

SP557 (01-14-10)

SECTION 00557 - PREMIXED POLYMER CONCRETE PAVEMENT OVERLAYS

Section 00557, which is not a Standard Specification, is included in this Project by Special Provision.

Description

00557.00 Scope - This work consists of constructing premixed polymer concrete (PPC) pavement overlays as shown or specified.

00557.01 Definitions:

PPC System - The combination of compatible resins and primers, mixed with aggregates and other specified ingredients and applied as specified, that produces an acceptable PPC pavement overlay.

System Provider - The polymer concrete supplier experienced in PPC mix design and the application of PPC systems.

00557.02 Public Safety Plan - Before beginning work, submit for approval, a Public Safety Plan (PSP) for the use of methacrylate resin and premixed polymer concrete. Include in the PSP:

- All materials, equipment, and methods to be used.
- All potential health and safety risks.
- Precautions that will be taken by personnel performing or inspecting the work.

Except for specifically Engineer written authorized, do not perform PPC pavement overlay work before the Engineer's approval of the PSP.

If the Engineer determines that the measures used by the Contractor are not adequate to provide for public safety associated with use of methacrylate resin and premixed polymer concrete, the Engineer will direct the Contractor to revise his operations and his Public Safety Plan. Such directions will be in writing and will specify the items of work for which the Contractor's Public Safety Plan is deemed inadequate. Do not perform further work on the items specified until the revised Public Safety Plan has been approved.

Within 14 Calendar Days after receiving the original PSP or revised PSP, the Engineer will notify the Contractor, in writing, of the approval or rejection of the original PSP or revised PSP.

The Agency will not be liable to the Contractor for delays caused by rejection of the original PSP or revised PSP.

(Use the following subsection .03 on projects in "sensitive" urban areas. Check with Bridge Designer.)

00557.03 Airborne Emissions Monitoring Plan - Furnish an airborne emissions monitoring plan, prepared by a Certified Industrial Hygienist (CIH). Monitor emissions at a minimum of three points including the point of mixing, the point of application, and the point of nearest public contact. At the completion of work, submit a report, prepared by the CIH, with the results of the airborne emissions monitoring.

00557.04 Pre-placement Conferences:

(a) Supervisory Personnel - Hold a pre-placement conference with all supervisory personnel, subcontractors, and suppliers who are to be involved in the PPC pavement overlay work and the QCT and the system provider's technical representative (SPTR) at a mutually agreed time approximately two weeks before placing the PPC pavement overlay including the trial overlay. The Engineer, subcontractor, supplier, and all other personnel are required to be at the pre-placement conference. Present and discuss all phases of the PPC pavement overlay work.

(b) Placement Crew - Hold a second pre-placement conference with the Engineer, the entire PPC pavement overlay crew, the QCT, and the SPTR at the job site one-half hour before the first placement begins to discuss placement duties and procedures. Do not begin PPC pavement overlay work until this meeting is held.

Materials

(Use one of the following subsection .10's as instructed below. Check with Bridge Designer. Delete the one that does not apply.)

[Use this .10 on projects in sensitive urban areas.]

00557.10 Resin Primer - Furnish a wax-free, low odor, high molecular weight methacrylate resin prime coat that has a maximum volatile content of 30 percent before adding an initiator, when tested according to ASTM D 2369, and meeting the following requirements:

[Use this .10 when the above .10 is not used]

00557.10 Resin Primer - Furnish a wax-free, high molecular weight methacrylate resin prime coat meeting the following requirements:

(Use the following table when either of the two .10's above are used.)

<u>High Molecular Weight Methacrylate (HMWM) Resin</u>		
<u>Property</u>	<u>Requirement</u>	<u>Test Method</u>
<u>Viscosity*</u>	<u>25 cps max. (Brookfield RVT with UL adaptor, 50 RPM at 77° F)</u>	<u>ASTM D 2196</u>
<u>Specific Gravity*</u>	<u>0.90, min. at 77 °F</u>	<u>ASTM D 1475</u>
<u>Flash Point*</u>	<u>180° F, min.</u>	<u>ASTM D 3278</u>

