CITY OF UNION, OREGON
TECHNICAL SPECIFICATIONS
SECTION 9
UNDERGROUND UTILITIES

A. GENERAL

1. Scope. These specifications cover the installation of the utility systems and appurtenances for the electrical power, telephone, gas, and television as shown in the Drawings. The Work includes, unless otherwise specified, furnishing all labor, materials, tools, equipment and incidentals, working in cooperation with the various utility companies, required to construct the various utility systems, ready for service or cable installation as outlined in the Drawings and Specifications. Requirements for excavation and backfill of trenches, surface restoration, and traffic control are specified under separate sections.

Listed hereafter are the various utility companies, with their contact person that will service this project.

Power: Oregon Trail Electric Co-op
107 Elm Street
La Grande, Oregon 97850
(541) 963-3155
Contact: Bill Neilson

Telephone: Verizon
P.O. Box 430
La Grande, Oregon 97850
(541) 963-2838, Cell (541) 910-3865
Contact: Mark Wing

Gas: Avista Utilities
P.O. Box 1048
La Grande, Oregon 97850
(541) 963-4451, Cell (541) 786-0281
Contact: Mike Daniels

TV: Charter Communications
P.O. Box 1401
La Grande, Oregon 97850
(541) 963-8452, Cell (541) 786-4132
Contact: Floyd Powers

CITY OF UNION, OREGON

TECHNICAL SPECIFICATIONS

SECTION 9

UNDERGROUND UTILITIES

Items included in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed. All applicable sections, as determined by the City Engineer, shall control the Work.

2. Specification References. Specification references made herein such as conduits, elbows, junction boxes, transformer pad vaults, etc., refers to designations for the American Society for Materials and Testing (ASTM).

3. Catalog Information. Catalog information on all materials and/or equipment to be installed shall be submitted to the utility owner for review prior to installation.

4. Care and Handling of Materials. Adequate care shall be taken to prevent damage to all material used in the construction of the utility systems. Conduit and other materials shall be adequately protected and secured during transport to prevent collision of individual pieces and possible subsequent damage.

All materials shall be loaded and unloaded in a manner to prevent shock or damage. Under no circumstances shall such material be dropped. All materials on the ground shall be protected from damage. All conduit, fittings, and all other materials used in the construction of the utility systems shall be carefully inspected by the Contractor prior to installation. All defective materials shall be rejected. All materials which are delivered considerably in advance of their installation shall be stored in a satisfactory manner.

The proper materials, tools and equipment shall be used by the Contractor for safe and convenient prosecution of the Work. All conduits and fittings, etc., shall be carefully lowered into the trench piece by piece in such a manner to prevent any damage to the materials. Under no circumstances shall conduit system materials or appurtenances be dropped or dumped into the trenches.

5. Certification by Manufacturer. The Contractor shall furnish to the City, when required by the City Engineer, a sworn statement from the manufacturer, stating that inspection and all specified tests have been made on the supplied material and that the results thereof comply with appropriate specifications. The statement shall also state that all materials furnished are in accordance with these Technical Specifications and that all materials are new.

B. MATERIALS

1. Electrical Power Conduit System.

a. PVC Conduit. The PVC conduit used for the electric power distribution and service systems shall be gray Type II PVC Schedule 40, suitable for use with 90°C rated wire. Conduit shall conform to UL Standard 651 and carry appropriate UL listing for below ground use.

b. Horizontal Elbows and Elbows at Service Pole Connections. Elbows for the electrical power distribution and service systems at these locations shall be 36-inch radius galvanized rigid steel conduit (GRC). The GRC elbows shall be smooth surface, heavy-wall, mild steel construction of uniform thickness and temper, reamed and threaded at each end. Protection shall be provided inside and out with galvanizing, sheradizing, or equal process. GRC shall comply with NEC Article 346.

c. Elbows at Transformer Locations. Vertical elbows at transformer locations for the electrical distribution and service systems shall be galvanized rigid steel conduit (GRC) complying with NEC Article 346 or Type II Schedule 40 PVC with 36-inch radius sweeps and threaded ends. The type of elbows used shall be approved by the power company.

