



The Underground Utilities Event

Underground Construction Technology | January 28-30, 2020 | Fort Worth, TX

Manhole Rehab-What to do when there's a problem

Polymer Liners

Gary Mock





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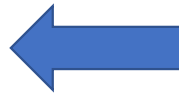
1. What are the problems that the selected method is designed to overcome?



Infiltration



Corrosion



Structural Reinstatement



New Structure Protection

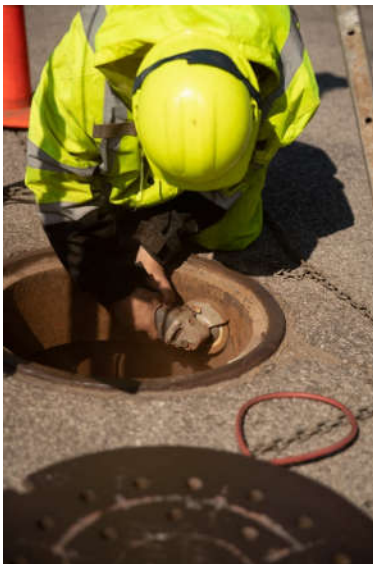




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2. What is the proper preparation for the selected method?



Proper preparation is key to avoiding problems after the rehabilitation.



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3. What system defects could occur?

Pinholes



Blistering



Cracking



Delamination



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Coating defect

Polyurea

Multi-Layer System

**Pinholes Allowing
Infiltration –**

**Applicator error. Void
was left open. Repair
could have been
avoided if a proper
inspection were done
after installation.**



Corrective Action

Polyurea

Multi-Layer System

**Abrade to provide a
sufficient profile,
clean surface, apply
promoter and recoat.**

**In some cases
removal of the
intermediate layer
may be necessary.**



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Coating defects

Rigid Polyurethane

Poor Coverage—Due to contractor and applicator's poor quality control. Coating not meeting specified mil thickness and exposed substrate.



Corrective Action

Rigid Polyurethane

Abrade to provide a sufficient profile, cut coating termination keys around repair area, remove all dust, apply promoter and recoat with specified mil thickness or apply epoxy material as repair.



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Coating defects

Polyurea

Multi-Layer System

Delamination –

Applicator error.

Cause could be one or combination of:

Active Leak or Moisture on the surface not allowing a bond.

Improper surface preparation/cleaning.



Corrective Action

Polyurea

Multi-Layer System

Remove affected area and beyond.

Address cause by stopping active leak, cleaning and drying the surface.

Abrade existing polyurea edge surface, apply promoter and reinstall the Multi-Layer system in the affected area.



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Coating defects

Polyurea

Delamination –

Applicator error.

Cause could be one or combination of:

Improper surface preparation/cleaning.

Material may have shrunk due to mix ratio being off.

Underlayment material damp and uncured.

Active Leak or Moisture on the surface not allowing a bond.



Corrective Action

Polyurea

Remove affected area and beyond.

Address cause by stopping active leak, cleaning and drying the surface.

Abrade existing polyurea edge surface, apply promoter and reinstall polyurea to the affected area.



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Coating defects

Rigid Polyurethane

Blistering—dome shaped projections due to lifting or loss of adhesion. Blisters may contain liquid, vapor, gas, or crystals.



Corrective Action

Rigid Polyurethane

Depending upon size and type of blistering, remove blistered areas or entire coating system and repair with epoxy or fully recoat, following manufacturer's recommendations.



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Coating defects

Rigid Polyurethane

Delamination or Adhesion Failure—layer separation generally related to poor surface preparation or applying additional coat before prior coat is past tack.



Corrective Action

Rigid Polyurethane

Depends upon the extent of adhesion failure. Removal of defective areas will be necessary prior to adequate preparation and application of correct coating system to manufacturer's recommendations.



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How are the defects corrected?

To repair the blistered and poorly bonded polyurea coatings; the system below will be comprised of an even coat of the specified primer over the previously prepared surface followed by spray application of Polyurea at the specified thickness. The scope of work shall include the following and meet the project specification.

- *Demarking the blistered / poor bonded areas.*
- *Removal of blisters and loosely adhering coating.*
- *Masking the areas to prevent paint overspray*
- *Abrading the polyurea/ substrate for a mechanical key*
- *Complete removal of the dust, debris and residues of iso or resins.*
- *Vacuum cleaning the area*
- *Trim taping for proper termination.*
- *Washing the area with solvent (Acetone/MEK) or denatured alcohol*
- *Priming with suitable inter-coat Primer*
- *Application of an even coat of specified material to the prepared areas.*





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Questions & Answers

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