<u>Vapor Pressure*</u>	<u>0.039 in. Hg. max. at 77° F</u>	<u>ASTM D 323</u>
<u>Tack-free time</u>	<u>400 minutes, max. at 77° F</u>	<u>California Test 551**</u>
<u>PCC Saturated Surface-Dry Bond Strength</u>	<u>500 psi, min. at 24 hours and 70 ± 2 °F</u>	<u>California Test 551**</u>
<u>* Perform test before adding initiator.</u> <u>** Copies of California Test 551 are available from the Engineer.</u>		

Provide test results, from an independent testing laboratory, for the first lot of primer manufactured for use on this Project, showing that the primer complies with the requirements of these Specifications. Provide a certificate of compliance from the manufacturer for each subsequent lot of primer, indicating that the primer was manufactured to the same formulation as the first lot.

00557.12 Concrete - Furnish premixed polymer concrete consisting of polyester resin binder and dry aggregate.

(a) **Polyester Resin Binder** - Furnish unsaturated isophthalic polyester-styrene co-polymer resin binder meeting the following requirements:

<u>Polyester Resin Binder</u>		
<u>Property</u>	<u>Requirement</u>	<u>Test Method</u>
<u>Viscosity*</u>	<u>75 - 200 cps (RVT, No. 1 Spindle, 20 RPM at 77 °F)</u>	<u>ASTM D 2196</u>
<u>Specific Gravity*</u>	<u>1.05 to 1.10 at 77 °F</u>	<u>ASTM D 1475</u>
<u>Elongation</u>	<u>35% min. Type I at 0.45 in./min. Thickness = 0.25 ± 0.03 inch</u>	<u>ASTM D 638</u>
	<u>Sample Conditioning: 18/25/50 + 5/70</u>	<u>ASTM D 618</u>
<u>Tensile Strength</u>	<u>2,500 psi min. Type I at 0.45 in./min. Thickness = 0.25 ± 0.03 inch</u>	<u>ASTM D 638</u>
	<u>Sample Conditioning: 18/25/50 + 5/70</u>	<u>ASTM D 618</u>
<u>Styrene Content*</u>	<u>40 to 50 % (by weight)</u>	<u>ASTM D 2369</u>
<u>Silane Coupler**</u>	<u>1.0% min. (by weight of polyester styrene resin)</u>	<u>n/a</u>
<u>PCC Saturated Surface-Dry Bond Strength</u>	<u>500 psi, min. at 24 hours and 70 ± 2 °F</u>	<u>California Test 551***</u>
<u>* Perform test before adding initiator.</u> <u>** An organosilane ester, gammamethacryloxypropyltrimeth-oxysilane.</u> <u>*** Copies of California Test 551 are available from the Engineer.</u>		

Provide test results, from an independent testing laboratory, for the first lot of polyester resin binder manufactured for use on this Project, showing that the binder complies with the requirements of these Specifications. Provide a certificate of compliance from the manufacturer for each subsequent lot of resin binder, indicating that the additional polyester resin binder was manufactured, to the same formulation as the first lot.

Provide a promoter that is compatible with suitable methyl ethyl ketone peroxide.

Initiate and thoroughly blend the polyester resin binder just prior to mixing with aggregate.

(b) Initiator - Provide an initiator system for the methacrylate resin consisting of a metal drier and peroxide. If the initiator is supplied separately from the resin, do not directly mix the metal drier with the peroxide.

Store containers in a manner that prevents leakage or spillage from one material to contact the containers or material of the other.

(c) Accelerators and Inhibitors - Provide accelerators and inhibitors, if required, as recommended by the system provider.

(d) Aggregate - Furnish 3/8" - 0 size aggregate that:

- Meets the following combined gradation:

<u>Sieve Size</u>	<u>Percent Passing (by Weight)</u>
<u>3/8"</u>	<u>100</u>
<u>No. 4</u>	<u>62 - 85</u>
<u>No. 8</u>	<u>45 - 67</u>
<u>No. 16</u>	<u>29 - 50</u>
<u>No. 30</u>	<u>16 - 36</u>
<u>No. 50</u>	<u>5 - 20</u>
<u>No. 100</u>	<u>0 - 7</u>
<u>No. 200</u>	<u>0 - 3</u>

- Does not exceed one percent aggregate absorption according to AASHTO T 85.
- The moisture content does not exceed one half of the aggregate absorption at the time of mixing with the polyester resin binder according to AASHTO T 255.

