

ATTACHMENT G-SPECIFICATIONS

COATINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

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

B. Work Includes:

1. Surface preparation of concrete floor slab and masonry wall surfaces (where cove base is required).

2. Field application of high-performance coating systems to floor slabs and all horizontal and vertical concrete surfaces in Inspections Pits and pit tunnels.

1.02 SUBMITTALS

A. SD-03 Product Data: Submit manufacturer's product data, including physical properties, chemical resistance, surface preparation and application instructions.

1. Submit manufacturer's standard warranty and applicator's warranty.

B. SD-04 Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

C. SD-04 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, including primers. 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. Concrete: Provide two ~~4-inch~~ square samples for each color and finish.

1.03 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. Pre-Application Meeting: Convene a pre-application meeting two weeks before the start of application of floor coating system. Require attendance of parties directly affecting work of this section, including the Contractor, engineer, Applicator and Manufacturer's Representative. Review the surface preparation, application, cleaning, protection, coordination with other work, and benchmark finish samples to demonstrate the basis of acceptance for the work.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store and handle materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the product indicated in the coating system descriptions.

2.02 COATING 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 clearly indicating comparable performance.

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 INTERIOR HIGH COATING SYSTEMS

A. High Traffic Coating System (**HTCS**): Provide a two-component moisture cured urethane, VOC-HTS™ - High Traffic System by TENNANT COMPANY, Minneapolis, MN, 800-228-4943, or approved equal.

1. Percent Solids, ASTM D2369
 - a. Part A - 62.29%
 - b. Part B - 100.00%
 - c. Mixed - 68.71%
 2. Volatile Organic Compound (VOC), ASTM D3960
 - a. 3.30 lb/gal or 400 g/L
 3. Abrasion Resistance, ASTM D406
 - a. 30-40 mg loss at 1000 revolutions
 - b. 120-130 mg loss at 5000 revolutions
 4. Tensile Strength, ASTM D2370
 - a. 5,300 psi or 36,570 kPa
 5. Percent Elongation, ASTM D2370
 - a. 5%
 6. Sward Hardness, ASTM D2134
 - a. 30-40 (1 mil film)
 7. Bonding Additive: Manufacturer's standard.
 - a. Solvent free
 8. Colorant: Manufacturer's standard pigmented colorant as selected by the engineer from manufacturer's full range.
 9. Joint Filler: Manufacturer's standard joint filler.
 10. Finish: Semigloss finish (a to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter).
- B. As shown in the plans provide a topcoat which is chemically resistant to typical fluids in a truck inspection facility near the north end of the inspection pits.
- C. As shown in the plans provide a topcoat which is resistant to UV rays on north and south ends of the building by the over doors.
- D. 3.5" safety yellow stripes shall be compatible with flooring system.

E. Guide rails shall be coated with a system of primer and paint designed for the substrate.

2.04 ADHESIVE BACKED SLIP-RESISTANT STAIR NOSING TREADS

A. High-friction, slip-resistant tape, 2" wide x 60 ft. rolls, safety yellow, coated on the backside with a pressure-sensitive adhesive covered by a removable protective liner.

B. Manufacturers:

1. 3M™ Safety-Walk™ 500 Series
2. Safe Way Traction Pressure sensitive traction tape
3. Wooster Products, Inc., Flex-Tred anti-slip tape

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. Use a Delmhorst moisture meter to check the moisture content of concrete. An unacceptably high reading is 22 or above on a wood scale.

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.

C. Notify engineer 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.

1. Schedule cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.

C. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for each substrate condition and as specified.

1. Remove all primers and coverings from existing surfaces.

2. Cementitious Substrates: Prepare concrete surfaces to be coated. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. If hardeners or sealers have been used to improve curing, use mechanical methods to prepare surfaces.

a. Prepare floor slabs of inspection bay by shotblasting or similar to a CSP 3-4 preparations.

b. Prepares all walls, benches in floor in inspection pits, stairways and tunnels by grinding or equal to remove all existing coatings to a roughness level specified by the manufacturer.

c. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not coat surfaces if moisture content exceeds that permitted in manufacturer's written instructions.

d. Prime all concrete surfaces as recommended by the HTCS flooring system.

D. Joint Treatment: Diamond saw and clean all expansion joints and fill joints with manufacturer's compatible joint filler, then shave joints smooth and level.

E. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's written 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 written 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. Coating colors, surface treatments, and finishes are indicated in the coating system descriptions
4. Provide finish coats compatible with primers used.
5. 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. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
 - b. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match 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. Omit primer on metal surfaces that have been shop primed and touchup painted.
 - b. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
 - c. Where manufacturer's written instructions require sanding, sand between applications to produce a smooth, even surface.

d. 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, or other applicators according to manufacturer's written 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 written 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 of spray equipment is not permitted.

