, and other related materials that are compatible with one another and with substrates under conditions of service and application, as demonstrated by floor coating manufacturer based on testing and field experience.
      2. Colors: Provide color of exposed floor coating to comply with the following:
         1. Provide selections for review and approval by Owner from manufacturer's full range of standard colors for products of type indicated.
   3. FLOOR COATING
      1. Primer:
         1. Tread-Shield VTP – Two-component, 100% solids, Zero VOC, epoxy concrete sealer/primer used to help control moisture vapor emissions.
         2. Tread-Shield Flex Primer – Two-component, 100% solids, Low VOC, epoxy concrete sealer/primer.
         3. Tread-Shield Primer WB – Two-component, 100% solids, Low odor, VOC compliant, water-based, epoxy concrete sealer/primer.
         4. ChemScreen Primer – Two-component, 100% solids, VOC compliant, urethane/epoxy hybrid, novolac primer.
      2. High-Build Base Coating:
         1. Tread-Shield – Two-component, 100% solids, Low VOC, epoxy coating.
            1. Tread-Shield Pigmented (reference Tread-Shield color chart)
            2. Tread-Shield Clear with Tread-Shield Flakes, decorative vinyl paint chips
            3. Tread-Shield Clear with Tread-Shield Quartz, decorative quartz granule aggregate
            4. Tread-Shield Clear with Silica Sand or Black Beauty aggregate, spreading rate as recommended by manufacturer for the specified system, substrate, type of aggregate, location, and service conditions indicated.
      3. Top Coating:
         1. Tread-Shield Top Coat VOC – Two-component, VOC compliant, polyester/aliphatic polyurethane coating (aggregate may be used for additional traction).
         2. Tread-Shield Top Coat WB – Two-component, water-based, Low odor, aliphatic polyurethane coating (aggregate may be used for additional traction).
         3. ChemScreen Top Coat: Two-component, high solids, VOC compliant, epoxy, novolac coating (aggregate may be used for additional traction).
      4. Aggregate:
         1. Uniformly graded, hard non-crushable, non-angular, rounded, washed silica sand (16/30 mesh), unless otherwise specified (typically used in high-build and/or base coat applications)
         2. Sugar Sand: Very fine, rounded silica sand (typically used in thinner top coat applications)
         3. Spreading Rate: As recommended by manufacturer for the specified system, substrate, type of aggregate, location, and service conditions indicated.
      5. Joint and Crack Sealant:
         1. Green-Lock Sealant XL, Single-component, STPE joint sealant.
         2. Perma-Joint: Two-component, pourable, 100% solids, epoxy/urethane hybrid joint sealant.
      6. Component Coat Thickness: As recommended by manufacturer for substrate and service conditions indicated, but not less than the following (measured excluding aggregate):
         1. Primer:
            1. Tread-Shield VTP: 94 sq. ft / gal; 17 wet mil thickness (WTF)
            2. Tread-Shield Flex Primer: 32-270 sq. ft. / gal; 6-50 mils WTF
            3. Tread-Shield Primer WB: 230-320 sq. ft. / gal; 5-7 mils WTF
            4. ChemScreen Primer: 32-270 sq. ft. / gal; 6-50 mils WTF
         2. High-Build Base Coating (Tread-Shield flooring system only):
            1. Tread-Shield: 80-100 sq. ft. / gal; 16-20 mils WTF
         3. Top Coating:
            1. Tread-Shield Top Coat VOC: 320-500 sq. ft. / gal; 3-5 mils WTF
            2. Tread-Shield Top Coat WB: 320-500 sq. ft. / gal; 3-5 mils WTF
            3. ChemScreen Top Coat: 90-100 sq. ft. / gal; 16-18 mils WTF

\*\* NOTE TO SPECIFIER \*\* .

