

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

## Structural Concrete Liner Defects

Keith Walker

**Director of Global Brands** 

Waterline Renewal Technologies



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

### Types of Defects

**1.Cracking Before Hardening** 2.Cracking After Hardening **3.**Fractures and Delamination 4.Washouts 5.Thickness 6.Leaks 7.Finish

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

### Cracking from Plastic Shrinkage



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

### Plastic Shrinkage Crack Repair



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

### Cracking from Movement



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

### Cracking from Thermal Movement





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

### Movement Crack Repair







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

### Movement Crack Repair





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

### Hydration Cracks



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

### Hydration Crack Causes



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

### Hydration Crack Repair



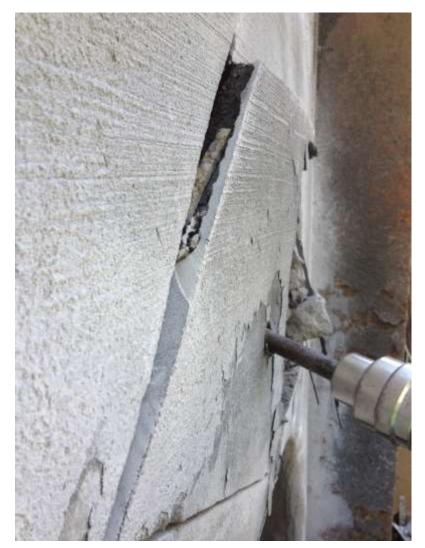
Underground Construction Technology | January 28-30, 2020 | Fort Worth, TX

### Fractures & Delamination



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

### **Remove Material**



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

### Reapply New Material



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

### Liner Washouts



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

Leaks



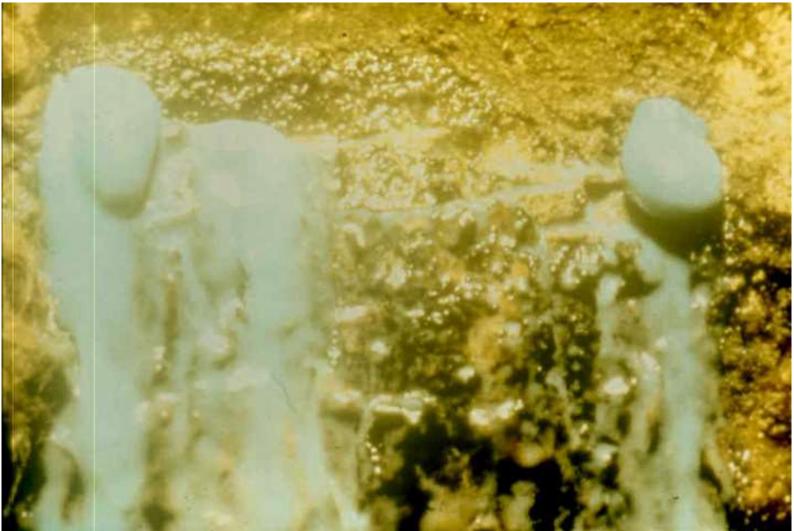
Underground Construction Technology | January 28-30, 2020 | Fort Worth, TX

### Autogenous Healing



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

### **Chemical Grout**



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

### Inadequate Thickness



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

### **Application Over Foreign Objects**



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

### Finish Issues



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

### Remove Loose Material and Reapply





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

# Questions?

