Traffic Coating Specification

For:

**Terapro 250 Surfacing System (Reinforced)
for**

**Vehicular Traffic Surfaces**

Prepared by:

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This specification is provided as a general guide for use of Siplast products based on typical surface conditions and standard application practices. As a manufacturer of traffic coating systems, Siplast has no experience, training or expertise in the areas of design and installation or in the area of consulting with respect to matters related to such areas. Siplast recommends that the Owner's representative independently verify the accuracy and appropriateness of a specification provided for a specific project.

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SECTION 07 18 13 VEHICULAR TRAFFIC COATINGS (5/2022)pq

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Evaluation/Preparation of Substrate to Receive Vehicular Traffic Coating

***B. Epoxy Primer Application***

C. Poly(methyl methacrylate)-based (PMMA) Primer Application

D. Poly(methyl methacrylate)-based (PMMA) Vehicular Traffic Coating Application

\*NOTE:Epoxy primer should only be used to prepare concrete substrates with a moisture value greater than 75% relative humidity in accordance with ASTM F2170. Epoxy primer is not approved for embedment of grid reinforcement and should only be used in addition to the specified PMMA primer.

1.02 RELATED SECTIONS.

1. Section [-----] – Submittals
2. Section [-----] – Concrete
3. Section [-----] – Asphalt Pavement
4. Section [-----] – Metals
5. Section [-----] – Elastomeric Joint Sealants
6. Section [-----] – Plumbing

1.03 REFERENCE STANDARDS.

Agencies that may be used as references throughout this specification section include:

NIOSH National Institute for Occupational Safety & Health

 Atlanta, GA

OSHA Occupational Safety and Health Administrations

 Washington, DC

ICRI International Concrete Repair Institute

 Sterling, VA

ACI American Concrete Institute

 Farmington Hills, MI

ASTM American Society for Testing and Materials

 Philadelphia, PA

SSPC The Society for Protective Coatings

Pittsburgh, PA

1.04 SUBMITTALS

All submittals which do not conform to the following requirements will be rejected.

\* NOTE: Coordinate submittal requirements with general provisions. Modify submittals to suit specific project requirements.

A. Submittals Prior to Contract Award Shall Include:

1. Letter from the proposed primary system manufacturer confirming that the bidder is an acceptable contractor authorized to install the proposed system.

2. Letter from the primary system manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified warranty.

1.05 QUALITY ASSURANCE

A. Acceptable Contractor: The contractor shall be certified in writing by the traffic coating materials manufacturer to install the specified products.

B. Project Acceptance: Submit a completed manufacturer's application for warranty form along with a project plan with drawings of the area to be coated, showing all dimensions, and details. The project must receive approval by the traffic coating manufacturer, through this process, prior to shipment of materials to the project site.

C. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full-time supervision, experienced application mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the coating system installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the traffic coating products.

D. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

E. Manufacturer Requirements: The traffic coating system manufacturer shall provide directly trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conduct a final inspection upon successful completion of the project.

F. Product Quality Assurance Program: Primary traffic coating materials shall be manufactured under a quality management system that is monitored regularly by a third-party auditor under the ISO 9001 audit process.

1.06 PRODUCT DELIVERY STORAGE AND HANDLING

A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Store closed containers in a cool, dry, well ventilated area away from heat, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Keep products away from open fire, flame or any ignition source. Store temperature sensitive products at temperatures recommended by the manufacturer.

C. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be rejected, removed and replaced at the Contractor's expense.

D. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Keep away from open fire, flame, or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink, or smoke in the application area. Workers shall wear long sleeve shirts, long pants and work boots. Workers shall wear butyl rubber or nitrile gloves when mixing or applying this product. Safety glasses with side shields shall be used for eye protection. Use local exhaust ventilation to maintain worker exposure below TLV as listed on MSDS for respective products. If the airborne concentration poses a health hazard, becomes irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentration. A filtering facepiece or dust mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

1.07 PROJECT/SITE CONDITIONS

A. Requirements Prior to Job Start

1. Notification: Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

2. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

3. Safety: Familiarize every member of the application crew with safety regulations recommended by OSHA and other industry or local governmental groups.

B. Environmental Requirements

1. Precipitation: Do not apply materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials and applied coating are protected from possible moisture damage or contamination.

