

# SAFETY AND HEALTH STANDARDS

## Trenching and Excavation Requirements

Effective Date: 02/28/14	Standard: 16.17	Document Number: KUCSH00004	Rev: 05
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### 16.17.1 **INTRODUCTION**

16.17.1.1 This standard covers provisions to protect employees from injury or loss of life due to open excavation hazards. In addition to this standard, it is KUCC policy that all excavation and trenching operations follow guidelines set forth in MSHA Standards, CFR 56 and / or OSHA CFR 29 Part 1926.

### 16.17.2 **REQUIREMENTS**

16.17.2.1 Prior to excavation, the location of underground installations (sewer, telephone, electrical, fuel, natural gas, water and other lines, and underground tanks) must be identified. Both KUCC and public utility lines must be located. The appropriate utility company shall be contacted for assistance if there is any question. Identification should always include a review of the most current drawings. However, since drawings may not always provide the required accuracy, positive identification should include additional methods such as "pot holing", or earth penetrating radar. The method of identifying underground utilities, piping, structures etc shall be recorded on the excavation permit.

16.17.2.2 All excavations between four feet and twenty feet deep are covered by this standard. Excavations more than twenty feet deep must be designed by a registered professional engineer in accordance with OSHA 29 CFR 1926.652 (b) and (c).

16.17.2.3 An inspection of the excavation site, adjacent areas, and protective systems by a competent person is required. A competent person means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are hazardous to employees and who has authority to take prompt corrective measures to eliminate them.

- For excavation greater than four feet deep, the inspection must be completed and documented by the completion of an Excavation Permit (Exhibit 16.17.1). The inspection must be completed daily and as needed throughout the shift.

16.17.2.4 Task training is required for all employees prior to beginning an excavation. No employee shall be permitted underneath loads handled by lifting or digging equipment. Personnel shall be required to stand away from any vehicle being loaded or unloaded (as described in 14.4 Delivery Driver Standard).

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16.17.2.5 Personnel shall be protected from cave-ins by an adequate protective system except when excavations are made entirely in stable rock or when the excavations are less than four feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

- Personnel must be removed from trenches if evidence of possible cave-ins, slides, failure of protective systems, hazardous atmospheres, or other hazardous conditions exist and may not re-enter until necessary precautions have been taken.
- Trench boxes or shields may be used only when designed or approved by a registered professional engineer or based on tabulated data prepared or approved by a professional engineer.
- Adequate sloping according to the type of soil must be used when sloping is required. The table provided on the Excavation Permit shall be used as a guide for reference to angle of repose. Sloping and benching systems not utilizing the referenced guides must be approved by a registered professional engineer.
- Ramps, runways, ladders, or stairs as means of access / egress must be within 25 feet of an employee work area if the trench is four feet or more deep.
- Testing and controls for hazardous atmospheres must be completed according to Standard No.16.2 Confined Space Entry when the excavation meets the definition of a confined space or when the potential for an explosion exists.
- Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth
- Testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

16.17.2.6 A warning system for persons and mobile equipment must be in place surrounding all excavations. The warning system shall consist of barricades, hand or mechanical signals, or stop logs and flashing lights at night. Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc. shall be backfilled and compacted.

16.17.2.7 All surface obstacles which may create a hazard shall be removed or

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supported as necessary to safeguard employees.

- 16.17.2.8 Adequate protection from hazards associated with water accumulation shall be in place before working in excavations.
- 16.17.2.9 Employees exposed to vehicular traffic shall be provided with and shall wear warning vests or other suitable garments marked with or made of reflective and high visibility material.
- 16.17.2.10 All excavated or other materials or equipment that could pose a hazard by falling or rolling into an excavation shall be placed at least two feet from the edge of the excavation.
- 16.17.2.11 Where employees or equipment are required or permitted to cross over excavation, walkways or bridges with standing guardrails shall be provided.