Deliver aggregate to the mixer in containers that maintain the specified moisture content.

(1) Coarse Aggregate - Furnish maximum size No.4 washed, clean, dry coarse aggregate with the largest size not exceeding one-half the minimum depth of the overlay.

(2) Fine Aggregate - Furnish No. 8 to No. 200 fine aggregate, consisting of natural sand only, with aggregate retained on the No. 8 and No. 4 sieves having a maximum of 45 percent crushed particles with at least one fractured face when tested according to AASHTO TP 61.

(e) Surface Texture Sand - Furnish dry commercial quality blast sand, meeting the absorption and moisture content requirements of the aggregate with 95 percent of the sand passing the No. 8 sieve, and 95 percent of the sand retained on the No. 20 sieve.

00557.14 PPC Mixture Tolerances and Limits - Provide a uniform, consistent, workable PPC mixture with a polyester resin content, by weight, of 12 ± 1% of the aggregate weight.

00557.15 Quality Control - Provide quality control according to Section 00165.

00557.16 Acceptance of Premixed Polymer Concrete:

(a) General - Acceptance of PPC will be based on the results of the Contractor's quality control testing according to 00557.16(c).

(b) Required Properties and Tolerances - Premixed polymer concrete meets the following requirements:

<u>Property</u>	<u>Requirement</u>	<u>Test Method</u>
<u>Compressive Strength for Traffic</u>	<u>2,000 psi, min. before opening to traffic</u>	<u>ASTM C 805</u>
<u>Surface Tolerance</u>	<u>See (d) below</u>	<u>n/a</u>
<u>Bond Strength</u>	<u>250 psi, min.</u>	<u>See (e) below</u>
<u>Set Time</u>	<u>30 to 120 minutes</u>	<u>Visual</u>
<u>Density</u>	<u>See (g) below</u>	<u>ASTM C 138</u>
<u>Modulus of Elasticity at 7 days</u>	<u>1,000 ksi, min. 2,000 ksi, max.</u>	<u>ASTM C 469</u>
<u>Surface Preparation Depth</u>	<u>1/8 inch, min.</u>	<u>ASTM E 965</u>

Perform acceptance testing according to the referenced tests, or furnish samples to the Engineer as required. Failing test results may be cause for rejection of the mix with removal and replacement of the affected material at no additional cost to the Agency.

(c) Compressive Strength - Within one minute of mixing or at the time of placing the overlay, cast and cure two sets of three 4 by 8 inch cylinder specimens from each batch of PPC placed on the Project, according to AASHTO T 106. A batch is defined as "per mixer" or "6 cubic yards", whichever is greater. Test one set according to ASTM C 469 to determine modulus of elasticity at 7 days. Retain the second set and submit to the Engineer for verification testing.

Do not allow traffic and equipment on the PPC overlay until the overlay has reached a minimum compressive strength of 2,000 psi as verified by the rebound number determined according to ASTM C 805.

(d) Surface Tolerance - The finished surface, when tested with a 12 foot straightedge, shall not vary by more than 1/4 inch. Furnish the straightedge and operate it under the direction of the Engineer.

Correct all non-specification surface tolerance with a diamond grinder.

(e) Bond Strength - Perform at least two bond tests daily in the presence of and at locations designated by the Engineer between 24 hours and 48 hours after placing the PPC overlay. Cut cores from in-place PPC and conduct bond tests on the cores.

The bond tests consists of:

- Coring through the PPC overlay and approximately 1 inch into the existing concrete.
- Attaching a device to the top of the core.
- Exerting a tensile load to the core sufficient to cause failure or achieve 250 psi, whichever occurs first.

A successful test is the failure of the concrete substrate or bond failure above 250 psi.

After coring and testing, restore the area voided by the cores by blowing with compressed air and filling with PPC.

(f) Set Time - Use an appropriate amount of initiator to achieve the required set time. Accelerators or inhibitors may be required as recommended by the polyester resin binder supplier and as approved by the Engineer.

(g) Density - Determine the unit weight of the PPC mixture according to AASHTO T 121 (ASTM C 138). Submit test results to the Engineer. The correlation factor established through density testing will be used to determine equivalency between weight and volume for purposes of payment. Perform density testing at the rate of one test per batch.

