

# Special Specification 4183

## Sealing Existing Box Culvert Joints



### 1. DESCRIPTION

Seal existing box culvert joints by grouting and injecting chemical grout into an existing box culvert. Work includes grouting the spaces between each joint in the box culvert and completely filling the annular voids around these joints with a chemical grout product.

### 2. MATERIALS

- 2.1. **Rapid-Set Cement Grout.** Provide concrete in accordance with DMS-4655, "Concrete Repair Materials," Type C that is rapid setting.

Before joint sealing operations, demonstrate that the mixture achieves a minimum compressive strength of 3,000 psi in 1 day. Test in accordance with Tex-418-A.

- 2.2. **Chemical Grout.** Use a non-corrosive hydrophilic urethane resin chemical grout to seal the annular spaces between the joints. When cured, this material shall be in accordance with ASTM D3574.

### 3. EQUIPMENT

- 3.1. Furnish equipment in accordance with Item 429, "Concrete Structure Repair," or as approved.

### 4. CONSTRUCTION

- 4.1. **Preparation.** Clean each joint by abrasive blasting, high-pressure water blasting, or other approved methods to ensure it is free from existing joint compounds, moisture, dirt, grease, oil, or other foreign material that may reduce the bond. If applicable, remove dust from the abrasive blasting operation. If necessary, use a cementitious material to attain saturated surface dry condition.

- 4.2. **Cement Grout Installation:** Use the rapid set cement grout to mortar each joint and set injection ports. Injection ports may also be drilled and set in place if conditions warrant. Mix, place, and cure cement grout in accordance with manufacturer's recommendations. Begin placement of material at the lower end of the sloped areas. Do not place grout if the air temperature is below 40°F.

- 4.3. **Chemical Grout Injection.** Injection ports shall be a minimum of 3/8 in. diameter. They shall be set in series, between 6 and 24 in. apart, along the top and sides of the box culvert at each joint.

Following manufacturers recommendations, saturate the soil with potable water for activation of the chemical grout. Injection of potable water may be necessary to ensure proper reaction rate. Inject the chemical grout under pressure with a suitable probe according to manufacturer's recommendations. The pressure shall not cause damage to the surrounding box culverts or other drainage features. Begin the injection process at the lowest elevation ports, at the bottom of the box. Proceed up the sides of the box and terminate at the top of the box culvert. Inject the grout until it can be seen at the adjacent port.

When the injection process is complete, and the grout has set, trim the excess port material and patch with rapid set concrete.

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5. **MEASUREMENT**

Measurement will be by the linear foot of joint sealed.

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6. **PAYMENT**

The work performed and materials furnished, in accordance with this Item and measured as provided under "Measurement," will be paid for at the unit price bid for "Sealing Existing Box Culvert Joints." This price is full compensation for rapid set cement grout, chemical grout injection, materials, equipment, labor, tools, and incidentals.