

SECTION 22 01 50 - EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide labor, materials, equipment, and services to perform operations required for the complete installation and related work as required in the Contract Documents.

1.2 SUBMITTALS

- A. Not required.

1.3 CODES

- A. Comply with local, state, and federal codes, regulations, and laws affecting work of this section.
- B. Comply with Code Rule 53 of the New York State Law.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cushion Sand: Clean, coarse, free of organic matter, conforming to New York State DOT Item No. 703-06.
- B. Crushed Stone: Crushed stone, graded, free of organic materials, No. 1 to No. 4 size. Conforming to New York State DOT Item No. 703-0201.
- C. Gravel Fill: Well-graded natural inorganic sand and gravel conforming to New York State DOT Item No. 703-0202.
- D. Ordinary Fill: Well-graded, natural soil, meeting the following requirements:
 - 1. Free of organic and other compressible materials, debris and frozen materials, and of stones larger than 4 in. maximum dimension.
 - 2. Be of such nature and character that it can be compacted to the specified densities.
 - 3. Free of highly plastic clays, of materials subject to decay, decomposition, or dissolution, and of cinders, ash and other corrosive materials.
 - 4. Maximum dry density of not less than 115 lbs. per cu. ft.
 - 5. Material from excavation on the site may be used as ordinary fill if it meets the above requirements.

2.2 CONCRETE

- A. Provide concrete thrust blocks as detailed on drawings at all changes in direction of underground water main.

PART 3 - EXECUTION

3.1 PREPARATORY WORK, SCHEDULING SHUTDOWNS, AND TEMPORARY WORK

- A. Build lines to grade and elevations shown. Provide stakes, grade boards, cleats, nails, instruments. Locate and stake each new run for its entire length. Verify elevations given. Start excavation at low point. Notify Engineer of elevation discrepancies. Protect marks and stations. Before starting excavating work, coordinate with Owner's Site Representative and furnish schedule of operations to Owner. Provide and maintain temporary bridges, walks and bridges over excavations where underground utility lines, sewers, water lines, etc., cross access roads, walks, and streets. Make necessary arrangement with authorities having jurisdiction.

3.2 PROTECTION

- A. Provide bracing, shoring, sheathing and other work for protection of personnel, the contract work, excavations, trees, shrubs, existing structures, and surrounding properties. Provide, erect, and maintain barricades, warning signs, flags, and lights to provide protection for work, workmen, public, and property. Plank walks, pavements, and curbs to be crossed by equipment. Protect adjacent property, existing fences, trees, shrubs, roads, curbs, sidewalks, manholes, hydrants, and other items:
 - 1. Restore, repair, rebuild or replace any such items damaged or destroyed to condition equal to that existing before such damage occurred.

3.3 INVESTIGATION AND PROTECTION OF EXISTING UTILITIES

- A. Every attempt has been made to indicate existing utilities as accurately as possible from existing drawings, surveys, and data. Report immediately other utility lines encountered, but not shown on the drawings. Notify Underground Facilities Protection Organization (UFPO), where same exists, before starting work. Phone (800)-962-7962 for information and location of nearest organization address and telephone number. Verify exact location of existing utility lines where work crosses existing utilities and where connections are to be made by test hole before starting work. Notify utility companies, municipalities, and other involved jurisdictions when excavation occurs within vicinity of existing underground service such as sewers, water, electric, gas, telephone, including such services owned by Owner. If existing service lines, utilities and utility structures which are to remain in service are uncovered or encountered during this excavation, they shall be protected from damage, and securely supported as directed and approved by the involved jurisdiction. Comply with Section 1918 of Penal Law of State of New York with regard to work in vicinity of combustible

gas piping. Immediately report damage or injury to utility lines to Owner's Representative and involved jurisdiction. Repair or replace utility lines damaged or injured as directed and approved by the involved jurisdiction. Excavate by hand in proximity to existing underground utility lines; take extreme care when excavating around ductbanks carrying energized cable. Remove plug or cap inactive or abandoned utilities encountered during construction operations. The location of such utilities shall be noted on the record drawings. Verify "inactivity" of services with involved jurisdiction before start of work.

