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## **Construction Documents Required for Support of Excavation Permit Applications (Sheeting, Shoring, and Underpinning)**

### **Plan Review Requirements**

For construction projects requiring temporary shored excavation the following additional documents shall be submitted along with the permit application:

#### **1. Geotechnical Report**

A geotechnical engineering report prepared by the Geotechnical Engineer of record of the project is required for the design of sheeting, shoring and underpinning work. As a minimum the report shall include the following information:

- A. Soil boring logs
- B. Soil profiles
- C. Soil classifications
- D. Ground water conditions
- E. Soil unit weights
- F. Soil internal friction angles
- G. Recommended active and passive soil pressures

#### **2. Letter by the Geotechnical Engineer of Record**

A signed and sealed letter by the Geotechnical Engineer of record of the project shall be submitted to the County with the permit application, prior to County review, verifying that the soil pressures and soil parameters utilized for the design of the sheeting and shoring system by the sheeting and shoring designer are suitable for the site. The letter shall clearly indicate if the pressures used in the design include surcharge loads. Surcharge shall be specified.

In case vibratory equipment will be used for pile installation in the vicinity of existing buildings, the safe distance of vibratory equipment from existing structures shall be indicated in the letter, based on tests performed at the site to determine the peak soil particle velocity and tolerable vibration limits for the adjacent structures.

#### **3. Design Calculations**

The calculations shall include the following:

- A. A summary of the soil parameters used in the design.
- B. Design loads

- a. Lateral loading from the following sources shall be considered in the design of the shoring system:
  1. Retained soils
  2. Retained ground water
  3. Surcharge from all applicable sources, including, but not limited to equipment and vehicles, tower cranes, material stock piles, structures and improvements, etc.
- b. Vertical (dead and live) loads from the adjacent buildings supported by underpinning piers and/or by bracket piles.

All elements of the temporary shoring system shall be designed for the combination of lateral soil, groundwater, and surcharge loads acting in conjunction with the vertical dead and live loads.

- C. Design calculations for all elements of the shoring system considering all stages of excavation and support removal. The calculations shall include estimated deflection values and shall demonstrate that the proposed system will not cause excessive settlement of the adjacent properties.
- D. All relevant safety factors shall be shown.
- E. Input and output from computer programs used for the analysis and design of the temporary shoring system shall be legible and supported by hand computations verifying the results.

#### **4. Plans and Shop drawings**

The drawings reviewed and approved by the Structural Engineer of record for general conformance with the overall building design shall include the following:

- A. A plan to show all adjacent buildings (including addresses, description of structural framing and number of stories), utilities, facilities, pertinent topographic information, and proposed shoring system.
- B. Shoring sections taken at each unique condition along the lot lines.
- C. Details of all connections including size and length of welds.
- D. Notes on the drawing must include the following:
  - a. Sequence of shoring installation.
  - b. Method of installation.
  - c. Sequence of construction at the bracket pile locations.
  - d. Contingency notes for possible cave-in conditions during pile installation.
  - e. Monitoring of the shoring system, adjacent buildings, and other facilities for lateral and vertical movements.
  - f. Vibration monitoring.
  - g. Dewatering requirements.

#### **5. Agreements**

Obtain permission from adjoining property owners for piles, rock bolts or tie-backs encroaching into their property.

Obtain permission from the State and the County for piles, rock bolts or tie-backs encroaching into the public right-of-way.