SPECIAL SPECIFICATION

8275

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 telephone duct bank and conduits in existing underground cable vaults (UCV) when shown on the plans. Prevent debris from entering conduit at all times. The TxDOT contractor should coordinate the installation of the cables, appurtenances, and connections to the AT&T facilities within the existing manholes, once the duct bank and conduits are completed, with an independent A.T.&T. contractor.

Terminate and/or tie electrical duct bank and conduits into existing electric conduits and/or vaults, where shown on the plans. Prevent debris from entering conduit at all times. The TxDOT contractor should coordinate with an independent contractor from Oncor Electric Delivery that will pull the lines and make connections to their facilities within the existing manholes, once the duct bank and conduits are completed.

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

   Item 421, “Hydraulic Cement Concrete”
   Item 476, “Jacking, Boring, or Tunneling Pipe or Box”
   Item 618, “Conduit”
   Item 622, “Duct Cable”

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.

Provide ¾” steel plate required for protection of the duct bank, as shown on the plans.

3. **Construction Methods.** 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.

A. **Preparation/Test of Conduit.** Prepare (test) the conduit by the methods described in this section.

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.

B. **Maintenance.** Whether newly installed or existing material, provide periodic and non-periodic maintenance as described in this Special Specification and when directed by the
Engineer. For Duct Bank material provided by referenced specification, provide maintenance in accordance with the referenced specification and any additional requirements provided in this Special Specification.

Periodic maintenance of furnished and existing Duct Bank material consists of all testing described in this Item, inclusive of all referenced specifications, as shown on the plans, and as directed by the Engineer. Perform duct bank maintenance at intervals not exceeding 12 months from the completion of the duct bank construction continuously until a period of no more than 12 months after acceptance of the total construction project, unless otherwise shown on the plans. Provide periodic maintenance with new material and include in price for new material.

Provide non-periodic maintenance of furnished and existing Duct Bank materials to remove, relocate, replace, and adjust any or all material described in this Special Specification when shown on the plans or as directed by the Engineer. Replace is defined as furnishing new material and removing existing material.

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.

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 “Duct Bank” of the various types, construction methods and installations, Duct Bank (Periodic Maint), Duct Bank (Adjust) specified. This price is full compensation for cleaning and testing conduit, for jacking and boring; furnishing and placing all pull cords and other materials, excavation, and backfill; replacing pavement structure, sod, riprap, curbs, or other surface; for marking location of duct bank (when required); for furnishing and installing all fittings, junction boxes, steel plates and expansion joints; tying into existing electric conduits and/or vaults and all labor, tools, equipment and incidentals necessary to complete the work.