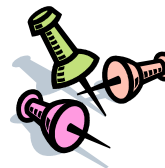




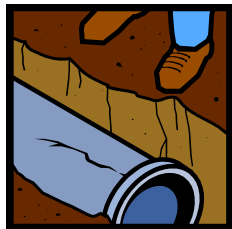
# Safety Note

UNIVERSITY OF CALIFORNIA  
AGRICULTURE AND NATURAL RESOURCES  
ENVIRONMENTAL HEALTH AND SAFETY



## Safety Note #59

### TRENCHING AND EXCAVATION REQUIREMENTS



Information available from the Census of Fatal Occupational Injuries indicates 542 trenching and excavation fatalities occurred between 1992 and 2001. In addition, an analysis of workers' compensation claims by the National Institute for Occupational Safety and Health indicated about 1,000 employees are injured annually by excavation cave-ins.

California Code of Regulations Title 8, Sections 1540 and 1541 address trenching and excavation requirements.

#### Trenching and Excavation Requirements

- Prior to initiating excavation or trenching work, Underground Service Alert (USA) shall be contacted to locate all underground public utilities. REC underground utilities and services shall also be accurately located.
- Employees working within an excavation or trenching work site shall wear hard hats, eye protection, gloves, long pants, safety vests, and steel-toed boots.
- Surface access to excavations and trenches shall be restricted with hazard tape and barricades.
- Where oxygen deficiency or a hazardous atmosphere could be reasonably expected to exist (i.e., where hazardous substances are stored nearby), the atmosphere in the excavation shall be tested before employees enter an excavation more than four feet in depth.
- Employees shall not enter an excavation or trench where an oxygen deficient or hazardous atmosphere has been identified.
- Employees shall not work in excavations or trenches with accumulated water unless precautions have been taken to protect employees against hazards posed by water accumulation.
- A stairway, ladder, ramp, or other means of safe egress shall be located in trenches that are four feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
- Employees shall not enter excavations or trenches of five feet in depth or greater unless they are adequately protected from cave-ins by sloping, supports, shields, and/or other protective systems.
- Excavations or trenches five feet in depth or greater shall be inspected by a competent person to determine whether there are any indications of a potential cave-in.
- Excavations or trenches five feet in depth or greater shall be sloped at an angle not steeper than one and one-half horizontal to one vertical (or 34 degrees measured from the horizontal) unless slopes are designed, approved, and inspected by a California registered professional engineer.
- A copy of the approved slope design shall be maintained at the excavation or trenching work site.
- Design of excavation and trenching support systems, shield systems, or other protective systems shall be selected, installed or constructed, and removed under the direction and approval of a California registered professional engineer.
- A copy of the approved support, shield, or other protective system design shall be maintained at the excavation or trenching work site.
- Materials and equipment used for protective systems shall be free of damage or defects that may impair their function.
- When material or equipment used for protective systems is damaged, a California registered professional engineer shall evaluate its suitability for continued use. Material and equipment that is not suitable for use shall be removed from service.
- Employees shall be protected from excavated or other materials falling in the excavation or trench by placing such materials at least two feet from the edge of the excavation or trench.
- Excavations and trenches, adjacent areas, and protective systems shall be inspected daily by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
- Inspections shall be performed before work starts, as needed throughout the shift, and after each rain storm or other hazard increasing occurrence.
- Employees shall be removed from the excavation or trenching work area when evidence is found of a situation that creates a hazardous exposure.