

## Standard Interpretations

### 01/16/2003 - Registered professional engineer approval requirements for manufactured trench protection systems deeper than 20 feet.



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- **Standard Number:** [1926.652](#); [1926.652\(c\)](#); [1926.652\(c\)\(1\)](#); [1926.652\(c\)\(2\)](#); [1926.652\(c\)\(3\)](#); [1926.652\(c\)\(4\)](#); [1926.652\(b\)](#); [1926.650](#)
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OSHA requirements are set by statute, standards and regulations. Our interpretation letters explain these requirements and how they apply to particular circumstances, but they cannot create additional employer obligations. This letter constitutes OSHA's interpretation of the requirements discussed. Note that our enforcement guidance may be affected by changes to OSHA rules. Also, from time to time we update our guidance in response to new information. To keep apprised of such developments, you can consult OSHA's website at <http://www.osha.gov>.

January 16, 2003

John M. Maas  
2304 Bel-Aire Court  
Green Bay, WI 53404-5017

Re: Whether an excavation contractor is required to get the approval of a registered professional engineer when using a manufactured trench protection system under §1926.652 (c)(2); Subpart P; excavations; registered professional engineers; trench shields

Dear Mr. Maas:

This is in response to your August 13, 2002, letter faxed to the Occupational Safety and Health Administration (OSHA) regarding OSHA's construction standards for excavation. (Those standards are codified in Subpart P of 29 CFR Part 1926 (§1926.650 *et seq.*). We apologize for the delay in providing this response.

We have paraphrased your question as follows:

**Question:** *Does the excavation standard (29 CFR Part 1926, Subpart P) require that a registered professional engineer design the trench support system whenever the excavation is deeper than 20 feet? Specifically, does this requirement apply even if the employer uses a manufactured trench shield consistent with the manufacturer's limitations and instructions?*

#### Answer

#### Background

Section 1926.652(c) contains requirements for the design of the various types of support methods for trenches and excavations -- support systems, shield systems and other protective systems. Under that paragraph [(c)], employer can choose among four options for the design of support systems, shield systems, and other protective systems. The four options are as follows:

- Option 1, under §1926.652(c)(1) -- timber shoring systems constructed to the requirements of Appendices A and C; or aluminum hydraulic shoring designs constructed to the requirements of Appendices D or §1926.652(c)(2);
- Option 2, under §1926.652(c)(2) -- support systems, shield systems, or other protective systems designs drawn from manufacturer's tabulated data and in accordance with the manufacturer's specifications, recommendations, and limitations;
- Option 3, under §1926.652(c)(3) -- support systems, shield systems, or other protective systems designs based on tabulated data approved by a registered professional engineer; or
- Option 4, under §1926.652(c)(4) – support systems, shield systems, and other protective systems not using options 1 through 3 must be designed by a registered professional engineer.

Note that Option 1 applies to timber and aluminum hydraulic shoring, and not to trench shields. Options 2 through 4 are applicable if a trench shield is to be used.

The requirements in §1926.652(c)(2) through (4) are supplemented with additional requirements in the text, tables, and illustrations in the appendices to Subpart P.<sup>1</sup> As you noted, Appendix F states that a registered professional engineer (RPE) must design protective systems for excavations deeper than 20 feet. The introductory paragraph preceding the flowcharts in Appendix F explains that "[t]he following figures are a graphic summary of the requirements contained in Subpart P for excavations 20 feet or less in depth. Protective systems for excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with §1926.652(b) and (c)."

In the appendices, it is repeatedly stated that the details and examples in the appendices are limited to depths of 20 feet, and that an RPE is required for excavations greater than 20 feet deep. For example, in Appendix B, note 3 to Table B-1, "Maximum Allowable Slopes," states that "[s]loping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer. Also, paragraph (a) (scope of Appendix D), states that "This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet (6.1 m) in depth."

This cut-off at 20 feet is based on the agency's determination in the rulemaking for the current version of Subpart P that deeper excavations constitute greater hazards than shallow ones. During the rulemaking, the issues of deep excavations and the use of RPEs were addressed together. The issues were addressed extensively in the Preamble under Issue 2 (at volume 54 of the Federal Register, pages 45898-45902, Oct. 31, 1989) and again regarding §1926.652(b) and (c) (at 54 FR 45929-45932). OSHA made the determination that excavations deeper than 20 feet require a registered professional engineer to design the protection:

OSHA agrees with the many commenters who recommended that excavations . . . deeper than 20 feet . . . require the expertise of an engineer in all cases. The Agency has revised this final rule to reflect these concerns."  
[54 *Federal Register* at 45902].

## **Use of Option 2**

With respect to the use of Option 2 under §1926.652(c)(2), it is presumed that the manufacturer has had its tabulated data and specifications, recommendations, and limitations approved by an RPE. Where a manufacturer's system is used at a depth deeper than 20 feet, as long as its use at the depth in question is consistent with the manufacturer's tabulated data, specifications, recommendations and limitations, the standard does not require the excavation contractor to obtain an approval from an RPE.

If you need additional information, please do not hesitate to contact us by fax at: U.S. Department of Labor, OSHA, Directorate of Construction, Office of Construction Standards and Guidance, fax # 202-693-1689. You can also contact us by mail at the above office, Room N3468, 200 Constitution Avenue, N.W., Washington, D.C. 20210, although there will be a delay in our receiving correspondence by mail.

Sincerely,

Russell B. Swanson, Director  
Directorate of Construction