00557.18 Submittals, Samples, and Notifications - Ten Calendar Days before the pre-construction conference, provide the following information to the Engineer:

- The type of scarifying equipment that will be used for deck preparation.
- The method and materials used to contain, collect, and dispose of all concrete debris generated by the scarifying process, including provisions for protecting adjacent traffic from flying debris.
- The method and materials used to contain HMWM resin and The PPC mixture within the deck area that will receive the overlay.
- The PPC mix design.
- Certification from the System Provider stating that the polyester resin and the primer are approved and are fully compatible with one another.

Provide the following samples to the Engineer at least 21 Calendar Days before placing the PPC overlay:

- 100 pounds of the blended aggregate.
- Representative samples from each lot of prepackaged deck repair material selected for use.

Provide the following information:

- A Material Safety Data Sheet for each shipment of polyester resin binder and high molecular weight methacrylate resin.

If bulk resin is used, provide written notification to the Engineer 10 Calendar Days before delivery of the bulk resin to the jobsite. Bulk resin is resin that is stored in containers exceeding 55 gallons.

- All material delivery receipts upon availability, but no later than one hour after the end of the work shift.

Equipment

00557.20 General - Remove all equipment that leaks oil or other contaminants from the jobsite until they are repaired. Before PPC placement, protect the prepared deck or pavement from contaminant spills by covering with clear plastic, overlapped to prevent contaminants from contacting the deck or pavement. Do not use equipment until approval is obtained.

00557.22 Surface Preparation Equipment:

(a) **Sawing Equipment** - Furnish power-driven concrete saws adequate for sawing joints and for surface texture.

(b) **Scarifying Equipment** - Furnish scarifying equipment consisting of power-operated diamond grinding or micro-milling equipment capable of uniformly removing the existing surface to depths required.

(1) **Diamond Grinding** - Furnish power-driven self-propelled machines with the cutting head made up of diamond cutting blades.

(2) **Micro-milling** - Furnish micro-milling equipment according to the following:

a. **Cold Plane or Rotomill Grinders** - Cold plane or rotomill grinding machines using carbide cutting tools in a rotary drum. Provide equipment with a tooth spacing of not more than 1/4 inch, capable of leaving a smooth, uniform pattern of striations. Limit machines to a gross operational weight of no more than 35 tons and a forward speed to 2.5 feet per minute. Operate at a drum speed of at least 120 RPM.

b. **Shot-Blasting** - Mono-directional or bi-directional electric-powered shot blast machines with single or multiple blast wheels that cover at least 2.5 feet per pass.

and conform to EPA air pollution requirements by containing dust and steel abrasive media. If the equipment is not equipped for simultaneous bi-directional blasting, make separate passes in opposite directions to ensure equal cleaning on all sides of the exposed aggregate.

(c) Power-Driven Hand Tools - Furnish power-driven hand tools for removal of unsound concrete meeting the following requirements:

- Class 2 Preparation Equipment - For Class 2 deck preparation, use chipping hammers equal to or less than a nominal 15 pound class.
- Class 3 Preparation Equipment - For Class 3 deck preparation, use jackhammers equal to or less than a nominal 30 pound class.

(d) Hand Tools - Furnish hammers and chisels to remove final particles of unsound concrete and to achieve the required depth.

(e) Air Compressor - Furnish air compressors equipped with functioning oil traps. Ensure air used for blow-down of prepared surfaces is free of oil.

00557.24 Mixing Equipment - Furnish mechanically operated continuous mixers specifically built or modified for PPC that:

- Employ an auger screw or chute device.
- Is equipped with a positive-displacement pump that is calibrated yearly and is connected to an adjustable catalyst pump.
- Is equipped with a metering device that is calibrated yearly and automatically measures and records the aggregate weight and the corresponding resin weight.
- Has a readout gage, visible to the Engineer at all times, that displays the volumes being recorded.

Record the volumes at no greater than five minute intervals along with the time and date of each recording. Furnish a printout of the recordings to the Engineer at the end of each work shift.

00557.26 Finishing Equipment - Furnish slip-form finishing equipment with an automatic grade control device to strike off the PPC mixture to the established grade and cross section. Fit the finishing equipment with vibrators or other means of consolidating the PPC.

