

SPECIAL PROVISION
FOR
CRACK TREATMENT USING KEVLAR® FABRIC AND EPOXY RESIN

Date: _____

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I. DESCRIPTION

This work consists of the use of Kevlar® fabric and epoxy resin for the sealing of linear cracks and construction joints on cast-in-place and precast, segmental concrete bridge decks as shown on the plans or as directed by the Engineer.

II. MATERIALS

Provide Kevlar® fabric and compatible epoxy resin. The Kevlar® fabric shall be woven with 5,680 denier yarns with the primary fibers in the weft direction and the fabric shall be eight inches wide. The Kevlar® fabric shall be tested in accordance with ASTM D3039 and shall have a minimum tensile strength and modulus of elasticity of 43.3 and 3,445 kips per square inch (ksi), respectively.

The epoxy resin shall be two-part, moisture insensitive, and 100% solids. The epoxy resin shall be tested in accordance with ASTM D638 and ASTM C579, Method B and meet the following mechanical properties:

NEAT EPOXY

Minimum Tensile Strength, 2,000 psi (14 MPa)
Minimum Tensile Elongation, 50 percent

EPOXY MORTAR

1 Part Mixed Epoxy with 3-1/4 parts loose aggregate by volume.
Minimum Compressive Strength at:
3 hrs. @ 75°F. 1300 psi (9 MPa)
3-1/4 hrs. @ 75°F. 1700 psi (11.7 MPa)
3-1/2 hrs. @ 75°F. 2200 psi (15 MPa)
48 hrs. @ 75°F. 6800 psi (47 MPa)

Use a single manufacturer's complete system of Kevlar® fabric and epoxy resin. Below is a list of products that the Department is aware of that meet the required criteria:

Fortec Stabilization Systems 5680-BD Kevlar® fabric and Fortec Lo-Mod 526 Flexible epoxy resin

III. INSTALLATION

Protect the work area from standing water and inclement weather. Surfaces may be damp. Surfaces must be clean and sound. Spalling or other damaged substrate must be removed to solid material. Laitance must be removed. Grinding, chipping, scarifying, shot blasting, sand blasting, or water jet are all acceptable methods. Use oil-free compressed air to remove any dust debris immediately prior to application of epoxy resins. Keep the Kevlar®

fabric from contamination. Store in a clean and dry area away from direct sunlight. Keep in original packaging until installation and protect from physical damage. Remove dust, dirt, and any other foreign materials. Remove water, grease, wax, oil, or any other liquids with an appropriate solvent.

After surface preparation is complete and if directed by the Engineer, fill the joint with the specified filler. Using a roller or squeegee, apply epoxy resin to the substrate on both sides of the joint. Cut the Kevlar® fabric to length with heavy duty, sharp scissors. Lay down the Kevlar® fabric over joint with 4 inches on either side and saturate the Kevlar® fabric with epoxy resin in place over the joint. Completely wet the Kevlar® fabric fibers with epoxy resin, pressing out all wrinkles and air voids. Allow the resin to squeeze through the fibers to assure a proper bond.

EPOXY OVERLAY

Where used with a two-lift epoxy overlay system, the Kevlar® fabric is placed in first application of epoxy resin. If the second epoxy resin is to be applied after the first application has cured, broadcast aggregate specified by the Engineer prior to the first application has cured to avoid amine blush.

HOT-MIX ASPHALT OVERLAY

Where used with a hot-mix asphalt overlay, a high-temperature epoxy resin as specified by the Engineer is used with the Kevlar® fabric.

IV. MEASUREMENT AND PAYMENT

The completed work, as described, will be measured and paid for at the contract unit price using the following pay items:

PAY ITEM	PAY UNIT
Kevlar®-Epoxy Crack Treatment.....	Lineal Feet

