



Existing Structures – Structure Rehabilitation – Repairing Structures – Epoxy Crack Injection

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	06-30-2022	Original Issue	Richard Foley

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for filling cracks in concrete structures using epoxy resin injection, including the selection of cracks to be filled.

Additional unique requirements for *Epoxy Crack Injection* are detailed in:

- [BCM 95-1](#), *Epoxy-General*

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review the [Contract Specifications](#) (CS), Section 60-3.05C, *Existing Structures – Epoxy Crack Injection*, that this BCM is based on as identified in the title block above. The information in the *Contract Specifications* typically will not be repeated in the text of this BCM.

Process Inputs

1. Contract work requiring the use of epoxy crack injection.
2. Epoxy submittals as required by the Contract *Special Provisions*.

Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#).
2. Inspection of field work for this process is:
 - a. [Continuous](#) for selection of cracks to be filled, the cleaning of cracks and inspection of all aspects of epoxy injection work being performed.
3. Before construction begins:
 - a. Verify the epoxy material is in conformance with the specification values listed in [CS, 95-1.02H, Epoxy – General – Materials – Epoxy Resin Adhesive for Pressure Injection Grouting of Concrete Pavement](#). Obtain and verify proof of contractual compliance for the epoxy material prior to incorporation into the work.
 - b. Verify [Form CEM-3101, Notice of Materials to Be Used](#), includes epoxy material:
 - i. On an as needed basis, contact the Material Engineering and Testing Services (METS) [Chemistry Lab](#) to arrange for QA testing.
 - ii. Verify the proposed epoxy material is compatible with the project parameters and field conditions. The associated concrete temperature and ambient temperature expected at the project should fall in line with the manufacturer's requirements and instructions for mixing and application of epoxy material.
 - c. Review the following documents:
 - i. [Attachment 1, Epoxy Crack Injection Inspection Guidelines](#)
 - ii. Structure Maintenance and Investigations (SM&I) training materials for [Epoxy Crack Injection](#)
 - d. Discuss operations, including unique safety concerns, with all personnel that will be involved. Review the Material Safety Data Sheet (MSDS) for materials to be used. Review project specific Code of Safe Practices.
4. During construction:
 - a. Verify the contractor follows manufacturer's instructions and contract requirements for epoxy packaging, labeling, and storage requirements.
 - b. Verify the contractor cleans the concrete surface to allow for location and limits of the cracks to be repaired. See the *Concrete Technology Manual, Chapter 6, Structure Concrete Repair and Rehabilitation*, (Page 6-22 to 6-23) for additional details on epoxy injection.

- c. Select cracks to be repaired in accordance with the requirements of the [contract documents](#). If the crack sizes exceed the specified limits of 8 mils to 250 mils (where 1 mil = 1/1000th inch) consult Bridge Design.
 - d. Verify the contractor cleans and prepares cracks in accordance with the specification and the requirements of the other contract documents.
 - e. Verify the temperature of concrete to be injected is within allowable limits.
 - f. Verify the contractor places injection ports into cracks for epoxy injection and places epoxy in accordance with the requirements of the contract documents and the manufacturer's instructions. See the *Concrete Technology Manual*, Chapter 6, (Page 6-22 to 6-23) for additional details on epoxy injection.
 - g. Verify epoxy is being sampled prior to and during operation when requested.
 - h. After epoxy cures, verify the contractor removes epoxy ports and cleans the concrete surface in accordance with the contract documents.
 - i. Document all inspection, construction, and quality assurance activities, pertinent to this BCM, in the Daily Reports per [BCM C-7](#), *Daily and Weekly Reports*.
5. Following construction:
 - a. Measure sealed cracks per the contract documents for payment.
 6. File all project documentation (correspondence, materials acceptance documentation, Daily Reports, etc.) in the appropriate category in the project records as specified in *Construction Manual*, [Section 5-102](#), *Organization of Project Documents*.

Process Outputs

1. Completed repair work requiring epoxy crack injection, which complies with the contract requirements
2. Daily Reports

Attachments

[Attachment 1](#), *Epoxy Crack Injection Inspection Guidance*