

CITY OF BOARDMAN, OREGON

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PART 1 - GENERAL

1.1 Scope

- A. These Specifications cover the installation of the utility systems and appurtenances for the electrical power, telephone, cable, and gas. 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 Specifications.
- B. Requirements for excavation and backfill of trenches, surface restoration, etc., are specified under separate Technical Specification sections.

1.2 Utility Contacts

- A. See the General Requirements for the various utility companies, with their contact person who will service this Project.
- B. 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.

1.3 Specification References

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

1.4 Care and Handling of Materials

- A. 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.
- B. 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.

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- C. 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.

1.5 Certification by Manufacturer

The Contractor shall furnish to the City, when required by the City, 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, and that all materials are new.

PART 2 - MATERIALS

2.1 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, sherardizing, 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 GRC complying with NEC Article 346 or Type II Schedule 40 PVC with 36-inch radius sweeps and threaded ends. The type of elbows to be used shall be approved by the power company.

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2.2 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.

2.3 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.

2.4 Gas Lines

All gas lines will be furnished and installed by the gas company.

2.5 PVC Cement

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

2.6 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.

2.7 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.

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2.8 Street Light Pole

The street light pole shall be a BH35-11S2BG32, 30-foot mounting height, direct buried, gray pole, drilled for mask arm with hand hole and conductor entrance as supplied by General Pacific, Inc., Portland, Oregon, telephone (503) 257-0327, or approved equal.

PART 3 - EXECUTION

3.1 Coordination

- A. 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.
- B. 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.
- C. 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.

3.2 Trench Excavation and Backfill

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

3.3 Gas Lines

The Contractor shall coordinate with the gas company, as required, to arrange for the gas company to furnish and install all gas main lines and service lines for the Project. Gas lines are to be installed in a common trench with the water line and power and telephone conduits. The Contractor will provide all excavation and trench backfill and bedding material for gas line installations.

3.4 Cable Service

The Contractor shall coordinate with the cable company, as required, to arrange for the installation of cable line in the conduits installed by the Contractor for cable main and service

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lines. The final location of all underground conduits shall be coordinated with the cable company.

3.5 Telephone Lines and Service

The Contractor shall coordinate with the telephone company, as required, to arrange for the installation of telephone line in the conduits installed by the Contractor for telephone main and service lines. The final location of all underground conduits shall be coordinated with the telephone company.

3.6 Power Service

The Contractor shall coordinate with the power company, as required, to arrange for the installation of power service for the Project. The power company shall install power lines in conduits furnished and installed by the Contractor. The developer will pay all power service fees for the Project. The final size, location, and number of underground conduits shall be coordinated with the power company.

3.7 Street Lights

The Contractor shall install street light poles as required. The Contractor shall then arrange for the power company to install power to the street lights and install street lights on poles furnished and installed by the Contractor. All fees for street lights charged by the power company will be paid for by the developer.

3.8 Record Drawings

In addition to the requirements for Record Drawings, etc., as required in the General Requirements, which shall be carefully complied with, the Contractor shall maintain a record showing the locations and depths of the various conduit systems installed.

3.9 Installation of Conduit

- A. Conduit shall be installed in accordance with best current practices as required by the manufacturer and as specified herein.
- B. Conduit shall be installed with bell ends laid facing in the direction of laying unless directed otherwise by the City. 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.

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All joints shall be free of dirt and other foreign matter prior to application of glue and the joining of the next conduit.

- C. Conduits shall be installed to the minimum depths 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.
- D. No conduit shall be installed in water or when conditions exist that, in the opinion of the City, 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.

3.10 Pull Line

- A. 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.
- B. Each conduit shall be proved to verify that it is properly installed.
- C. 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.
- D. Attach a label to each pull line as to conduit starting or termination point and the intended future use.
- E. Use plastic labels with indelible markings.

3.11 Elbows

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

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3.12 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.

END OF SECTION