00557.28 Miscellaneous Equipment:

(a) Hand Tools - Furnish hand tools for placing and finishing the PPC. Use manual type screeds with approved vibrators attached to consolidate and finish smaller areas where it is impractical to use a finishing machine.

(b) Straightedge - Furnish a 12 foot metal straightedge.

(c) **Coring Equipment** - Furnish core cutting equipment that can cut a core at least 3 inches in diameter.

(d) **Bond Testing Equipment** - Furnish bond testing equipment that:

- Is compatible with the core tested.
- Can exert a tensile load to the core sufficient to exceed 250 psi.
- Is equipped with a measuring device capable of reading tensile force exerted within 1 percent accuracy.

(e) **Diamond Grinders** - Furnish power-driven self-propelled machines with the cutting head made up of diamond cutting blades to correct non-specification surface variations only.

Labor

00557.30 Personnel Qualifications - Perform the PPC pavement overlay work using a company and personnel experienced in PPC pavement overlay work. 10 calendar days before the preconstruction conference, provide the following information to verify the company's qualifications and experience and the qualifications of personnel scheduled to perform the PPC pavement overlay work to the Engineer for approval:

- The name of the company that will be performing the PPC pavement overlay work.
- A project reference list of at least two separate PPC pavement overlay projects, successfully completed within the last five years, that have used the same PPC pavement overlay system and materials that will be used on this Project with each project using at least 100 cubic yards of PPC overlay material. Include the following information for each qualifying project:
 - A brief description of each project.
 - Each project's name.
 - The owner's contact person's name, title, and current phone number for each project.
 - Alternate owner's contact person's name, title, and current phone number for each project.
 - The amount of PPC overlay material used on each project.
- Identify a SPTR, the mixer operators, and the finishing machine operators that will perform the PPC pavement overlay work. Include documentation that they have relevant experience with PPC pavement overlay work and that they have completed at least two separate PPC pavement overlay projects within the last three years.

The Engineer will respond within 21 Calendar Days after receipt of the submittal. Do not begin work on PPC pavement overlay work until the qualifications have been approved. The Engineer may suspend the PPC pavement overlay work if the Contractor substitutes unapproved personnel during construction. Submit requests for substitution of SPTR, mixer operators, and finishing machine operators to the Engineer. The Engineer will respond within seven calendar days of each request. Additional costs resulting from the suspension of work due to the changing of personnel is the Contractor's responsibility, and no adjustment in Contract Time resulting from the suspension of work will be allowed.

00557.32 Quality Control Personnel - Provide the following certified technicians:

(a) Certified Aggregate Technician (CAgT) - Duties:

- Sample and test on the trial overlays to verify gradation, absorption, and crushed particle content.

(b) Quality Control Technician (QCT) - Duties:

- Attend pre-placement meetings.
- Be at the PPC placement site when PPC placement is in progress.
- Verify that the primer gels, as mixed and applied.
- Performs all acceptance testing.
- Be responsible for ensuring the PPC is in compliance with Specifications.
- Notify the Contractor and the Engineer immediately when the PPC is not in compliance with Specifications.

(c) System Provider's Technical Representative (SPTR) - Duties:

- Guide development of the PPC mix design and be present at the trial overlay placement.
- Attend pre-placement meetings.
- Be present throughout all mixing to control adjustments to the mix, if any.
- Be at the PPC placement site during PPC placement and evaluate each batch delivered and control adjustments to the mix, if any.

Construction

00557.40 Trial Overlay Strip - Before constructing PPC overlays, conduct one or more trial overlays on a concrete base approved by the Engineer to determine the initial set time and to demonstrate the effectiveness of deck preparation, mixing, placing, and finishing equipment proposed. Roughen the surface of the trial overlay strip leaving an exposed aggregate surface texture depth profile of at least 1/8 inch, determined according to ASTM E 965 (standard volumetric test).

Construct trial overlays meeting the acceptance criteria of 00557.16, except test the modulus of elasticity at 24 ± 1 hours, at the locations designated by the Engineer. Construct each trial overlay 12 feet wide by at least 20 feet long, and at the same thickness as the final PPC overlay. Construct trial overlays when weather conditions are similar to those expected during construction of the PPC overlay. Use the same equipment, including deck preparation equipment, that will be used for the PPC overlay.