2. Temperature Restrictions – ***Epoxy and*** PMMA-based Materials: Do not apply resin materials if there is a threat of inclement weather. Follow the resin manufacturer's specifications for minimum and maximum ambient, material, and substrate temperatures. Do not apply resin materials unless ambient and substrate surface temperatures fall within the resin manufacturer's published range.

\*NOTE:Epoxy primer should only be used to prepare concrete substrates with a moisture value greater than 75% relative humidity in accordance with ASTM F2170. Epoxy primer is not approved for embedment of grid reinforcement and should only be used in addition to the specified PMMA primer.

C. Protection Requirements

1. Protection: Provide protection against staining and mechanical damage for newly applied coating and adjacent surfaces throughout this project.

2. Limited Access: Prevent access by the public to materials, tools, and equipment during the course of the project.

3. Debris Removal: Remove all debris daily from the project site and dispose of at a legal dumping area authorized to receive such materials.

4. Site Condition: Complete, to the Owner's satisfaction, all job site clean-up including building exterior and landscaping in areas affected by the construction.

1.08 WARRANTY

A. Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's **[5] [10]** year materials warranty.

> 5-year PMMA Surfacing Materials Warranty

> 10-year PMMA Surfacing Materials Warranty

\* NOTE: Specific warranty term and type must be selected above.

PART 2 PRODUCTS

2.01 VEHICULAR TRAFFIC COATING

A. Liquid Applied Vehicular Traffic Coating: A pre-pigmented, fluid-applied, fast curing, anti-skid PMMA-based traffic coating for use over concrete and polished asphalt surfaces to receive vehicular traffic. The color of the coating shall be selected by owner/specifier from the manufacturer’s standard palette of colors and pre blended into the material during the manufacturing process.

a) Solids Content: >99% (ASTM D1644)

b) Density: 0.06 lb/inᶟ ( 1.9g/cmᶟ)

c) Water Absorption (24 hours at 73°F) [23°C]: <0.25% (ASTM D570 Method I)

d) Shore Hardness: 65 – 70 A (ASTM D2240)

e) VOC Content: < 50 g/l (catalyzed)

f) Elongation at Break: >300% (ASTM D638)

g) Tensile: > 2.0 MPa (ASTM D638)

h) Consumption: 0.371 kg/ft² (4.00 kg/m²) minimum

i) Dry time to recoat at 68°F (20°C): approximately 45 minutes

j) Rain Proof at 68°F (20°C): approximately 30 minutes

k) Stress Resistant at 68°F (20°C): approximately 2 hours

l) Ambient and Substrate Temperature: 32°F (0°C) - 95°F (35°C) See manufacturers mixing chart for detailed temperature ranges.

> Terapro 250 Resin/Aggregate Vehicular Traffic Coating by Siplast; Dallas, TX

B. Catalyst: A peroxide-based reactive agent used to induce curing of PMMA-based resins.

> Pro Catalyst Powder by Siplast; Dallas, TX

* 1. TRAFFIC COATING ACCESSORIES

\*NOTE:Epoxy primer should only be used to prepare concrete substrates with a moisture value greater than 75% relative humidity in accordance with ASTM F2170. Epoxy primer is not approved for embedment of grid reinforcement and should only be used in addition to the specified PMMA primer.

***A. Epoxy Primer: A high-density, two-component, single-coat, liquid applied, epoxy-based primer for use over concrete in horizontal and vertical applications.***

***> Pro Primer E by Siplast; Dallas, TX***

B. PMMA Primer: A PMMA-based primer for use over concrete in vertical applications, concrete repair materials, masonry, wood and plywood.

> Pro Primer W by Siplast; Dallas, TX

C. PMMA Primer: A PMMA-based primer for use over horizontal concrete substrates.

> Pro Primer T by Siplast; Dallas, TX

C. PMMA Primer for New Polished Asphalt Surfaces: A PMMA-based primer for use over asphalt surfaces as a bleed blocker prior to application of the pavement coating.

> Pro Primer R by Siplast; Dallas, TX

D. Cleaning Solution/Solvent: A clear solvent used to clean and prepare transition areas of in-place catalyzed resin to receive subsequent coats of resin and to clean substrate materials to receive resin.

> Pro Prep by Siplast; Dallas, TX

E. Flashing Resin: A thixotropic, flexible, acrylic, PMMA-based resin for use in combination with a fleece fabric to form a monolithic, reinforced flashing membrane used in conjunction with a reinforced or unreinforced waterproofing system.