### **REFERENCE**

MSHA CFR 56 Subpart B  
 OSHA CFR 29 Part 1926.650 - .653  
 KUCC Safety and Health Standard 16.2 - Confined Space Entry  
 OSHA CFR 29 Part 1926.651 (g)(1)(i)

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EXHIBIT 16.17.1

### KENNECOTT UTAH COPPER CORPORATION EXCAVATION PERMIT (Standard 16.17)

Rev 4 – 12/07

This permit will remain at the work site until the work is completed or a new permit is issued. If conditions change within the excavation, all persons must be evacuated until the conditions are evaluated and a new permit is issued. Expired permits must be returned to the facility recordkeeping center for filing.

Date Issued:  Date Expires:   
 Specific Location of Work:   
 Purpose of Excavation:

TRACK completed for this task (Initials):

Size of Trench, Pit or Wall Opening:				
Feet Long	Feet Wide	Feet Deep		

**NOTE:** A professional engineer must design excavations greater than 20 feet deep. Excavation plans and all registered drawings must be maintained at the excavation site.

MEANS OF EGRESS (If 4 feet or more in depth access must be provided within 25 feet of workers):			
<input type="checkbox"/>	Stairway(s)	<input type="checkbox"/>	Ladder(s)
<input type="checkbox"/>	Ramp(s)	<input type="checkbox"/>	Other (specify)

SOIL TYPE (See Definitions Below):	
<input type="checkbox"/>	Stable Rock
<input type="checkbox"/>	Type A
<input type="checkbox"/>	Type B
<input type="checkbox"/>	Type C

IDENTIFICATION OF UNDERGROUND INSTALLATIONS: (Method used to identify buried hazards & by whom: )			
<input type="checkbox"/>	Electrical	<input type="checkbox"/>	Drainage
<input type="checkbox"/>	Communications	<input type="checkbox"/>	Acid
<input type="checkbox"/>	Fuel / Oil	<input type="checkbox"/>	Natural Gas
<input type="checkbox"/>	Water	<input type="checkbox"/>	Sewer
<input type="checkbox"/>	Process	<input type="checkbox"/>	Other (specify)
<input type="checkbox"/>	Steam	<input type="checkbox"/>	

OTHER KNOWN OBSTRUCTIONS:			
<input type="checkbox"/>	Footings	<input type="checkbox"/>	Encasements
<input type="checkbox"/>	Pilings	<input type="checkbox"/>	Other (specify)
<input type="checkbox"/>	Tanks	<input type="checkbox"/>	

CONTROL REQUIREMENTS:			
<input type="checkbox"/>	Shoring	<input type="checkbox"/>	Sloping at angle
<input type="checkbox"/>	Trench Box	<input type="checkbox"/>	Material and equipment 2 feet from edge

PRECAUTIONS:			
<input type="checkbox"/>	Properly Isolated Lines	<input type="checkbox"/>	Ground Tools
<input type="checkbox"/>	Hand Excavation	<input type="checkbox"/>	Hot Work Permit
<input type="checkbox"/>	Confined Space Permit	<input type="checkbox"/>	Other (specify)

WARNING SYSTEMS:			
<input type="checkbox"/>	Barricades	<input type="checkbox"/>	Lighting
<input type="checkbox"/>	Signaling Devices	<input type="checkbox"/>	Flagman (with appropriate vests)

The above data has been checked with drawings on file. Stakes indicating the location and depth must mark existing lines and interferences in the vicinity of work. When tight interferences are identified, hand excavation must be used to determine the exact location.

**Approved By:**

Competent Person <input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>
Print Name	Signature	Date



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### REVISION HISTORY:

MOC#	Description of Change	Prepared By	Date
TS00139	Updated format and Document number added. Modify standard and permit to specify means of identifying underground installations	KUCC Safety and Health Standards Committee	12/06/07
25493	Added testing detail to be in compliance with OSHA 1926.651(g)(1)(i)	KUCC Safety and Health Standards Committee	Feb 11, 2014