2. Telephone Conduit Systems.

a. PVC Conduit. The PVC conduit for telephone conduit systems shall be Schedule 40 PVC Type DB-120 suitable for use with 90°C rated wire. The conduit shall be suitable for below ground use meeting or exceeding the requirements of ASTM F512 and NEMA TC-8.

b. Elbows. Elbows for the telephone and television conduit systems shall be Type II Schedule 40 PVC. Elbows shall have a 36-inch radius sweep. The ends may be threaded or plain.

3. Cable Conduit System. Conduits for cable systems will be furnished by the cable company and installed by the Contractor as required by the cable company.

4. PVC Cement. The PVC cement used to joint the conduit sections shall be an all-weather quick-set cement, approved for use by the conduit manufacturer.

5. Miscellaneous Fittings. PVC lock nuts, male and female adapters, and all other fittings used in the conduit systems shall be Schedule 40 PVC suitable for below ground use with UL listing.

6. Pull Line. The pull line to be installed in all power conduit systems shall be non-conductive nylon with a tensile strength of at least 400 pounds. The pull line installed in all phone and television conduit systems shall be non-conductive nylon with a tensile strength of at least 100 pounds. Baling twine shall not be used as a pull line.

C. CONSTRUCTION

1. Coordination. Prior to construction of underground utility conduits, etc., the Contractor shall hold a meeting with all utilities to coordinate the Work and to work out all details related to the utility services to be provided. The Contractor shall plan the installation of the power and communication conduit systems in such a manner as to avoid grade conflicts with other utilities. When crossing other power or communication conduits the grade of the primary conduits shall be held and the service conduits shall pass underneath. Where necessary, the grade of the utility conduits shall be adjusted up or down to accommodate the grade of other fixed underground utilities.

All conduits shall be installed to the following tolerances except where grade adjustment is required to accommodate other utilities.

Horizontal -±0.5 feet of plan location
Grade - ±0.2 feet of plan location

2. Trench Excavation and Backfill. Trench excavation and backfill shall be performed as specified in the Technical Specifications - "Excavation and Backfill of Trenches."

3. Record Drawings. In addition to the requirements for record drawings, etc., as required in the Technical Specifications - "Special Conditions," which shall be carefully complied with, the Contractor shall maintain:

- A record showing the locations and depths of the various conduit systems installed.

4. Installation of Conduit. Conduit shall be installed in accordance with best current practices as required by the manufacturer and as specified herein.

Conduit shall be installed with bell ends laid facing in the direction of laying unless directed otherwise by the City Engineer. Each pipe shall be properly bedded so as to be supported for the full length of the pipe. All joints shall be glued with waterproof solvent cement and joined in accordance with the installation instructions of the conduit manufacturer. All joints shall be free of dirt and other foreign matter prior to application of glue and the joining of the next conduit.

Conduits shall be installed to the minimum depths called for on the Drawings and to the lines and grades when shown. It shall be recognized that conduit depths may vary from the minimum depths shown when adjustment of grade is required to avoid conflict when crossing other utilities.

No conduit shall be installed in water or when conditions exist that, in the opinion of the City Engineer, are unsuitable for the installation. At times when conduit laying is not in progress, the open ends of the conduit shall be closed by a watertight plug or other approved means. This provision applied during the noon hour as well as overnight. If there is water in the trench, the seal should remain in place until the trench is dewatered sufficiently to prevent groundwater from entering the conduit. Conduits shall be kept clean and dry during installation. Secure ends of all open conduits after installation to prevent the introduction of debris and/or water.

5. Pull Line. Each power conduit shall be installed with a nylon pull string having a tensile strength of at least 400 pounds for the power conduit system and 100 pounds for the phone and television conduit system. Each conduit shall be proved to verify that it is properly installed. Where conduits are stubbed up and capped, coil a minimum of 72 inches of pull line at the termination of primary or main conduit, and 15 feet at the termination of secondary or service conduits. Attach a label to each pull line as to conduit starting or termination point and the intended future use. Use plastic labels with indelible markings.

6. Elbows. All vertical elbows shall be installed plumb and at the locations shown on the Drawings. Adjust depth of conduit for the required stub-up height. Do not cut off elbows. Bundle stubs together as shown on the Drawings and bind together with a PVC tie or stainless steel band. Place a PVC lock nut on the terminal ends of all elbows.

7. Acceptance. The systems will be considered accepted after the various utilities have successfully installed their conductors and communication cables. Any defects of the conduit systems discovered during the installation of the power conductors or the communication cables shall be promptly and properly repaired by the Contractor, at the Contractor's expense.