
Chapter 10 : EXCAVATION/SHORING/ TRENCHING

INTRODUCTION/OVERVIEW

CUNNINGHAM PAVING's policy is to have a trained Competent Person present any time excavation work is in progress and whenever employees are working in excavations.

OSHA Standard 1926.650-652 covers all open excavations and defines excavations to include trenches.

According to the OSHA Construction Safety and Health Standards, a **trench** is a narrow excavation made below the surface of the ground in which the depth is greater than the width. An **excavation** is any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal. All trenches are excavations, but not all excavations are trenches.

DEFINITIONS

1. **Competent Person-** One who is trained and capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
2. **Aluminum Hydraulic Shoring-** A pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.
3. **Bank-** A mass of soil rising above a digging level
4. **Bell-bottom Pier Hole-** A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.
5. **Benching (Benching system)-** A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
6. **Cave-in-** The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
7. **Cross braces-** The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

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8. **Excavation-** Any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal.
 9. **Exploration Shaft-** A shaft created and used for the purpose of obtaining subsurface data.
 10. **Faces or sides-** The vertical or inclined earth surfaces formed as a result of excavation work.
 11. **Failure-** The breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.
 12. **Hard Compact-** All earth material not classified as running soil.
 13. **Hazardous Atmosphere-** An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.
 14. **Kickout-** The accidental release or failure of a cross brace.
 15. **Lagging-** Boards, which are joined, side-by-side, lining an excavation.
 16. **Protective System-** A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.
 17. **Ramp-** An inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.
 18. **Registered Professional Engineer-** A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
 19. **Running Soil-** Earth material where the angle of repose is approximately zero, as in the case of soil in a nearly liquid state, or dry, unpacked sand which flows freely under slight pressure. Running material also includes loose or disturbed earth that can only be contained with solid sheeting.
 20. **Shaft-** An excavation under the earth's surface in which the depth is much greater than its cross-sectional dimensions such as those formed to serve as wells, cesspools, certain foundation footings, and under streets, railroads, buildings, etc.
 21. **Sheeting-** The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.
 22. **Shield (Shield System)-** A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