> Terapro Flashing Resin by Siplast; Dallas, TX

F. Flashing Reinforcement: A non-woven, needle-punched polyester fabric used as a reinforcement in PMMA-based flashing membrane systems.

a) Nominal Thickness: 40 mils (1 mm)

b) Weight: 110 grams per square meter

> Pro Fleece by Siplast; Dallas, TX

G. Field Reinforcement: A coated fiberglass scrim reinforcement used to reinforce PMMA-based field membrane systems.

> Pro Grid Reinforcement by Siplast; Irving, TX

H. Joint Tape: A filament-reinforced tape used to facilitate the create color breaks or joints between sections of the wearing layer of the waterproofing system.

> Pro Grout Tape by Siplast; Dallas, TX

I. Spray Primer for Stainless Steel, Aluminum and Copper Substrates: An enamel spray primer for metal substrates to receive PMMA-based flashings.

> Rust-Oleum™ High Performance V2100 System Enamel Spray Primer by Rust-Oleum™, Vernon Hills, IL

PART 3 EXECUTION

3.01 EXAMINATION

1. General: Ensure that surfaces are free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, bituminous products, release agents, laitance, paint, loose particles/friable matter, rust, de-icing materials, chemical residue or any other material that would be detrimental to adhesion of the coating to the traffic surface. Protect areas using plastic sheeting, tarps, coating shields, as necessary to protect adjacent surfaces.

3.02 SUBSTRATE EXAMINATION

A. General: Verify that the substrate is suitable to receive work. Notify the general contractor and/or specifier in writing of conditions detrimental to the proper and timely completion of work. Bring substrate deficiencies into an acceptable condition prior to commencing work.

B. Concrete Substrate Requirements: Structural concrete shall have a minimum compressive strength of 3,500 psi (24 N/mm2) and have a moisture content that conforms with the waterproofing system manufacturer’s requirements prior to commencement of work.

\* NOTE: The Contractor must carefully verify the suitability of a concrete substrate. High moisture content or a substandard surface condition may result in inadequate adhesion of the waterproofing system.

\* NOTE: Lightweight structural concrete or concrete that does not provide bottom-side venting is not a suitable substrate for direct application of the waterproofing system materials. Contact Siplast for information on applicability and/or recommended treatment of lightweight structural concrete or concrete that does not provide bottom-side venting. The presence of an underlying slotted metal deck does not constitute bottom-side venting.

\* NOTE: Curing compounds containing waxes, oils, silicones or other materials that may inhibit adhesion of the waterproofing system should not be used.

C. Moisture Content Evaluation: Evaluate the level of moisture in the concrete substrate to determine that the moisture content is acceptable for application of the specified waterproofing system and to determine primer application rates. Concrete substrates to receive PMMA-based primers shall have a maximum internal relative humidity of 75% when tested in in accordance with ASTM F1869 and release a maximum of 3 lb of moisture 1000 ft² of surface area per 24-hour period when tested in in accordance with ASTM F2170.

D. Adhesion Testing for Concrete Substrates to Receive Resin Materials: Test the concrete substrate using a device conforming to ASTM D7234 (50 mm dolly) adhered with the specified catalyzed PMMA-based primer. Utilize the same concrete preparation methods as that which will be used prior to application of the waterproofing for areas to be evaluated for adhesion. Ensure that a minimum adhesion value of 220 psi is obtained before application of the PMMA-based primer. If multiple areas or substrates are involved in the scope of work, evaluate each to determine suitability. Maintain testing/evaluation records.

3.02 SURFACE PREPARATION

A. Protection: Provide protection to prevent dust/debris accumulation, spillage and resin overruns.

B. Taping: Utilize masking tape at perimeters and joints of the area to be coated to provide neat terminations.

C. Masonry/Concrete Walls: Shot-blast or grind concrete or masonry wall surfaces to provide a sound substrate free from laitance and all residue from bitumen, coal tar, primer, coatings, adhesives, sealer or any material that may inhibit adhesion of the primer. Following application of the specified primer, but prior to application of the waterproofing system, fill cracks, voids, fractures, depressions, small indentations, and low areas in the substrate using the specified paste. The use of paste or sealant is not an acceptable alternative to repointing mortar joints. Do not apply waterproofing materials over soft or scaling brick or masonry, faulty mortar joints, or walls with broken, damaged or leaking coping components.

