R&D SPECIFICATION MANUAL

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Division 09700

Guide Specifications Permaflor & Permaflor R Heavy-Duty Mortar Resurfacer

Note To Specifier

1. This document has been prepared to assist Specifiers in the preparation of specifications for the installation of PERMAFLOR.

   PERMAFLOR is an epoxy-flooring system intended for industrial, light industrial and commercial use.

2. This document was prepared to be included as part of a complete specification for new construction or can be used as a stand-alone document for existing structures.

3. There are several areas in this document that, at the discretion of the Specifier, will require values to be inserted, as appropriate for the type of placement being specified. Physical properties for PERMAFLOR are listed Appendix A.

4. PERMAFLOR can be specified and installed in a variety of thickness; degrees of slip resistance and chemical resistance desired depending on its intended use.

5. Also refer to related documents, Technical Data Sheets & Installation Procedures.

1.0 General

1.1 Scope

The contractor shall furnish all materials, tools, equipment, appliances, transportation, labor and supervision required during the preparation and installation process.

1.2 Pre-Qualification

1. Contractor and his installer(s) shall have satisfactorily completed a program of instruction in proper methods of preparation of the substrate, patching of spalled and delaminated areas, crack and joint repair. The applicator shall have in writing, a certificate of approval from the manufacturer.

2. Contractor(s) seeking approval of substitute materials shall have a minimum of five (5) years experience installing this type of surfacing in similar size projects. They must also submit their request in writing to the Architect/Engineer at least seven (7) days before closing of bids.

Include samples; testing laboratory reports regarding conformity with specifications; and list of completed successful installations, including phone number of responsible person to contact, to enable accurate appraisal of the system. Bidders shall be notified of acceptable substitute materials by written addendum or amendment.

1.3 Applicable Standards & Test Methods

Please refer to Appendix A for standards and test methods used in their results.

1.4 Project / Site Conditions

1. Minimum concrete surface and ambient temperature of 55°F (12°C) for 48 hours before, during, and after installation, or until cured.

2. Adequate ventilation and clean water supply required during installation.

3. Substrate requirements (see Appendix B).

1.5 Warranty

1. Contractor shall submit a one-year, limited warranty against improper workmanship and defective materials (from date of use or completion, whichever comes first).

2.0 Products

2.1 Acceptable Manufacturer

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2.2 Materials

1. PERMAFLOR, meeting or surpassing physical property requirements as listed in Appendix A.

2. Optional elastomeric membrane NEO V II C latex neoprene, for waterproofing and/or to reduce reflective cracking from the substrate.

2.3 Samples

1. Submit two (2) samples that are representative of work.

2. Construct panel 100 ft^2 minimum of typical flooring on site as part of final installation for approval. Location to be determined by Architect or Engineer.

3.0 Execution

3.1 Inspection

1. Surface conditions (see Appendix B)

2. Before starting work, ensure environmental and site conditions are suitable for application and curing.

3. Inspect surface for acceptability of levelness, texture, moisture content, pitch to drains, etc. (See Appendix B)

4. Any and all deficiencies shall be reported, in writing, to specifying engineer, and copy sent to material manufacturer. Surface must be approved by the manufacturer or certified contractor prior to application of membrane.

3.2 Preparation

1. Surface must be clean and sound, which in all cases, requires some form of preparation. Substrate must be prepared in accordance with manufacturer's printed instructions.

2. Effectively remove concrete laitance by steel-shot blasting or acid etching.

3. Pre-fill surface irregularities, holes and cracks per manufacturer's recommendation.

3.3 Protection

1. Advise owner/operator and trades that unfinished surface is to remain free from traffic, and that fixtures, fittings and finishing are not to be installed, until flooring is completed.

2. Protect adjacent surfaces from damage resulting from work of this trade. If necessary, mask and/or cover adjacent surfaces, fixtures, equipment, etc., by suitable means.

3. Traffic control - no individuals are permitted in areas during application and until surface has cured and has been approved for traffic by the applicator and the manufacturer.

4. Apply temporary protection until flooring is fully cured.

5. Optional install cove and/or base in accordance with manufacturers instruction.

6. Prime entire surface with recommended primer.

7. Apply epoxy and/or aggregate matrix in accordance with manufacturers instructions to total thickness of _____ inches, (_____mm).