1. EXECUTION
   1. EXAMINATION
      1. Verify that substrate is ready to receive work; surface is clean, dry, and free of substances that could affect bonding or the performance of the new floor coating.
      2. Verify that the concrete meets the requirements of the coating manufacturer.
      3. Begin coating application only after minimum concrete curing and drying period recommended by the designer of record and concrete contractor has passed, after unsatisfactory conditions have been corrected, and after surfaces are dry.
         1. Verify that substrates are visibly dry and free of moisture.
            1. Test for vapor transmission by plastic sheet method according to ASTM D4263
         2. Verify that no vapor emission issues will negatively affect the performance of the new floor coating.
            1. Calcium chloride test will establish vapor emission issues within the slab that may prevent functional performance of new coating applications. Install several test kits around the area to be coated and compare the weight of the calcium chloride before and after the duration of the test. All testing should be documented and filed as a pre-job checklist item. A detailed outline for the test can be found online at <https://www.humboldtmfg.com/vapor-emission-test-kit.html>
      4. Perform adhesion tests per manufacturer’s recommendations when going over existing floor coatings
      5. Verify that all other work involved with this area, done under other sections, has been completed and accepted by the architect and general contractor prior to starting the floor coating application.
      6. Application of coating indicates acceptance of surface and conditions.
   2. PREPARATION
      1. Surface Cleaning: Clean substrate to remove any and all surface contaminants. Concrete surfaces must be thoroughly clean, dry and free from any surface contaminates or cleaning residue. Acceptable methods of cleaning are sandblasting, shotblasting or mechanical grinding followed by the complete removal of any residue. Concrete surface profile required for floor coating is CSP-3.
      2. Mask off all adjoining areas that are not to receive coating.
      3. Provide a suitable workstation to mix the coating materials.
      4. The concrete surfaces shall be of sound structural grade (3000 psi compressive strength recommended), of adequate design and thickness, and shall have a steel troweled followed by a fine broom finish, free of fins, ridges, voids or air entrained holes.
      5. Concrete: Special attention should be given to smoothness of surface and freedom from contaminants including paint or previous coatings. Consult manufacturer’s representative for alternate procedures for coating over existing coatings. Such procedures are highly dependent on specific job conditions. Curing compounds if used shall be removed by shotblasting. In the event specifications are not met, the following corrective procedures are recommended.
         1. Surface Contaminants: Wipe up grease or oil with a solvent and absorbent sweeping material. Disposal of this material should be in accordance with local laws and codes. Wash with solvent-alkaline cleaners diluted one part cleaner and five parts water. Rinse thoroughly with clean water.
            1. Remove curing compounds by shotblasting. Grinding may remove heavy deposits of contaminants.
         2. Fins and projections: Grind smooth.
         3. Rock Pockets and Depressions: Commercially available concrete patching compounds can be used provided they contain no bitumen based binders. Only those patching compounds utilizing a binder are recommended for patching. Neat cement sacking is NOT an acceptable surface preparation for coatings.
         4. Small/Shallow Depth Concrete Repairs – Perma-Top Patch Kit: Sound the concrete to outline the size and shape of the spalled and/or debonded concrete area. Saw cut the perimeter of the repair area to prevent feathering out of the patch material. Chipped out the deteriorated concrete and around the reinforcing steel. Sandblast or grind the reinforcing steel and patch area to remove rust and surface contaminants that would prevent good adhesion of the repair material. Patch with Perma-Top Repair Kit per the product data sheets. See typical shallow depth concrete repair detail for more information.
         5. Deep/Larger Concrete Repairs – Please contact the manufacturer’s representative.
         6. Heavily Pitted Areas of Concrete – Leveling Course: Shotblast or grind the pitted areas. Use a notched squeegee to float Treadshield Flex Primer over the pitted areas and broadcast sand aggregate into the epoxy while it is still wet. Allow to cure before installing new coating system.
   3. TERMINATIONS AND PENETRATIONS
      1. Prepare vertical and horizontal surfaces at terminations and penetrations through the floor coatings and at expansions joints, drains, and sleeves by installing Green-Lock Sealant XL per the manufacturer’s specifications (or approved manufacturer’s sealant).
   4. JOINT AND CRACK TREATMENT
      1. Rout all cracks > 1/16” and caulk with Garland single-component Green-Lock Sealant XL (or approved manufacturer’s sealant).
      2. Remove and replace sealant at all expansion, control, cove, and construction joints with Green-Lock Sealant XL (or approved manufacturer’s sealant).
      3. Honor (hold back epoxy coating system) from all movement joints. Do not install rigid epoxy coating over areas or joints requiring room for expansion/contraction.
   5. WALLS AND EDGE DETAILING
      1. Apply a cove joint of sealant at the deck to wall transition.
   6. INSTALLATION
      1. Tread-Shield Floor Coating System
         1. Technical Advice: The installation of this floor coating system shall be accomplished in the presence of, or with the advice of the manufacturer’s technical representative. Contact the nearest regional office for assistance.
         2. Primer:
            1. Tread-Shield Flex Primer: Prime all surfaces to be coated at the rate of 32-270 sf/gal.
            2. Tread-Shield Primer WB: Prime all surfaces to be coated at the rate of 230-320 sf/gal.
            3. Tread-Shield VTP: Prime all surfaces to be coated at the rate of 94 sf/gal.
            4. ChemScreen Primer: Prime all surfaces to be coated at the rate of 32-270 sf/gal.
         3. High-Build Base Coat (Tread-Shield flooring system only): Install 16-20 mil application of Tread-Shield in the desired color at the rate of 80-100 sf/gal in low humidity conditions (< 75% R.H.). Apply Base Coat with a notched squeegee and back roll with a nap roller to help avoid pin holes and squeegee lines. Repair any pinholes as they occur. If Tread-Shield Flakes or Quartz are desired, installed into Base Coat while still wet.
         4. Top Coat:
            1. Tread-Shield Top Coat VOC: Install 3-5 mil application at the rate of 320-500 sf/ gal in low humidity conditions (< 75% R.H.). Apply Top Coat with a notched squeegee. Back roll with a nap or foam roller to help avoid pinholes and squeegee lines. Repair any pin holes as they occur. Super fine, rounded, silica sand (sugar sand) may be added to the Top Coat for additional traction if desired.
            2. Tread-Shield Top Coat WB: Install 3-5 mil application at the rate of 320-500 sf/ gal in low humidity conditions (< 75% R.H.). Apply Top Coat with a notched squeegee. Back roll with a nap or foam roller to help avoid pinholes and squeegee lines. Repair any pin holes as they occur. Super fine, rounded, silica sand (sugar sand) may be added to the Top Coat for additional traction if desired.
            3. ChemScreen: Install 16-18 mil application at the rate of 90-100 sf/ gal in low humidity conditions (< 75% R.H.). Apply ChemScreen with a notched squeegee. Back roll with a nap or foam roller to help avoid pinholes and squeegee lines. Repair any pin holes as they occur.
   7. CLEANING AND PROTECTION
      1. Protect floor coatings from damage and wear during the remainder of construction period.
      2. Clean spillage from adjacent construction using cleaning agents and procedures recommended by the manufacturer of affected construction.

\*\* NOTE TO SPECIFIER \*\* Include the following paragraphs to specify requirements for inspection and testing by the manufacturer. Delete if not required for project.

END OF SECTION