

DOSH DIRECTIVE

Division of Occupational Safety and Health

Department of Labor and Industries

Keeping Washington safe and working

27.30

Excavation Operations

Updated: August 15, 2016

I. Purpose

This Directive establishes guidelines for DOSH Compliance and Consultation Safety and Health Officers (CSHOs) when assessing employee exposure to hazards associated with excavation operations.

II. Scope and Application

This Directive applies to all DOSH operations statewide. It provides pertinent information and guidance to assist CSHOs with interpreting and applying the excavation requirements. It replaces the previous directive issued May 8, 2014.

III. References

- Chapter 296-155 WAC, Part N, Excavation, Trenching and Shoring
- Chapter 296-155 WAC, Safety Standards for Construction Work
- Chapter 296-809 WAC, Confined Spaces
- DOSH Directive 1.18, Employers Exposed to Hazards

IV. Definition

Registered Professional Engineer (RPE) means a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer who is registered in any state is deemed to be a “registered professional engineer” within the meaning of Part N when approving designs for “manufactured protective systems” or “tabulated data” to be used in interstate commerce.

V. Enforcement Policy

- A. Accident Prevention Program (APP).** Employers are in violation of WAC 296-155-110(2) if they have not addressed hazards associated with excavation operations in their written safety program and the methods to reduce or eliminate employee risk of exposure to those hazards.
- B. Training Programs.** Training programs are required by WAC 296-155-100(1)(c). CSHOs should document what training program the employer has in place to improve the skill and competency of employee safety and health with respect to the dangers of excavation operations.

- C. Confined Space.** An excavation can be a confined space. A structure within an excavation (i.e., welding inside a pipeline) can also be a confined space. To cite a trench or excavation using Chapter 296-809 WAC, the excavation would have to meet the confined space definition in the standard and have hazards not addressed by the excavation standard.
- D. Tabulated Data.** CSHOs should ensure that the protective system is constructed according to the tabulated data. This applies to systems designed and approved by an RPE as well as systems designs constructed using the tabulated data in the appendices of Part N in Chapter 296-155 WAC.
- E. Warning System for Mobile Equipment.** The warning system requirement specified by WAC 296-155-655(6) does not apply when equipment is being operated to push spoil back into the excavation for backfilling purposes.
- F. Prompt Safe Removal.** In accordance with WAC 296-155-035(9), CSHOs should evaluate and document through interviews with the employer and employees as to what the employer's plan is for prompt safe removal in the event of a cave-in. Also, see DOSH Directive 1.18, "Employers Exposed to Hazards."
- G. Safe Access and Egress.**
1. **Earth Ramp.** An earth ramp sloped at one end of the trench is considered a safe means of egress as long as employees are able to walk normally in an upright manner **without assistance** when entering or exiting the trench or excavation. If this is not the case, CSHOs should issue a citation using WAC 296-155-655(3)(b). CSHOs should also consider and document the degree of the slope, depth of the excavation, soil and environmental conditions, and the presence of any obstructions in the trench when determining whether or not the earth ramp can be used for safe access and egress.
 2. **Structures.** Provide safe access and egress onto and off of structures. Ramps, by definition in Part N, are used to gain access from one point to another. DOSH considers jumping onto structures or stepping across onto structures located in excavations as unsafe access and egress to or from an excavation. When structures are located in the excavation, they become a part of the excavation for which safe access and egress must be provided. This is a violation of WAC 296-155-655(3)(a)(i).
 3. **Lifting Equipment.** DOSH does not consider lifting equipment as "other safe means of egress." For example, employees riding in a backhoe bucket to either enter or exit trench excavations, is not "other safe means of egress" for purposes of the standard. This is a violation of WAC 296-155-655(3)(b).
 4. **Ladders.** (Set up and use must meet the requirements of Chapter 296-876 WAC)
 - a. Part J of Chapter 296-155 WAC for providing a stairway, ramp or ladder when there is a break in elevation of 19 inches or more is not applicable to excavation operations. The excavation standard is clear that a stairway, ramp, or ladder is required when the depth of the excavation is 4 feet or more.

- b. Ladders must be set up inside the protective system. If employees go outside of the protective system to access the ladder, the employer is in violation of WAC 296-155-657(1)(a).
- c. Ladders cannot be laid topside near the edge of the trench, nor can someone stand at the edge of the trench and withhold the ladder until they think it needs to be provided. Both of these examples are violations of WAC 296-155-655(2)(b).

H. Crossing Over an Excavation. Employees who jump or step across an open excavation or onto a structure within the excavation that is 4 feet or more in depth are in violation of WAC 296-155-655(12)(a).

I. Sloping. When the employer has elected to protect employees by sloping in accordance with WAC 296-155-657(2)(a), the slope cannot be steeper than 1.5H:1V, unless the employer uses one of the other options listed in (2)(b-d) for sloping and benching systems, or the options listed in (3)(a-d) for the design of support systems. If the case is appealed to the Board of Industrial Insurance Appeals, DOSH must be able to demonstrate (using the CSHOs documented inspection case file) that no support system was used and the sides of the excavation were steeper than 1.5H:1V.

J. Shielding/Shoring and Registered Professional Engineers (RPEs).

1. CSHOs are expected to verify and document all of the following:
 - a. The protective system being used was designed or approved by a RPE.
 - b. The name of the RPE, or if a firm, the firm's name, the name of the engineer of record who approved the work for the firm, and the registration number.
 - c. The status of the RPE's certification with the Department of Licensing professional engineering section.
 - d. All other aspects of the on-site excavation conditions which the employer indicates are under the direct supervision of a RPE.
2. The CSHO shall determine if the RPE of record is in fact working within a discipline applicable to the excavation work (i.e., it would be inappropriate for an electrical engineer to approve a shoring design for an excavation).
3. All inquiries relating to the adequacy of the engineering design shall be referred to the DOSH regional office. In appropriate cases, the regional office may refer deficient or inadequate engineering designs of protective systems to the Department of Licensing.

K. Working Under Loads. The information contained in this section is largely from an OSHA Letter of Interpretation dated December 19, 2007.

1. WAC 296-155-655(5) specifically states, "No employee shall be permitted underneath loads handled by lifting or digging equipment."
2. The standard does not address either of the following situations:
 - Employee exposure to caught-in-between or lateral struck-by hazards (from the load) that can be present when an employee is in a trench but not directly under a

load. Often these hazards can be present when a restricted space limits an employee's movement.

- The hazard of the backhoe itself striking the employee in the trench.
3. Because the hazards described in "2" above are recognized by DOSH and the construction industry to cause serious physical harm or death, the employer may be in violation of WAC 296-155-040(1).
 4. To issue a "Safe Place" violation, the CSHO must document the location and proximity of the employee (who is not under the load, but is in the trench box) while a backhoe is lowering material such as a section of precast concrete pipe into the trench. Does the employee's location expose him or her to struck-by or caught-in-between hazards? How?

Examples:

- An employee standing between the hoisting path and the trench box wall would typically be exposed to both hazards. WAC 296-155-040 should be cited.
- If a long trench box (or a series of adjacent trench boxes) was being used, and the employee was standing far enough away from the equipment and hoisting path so there was no struck-by or caught-in-between hazard, then the employee could remain in the trench box. No violation would be issued.

VI. Who to Contact

If DOSH staff have questions or need additional guidance or interpretive assistance, they are encouraged to contact Technical Services.

VII. Expiration Date

This Directive will expire on August 15, 2018, or earlier, if replaced by some other method of sufficient guidance.

Approved: _____



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