Brieser CONSTRUCTION

Toolbox Talk

Excavations – Shoring/Shielding – Part 4 of 4

DATE 11/09/25 – 11/15/25

PROTECTIVE SYSTEMS: HOW TO PREVENT CAVE-INS

OSHA generally requires that employers protect workers from cave-ins. Two methods covered in this toolbox talk at **shoring** and **shielding**.

Shoring refers to supporting the sides of the excavation.

Shoring/Shielding Types typically used at Brieser:

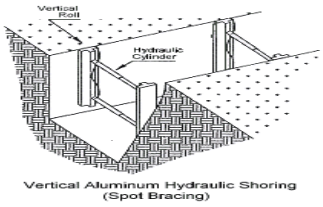
Hydraulic Shoring

The trend today is toward the use of hydraulic shoring, a prefabricated strut and/or wale system manufactured of aluminum or steel. Hydraulic shoring provides a critical safety advantage over timber shoring because workers do not have to enter the trench to install or remove hydraulic shoring. Other advantages of most hydraulic systems are that they:

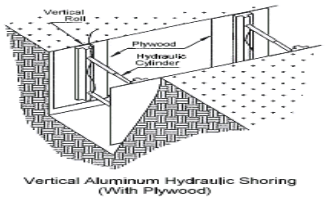
- Are light enough to be installed by one worker;
- Are gauge-regulated to ensure even distribution of pressure along the trench line;
- Can have their trench faces "preloaded" to use the soil's natural cohesion to prevent movement; and
- Can be adapted easily to various trench depths and widths.

All shoring should be installed from the top down and removed from the bottom up. Hydraulic shoring should be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases, and any other damaged or defective parts.

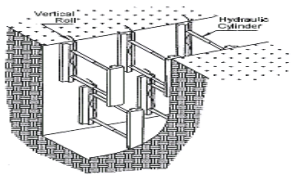
Shoring Variations: Typical Aluminum Hydraulic Shoring Installations



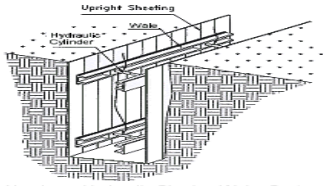
Vertical Aluminum Hydraulic Shoring (Spot Bracing)



Vertical Aluminum Hydraulic Shoring (With Plywood)



Vertical Aluminum Hydraulic Shoring (Stacked)



Aluminum Hydraulic Shoring Waler System (Typical)

This figure (above) illustrates four vertical aluminum hydraulic shoring variations: Vertical Aluminum Hydraulic Shoring with Spot Bracing, Vertical Aluminum Hydraulic Shoring with Plywood, Vertical Aluminum Hydraulic Shoring (Stacked), and Aluminum Hydraulic Shoring Water System (Typical). The first variation uses a hydraulic cylinder to exert force against a vertical roll, which transfers the force the wale. The second variety adds plywood between the vertical roll and wale. The third variety stacks multiple arrangements of the first type vertically. The fourth variety uses a hydraulic cylinder exerting force on a horizontal wale that presses against upright sheeting.

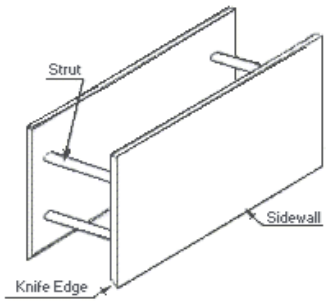
Pneumatic Shoring

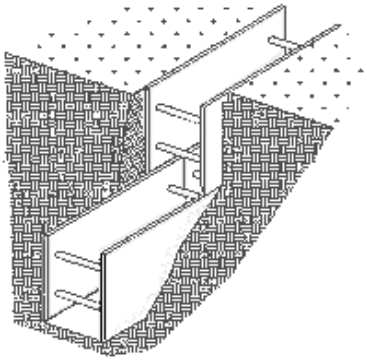
Pneumatic shoring works in a manner similar to hydraulic shoring. The primary difference is that pneumatic shoring uses air pressure in place of hydraulic pressure. A disadvantage to the use of pneumatic shoring is that an air compressor must be on site.

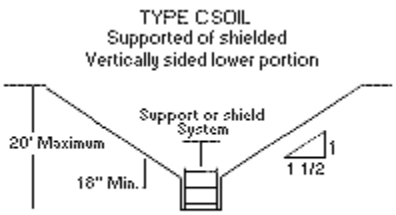
1. Single-Cylinder Hydraulic Shores. Shores of this type are generally used in a water system, as an assist to timber shoring systems, and in shallow trenches where face stability is required.
2. Underpinning. This process involves stabilizing adjacent structures, foundations, and other intrusions that may have an impact on the excavation. As the term indicates, underpinning is a procedure in which the foundation is physically reinforced. Underpinning should be conducted only under the direction and with the approval of a registered professional engineer.

Shielding Types

Trench Boxes are different from shoring because, instead of shoring up or otherwise supporting the trench face, they are intended primarily to protect workers from cave-ins and similar incidents. The excavated area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench boxes and the excavation side are backfilled to prevent lateral movement of the box.







Combined Use. Trench boxes are generally used in open areas, but they also may be used in combination with sloping and benching.

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of ¾:1. The support or shield system must extend at least 18 inches above the top of the vertical side

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Toolbox Talk

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