

Understanding Protective Systems in Trenching and Excavating

Excavating is one of the most hazardous construction operations, and approximately 54 workers are killed at excavation sites each year.

Excavations are any man-made cuts, cavities, trenches or depressions formed by earth removal. Of these, trenches—narrow excavations made below the surface of the ground—create the most significant workplace hazards, particularly as they relate to:

- Cave-ins
- Hazardous atmospheres (e.g., carbon monoxide, noxious gas, vapors or a lack of oxygen)
- Falls (e.g., a worker accidentally falls into a trench and injures themselves)
- Floods or water accumulation
- Mobile equipment (e.g., equipment operated or stored too close to the excavation site falls into the trench)

Even with the proper protections in place, trenches naturally want to refill themselves, which can create major cave-in hazards for those unprepared. As such, it's important to have an understanding of the different protective systems uses to safeguard workers:

Shoring

Shoring involves installing aluminum, hydraulic or other types of supports to prevent soil movement and cave-ins. Shoring systems typically consist of posts, wales, struts and sheeting.

Shoring can help prevent the movement of excavated walls, soil, underground utilities, roadways and foundations, improving worker safety in trenches.

There are several kinds of these systems, with hydraulic and timber shoring systems being the most common.

Benching and Sloping

Benching and sloping refers to excavating the sides of an excavation to form one (sloping) or a series (benching) of horizontal levels or steps.

Sloping, if done correctly, removes the risk of cave-ins by sloping the soil of the trench back from the trench bottom. Slope angles will vary depending on the type of soil around the trench.

Shielding

Shielding refers to the use trench boxes or other types of supports to prevent soil cave-ins. These shields and supports are typically designed or approved by a registered professional.

Trench boxes are different from shoring because, instead of supporting the trench face, they are intended primarily to protect workers from cave-ins and similar incidents.

Shields can be permanent structures or can be designed to be portable and moved along as work progresses.

For questions related to trenching safety, speak to your supervisor.

JOB SITE:

Date:

Name of Employee (<i>Please Print</i>)	Signature