3.4 CUTTING AND PATCHING

- A. Before starting work, obtain necessary permits and pay fees and charges for same. Cut paved areas as called for, perpendicular to surface and in straight saw-cut lines. Replace pavements, roadways, streets, blacktop areas, walks, disturbed by excavating operations with materials equal to adjacent pavements.

3.5 EXCAVATION

- A. Excavate to proper depth and width for installation work as called for and comply with rules set forth by New York State Departments of Labor and Transportation. Remove materials including masonry work, rubble, earth, brickwork, concrete, sand, debris, abandoned pipe lines, drains and sewers, rocks, boulders, and concrete, all of which is considered "earth excavation." Provide for legal disposition of excess excavated materials. Make allowance for gravel fill, sand bases, thrust blocks, sheet piling, drainage pumps, and work space. Start excavation at rough grade and provide form work and sheet piling where required.
- B. Trench excavation:
 - 1. By open cut, to proper depth and grade no wider than required for placement of work and not more than 100 ft. in advance of utility being installed.
 - 2. Should trench bottom be wet, unstable, and/or otherwise incapable of supporting the contract work, immediately report same to Owner's Representative. Should it be deemed unsuitable, excavate to depth as directed and backfill with gravel to trench depth, or provide concrete cradling.
 - 3. Should rock be encountered, excavate 6 in. deeper and fill space between trench bottom and pipe with coarse sand, well tamped to form firm bed.
- C. Shoring, bracing, sheathing:
 - 1. In addition to governing codes, protect sides of excavations with sheeting and bracing where necessary to prevent sliding or caving of banks and to protect adjacent structures. Remove as backfill is placed.
 - 2. Provide at locations adjacent to existing manholes, hydrants, and similar

items.

3.6 BACKFILL

A. Bedding:

1. Around piping with coarse sand from 6 in. below to 8 in. above. Apply by hand and compact under and at sides by mechanical means.
2. Piping, jackets and sand bed must be inspected and tested prior to backfill of any nature. Provide necessary anchors, thrust blocks, for testing.

B. Remainder of trench:

1. Fill remainder of trench in 12 in. layers, use ordinary fill material, except as otherwise specified. Do not use frozen material. Remove boulders, stones, broken rock, wood, bricks, blocks, and debris from fill material before backfill operation.

C. Under roadways, drives, parking areas, walks, slabs on grade and at utility entrance to building:

1. Backfill in 6 in. layers with gravel or crushed stone, free from organic or other unsuitable material, to grade. Thoroughly compact each layer.

D. Compaction Requirements:

1. Compaction to not less than 95% density compared to maximum laboratory tests by weight, per modified ASTM D1557-64T, latest editions, method "A" under slab on grade, roadways, drives, and other paved areas and 85% for general grading. Submit certified results of tests by an approved soil testing laboratory.

E. Pavement Placement:

1. Replace pavement for roads, walks, parking areas and bus loops removed during construction. Use details shown on drawings and follow the New York State Department of Transportation Item numbers given for base, binder and top courses of bituminous pavement.

3.7 REMOVAL OF WATER

- #### **A.**
- Provide pumps, hoses, pipe, labor and fuel, necessary to keep excavations free of water accumulation. Maintain and operate equipment. Discharge water in manner not interfering with and not to undermine or disturb existing or adjacent structures or land. Grade to prevent surface water from flowing into all excavations and trenches. Do not discharge dirt, backfill, debris, into sanitary or storm drainage systems.

3.8 EARTHWORK COMPLETION

- A. On completion of the work, clean the entire site; remove surplus earth, large stones and debris, to off-site legal disposal. Remove tools and equipment and leave the entire area in a neat condition.
- B. Rough grading:
 - 1. Rough grade to 6 in. below finished grade. Scarify subsoil to depth of 2 in. to achieve bond between topsoil and subsoil.
- C. Seeding:
 - 1. Bring grades back to original elevations by filling with top soil conforming to New York State DOT Item No. 713-01.
 - 2. Complete work by reseeding, using New York State DOT Item No. 713-03 Fertilizer and Item 713.04 grass seed. Application rates to suit New York State DOT Item No. 610-3.02.

END OF SECTION