

1 (September 7, 2021)

2 **Partial Depth Spall Repair - Polyester Concrete**

3 **Manufacturer's Technical Representative**

4 The Contractor shall have the services of a qualified polyester concrete
5 manufacturer's technical representative physically present at the job site during
6 the first shift of polyester concrete placement. The manufacturer's technical
7 representative shall assist the Contractor in training the Contractor's personnel
8 and providing technical assistance in preparing the concrete surface, applying
9 primer, and mixing, placing, and curing the polyester concrete. If the polyester
10 concrete Work is unsatisfactory, or additional training or technical assistance is
11 needed the Contractor shall have the services of the manufacturer's at the job
12 site for additional time as deemed necessary by the Engineer to correct the
13 deficiency.

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15 **Mix Design**

16 Polyester concrete shall be composed of a polyester resin binder and
17 aggregate. The Contractor shall prepare and submit a Type 1 Working
18 Drawing consisting of the polyester concrete mix proportions and mixing
19 procedure. The polyester resin binder in the polyester concrete shall be
20 between 11 to 13 percent by weight of the dry aggregate. The mix design shall
21 include the proportion of polyester resin binder as a percentage of the dry
22 weight of aggregate, the approximate set time and time for opening to traffic for
23 the temperature ranges expected during polyester concrete placement.

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25 **Delivery and Storage of Materials**

26 All materials shall be delivered in their original containers bearing the
27 manufacturer's label, specifying date of manufacturing, batch number, trade
28 name brand, and quantity. Each shipment shall be accompanied by a Safety
29 Data Sheet (SDS) for each component of the resin binder.

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31 The material shall be stored in accordance with the manufacturer's
32 recommendations.

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34 **Surface Preparation**

35 Removal of the existing pavement shall not damage any pavement to be left in
36 place. Any existing pavement that is to remain that has been damaged shall be
37 repaired at the Contractor's expense. If jackhammers are used for removing
38 pavement, they shall not weigh more than 30 pounds, and chipping hammers
39 shall not weigh more than 15 pounds. All power driven hand tools used for the
40 removal of pavement shall be operated at angles less than 45 degrees as
41 measured from the surface of the pavement to the tool. The patch limits shall
42 extend beyond the spalled area a minimum of 3 inches. Repair areas shall be
43 kept square, rectangular or circular. Repair areas that are within 12 inches of
44 another repair area shall be combined.

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46 A vertical cut shall be made to a minimum depth of 2 inches around the
47 perimeter to be patched using a saw or core drill as marked by the Engineer.
48 The Contractor shall remove material within the perimeter of the saw cut to a
49 depth of 2 inches, or to sound concrete as determined by the Project Engineer.

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51 The concrete surfaces shall be prepared by removing all material which may
52 act as a bond breaker between the surface and the polyester concrete. The

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surfaces to receive the polyester concrete shall be sand blasted and all loose material removed. All sandblasting residue shall be removed.

Spall repair shall not be done in areas where dowel bars are encountered.

When a partial depth repair is placed directly against an adjacent longitudinal joint, a bond-breaking material such as polyethylene film, roofing paper, or other material as accepted by the Engineer shall be placed between the existing concrete and the area to be patched.

Working transverse joints or cracks adjacent to or within the repair area require placement of a compressible insert. The new joint or crack shall be formed to the same width as the existing joint or crack. The compressible joint material shall be placed into the existing joint 1 inch below the depth of repair. The compressible insert shall extend at least 3 inches beyond each end of the patch boundaries.

Patches that abut the Lane/Shoulder joint require placement of a formed edge, along the slab edge, even with the surface.

If the concrete surfaces become contaminated, the contaminated areas shall be re-cleaned by abrasive blasting at the Contractor's expense.

Precautions shall be taken to ensure that no dust or debris leaves the roadway and that all traffic is protected from rebound and dust. Appropriate shielding shall be provided as required at no additional cost to the Contracting Agency and shall be approved by the Engineer. The Contractor shall reseal all joints in accordance with Section 5-05.3(8)B.

Application of Prime Coat

Application of the prime coat and the polyester concrete shall not begin if rain is forecast within 12-hours of completion of the Work. The area receiving the prime coat shall be dry and had no rain within the past 12 hours. Immediately prior to applying the prime coat, loose material shall be removed using oil and moisture free compressed air.

The concrete surface shall be between 40°F and 100°F when applying the prime coat.

The Contractor shall apply a prime coat consisting of one coat of promoted/initiated wax-free HMWM resin to the prepared concrete and steel surfaces immediately before placing the polyester concrete.

The prime coat shall be worked into the concrete in a manner to assure complete coverage of the area receiving polyester concrete.

If the primed surface becomes contaminated, the contaminated area shall be cleaned by abrasive blasting and re-primed.

The prime coat shall not be allowed to run into drainage structures, joints or working cracks.

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Mixing Components

The components of the polyester resin binder shall be thoroughly blended just prior to mixing with the aggregate. The polyester concrete shall be thoroughly mixed prior to placing.

The Contractor shall prevent any cleaning chemicals from reaching the polyester concrete mix during the mixing operations.

Polyester Concrete Placement

Under no circumstances shall any polyester resin or polyester concrete be allowed to run into drainage structures, joints or working cracks.

Place polyester concrete within two hours of placing the HMWM prime coat.

Polyester concrete shall be placed within 15 minutes following initiation. Polyester concrete that is not placed within this time shall be discarded.

The surface temperature of the area receiving the polyester concrete shall be the same as specified above for the HMWM prime coat.

The polyester concrete shall be consolidated in accordance with the manufacturer's recommendations.

Finished Polyester Concrete Surface

All repair areas shall be struck off level with the adjacent concrete. Forms shall be coated with suitable bond release agent to permit ready release of forms.

Sand for abrasive finish shall be broadcast onto surface to uniformly cover any smooth or glossy areas immediately after finishing and before resin gelling occurs. The completed surface shall be free of any smooth or glossy areas. After the polyester concrete has cured, any smooth or glossy areas shall be repaired by the Contractor in the manner recommended by the System Provider and approved by the Engineer at no additional cost. The surface texture of polyester concrete shall be uniform and impervious to moisture.

Curing

The polyester concrete shall be cured in accordance with the manufacturer's recommendations. The Contractor shall measure the compressive strength of the cured polyester concrete with a rebound hammer in accordance with ASTM C 805. Traffic and equipment shall not be permitted on the polyester concrete until it achieves a compressive strength of 2,500 psi based on the rebound hammer manufacturer's correlation of rebound number to compressive strength for the rebound hammer used.