EXCAVATION AND TRENCHING

CITY TRENCHING PLAN

Serious hazards exist for all employees who work in trenching and excavation. Cave-ins pose the greatest risk and are one hazard that can be eliminated by following the requirements of the Cal/OSHA Construction Safety Orders (Title 8, CCR) and Cal/OSHA's guidance. As well as a cave-in, a worker can be injured by falling into an excavation, falling equipment, being struck by equipment, being struck by falling or rolling objects, or being struck by other trenches, etc. Proper protections are in place to prevent cave-ins, and workers are trained to recognize and avoid other hazards associated with trenching and excavation activities.

Excavation does not have to be deep to be dangerous or deadly. However, sloping and shoring/trench boxes are required for all excavations deeper than 5 feet. Trenches 4 feet deep require a ladder or other means of exit within 25 feet of travel.

Trenches and excavations can be very dangerous or deadly. Trenches can collapse, trapping and suffocating workers in a matter of seconds. Workers can be injured by falling into an excavation or trench, or by being struck by equipment or tools.

Competent Person

- Daily inspections of excavations and adjacent areas for conditions that could result in cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. Inspections will be completed in accordance with Cal/OSHA requirements.
- Stop work immediately if unsafe conditions are found.
- Explain weather conditions or ground conditions change that may affect the safety of the excavation.
- Remove potential equipment hazards and remove the work area when a condition of hazardous atmosphere exists, or when a cave-in, or other hazardous condition, is imminent. Do not re-enter the area until it is safe to do so.
- Evaluate the need and the installation of shoring systems.

Project Supervisor

- Monitor site conditions for excavation hazards.
- Ensure that adequate protective measures are put in place for excavation and trenching activities.

PLANNING

Excavation is a dangerous activity. The phrase, "the hole you dig is your future hole-in-ground," is a saying that underscores the importance of employer has to take the time, care and preparation must be taken to ensure that the excavation is completed safely and properly.

Before digging, it is time-saving and beneficial to learn about the excavation site. Many are covered by maps. Many are also in the vicinity of other excavations, or other hazards. Knowing what is underground is critical to correct mistakes in shoring or sloping down the operation, and to avoid injuries. Knowing what is underground is critical to avoid damaging utility lines, which can be costly, dangerous, and lethal, and bring a great engineering problem. It is a cost to manage and repair damaged utility lines, and it is a cost to repair the area and trenching or excavation of any.

To perform the work safely the following conditions must be included in the excavation and trenching plan:

- Location
- Location and physical condition of nearby structures
- Underground utilities
- surface and groundwater
- Nature of the upper layer
- Weather and environmental conditions
- Equipment
- Other nearby operations/processes that may be required
- All protective needs
- Traffic patterns, including access to and
- all other equipment

GENERAL REQUIREMENTS

The following OSHA "construction requirements" are found in Cal/OSHA's Construction Safety Orders.

Review Earlier Considerations

Slope, angle, shoring, shield, plate, pipe, pipe rolling, and trench box remained, knowed, shored, or otherwise supported to prevent a hazard.

Remove Surface Encumbrances

Identify Underground Utilities

Contact Underground Service Alert (USA) and have the utilities marked in the work area.

Ensure a Safe Entry and Exit

The method of entering and exit from a deeper trench has a remarkable effect on safety. Ladders, ramps, and steps are all acceptable means of entry and exit from excavations and in the excavations. Many, ladders between 25 feet from any employee are in the excavation. Many, ladders between 25 feet from any employee are in the excavation.

Wear Personal Protective Equipment (PPE)

Hard hats are needed when there is a risk of being struck by falling objects. Cal/OSHA 1509 (Title 8) requires that safety hard hats where there is a risk of being struck by falling objects.

Protect Workers from Falling Loose

Never allow workers under loads handled by lifting or digging equipment. Ensure that workers are not exposed to falling loose materials. Keep equipment and materials at least two feet from the edge of the excavation. Keep, pipe bags, backhoeses, or other mechanical signals are also required to be used to lift and lower materials and equipment into and out of a properly sloped and protected trench or other excavation.

Test for Hazardous Atmospheres

In excavations deeper than 4 feet, the air will be potential for a hazardous atmosphere to develop. Test the air in the excavation before workers enter the excavation and as often as necessary to ensure the atmosphere is safe. Ventilate the excavation if the atmosphere is found to be unsafe. Provide a means of escape or rescue if the atmosphere cannot be ventilated to a safe condition. Ventilate the Confined Spaces policy in this manual for more information.

Protect Against Water Hazards

Workers must not work in excavations where water is accumulating unless precautions have been taken to safeguard workers against the hazard. Control water in excavations with a sump pump. If a pump is used, place the pump on a stable platform. Water accumulation in excavations must be monitored by a competent person.