8. Apply grout coat and top coat(s) at recommended coverage, to provide uniform, dense surface.

9. Allow proper cure time for each installation procedure.

8. Finished work shall meet the specified standard as forementioned in specification section

Appendix A – Physical Properties For PERMAFLOR

Property	Test Method	Test Results
Tensile Strength, Binder	ASTM C 638	6,400 psi
Tensile Strength, Mortar	ASTM C 307	2,000 psi
Tensile Elongation, Minimum Value, Binder	ASTM D 638	3.5 %
Compressive Yield Strength, Binder	ASTM D 695	10,200 psi
Compressive Yield Strength, Mortar	ASTM C 579	9,100 psi
Flexural Yield Strength, Mortar	ASTM C 580	3,200 psi
Hardness Shore D, Binder	ASTM D 2240	80
Curing Shrinkage, Binder	ASTM C 881 ASTM D 2566	<.005
Curing Shrinkage, Mortar	ASTM D 531	3.75×10^{-4} ("/")
Coefficient of Thermal Expansion	ASTM C 531	1.32×10^{-5} ("/"°F)
Impact resistance – no chipping, cracking, spalling or loss of adhesion	Gardner Impact Tester	160 in/lb
Water Absorption	ASTM C 413	0.5 %
Moisture Vapor Permeability	ASTM E 96	0.06 perms
Taber Abrasion CS 17 Wheels 1,000 gm – 1000 cycles	ASTM D 4060	105 gm

Appendix B – General Sub floor Requirements

CONCRETE – Section 03300

1. Concrete to receive PERMAFLOR should be designed and installed to prevent random cracking and deflection. Provide sufficient control and isolation joints.

2. Variation in plane shall be determined by the specifier and be in accordance with ACI 302, "Guide for Concrete Floor and Slab", as well as ASTM 1155-87," Determining Floor Flatness and Levelness Using the F Number System."

3. Proper to slope to drain(s) must be maintained.

4. A light steel trowel finish is preferred for best results and to minimize surface preparation.

5. Concrete to be clean, crack free, sound and durable (minimum compressive strength of 3,000 psi) and dry (3% maximum moisture content by mass).

6. Concrete must be free of hydrostatic and/or capillary moisture pressure and should not be in direct contact with the ground. An effective vapor barrier and properly engineered soil are required.

7. Allow concrete to cure twenty-eight (28) days minimum before applying membrane traffic coating. For concrete patches, the minimum cure time will vary depending on the depth of the patch, temperature, water-cement ratio, etc.

8. **Must be 3º C (37.4 ºF) above measured dew point**

9. **Moisture Content – Non-Destructive:** Securely tape squares of heavy-duty polyethylene film sheeting (10 mil gauge minimum) to the substrate. Place and infra red heat lamp twenty-four (24) inches above the polyethylene film for twenty-four hours in the on position and observe for accumulation of moisture under the film / or calcium chloride test.

10. Concrete to be free from curing compounds, membrane curing agents, metallic hardeners, or foreign matter.

11. Lightweight and insulating concrete not recommended under the PERMAFLOR; consult the manufacturer.

CONTROL JOINTS – Section 03250

1. Install control and expansion joints in accordance with standard practice.

2. The floor contractor may fill non-moving control joint(s) with approved elastomeric sealant or full depth semi-rigid two component epoxy joint filler, designed specifically for this purpose (use full

depth joint filler when reinforcement of the joint edges is desirable). Movement may crack surfacing unless proper detailing has been done.

3. Filling moving isolation joints or expansion joints is not recommended.

4. Filling of non-moving isolation joints or expansion joints with elastomeric caulking and sealants or with semi-rigid epoxy joint filler is acceptable. Movement may crack surfacing unless proper detailing has been done.

BACKING FOR COVE BASE

1. Surface to receive cove and/or base shall be strong, durable and dry. Suitable backings include; concrete, cement plaster, standard lightweight block, clay, sand-lime and cement bricks. Masonry surface(s) to be free of voids, irregularities and recessed joints (if present, fill with recommended epoxy plaster).

2. **Questionable Surfaces:** Surfaces with weak backings, such as painted surfaces, drywall or finished plaster are not acceptable unless reinforced.