

SECTION 026214
GROUTING ABANDONED UTILITY LINES

1. DESCRIPTION

This specification shall govern all work and materials required for grouting abandoned utility lines in place.

2. MATERIALS

A. Flowable Grout:

Flowable grout (or flowable fill) shall consist of a mixture containing Portland cement, fly ash, sand, water, and "Darafill" admixture (or approved equivalent), in the amounts shown below (or otherwise proportioned to provide 100 psi compressive strength at 28 days), to achieve a paste-like consistency immediately prior to placing the flowable grout. The flowable grout mixture shall be supplied by an approved ready-mix supplier. The manufacturer's representative shall be consulted for any final adjustments to improve the flowability of the mixture. Commercially produced flowable grout may be used with approval of the Engineer.

100 lbs/ CY	Portland Cement
300 lbs/ CY	Fly Ash
2100 lbs/ CY	Sand
250 lbs/ CY	Water
6 oz/ CY	"Darafill" admixture, as manufactured by Grace Construction Products, or approved equivalent.

B. Raw Soil: Soil shall be typical clayey soil of the area. It shall be from the project site or other approved source not suspected of being contaminated. The soil shall have a Plasticity Index over 15 and a Liquid Limit not to exceed 65.

C. Lime: Lime shall be hydrated lime, calcium hydroxide, in accordance with AASHTO M 216.

D. Water: Water shall be potable.

3. CONSTRUCTION METHODS

A. Flowable Grout: Mix Portland cement, sand, fly ash, "Darafill" and water in the amounts shown above to achieve a paste-like consistency immediately prior to placing flowable grout.

B. Soil-Lime Mix Design: The following is given as a typical mix design for soil-lime mixture for trial mix. The mix design is based on damp soil with an initial water content of about 15%. The proportions of soil and lime shall not be altered. The Contractor shall determine the amount of water to be added as required to produce a mix at its liquid limit.

Trial Mix Design:

Damp Soil	1000 lb.
Lime	50 lb.
Water (approximate)	48 gal.

Consistency shall be checked with liquid limit apparatus.

- C. Placement: The Contractor shall grout abandoned lines as indicated on the drawings. Temporary pumping and venting ports shall be placed as required to provide complete filling of the abandoned line and proper placement of the grout. If segregation or "sand packing" is experienced during pumping, the Contractor shall reduce the water content of the mix or obtain other soil source (for soil-lime mixture), as required. Any damage resulting from pumping operation shall be repaired at the Contractor's expense.

4. MEASUREMENT AND PAYMENT

Unless otherwise specified on the Bid Form, grouting abandoned utility lines shall be measured by the linear foot of abandoned-in-place pipe. Payment shall be full compensation for all labor, equipment, materials and incidentals required to mix, transport, and place the grout and restore surface at pump ports.