

Excavation Safety

Over a 5-year period, 26 California workers died and 207 others were injured in trench cave-ins. In almost every instance, improperly implemented protective measures were the cause of the accident. The following will be implemented at this job site (only cover the issues that are relevant to your scope of work and be sure to review Article 6—*Excavations* of the Construction Safety Orders to ensure all regulatory requirements are addressed and implemented). *Red italics set in brackets indicate where you must customize the content of this tailgate meeting for your job site's equipment and conditions.*

Before Excavation Begins—Checklist

- The excavator has:
 - Determined the approximate locations of subsurface installations that can be reasonably expected to be encountered.
 - Notified all affected utility Regional Notification Centers at least 2 working days and not more than 14 calendar days from the start date.
 - Received clearance from all known owner/operators of subsurface installations that might be affected.
 - Met with the facility owner/operator to determine how to verify the location for high priority installations that come within 10 ft. of the excavation.
- The excavation area has been marked.
- A qualified person performed subsurface installation locating activities.
- Permits for excavations 5 ft. or deeper that a person might enter have been obtained from Cal/OSHA. Protective systems such as shoring or sloping are used regardless of depth should soil type or condition warrant it.
- All employees exposed to excavation hazards have received required training on excavator notification and excavation practices.

Subsurface Installations (Utilities, Etc.)

- The following safe means of determining the exact location of subsurface installations are used when excavation operations approach their approximate location: *[Describe the site-specific methods to be used, such as hand tools, and if necessary, power-driven excavation or boring equipment.]*

- A damaged subsurface installation requires the following notifications: *[Describe site-specific notifications and measures to be taken, including calling 911 where damage to a high priority subsurface installation results in escape of any hazardous gas/liquid.]*
- While the excavation is open, employees are safeguarded from subsurface installations by: *[Describe site-specific means of doing this (for example, protection, support, or removal of subsurface installations).]*

Surface Encumbrances, Adjacent Structures, and Sidewalks

- The following pose a hazard and are addressed by: *[List the site-specific encumbrances, including adjacent structures, and describe how they are being removed or adequately supported.]*

Protective Systems

- The following protective systems are being used: *[Describe the site-specific systems that will be used (for example, type of shoring and/or sloping based on soil type and condition) for excavations greater than 5 ft. deep and less than 5 ft. deep where the competent person has determined there is indication of a potential cave-in. For excavations more than 20 feet deep, include how the protective system has been designed by a registered professional engineer.]*

Falling Loads

- Employees are not permitted underneath loads handled by lifting or digging equipment and are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped to provide adequate protection for the operator during loading and unloading operations.

Access/Egress

- *[Describe means of access/egress, including use of ramps/steps in excavations and ramps/ladders every 25 ft. in trenches more than 4 ft. deep.]*

Inspection

- *[Provide the name of the competent person]* will inspect the trench and protective systems daily, before the start of work and throughout the day as conditions change. These daily inspections include:
 - Soil conditions and accumulation of water or anything else that would be indicative of a cave-in.
 - Protective system integrity.
 - Hazardous atmospheres.
 - *[Describe other site-specific hazards and how they are abated.]*
- Employees are not allowed to enter the excavation unless cleared safe to do so by the competent person.

Vehicular Traffic and Warning System

- *[Describe the warning vests/garments used by exposed employees.]*
- *[Describe the warning system (e.g., barricades, hand or mechanical signals, stop logs) for mobile equipment operating adjacent to an excavation.]*

Hazardous Atmospheres

- *[Describe how oxygen deficiency or other hazardous atmospheres will be tested and controlled in excavations greater than 4 ft. in depth.]*
- *[Describe the emergency equipment (e.g., breathing apparatus, safety harness/line, basket stretcher, etc.) to be readily available.]*

Water Accumulation

- Employees will not work in excavations where there is accumulated water unless the following precautions have been taken: *[Describe precautions (for example, special support or shield systems, water removal pumps, the means of diverting water from entering excavations, use of harness and safety line, etc.).]*

