

# 02210 - TRENCHING, BACKFILLING AND COMPACTION OF UTILITIES

(Last revised X/XX/XX)

This division contains 47 pages!

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## **PART 1 – GENERAL**

### **1.1 GENERAL:**

- A. The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation, complete, of all operations in connection with excavation, trenching, and backfilling of underground utilities as shown on drawings and as specified, in accordance with provisions of the Contract Documents, and completely coordinated with work of all other trades.

Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure, complete and compatible installation.

Work included in the project consists of, but is not necessarily limited to, methods of installation of the following:

- 1) Sanitary Sewer Pipe Installation & appurtenances.
- 2) Water Distribution Pipe Installation & appurtenances.
- 3) Relocation of piping systems.

### **1.2 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this specification.
- B. [Section 02800](#) – SANITARY SEWER.
- C. [Section 02900](#) – WATER DISTRIBUTION.

### **1.3 SUMMARY**

- A. This section includes:

## **PART 2 – PRODUCTS**

### **2.1 SOIL, BEDDING AND BACKFILL**

#### **2.1.1 MATERIAL CLASSIFICATION**

- A. **Bedding Material:** #57 or #67 stone.
- B. **Excavation:** All excavation material shall be classified as either Rock or Unclassified Earth Excavation. Prices bid for the various sizes of pipe shall include excavation and backfilling.
- C. **Flowable Fill Concrete Backfill** (Controlled Low Strength Material): Concrete strength shall be liquid enough to flow, be self-leveling, excavatable, and have a minimum 28 day compressive strength of 30 psi but not more than 100 psi. Non-excavatable flowable fill concrete shall have a minimum 28 day compressive strength of 125 psi but no more than 200 psi (to be excavatable by machine equipment). Materials shall comply with the recommendations within chapter 3 of ACI 229, latest revision, which include cement, aggregates, fly ash, water, admixtures, slag and other non standard materials).

Excavatable is an application where it may be necessary to remove the flowable fill at a later date. Non-excavatable is an application where it is not necessary to remove or otherwise excavate the flowable fill at a later date.

- D. **Foundation Stone:** Foundation/Trench Stabilization Material: #5, #357 or #57 stone.
- E. **Select Earth Backfill:** Select earth backfill shall be free of debris, roots, frozen materials, organic matter, rock, or gravel larger than 1 inch in any dimension, or other harmful matter and shall generally meet XXDOT *Standard Specifications for Roads and Structures*, Section 1016 – *Select Material* for properties and gradation.
- F. **Common Trench Backfill:**
- 1) **Satisfactory Soils:** ASTM D 2487 soil classification group (Unified Classification System) GW, GP, GM, SW, SW, SM, SC, ML, and CL or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste frozen materials, vegetation, and other deleterious matter.
  - 2) **Unsatisfactory soils:** ASTM D 2487 soil classification group CH, MH, OH, OL and PT; soils which contain rock or gravel larger than 3 inches in any dimension, debris, waste frozen materials, vegetation, and other deleterious matter. Unsatisfactory soils also include satisfactory soils not maintained within 2-percent of optimum moisture content at time of compaction, unless otherwise approved by either Bedford Fall's Engineer or a Geotechnical Engineer.

- G. **Structures, Backfill around:** Backfill shall be approved by Bedford Fall's Engineer and shall be free from large or frozen lumps, wood, or rocks more than 3 inches in their greatest dimension or other extraneous material. Porous backfill shall be either #67, #57, or #357 clean stone.

## **PART 3 – EXECUTION**

### **3.1 PREPARATION**

#### **3.1.1 GENERAL REQUIREMENTS APPLYING TO ALL AREAS**

- A. Contractor shall plan construction to minimize disturbance to properties adjacent to the water or sewer lines.
- B. Bedford Fall's Engineer reserves the right to limit the width of land to be disturbed and to designate on the drawings or in the field certain areas or items within this width to be protected from damage.
- C. **Access and/or Haul Roads:** Any grading or excavation required for equipment travel during the course of construction as well as erosion control, access or haul road removal, restoration, seeding and ground cover shall be provided by the contractor.
- D. The contractor shall be responsible for damage to areas or items designated by Bedford Fall's Engineer to be protected. Repairs to, replacement of, or reparations for areas or items damaged shall be made to the satisfaction of Bedford Fall's Engineer before acceptance of the completed project.
- E. The contractor shall protect all buildings or structures located along the utility line. Hand trenching, shoring, or other methods may be required.
- F. Any fences disturbed by the contractor shall be repaired with new materials to a condition equal to or better than their original condition or to the satisfaction of Bedford Fall's Engineer.
- G. Contractor shall limit width of disturbed area through garden areas to a width absolutely necessary for construction of utility line.
- H. Contractor shall obtain written permission from property owners for use of any access other than ones located within public rights-of-way or easements. Written permission shall contain conditions for use and restoration agreements between property owner and contractor.
- I. All areas disturbed shall be restored to a condition equal to or better than their original condition and shall be graded to drain.
- J. The contractor shall replace or repair all damaged or destroyed hedgerows and property corners