Do not proceed with PPC overlay work until the Engineer approves the trial overlays.

Remove and dispose of the trial overlays and the concrete bases according to 00290.20.

00557.42 Surface Preparation:

(a) General - Remove surface concrete by approved hand methods that cannot be reached by power-driven equipment.

Repair all damage to abutting concrete surfaces or other surfaces that are damaged by Contractor's operations at no additional cost to the Agency.

(b) Bridge Deck Drains - Block all deck drains and catch basins. Do not allow scarifying, chipping, sawing, sandblasting, shot-blasting, or sweeping material to enter them.

Before placing the prime coat, permanently plug bridge deck drains as shown, with PPC mixture and an approved metallic stay-in-place form.

(c) Expansion Joints - Block out expansion joints with polyethylene foam or other approved material, compatible with the resin and primer, before constructing the PPC overlay.

Remove material that is within 12 inches of all joints in a manner acceptable to the Engineer. Do not damage the joints.

(Include the following paragraph (d) when the Project includes crack sealant removal. If not used, delete paragraph and re-alphabetize remaining paragraphs.)

(d) Sealant Removal - Remove all existing crack sealant from deck surface by grinding, bush hammering, or other approved method. Do not exceed 1/4 inch of surface deck removal.

(e) Initial Surface Preparation - Perform surface preparation far enough in advance of resurfacing so that all further deck preparation can be satisfactorily completed. Prepare bridge deck and concrete pavement preparation according to the following:

(1) Class 1 Preparation:

- Roughen the existing concrete surface that leaves an exposed aggregate surface texture depth profile of at least 1/8 inch, determined according to the standard volumetric test (ASTM E 965).
- Protect visible reinforcing steel and reinforcing steel where the plans show it to be within 1/2 inch of the surface.

(2) Class 2 Preparation - In Class 2 areas, remove concrete with 12 pound hand hammers or nominal 15 pound powered chipping hammers as follows:

- Remove all unsound concrete from the lower limit of Class 1 preparation down to sound concrete.
- Remove a minimum of 3/4 inch of concrete around and below reinforcing steel that is not at least 50 percent embedded in the existing concrete surface.
- Sandblast reinforcing steel coated or pitted with rust to a bright finish.

(3) Class 3 Preparation - When Class 3 preparation is required, it will be designated by the Engineer and performed as Extra Work.

Perform Class 3 preparation as follows:

- Remove the full thickness of deck or pavement remaining below the lower limit of Class 2 preparation, using jackhammers.
- Sandblast reinforcing bars pitted with rust to remove all rust.

Where concrete is removed to the limits of Class 2 and Class 3 preparation, repair the deck with a cementitious patching material from the QPL. Cure the patching material according to the manufacturer's recommendations. Place the patching material at least five Calendar Days before placing the PPC, except if high-alumina concrete is used, the cure time may be reduced to 24 hours before placing PPC.

(f) Final Surface Preparation - Prepare all surfaces that are to be in contact with the PPC, including vertical contact areas as follows:

- Clean the entire surface by shot-blasting within 24 hours of placing the PPC.
- Sweep the area magnetically to remove metal residue.
- Blow clean the surfaces with compressed air.
- If the prepared surface becomes contaminated by spills, rain, or other contaminant before placing the PPC, prepare the surface again according to this subsection.

00557.44 Prime Coat - Before applying the prime coat, dry the area by methods approved by the Engineer and blow clean with compressed air to remove accumulated dust and all other loose material. Apply the prime coat only when the surface temperature is at least 50 °F and has been dry the preceding 72 hours. Do not allow the prime coat to leak from the cracks or from other openings of the deck.

Flood the deck surface with the prime coat at rate of 75 to 100 square feet per gallon to allow it to penetrate into the concrete and fill all cracks. Redistribute the applied prime coat in cracks by squeegees or brooms. Only use enough initiated promoted resin that is needed to apply a prime coat. A noticeable increase in viscosity of the prime coat material before it is placed will be cause for rejection. Do not allow traffic on the primed surface.

