

## **UTILITY DUCT BANK CONSTRUCTION**

### **GENERAL**

#### Scope

The work under this section is limited to the assembly of the spacers and ducts required to form the duct bank.

**1. Spacer Installation.**

Spacers shall be installed close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 feet of duct. The contractor shall secure spacers to earth and to ducts to prevent floating during concreting.

**2. Concreting Sequence.**

The contractor shall pour each run between manholes or other terminations in one continuous operation. Concreting shall start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour.

**3. Pouring Concrete.**

The contractor shall spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface. The contractor shall not allow a heavy mass of concrete to fall directly onto ducts. A plank shall be used to direct concrete down sides of bank assembly to trench bottom. Concrete shall be allowed to flow to center of bank and rise up in middle, uniformly filling all open spaces. Power-driven agitating equipment shall not be used unless specifically designed for duct-bank application.

**4. Forms.**

The contractor shall use walls of trench to form side walls of duct bank where soil is self-supporting and concrete can be poured without soil inclusions; otherwise, forms shall be used.

**5. Termination into structure.**

The termination of the conduit into the structure shall be water tight and capable of withstanding non-uniform loads without cracking or breaking.

**6. Restoration.**

The contractor shall restore the finished grade upon completion of the duct bank installation, to match the prior conditions and the cost of such operations shall be included in the cost of duct bank installation. Restoration includes but is not limited to restoration of existing curb and gutter, pavement, sidewalk, and other miscellaneous items.

### **MEASUREMENT AND PAYMENT**

UTILITY MANHOLES, HANDHOLES, SPLICE BOXES & VAULTS – Item shall be measured in units of each, complete in place, and shall be paid for at the contract unit price per each. The price shall include providing and installing the manhole, handhole, splice box, or vault and all required appurtenances, providing and installing conduit identified to be included with this pay item, excavation, sheeting, shoring, dewatering, bedding, backfill with suitable material, restoring impacted existing ground or pavement after completion, compaction, disposal of surplus or unsuitable material, grading at the site, adjustment of the collar, frame and cover, grounding, and furnishing all tools, labor, equipment and incidentals necessary to complete the installation. The contractor shall furnish and install all collars for manholes as needed in order to reach final plan elevations at no additional cost to the County. No additional compensation shall be provided in relation to the collars.

Note: The following items will be provided by the respective utility owner: Comcast – vaults, handholes, pedestals, and power supply cabinets. Dominion Energy – splice box, manhole frame and cover.

X – X” DUCT DUCTBANK (XW X YH) ALL DEPTHS – XW X YH refers to the number of conduits wide (horizontal) and the number of conduits high (vertical). Item shall be measured in linear feet of trench per typical, complete in place, and shall be paid for at the contract unit price per linear foot. The price shall include providing and installing conduits and all required appurtenances, including, but not limited to marking tape, spacers, pull tape, caps and plugs. Price shall include excavation, sheeting, shoring, dewatering, bedding, backfill with suitable material, restoring impacted existing ground or pavement after completion, compaction, disposal of surplus or unsuitable material, cleaning/rodding, concrete encasement, and furnishing all tools, labor, equipment and incidentals necessary to complete the installation. Price for the furnishing and installation of all required sweeps, bends and elbows shall be

included in the cost of conduit installation.

X – X” – CONDUITS ( DIRECT BURY ) ALL DEPTHS – Item shall be measured in linear feet of trench per typical, complete in place, and shall be paid for at the contract unit price per linear foot. The price shall include providing and installing conduits and all required appurtenances, including, but not limited to marking tape, spacers, pull tape, caps and plugs. Price shall include excavation, sheeting, shoring, dewatering, bedding, backfill with suitable material, restoring impacted existing ground or pavement after completion, compaction, disposal of surplus or unsuitable material, cleaning/rodding, and furnishing all tools, labor, equipment and incidentals necessary to complete the installation. Concrete encasement is not required. Price for the furnishing and installation of all required sweeps, bends and elbows shall be included in the cost of conduit installation.

X – X” – CONDUITS ( DIRECTIONAL DRILL) ALL DEPTHS – Item shall be measured in linear feet, complete in place, and shall be paid for at the contract unit price per linear foot. The price shall include providing and installing conduits and all required appurtenances, including, but not limited to marking tape, spacers, pull tape, caps and plugs. Price shall include excavation, sheeting, shoring, dewatering, bedding, backfill with suitable material, restoring impacted existing ground or pavement after completion, compaction, disposal of surplus or unsuitable material, cleaning/rodding, and furnishing all tools, labor, equipment and incidentals necessary to complete the installation. Concrete encasement is not required. Encasement pipe is not required. Price for the furnishing and installation of all required sweeps, bends and elbows shall be included in the cost of conduit installation.

#### **SUPPLEMENTAL CONSTRUCTION NOTES:**

1. Once each conduit run between manholes is completed, required mandrel testing shall be completed and verified as done and acceptable. Any deficiency found in the run shall be corrected prior to moving onto the next section of conduit.
  2. Restoration will be performed as work is completed on the project prior to moving onto the next work area.
  3. The contractor's schedule shall include footages for each segment of conduit installed throughout the entire project, not just an overall project total.
  4. If installed conduit is to be left uncovered at the end of the work day, a manufactured cap fitting that size line is to be installed temporarily until work on that conduit resumes. Use of duct tape or any other substitute for an engineered cap is NOT permitted.
  5. The profiles enclosed in the plans of this project do not call for manufactured bends. If the contractor finds he will need to use engineered bends in lieu of deflecting the pipe for any reason, it is their responsibility to determine what kind of bend will be needed and get approval of the utility company that will own the conduit they are installing the bend on. Any installed bend will still need to pass any required mandrel test performed on the overall conduit run.
  6. During the life of this project, the limits of the right of way will be the responsibility of the contractor's to maintain. Any repair of patches, potholes arising from construction, damage to signal equipment will be the responsibility of the contractor to correct. These corrections once determined needed will be completed to the satisfaction of the Owner prior to moving to the next work area.
  7. All conduit material must be submitted to the utility company taking ownership of that conduit over for approval before installation on the project.
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