

# Special Specification 6129

## Concrete Encased Duct Bank



### 1. DESCRIPTION

Construct, prepare, replace, and install conduit and conduit fittings of various sizes, as shown on the plans, in a duct bank encased in concrete.

Terminate conduits in underground cable vaults (UCV) described in Special Specification, "Underground Cable Vault" when shown on the plans. Prevent debris from entering conduit at all times.

### 2. MATERIALS

Provide new materials that comply with the details shown on the plans, the requirements of this Item, and to the requirements of the following Items:

- Item 421, "Portland Cement Concrete"
- Item 476, "Jacking, Boring, or Tunneling Pipe or Box"
- Item 618, "Conduit"
- Item 622, "Duct Cable"
- "Multi-Duct Conduit System"

Provide conduit and conduit fittings in accordance with the latest revision of Rural Utilities Service (RUS) Bulletin 1751F-643, Underground Plant Design. TxDOT specifications govern in case of discrepancy between TxDOT and RUS Bulletin requirements.

Provide high density polyethylene (HDPE) or fusible polyvinyl chloride (PVC) conduit, as approved by the Engineer, of the various sizes shown on the plans. Provide UL Listed terminations and couplings. Encase conduit used in underground duct bank in concrete of the class shown on the plans.

Use fiberglass-reinforced epoxy approved by the Engineer in aboveground duct banks.

Provide conduit fittings required by the National Electric Code (NEC), shown on the plans, and as directed by the Engineer.

Install pull cords in each conduit immediately after placement and plug with tapered plastic plugs to prevent entry of debris. Provide plugs with tabs for attaching pull cords and polyester tapes or rope pull cords with a tensile strength of at least 1200 lb.

Provide all duct bank material information not included in the RUS List of Materials, Bulletin 1751F-643, Underground Plant Design and Bulletin 1751F-644, Underground Plant Construction to the Engineer for approval prior to construction.

When conduit replacement is required, provide conduit meeting the requirements of Item 618, "Conduit." Use conduit of same size and type of that being replaced or as directed.

### 3. CONSTRUCTION

Construction of this Item is considered electrical work. Ensure all electrical work is in accordance with the National Electric Code (NEC). Electrical work is subject to additional requirements found elsewhere in the plans and specifications.

Do not splice HDPE conduit except at locations specifically shown on the plans.

Seal conduit ends immediately. Terminate and cap conduit immediately upon placement. Use domed plastic caps for capping. Do not leave empty conduit ends unsealed.

Always maintain a constant slope in duct bank runs. Avoid sharp bends and dips that would trap debris and water. Provide conduit bends meeting manufacturer's recommendations.

Use spacers to maintain the conduit spacing and clearance indicated on the plans. Unless otherwise shown on the plans, molded plastic duct spacers may be used.

Provide conduit suspended from structures conforming to the electrical details shown in the plans.

Mark the duct bank as shown on the plans, when required.

Provide conduit and conduit fittings in accordance with the latest revision of Rural Utilities Service (RUS) Bulletin 1751F-644, Underground Plant Construction, and RUS Bulletin 1753F-151, RUS Form 515b, Specifications and Drawings for Construction of Underground Plant. TxDOT specifications govern in case of discrepancy between TxDOT and RUS Bulletin requirements.

### 3.1. **Testing.**

Test all conduits to determine if free from obstructions. Test empty conduits according to Item 618, "Conduit."

Repair or replace conduit runs not allowing passage of a spherical template as described in Item 618, "Conduit." For additional testing techniques refer to Rural Utilities Service (RUS) Bulletin 1751F-644, Underground Plant Construction. Replace conduit deemed impractical to repair or remains unsuitable in accordance with Item 618, "Conduit." Clean the conduit by pulling a rubber swab slightly larger in diameter than the conduit.

If conduits contain conductors, blow compressed air through the conduit to remove debris. Do not use water to clear debris. Retest the conduit by blowing compressed air.

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## 4. **MEASUREMENT**

This Item will be measured by the linear foot of duct bank complete, in place and with all fittings as cleared, tested, replaced and repaired of the various types, installations, and maintenance specified.

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## 5. **PAYMENT**

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement," will be paid for at the unit price bid for "Concrete Encased Duct Bank" of the various types, construction methods and installations specified. This price is full compensation for cleaning and testing conduit; for jacking and boring; furnishing and placing all pull cords and other materials; furnishing and placing all electrical conduit, conduit fittings and accessories, conduit mounting brackets and hardware, spacers, accessories, casings, and other required duct bank assembly materials; for furnishing and placing all concrete for duct bank encasement; for all cleanup, removal, and disposal of spoils; excavation, and backfill; replacing pavement structure, sod, riprap, curbs, or other surface; for furnishing and installing all fittings, junction boxes, and expansion joints; and all labor, tools, equipment and incidentals necessary to complete the work.