***D. Preparation of Newly Placed Concrete Substrates to Receive Epoxy Primer: Newly placed concrete shall be a minimum 7 days old and have reached a minimum 3,500 psi (24 MPa) compressive strength. Following evaluation for moisture content and confirmation that the moisture content is at an acceptable level, shot-blast or scarify/shot blast the surface to provide a sound substrate free from laitance and to generate a concrete surface profile of CSP-3 as defined by the ICRI. Grinding may be used as a preparation method for localized areas that cannot be reached by shot blasting equipment provided that a surface profile of CSP-3 can be generated.***

\*NOTE:Epoxy primer should only be used to prepare concrete substrates with a moisture value greater than 75% relative humidity in accordance with ASTM F2170. Epoxy primer is not approved for embedment of grid reinforcement and should only be used in addition to the specified PMMA primer.

E. Preparation of Existing Concrete/Masonry Substrates to Receive PMMA-based Primer: Existing concrete substrates shall have a minimum compressive strength of 3,500 psi (24 N/mm2). Following evaluation for moisture content and confirmation that the moisture content is at an acceptable level, shot blast or scarify/shot-blast concrete or masonry surfaces to provide a sound substrate free from laitance, carbonated concrete, residue from bitumen, coal tar, primer, coatings, adhesives, sealer or any material that may inhibit adhesion of the specified primer. Generate a concrete surface profile of CSP-2 to CSP-4 as defined by the ICRI. Grinding may be used as a preparation method for localized areas that cannot be reached by shot blasting equipment provided that a surface profile of CSP-2 to CSP-4 can be generated.

F. Repair and Leveling of Concrete to Receive Resin Materials: Before application of the waterproofing membrane, and after priming, fill all joints, cracks, voids, fractures, depressions, small indentations, and low areas in the substrate using the specified paste or repair mortar.

G. Concrete Substrate Repair: Prime areas of the prepared concrete substrate intended for repair using the specified PMMA-based primer. FiIl the areas using the specified paste or repair mortar and allow to cure. Follow the paste or repair mortar manufacturer's published minimum and maximum product thickness limitations per lift.

H. New Asphalt Pavement Preparation: Apply the specified PMMA primer resin to prepared polished asphalt surfaces using a roller or brush at the minimum rate specified by the primer manufacturer. Do not allow resin to pool or pond. Do not over-apply primers as this may interfere with proper primer catalyzation. When calculating application rates, make allowances for saturation of roller covers and application equipment.

I. Existing Coatings: Remove any existing surface markings by sandblasting, pressure-washing, grinding, or other mechanical methods, as approved by the Owner or Owner’s representative.

J. Preparation of Steel Substrates: Grind to generate a "white-metal" surface and remove loose particles. Extend the preparation area a minimum of 1/2-inch (13 mm) beyond the termination of the waterproofing/flashing system. Notch steel surfaces to provide a rust-stop where detailed.

\* NOTE: Consider the use of primer and paint to treat the prepared area not covered with resin to prevent corrosion of steel surfaces.

K. Preparation of Stainless Steel, Aluminum and Copper Substrates: Hand tool (SSPC-SP-2) or power tool (SSPC-SP-3) clean to remove loose rust, mill scale, and deteriorated previous coatings as well as to generate a tooth. Protect surrounding surfaces from overspray. Shake the can for one minute after the mixing ball is heard. Hold can 10-14 inches from the surface. Apply several light coats a few minutes apart to avoid drips and runs. Recoat within 1 hour or after 24 hours; allow more time in cooler temperatures. Monitor ambient and substrate temperatures/conditions to ensure that they are within the paint manufacturer’s acceptable range.

L. Crack Preparation: Follow manufacturer’s details for crack preparation prior to waterproofing system application.

\* NOTE: If there is any doubt regarding whether a crack or joint is static or dynamic, the condition should be treated as dynamic.

\* NOTE: Contact Siplast for further information regarding dynamic crack and joint evaluation/treatment options as well as interface of the Terapro System with mechanical expansion joint components.

3.03 PMMA PRIMER MIXING AND APPLICATION

\*NOTE:Epoxy primer should only be used to prepare concrete substrates with a moisture value greater than 75% relative humidity in accordance with ASTM F2170. Epoxy primer is not approved for embedment of grid reinforcement and should only be used in addition to the specified PMMA primer.

