

SECTION 361
SHALLOW DEPTH FIBER OPTIC MICRO-CONDUIT INSTALLATION

361.1 DESCRIPTION:

This work shall consist of the installation of underground fiber optic micro-conduit telecommunications facilities within the public right-of-way.

361.2 TRENCHING, BACKFILL AND RESTORATION:

All work shall be done in accordance with Section _____

361.3 MICRO-CONDUIT INSTALLATION:

(A) "Trunk Lines" Cable providing telecommunications service by connecting regions or states or by connecting central offices within a metropolitan area. Such cable shall be installed as described below:

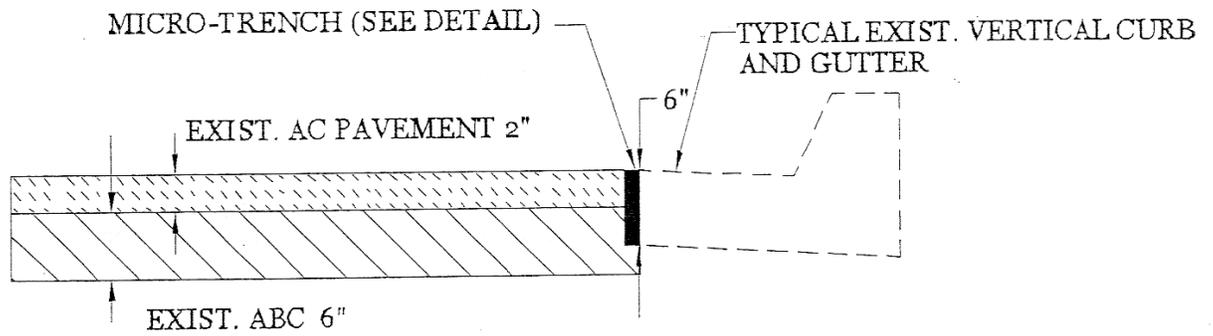
(B) Telecommunications cables other than "trunk lines" shall be installed as described below:

361.4 CABLE LOCATING (FIBER OPTIC):

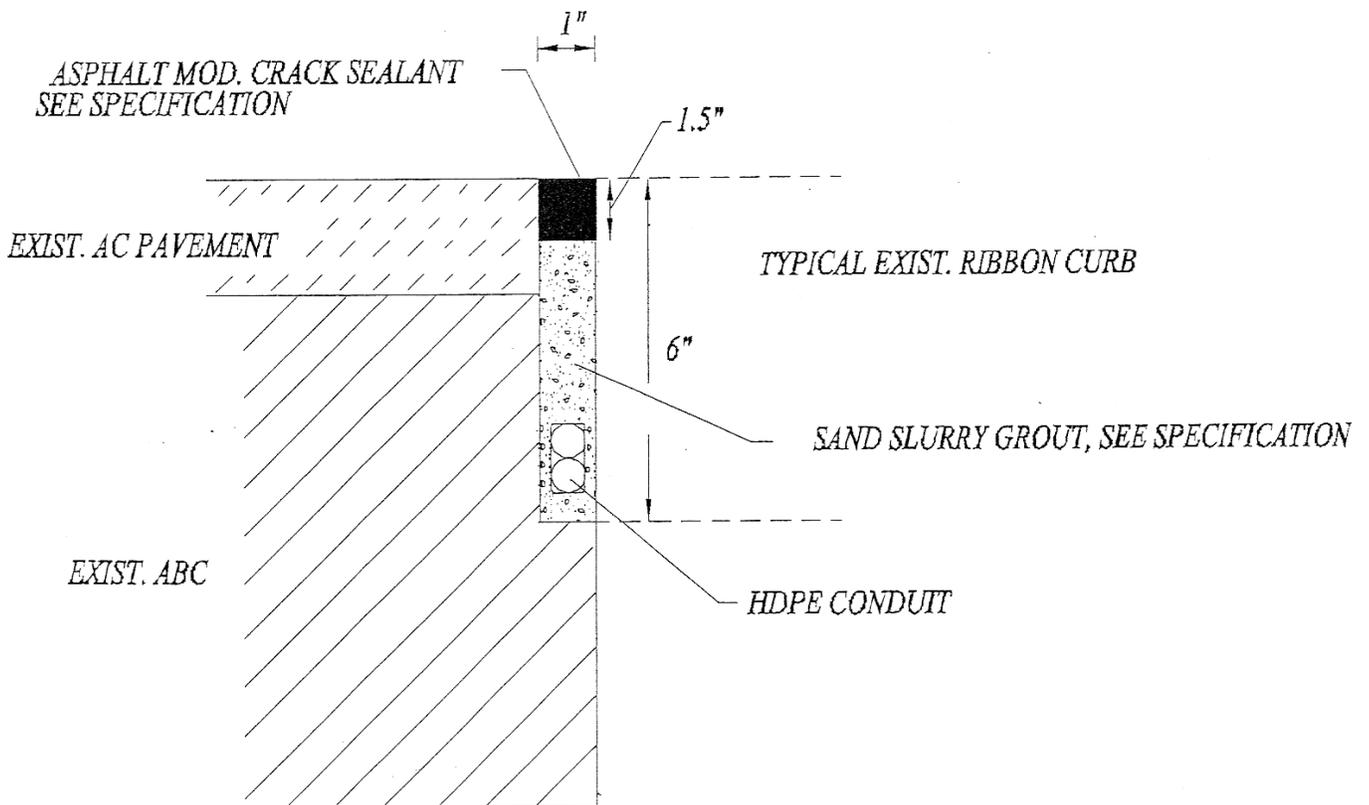
Tracing or locating wire shall be installed with the cable.