Allow the prime coat to pond and penetrate into the deck surface a minimum of 15 minutes before placing the PPC. If the primed surface becomes contaminated, or if the prime coat fails, clean the contaminated area by abrasive blasting, and re-prime at no additional cost to the Agency.

00557.46 Premixed Polymer Concrete Pavement:

(a) Mixing - Mix PPC on-site. Do not allow packaging to enter the mix.

Use initiators to produce a set time of between 30 and 120 minutes after placement. Use accelerators or inhibitors, if required for the 30 to 120 minute set time, as recommended by the resin supplier.

Initiate and thoroughly blend the polyester resin binder before introduction of aggregate to the binder. Use all bags or other containers of aggregate that are opened at the time of mixing, otherwise discarded them.

(b) Placing PPC - Place premixed polymer concrete:

- Before it gels or within 15 minutes after the addition of the initiator, whichever is first. Discard the PPC if it is not placed within this time.
- During the same work shift the prime coat is applied.
- When the surface temperature is 45 °F and rising.

00557.48 Roadway Finish:

(a) Abrasive Sand Surface Treatment - After overlay strike-off and before gelling occurs, uniformly apply an abrasive sand finish to PPC surfaces at a rate of 1.8 pounds per square yard.

(b) Surface Texturing - After application of the surface texturing sand and before gelling occurs, texture the PPC by one of the following methods:

- A steel-tined tool with 1/8 inch wide tines that will mark the finished PPC to a depth of 1/8 to 3/16 inch. Randomly space the markings from 1/2 to 1 1/4 inch as approved.
- A finned float having a single row of fins that will groove the finish approximately 3/16 inch wide by 1/8 inch deep. Randomly space the markings from 1/2 to 1 1/4 inch as approved. Perform this operation so the texture will be achieved while minimizing displacement of the larger aggregate particles.
- Orient the texturing perpendicular or longitudinal to the roadway centerline and full width of the roadway width except leave smooth strips 14 inches wide along each curb faces. Do not overlap texturing.

Correct all non-specification surface texturing, at no additional cost to the Agency, according to the following:

- Correct texturing after PPC curing and before opening the roadway to traffic.
- Cut grooves 1/8 inch wide and 1/8 to 3/16 inch deep.
- Unequally space grooves from 1/2 to 1 1/4 inch apart.
- Remove saw slurry and laitance from the sawing operation while cutting the grooves.
- Orient the grooves perpendicular or longitudinal to the roadway centerline and full width of the roadway width except leave smooth strips 14 inches wide along each curb faces. Do not overlap grooves.

Measurement

00557.80 Measurement - The quantities of work performed under this Section will be measured according to the following:

- Class 2 Preparation - Class 2 preparation will be measured on the area basis.
- Furnishing Premixed Polymer Concrete - Furnishing premixed polymer concrete material will be measured on the volume basis. The quantities will be determined by converting the weight identified on the mixer's automatic metering device to volume, using the yield factor according to AASHTO T 121 (ASTM C 138).
- Constructing Premixed Polymer Concrete Overlay - Constructing premixed polymer concrete overlays will be measured on the area basis. Field measurement of the area will not be made. The area will be determined by calculating the area from the dimensions shown.

(Use the following bullet when the Project includes crack sealant removal. Insert the estimate quantity in the blank.)

- Crack Sealant Removal - No measurement of quantities will be made for crack sealant removal.

The estimated quantity of crack sealant to be removed is _____ feet.

Payment

00557.90 Payment - The accepted quantities of work performed under this Section will be paid for at the Contract unit price, per unit of measurement, for the following items:

<u>Pay Item</u>	<u>Unit of Measurement</u>
<u>(a) Class 2 Preparation.....</u>	<u>Square Yard</u>
<u>(b) Furnish Premixed Polymer Concrete</u>	<u>Cubic Yard</u>
<u>(c) Construct PPC Overlay</u>	<u>Square Yard</u>

(Use the following pay item (d) when the Project includes crack sealant removal.)

<u>(d) Crack Sealant Removal</u>	<u>Lump Sum</u>
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Payment will be payment in full for furnishing and placing all materials, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for Class 1 preparation work or for constructing and disposing of the trial overlays.

Class 3 preparation will be paid for as Extra Work according to Section 00196.