Loose Rock/Soil

- *[Describe how employees are protected from loose rock/soil that could pose a hazard by falling from an excavation face (for example, scaling, protective barricades, etc.).]*
- Excavated materials or equipment that could fall into an excavation are kept at least 2 feet from the edge of the excavation unless the following retaining devices are used: *[Specify the site-specific means.]*

General Concerns

To ensure safe working conditions, be on the lookout for:

- **Changing weather conditions:** Hard packed soil can become soupy or unstable after a rain. Trenches that are safety sloped or shored in dry weather can pose a hazard when wet. Thawing soil can also suddenly become unstable.
- **Heavy loads in area:** Do not park heavy equipment next to a trench.
- **Vibration:** If you are digging a trench near a roadway or where other operations create vibration, make certain the shoring/sloping design reflects these conditions.
- *[Describe other site-specific hazards that can develop and are not discussed elsewhere in this tailgate meeting.]*

Fall Protection

- Walkways or bridges with standard guardrails are provided for excavations deeper than 6 ft. and wider than 30 inches where employees or equipment are required to cross.
- Remote excavations are provided with: *[Describe the adequate barrier physical protection used.]*
- All wells, pits, shafts, etc., are: *[Describe how they will be barricaded or covered.]*
- Temporary wells, pits, shafts, etc., are backfilled upon completion of exploration and similar operations.

Discussion Questions

- Do you have any questions or concerns about the excavations on this site?
- Do you have any suggestions for improvement?
- *[Provide other questions related to the particular working conditions.]*

Permit-Required Confined Spaces

Excavations can be confined spaces, but not covered by the construction permit-required confined space standard unless a structure within the excavation, such as a pipe, creates a secondary confined space. Refer to Article 37 of the Construction Safety Orders and section 5158 for details.

Disclaimer

The user of this Tailgate Topic must tailor it to site-specific conditions and issues. The regulations for excavations are covered in Title 8, California Code of Regulations, Article 6 of the Construction Safety Orders. The information provided in this Tailgate Topic is neither a substitute for, nor a legal interpretation of the occupational safety and health regulations. Readers are cautioned to refer directly to Title 8 of the California Code of Regulations for detailed information regarding the regulation's scope, specifications, exceptions, and other requirements that may be applicable to their operations.

Resources

[Title 8, California Code of Regulations](http://www.dir.ca.gov/samples/search/query.htm) (www.dir.ca.gov/samples/search/query.htm)

- [Construction Safety Orders](http://www.dir.ca.gov/Title8/sub4.html) (www.dir.ca.gov/Title8/sub4.html)
- [Excavations—Article 6](http://www.dir.ca.gov/Title8/sb4a6.html) (www.dir.ca.gov/Title8/sb4a6.html)
- [Confined Spaces in Construction—Article 37](http://www.dir.ca.gov/Title8/sb4a37.html) (www.dir.ca.gov/Title8/sb4a37.html)
- [Other Confined Space Operations—section 5158](http://www.dir.ca.gov/Title8/5158.html) (www.dir.ca.gov/Title8/5158.html)
- [Injury and Illness Prevention Program \(IIPP\)—section 1509](http://www.dir.ca.gov/Title8/1509.html) (www.dir.ca.gov/Title8/1509.html)

[Cal/OSHA Publications](http://www.dir.ca.gov/dosh/PubOrder.asp) (www.dir.ca.gov/dosh/PubOrder.asp)

- [Cal/OSHA Pocket Guide for the Construction Industry](http://www.dir.ca.gov/dosh/dosh_publications/ConstGuideOnline.pdf) (www.dir.ca.gov/dosh/dosh_publications/ConstGuideOnline.pdf)

[Cal/OSHA Consultation Service](http://www.dir.ca.gov/dosh/consultation.html) (www.dir.ca.gov/dosh/consultation.html)

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