361.5 PAYMENT:

Payment will be made at the contract unit price bid per lineal foot.



TYPICAL SECTION AND TRENCH ALIGNMENT



MICRO-TRENCH DETAIL

Cano & Associates, Inc.

**ASPHALT PAVEMENT CRACK AND JOINT SEALING
For MICRO-TRENCH**

200.01 Description

All one inch wide trenches shall be cleaned out and filled with an approved asphalt-rubber or other asphalt modified sealer.

200.02 Material

The crack sealant shall be an asphalt-rubber or a polymer modified product, such as equal to Crafcro Polyflex Type 3 Sealant.

200.03 Material Specifications

TEST	RECOMMENDED SPEC.
Cone Penetration (ASTM D5329)	20-40
Resilience (ASTM D5329),	40% min.
Softening Point (ASTM D36),	210 F (99C) min.
Ductility, 77F (25C) (ASTM D113)	30 cm min.
Flexibility (ASTM D3111 Mod.)	Pass at 30F (-1C)
Flow 140F(60C) (ASTM D2669)	3 mm max.
Brookfield Viscosity, 400F(204C) (ASTM D2669)	100 Poise max.
Asphalt Compatibility (ASTM D5329)	Pass
Bitumen Content (ASTM D4)	60% min.
Tensile Adhesion (ASTM D5329)	400% min.
Safe Heating Temperature	400 F (204C)
Recommended Pour Temperature	380F (193C)

200.04 Crack Cleaning and Sealing

Clean the existing pavement surface of all loose material, dirt, or other deleterious substances by brooming, or other approved MAG methods. Seal 1-inch wide crack with an approved hot pour asphalt rubber sealant.

Cano & Associates, Inc.

**SAND SLURRY GROUT
FOR MICRO-TRENCH**

300.01 Description

This slurry grout is a controlled low strength material specification MAG Section 728 modified. The material is a mixture of portland cement, fined aggregate (mortar sand), flowability additives, and water. The slurry grout is a self compacting, flowable, cementitious material used to backfill or structural fill a 1-inch wide, 5 to 8 inches deep micro-trench.

300.02 Material

Portland Cement, shall conform to MAG Section 725.2
Fine aggregate (mortar sand), shall conform to MAG Section 701
Cement additives to meet flowability rate
Water, shall conform to Section 725.5

300.03 Material Specifications

A mix design shall be submitted with test data for the Engineer's approval prior to excavation.

Slurry Grout Material Requirements (Per 1 Sack)

CEMENT CONTENT, LBS/CU YD	SLUMP, INCHES	COMPRESSIVE STRENGTH AT 28 DAYS, PSI
94 +/- 5%	8 +/-1	150

300.04 Notes

1. The values specified in the table are for both mix design requirements and field production. The deviations are for production, testing, and sampling tolerances.
2. Slump shall be tested in accordance with ASTM C-143 and D-6103.
3. Compressive strength shall be tested in accordance with ASTM D-4832.
4. Sampling shall be in accordance with ASTM D-4832.
5. Unit weight shall be obtained by ASTM D-6023.
6. Temperature shall be taken in accordance with ASTM C-1064.
7. Cement content shall be tested in accordance with ASTM D-5982.

300.05 Mixing

Mixing shall conform to MAG Section 728.4