

Excavating and Trenching

Additional Resources:

- **Complete OSHA Standard (1926.651)**
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The estimated location of utility installations such as sewer, telephone, fuel, electric, waterlines, or any other underground installations that reasonably may be expected to be encountered during excavation work – shall be determined prior to opening an excavation. 1926.651(b)(1)

When utility companies or owners cannot respond to a request to locate underground utility installations within 48 hours, or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used. 1926.651(b)(2)

When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means. While the excavation is open, underground installations shall be protected, supported, or removed, as necessary, to safeguard employees. 1926.651(b)(3) through (4)

A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.

Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

Daily inspections of excavations, the adjacent areas, and protective systems shall be made 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.

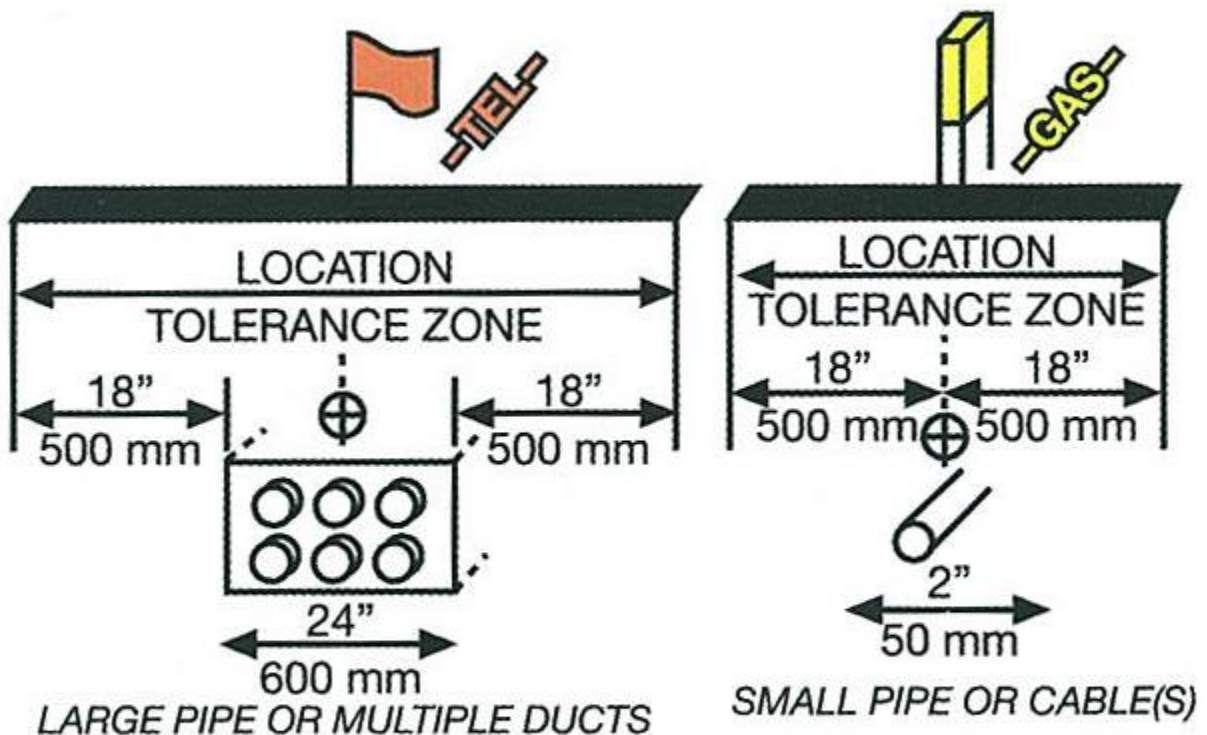
Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of section

1926.652 except when: excavations are in stable rock or less than 5' and approved by the Competent Person.

Universal Color Coding and Dimensions

The graphics below and on the next page illustrate common color codes and dimension tolerances for field marking of underground utilities. Please check with your locale for any variations.

Remember: The tolerance zone for marked lines is the width of the underground utility plus 18"-24" (depending on state) on each side. Tolerance zone distances vary; check with your locale for specific dimensions.



*Check with your state for specific dimensions.

Color Codes for Locating Utility Lines	
Red	Electric Power Lines, Cables Conduit and Lighting Cables
Yellow	Gas, Oil, Steam, Petroleum, or Gaseous Materials
Orange	Communication, Alarm or Signal Lines, or Conduit
Purple	Reclaimed Water, Irrigation, and Slurry Lines
Blue	Potable Water
Green	Sewers and Drain Lines
Pink	Temporary Survey Markings
White	Proposed Excavating

One Call Centers

The One Call notification system was put into place to allow a single call number to work in all states to enable contractors to give advance notice of their plans to excavate so that utility companies can mark underground facilities prior to excavation to prevent damage to those facilities. The One Call number is "8-1-1" and is a nationwide One Call number for all excavation and trenching activities. The "8-1-1" One Call number may not take you directly to your areas One Call Center but must provide the information and details to enable that to happen.

Contractors need to be prepared to provide information regarding the location of the proposed excavation and trenching work, dates of proposed start and finish, proposed depth, contact information of the contractor and the individual making the call. The information is kept on record and a "ticket" is issued notifying you that a record has been made of the call.

It is important to remember that most areas will require at least 48 hours of notice prior to starting any excavation or trenching work. Also remember, it is your responsibility to dig safely and to estimate the location of any utilities whether marked or not. Calling a One Call Center is the law!!

Each employee in an excavation shall be protected from cave-ins by an adequate protective system except when:

- Excavations are made entirely in stable rock, or excavations are less than 5' (1.5 meters) in depth and examination of the ground by a competent person provides no indication of a potential cave-in. 1926.652(a) (1)(i) through (ii)
- Protective systems shall have the capacity to resist, without failure, all loads that are intended or could reasonably be expected to be applied or transmitted to the system. 1926.652(a)(2)

Sloping and/or benching may be used to protect employees. In general, the maximum slopes for the soil type encountered is as indicated in the following table:

Soil Type	Height/Depth Ratio	Slope Angle
Stable Rock	Vertical	90°
Type A	3/4 : 1	53°
Type B	1 : 1	45°
Type C	1-1/2 : 1	34°

For benching, the same angles apply, as measured along a line from the toe of the bottom of the excavation to the tip of the second bench and beyond. The maximum height on the vertical side on the bench shall not exceed 4'.

Excavations greater than 20' in depth shall be designed by a registered professional engineer. 1926. Subpart P, Appendix B

Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2' from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary. 1926.651U)(2)

Daily inspections of excavations, the adjacent areas, and protective systems shall be made 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. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. These hazard-increasing inspections are only required when employee exposure can be reasonably anticipated. 1926.651(k)(1)

Where a competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety. 1926.651(k)(2)

A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4' or more in depth so as to require no more than 25' of lateral travel for employees. 1926.651(c)(2)