D. 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.

E. 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.

F. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

3.04 ADHESIVE BACKED SLIP-RESISTANT STAIR NOSING TREADS

A. Prep and clean concrete stair tread surfaces as recommended by tape manufacturer.

B. Apply adhesive backed nosing tread tape continuous from wall to wall at each tread. Locate edge of tape 1 inch back from edge of tread.

C. Test all adhesive strips and replace sections that fail to adhere properly to concrete substrate.

3.05 CLEANING

A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. 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 engineer, 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. Close job site to traffic for a period of 24 hours after coating application.

3. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

ACCESS DOORS

PART 1 - GENERAL

1.01 SCOPE

A. The work under this section includes removal and replacement of access doors for radiant heat manifolds as specified in the plans.

1.02 SUBMITTALS

A. Include dimensioned drawings, with material specifications for each size/configuration of panel.

B. Include products specification for grout used for installation.

PART 2 – PRODUCTS

- A. Access panels shall meet the following specifications.
 - a. Size shall be equal to or larger than existing panels. Larger panels shall be closets available size in product line.
 - b. Slip resistant /Diamond Plated
 - c. Aluminum
 - d. Flush
 - e. Hinged
 - f. Load Rated for Vehicles (16,000# Wheel Load)

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Remove existing covers and frames.
- B. Clean out concrete remnant and saw cut floor as needed to provide a uniform area for installation of new panel and frame.
- C. Grout new frames into place using a pourable high grade, solvent free, 3-component epoxy resin composition.
 - a. Mechanical Properties of Grout-After 7 days at 23 Degrees Celsius
 - i. Compressive Strength: >12,000 psi
 - ii. Flexural Strength:>6000 psi
 - iii. Modulus of Elasticity 2,000,000 psi
 - iv. Adhesive Strength On Concrete >600 psi on Steel >1500 psi
 - b. Grout shall be resistant to Potable, sea and wastewater. Diluted acids and alkalis. Grease, Fuel and Mineral oils.
 - c. Grout shall have a minimum compressive strength of 12,000 psi at 20 Degrees Celsius after 7 days.

INTERIOR LIGHTING FIXTURES AND LAMPS

PART 1 - GENERAL

1.02 SCOPE

- A. The work under this section includes inspection pit luminaires

1.04 SUBMITTALS

- A. Include outline drawings, lamp data, support points, weights, accessory information and performance data for each luminaire type.
- B. For each luminaire type, submit luminaire information and submit catalog cuts with highlighted catalog numbers and required accessories.

1.05 OPERATION AND MAINTENANCE DATA

- A. Supply all relevant operations and maintenance data.

PART 2 – PRODUCTS

- A. Inspection pit lights shall be:

QTY	Manufacturer	Catalog Number	Volts	Lamps	Watts/Fixture
20	Columbia	LXEM-4-40-ML- RFA-E-U	120	LED	53

Substitutions by other manufacturers will be considered. Submit substitution requests in regards to equal products as follows.

**A.PRODUCT SUBSTITUTIONS WILL ONLY BE CONSIDERED DURING
BIDDING**

B.SUBSTITUTIONS WILL ONLY BE ALLOWED WITH THE PRIOR APPROVAL OF OWNER DURING BIDDING.

2.02 LAMPS

A. Manufacturer names and catalog numbers are used to develop quality and performance requirements only. Lamps manufactured by others will be accepted provided they meet or exceed the specifications.

B. All lamps shall be new.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prohibit movement.

C. The Contractor shall install fixture supports as required. Fixture installations with fixtures supported only by insecure boxes will be rejected. It shall be the Contractor's responsibility to support all lighting fixtures adequately, providing extra steel work for the support of fixtures if required. Any components necessary for mounting fixtures shall be provided by the Contractor. No plastic, composition or wood type anchors shall be used.

D. Install accessories furnished with each luminaire.

E. Bond fixtures and metal accessories to branch circuit equipment grounding conductor.

F. Install specified lamps in each luminaire and exit sign.

G. All lamps shall be delivered to the job in sealed cartons and protected from dirt and dust during storage on the project. Lamps shall be taken directly from the cartons and installed in the fixture with special care so that they do not become dusty and are not soiled in the operation.

H. All new lamps shall be operational at the Substantial Completion of the project.

3.02 ADJUSTING AND CLEANING

A. Align luminaires and clean lenses and diffusers at completion of Work. Clean paint splatters, dirt, and debris from installed luminaires.

- B. Aim and adjust luminaires as indicated on Drawings or as directed by the owner
- C. Touch up luminaire finish at completion of work.

3.04 FIELD QUALITY CONTROL

- A. Operate each luminaire after installation and connection. Inspect for proper connection and operation.