

## SECTION 02151

### SHORING

#### PART 1 - GENERAL

##### 1.01 SECTION INCLUDES

- A. Shoring, sheeting and bracing necessary to protect excavations against loss of ground, caving or slipping.
- B. Shoring, sheeting and bracing necessary to protect existing buildings, streets, walkways, utilities, and other improvements.

##### 1.02 RELATED SECTIONS

- A. Trenching, Backfilling, and Compacting: Section 02221.

##### 1.03 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
  - 1. Shoring materials and installation work shall conform to Federal, State and local laws, rules, regulations and requirements.
  - 2. Provide material for sheet piling, sheeting bracing and shoring and drive or set in place in accordance with Federal, State and local laws for excavations and construction and as may be required to protect the workers and the public.

##### 1.04 SITE CONDITIONS

- A. Responsibility for Condition of Excavation:
  - 1. The failure or refusal of the Authority, or their agents or employees, to suggest the use of bracing or sheeting, or type of materials, or to suggest sheeting, bracing, struts, or shoring to be left in place, shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of excavation or of any of the obligations under the Contract, nor impose any liability on the Authority; nor shall any delay, whether caused by any action or want of action on the part of the Contractor, or by any act of the Authority, or their agents, or employees, resulting in the keeping of any excavation open longer than would otherwise have been necessary, relieve the Contractor from the necessity of properly and adequately protecting the excavation from caving or slipping, nor from any of the obligations

under the Contract relating to injury to persons or property, nor entitle Contractor to any claims for extra compensation.

- B. Tight Sheeting:
  - 1. Protect excavations deeper than eight feet with tight sheeting from the top of the original grade to below the structure foundation or to the bottom of utility trench except for excavations where stable rock is encountered. If stable rock is encountered at a depth greater than eight feet but above the structure foundation, or the bottom of utility trench, carry sheet down to the top of the rock.
  - 2. Contractor, at her/his discretion and expense, may use other, OSHA approved, methods for protection of excavations in lieu of tight sheeting.
- C. The Authority or Engineer reserves the right to order sheeting and bracing left in place for the protection of the finished work or adjacent property. Sheeting and bracing which have been ordered left in place by the Authority or Engineer must be removed for a distance of three feet below the established or existing grade, whichever is lower. Trench bracing, except that which must be left in place, may be removed when the backfilling has reached the respective levels of such bracing.
- D. Before starting work, check and verify governing dimensions and elevations.
- E. Protect existing active sewer, water, gas, electricity and other utility services and structures.
- F. Notify municipal agencies and service utility companies having jurisdiction. Comply with requirements of governing authorities and agencies for protection, relocation, removal and discontinuing of services, as affected by this work.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. General: Provide suitable shoring and bracing materials which will support loads imposed.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Drive or set sheeting, sheet piling, braces or shores in place and arrange such that they may be withdrawn as the excavations are backfilled, without damage to piping and structures, and without damage to or settlement of adjacent structures and pavements.

- B. Authority reserves the right to order sheeting driven to the full depth of the excavation or to such additional depths as may be required for the protection of the work.
- C. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
- D. When tight sheeting is required, it shall be driven to prevent adjacent soil from entering the excavation either below or through such sheeting.
- E. Install internal bracing, if required, to prevent spreading or distortion to braced frames.
- F. Remove sheeting, shoring and bracing in stages to avoid disturbance to underlying soils and damage to structures, pavements, facilities, and utilities.
- G. Repair or replace, as acceptable to Authority or Engineer, adjacent work damaged or displaced through installation or removal of shoring and bracing work.

**END OF SECTION**