Provide Ramps Stairways or Means Of Egress

Excavation trenches four feet or more in depth, shall be provided with a means of egress such as ladders or stairs. Ramps, if used, shall be constructed in a manner equivalent to a ladder or stairway. Ramps shall be constructed with a maximum slope of one foot in four feet. Ramps, stairs, or other mechanical signals are also required to be used to lift and lower materials and equipment into and out of a properly sloped and protected trench or other excavation.

Test for Hazardous Atmospheres

In excavations deeper than 4 feet, the air will be potential for a hazardous atmosphere to develop. Test the air in the excavation before workers enter the excavation and as often as necessary to ensure the atmosphere is safe. Provide a means of escape or rescue if the atmosphere is found to be unsafe. Provide ventilation if the atmosphere cannot be ventilated to a safe condition. Ventilate the Confined Spaces policy in this manual for more information.

Protect Against Water Hazards

Workers must not work in excavations where water is accumulating unless precautions have been taken to safeguard workers against the hazard. Control water in excavations with a sump pump. If a pump is used, place the pump on a stable platform. Water accumulation in excavations must be monitored by a competent person.

Provide Fall Protection

Where prevention or protection measures cannot eliminate, a workman or a large mass be engineered to withstand the maximum expected loads. Ensure that workers are not exposed to falling loose materials. Keep equipment and materials at least 2ft. Cal/OSHA Subpart M. All protective necessities or those in excess hundreds must have adequate protection against falling materials. Provide a means of egress such as ladders, stairs, ramps, or other equivalent means of egress. Ramps, stairs, or other mechanical signals are also required to be used to lift and lower materials and equipment into and out of a properly sloped and protected trench or other excavation.

Wall Mechanics

Wall mechanics are used to keep the earth from the surrounded soil in place. An excavation structure or structure keeps house, Soil Mechanics are used to keep the earth from the surrounded soil in place such as ladder, backhoe, shoulder, and other holding.

SOIL CLASSIFICATION PATTERN

Soil Texture Triangle

The component phase consists mostly of sand and manual soil tests are used to determine the soil's texture. Soil texture is classified as follows:

- **Sand (Sand Texture)**: Sand, the coarsest of the soil particle sizes. The percentage of sand is and also sand percentage is 85 percent or more.
- **Sandy Loam**: A grouped soil of average texture. Sandy Loam is Sandy Loam is grouped. It is a sandy. Sand can be seen by the naked eye. Sand is the coarse of the soil particle sizes. Sand is the coarse of the soil particle sizes. Sand is the coarse of the soil particle sizes.
- **Silt**: Silt is the finest soil. It is composed of silt, clay, silt, clay, and humus. Silt is the finest soil. It is composed of silt, clay, and humus. Silt is the finest soil. It is composed of silt, clay, and humus. Silt is the finest soil. It is composed of silt, clay, and humus.
- **Clay**: Clay is the finest soil. It is composed of silt, clay, silt, clay, and humus. Clay is the finest soil. It is composed of silt, clay, and humus. Clay is the finest soil. It is composed of silt, clay, and humus. Clay is the finest soil. It is composed of silt, clay, and humus.

Type A Soil

Type A is the best stable soil. It is composed of clay, silt, clay, and humus. Type A is the best stable soil. It is composed of clay, silt, clay, and humus. Type A is the best stable soil. It is composed of clay, silt, clay, and humus. Type A is the best stable soil. It is composed of clay, silt, clay, and humus. Type A is the best stable soil. It is composed of clay, silt, clay, and humus.

Type B Soil

Type B is the second stable soil. It is composed of silt, clay, silt, clay, and humus. Type B is the second stable soil. It is composed of silt, clay, silt, clay, and humus. Type B is the second stable soil. It is composed of silt, clay, silt, clay, and humus. Type B is the second stable soil. It is composed of silt, clay, silt, clay, and humus. Type B is the second stable soil. It is composed of silt, clay, silt, clay, and humus.

Type C Soil

Type C is the least stable soil. It is composed of silt, clay, silt, clay, and humus. Type C is the least stable soil. It is composed of silt, clay, silt, clay, and humus. Type C is the least stable soil. It is composed of silt, clay, silt, clay, and humus. Type C is the least stable soil. It is composed of silt, clay, silt, clay, and humus. Type C is the least stable soil. It is composed of silt, clay, silt, clay, and humus.

Previously discussed soil must be classified as Type C.

Potato Rock

This sample which Kimber noticed can be excavated with vertical cuts and crossed marks and sequent.

Potato Rock

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Potato Rock
Potato Rock