Resource 3-3. Sample Lesson Learned from the Virginia DOT

VDOT

Construction Lesson Learned

August 2012

Installation Considerations for Sheet Piles

Lesson

At least two construction methods for installing sheet piles should be considered when performing constructability reviews for projects using sheet piles. Contractor's bids may be lower when they are provided more flexibility in design. The primary difference between the two methods described below is the increased minimum clearance between electrical distribution and transmission lines and any part of a crane or its load required by the Occupational Safety and Health Administration (OSHA).

VDOT Specification and OSHA Documentation

2007 Road and Bridge Specifications Section 402 – Sheet piles

OSHA Small Entity Compliance Guide for Final Rule for Cranes and Derricks in Construction

Explanation

OSHA regulations require the maintenance of a minimum clearance between electrical distribution and transmission lines and any part of a crane or its load. Installation of sheet piles can result in conflicts with overhead electrical distribution and transmission lines if proper relocation of utilities is not performed before actual construction begins.

One method of installing sheet piling is to drive the first pile to depth, then drive the second pile to depth, then all other piles in the same manner. This method includes using templates instead of leads to align the sheet piles. For a 35'-long sheet pile, the clearance of the crane or its load required to perform the work is equal to the height of sheet piling (35') + the height of hammer, tackle and boom (say 20'), plus the minimum distance required by OSHA: A height of *55' + OSHA requirement.*

Installation Considerations for Sheet Piles

Explanation

A second method for installing sheet piles is to drive the first sheet pile until it is self-supporting (approximately 5') and then insert the next piece of sheet pile by sliding the interlock of the second into the first and driving the second sheet pile approximately 5'. This process is repeated until 4 to 6 pieces of sheet pile are in place and driven to approximately 5'. The contractor then returns to the first pile and drives it to half depth and continues this process with the remaining piles. The contractor repeats this driving process and drives all piles to design tip elevation. This method includes using the adjacent self-supporting piles instead of leads to align the other sheet piles. For the same length of pile (35') as the first method, the clearance of the crane or its load required to perform the work is equal the height of sheet piling after driving 5' (30'), the height of sheet piling (35') + the height of hammer, tackle and boom (say 20'), plus the minimum distance required by OSHA. A height of *85' + OSHA requirement.*

Incorrect assumptions for the required distance clearance required for the placement of sheet piles can result in improper power line relocation and affect the project's critical path, thereby delaying project completion.

Options to Minimize Problems

Constructability reviews should take into account reasonable and normal methods for construction activities, especially where sheet pile installation is a feature of the construction work.

Audience

Area Construction Engineers
Construction Managers Inspectors

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For additional information related to Knowledge Codification and Dissemination, see:

- ☐ Video: Knowledge Retention: http://polaris.umuc.edu/de/csi/2010_JayLiebowitz/ppt_syn/retention_full_version.html
- ☐ NASA APPEL Knowledge Sharing Initiative: http://appel.nasa.gov/knowledge-sharing/
- ☐ USAID After-Action Review Guide (Introduction/Technical Guide): http://pdf.usaid.gov/pdf_docs/pnadf360.pdf