***A. Mixing Epoxy Primer: Pierce a hole through the rubber membrane in the lid and continue through the bottom of the lid-well. Ensure that the liquid in the upper reservoir fully drains into the lower reservoir. Remove the upper reservoir and stir mixture for 5 minutes using a Jiffy Mixer at approx. 300 rpm to generate a homogenous, streak-free consistency. Keep the mixer blades fully submerged to avoid trapping air. Ensure that the bottom and sides of the container are fully scraped to disperse any materials that may have settled. Pour the mixed material into a clean, secondary container and mix again for an additional 30 seconds.***

***B. Application of Epoxy Primer: Wet the qualified and prepared concrete using potable water and ensure that the substrate is in a saturated-surface-dry condition. No standing water should be present at the time of epoxy application. Apply the properly mixed epoxy using a squeegee or 3/8” nap roller using methods provided by, and at the rate specified by, the supplier/manufacturer. Scrub the epoxy into the open concrete surface using a brush recommended by the supplier/manufacturer. Cross-hatch using a 3/8” nap roller to generate full, even coverage. Vertical or sloped substrates may require a second coat. Apply primer while substrate and ambient temperatures are falling rather than rising to minimize the potential for pinhole formation. Allow the epoxy system to cure for a minimum of 12-hours. Inspect the cured primer surface to ensure that coverage is full and free from dry spots and pinholing. Do not proceed with application of the waterproofing system if pinholing or dry areas are observed. Dry areas will require an additional layer of epoxy and pinholing should be investigated to determine a cause and remedy. The epoxy system must be overlaid with the PMMA waterproofing/surfacing system within 48-hours of application. When calculating application rates, make allowances for saturation of roller covers and application equipment.***

C. Mixing and Catalyzing PMMA Primers: Thoroughly mix the entire drum of uncatalyzed resin for 2-minutes if pouring the resin into a second container when batch mixing. Catalyze only the amount of material that can be used within its pot life. Add pre-measured catalyst to the resin component and stir for 2-minutes using a slow-speed mechanical agitator or mixing stir stick. The amount of catalyst added is based on the weight of the resin used. Refer to the waterproofing system manufacturer’s literature for mixing ratios.

D. Application of PMMA Primer: Using the appropriate primer, apply using a 1/2” nap roller at the rate specified by the primer manufacturer to qualified/prepared substrates. Apply primer when ambient and substrate temperatures are falling rather than rising to minimize the potential for pinhole formation. Apply and allow to cure for a minimum of 45 minutes. Increase application rates over absorbent substrates. Inspect the cured primer surface to ensure that coverage is full and free from dry spots and pinholing. Do not let the resin pool or pond. Do not over-apply primers as this may interfere with proper primer catalyzation. When calculating application rates, make allowances for saturation of roller covers and application equipment.

3.04 VEHICULAR TRAFFIC COATING INSTALLATION

A. Mixing and Catalyzing of Resins: Thoroughly mix the entire drum of uncatalyzed resins for 5 minutes if pouring the resin into a second container when batch mixing. Catalyze only the amount of material that can be used within its pot life. Add pre-measured catalyst to the resin component and stir for 2-minutes using a slow-speed mechanical agitator or mixing stir stick. The amount of catalyst added is based on the weight of the resin used. Refer to the pavement coating manufacturer’s literature for mixing ratios.

B. Vehicular Traffic Coating Application

1. Loose lay a layer of fiberglass grid reinforcement over the prepared substrate. Prime the prepared concrete substrate and grid reinforcement using the specified catalyzed PMMA primer at the rate specified by the resin manufacturer. Allow to cure for a minimum of 45 minutes before application of the wearing layer of resin.

2. Apply a layer of catalyzed traffic coating resin using a squeegee at the minimum rate specified by the traffic coating manufacturer. Use a resin saturated nap roller to even the application of the pavement coating resin.

3. If work is interrupted for more than 12 hours, or the surface of a catalyzed resin layer becomes dirty or contaminated from exposure to the elements, thoroughly clean the area with the specified cleaner/solvent. Allow a minimum of 20 minutes for the solvent to evaporate before continuing work. Complete the next application procedure within 60 minutes following the evaporation of the cleaner/solvent.

3.05 FIELD QUALITY CONTROL AND INSPECTIONS

A. Site Condition. All areas around the job site shall be free of debris, coating materials, equipment, and related items after completion of the job.

B. Notification Of Completion: Contractor shall notify the manufacturer using the manufacturer's printed Notification of Completion form when the job is complete to commence the warranty issuance process.

C. Issuance Of The Warranty. Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified warranty.