PROTECTING THE PUBLIC RIGHT-OF-WAY FROM ADJACENT EXCAVATIONS



City Council Tuesday, December 16, 2014

CITY OF LONG BEACH | DEPARTMENT OF PUBLIC WORKS



Need for Ordinance

Understanding Shoring Structures

- Elements of Shoring
- Steel Tiebacks

Question and Answer

WHY IS THIS REQUEST NEEDED?

- Changes in the economy and an emphasis on urban density may lead to renewed interest in constructing high-rise buildings with below-grade parking structures or basements that may require excavations adjacent to the public right-of-way.
- City staff recommends that the City Council request the City Attorney to draft an ordinance that would require a permit for excavations adjacent to the public right-of-way, so that:
 - The City Engineer can ensure appropriate shoring plans are prepared by the excavator within and adjacent to the public rights-of-way.
 - The City is financially protected if restoration of the right-of-way is needed due to a shoring system failure.

WHEN IS AN EXCAVATION CONSIDERED ADJACENT TO THE PUBLIC RIGHT OF WAY?



WHAT IS A SHORING SYSTEM?

- Engineers use different types of bracing to support adjacent properties when excavating. This bracing holds back the surrounding soil to prevent a collapse of the excavation embankments into the excavation pit.
- Civil engineers may opt to use a soldier pile and steel tieback shoring system, which provides maximum space in the excavation pit, while securing the embankments from collapse.
 - Requirements for a shoring structure will protect the public right-of-way by ensuring that the City Engineer review shoring design plans.

UNDERSTANDING SHORING: SOLDIER SYSTEM

The excavation begins using solider piles, where construction equipment drills a borehole into the ground at the periphery of the excavation site.



Image Credit: SFL PileTech

UNDERSTANDING SHORING: TIEBACKS AND TENSIONING

- After putting in place the solider piles, tiebacks are constructed by drilling a small diameter shaft at an angle into the surrounding embankments.
- A tieback structure resists forces that would otherwise cause the embankment to lean, and holds back the surrounding earth from collapsing into the excavation pit (plane of failure).





A Complete Steel Tieback System

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NEED TO REMOVE, DE-TENSION

The removal of the steel rods, when the structure can support the embankments, protects future public right-of-way uses.

- When tensioned, the steel acts like a rubber band, snapping back should drilling equipment strike the tieback rods, causing bodily harm or property damage.
- These tiebacks can go well into the adjacent public right-of-way—up to 30 feet—potentially affecting sewer, water, and other utility lines in addition to storm drains.
- Without removal, the steel tiebacks will cause significant damage to the drilling equipment, result in costly change orders to the City, or affect the City's ability to repair sewer and water lines, and storm drains.

QUESTION AND ANSWER

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