

## TABULATED DATA FOR HYDRAULIC SHORING

Table 1 Hydraulic Shore Selection Guide <sup>(1)</sup>						
Depth of Trench (ft)	Hydraulic Cylinder Requirements					Sheeting
	Maximum Horizontal Spacing (ft)	Maximum Vertical Cylinder Spacing (ft)	Cylinder Size Width of Excavation (ft)			
			to 8	8 to 12	12 to 15	
<b>TYPE "A" Soil</b>						
to 10'	8'	4'	2"	2"	2"+OS2	NOTE 2
10' to 16'	↓	↓	↓	2"	2"+OS2	↓
16' to 20'	↓	↓	↓	2"+OS1	2"+OS2	↓
20' to 25'	↓	↓	↓	2"+OS1	2"+OS2	↓
<b>TYPE "B" Soil</b>						
to 10'	8'	4'	2"	2"	2"+OS2	NOTE 2
10' to 16'	8'	↓	↓	2"	2"+OS2	↓
16' to 20'	6'	↓	↓	2"+OS1	2"+OS2	↓
20' to 25'	6'	↓	↓	2"+OS1	2"+OS2	NOTE 3, 4
<b>TYPE "C-60" Soil</b>						
to 10'	6'	4'	2"	2"	2"+OS2	NOTE 3
10' to 16'	6'	↓	↓	2"	2"+OS2	↓
16' to 20'	6'	↓	↓	2"+OS1	2"+OS2	↓
20' to 25'	4'	↓	↓	2"+OS1	2"+OS2	NOTE 3, 4
<b>OS1 = 3"X3/16" Wall Aluminum Oversleeve</b>						
<b>OS2 = 3.5"x3.5"x3/16" Wall Steel Oversleeve</b>						

### Notes

- Soil shall first be classified in accordance with OSHA Appendix A Soil Classification for use with this selection guide. Type C-60 soil is OSHA Appendix A Type C soil that will stand up long enough to install the hydraulic shores.
- Sheeting is required at any depth whenever sloughing or raveling occur. If sloughing or raveling occurs between sheeting, decrease spacing until it is prevented. See **Table 2** for allowable sheeting. Sheeting may be attached to jack or set into trench separately.
- Sheeting is required at this depth.
- Sheeting must extend to the bottom of the excavation.
- This tabulation includes lateral loading from equipment weighing 20,000 lbs or less and a maximum 3 ft high spoil pile set back a minimum of 2 ft. The competent person shall determine the effect of all other surcharge loads and reduce hydraulic shore spacing as required to resist those loads.

Table 2-ALLOWABLE SHEETING			
Plywood		Other Materials	
3/4" Fin Form		1/2" thick steel plate 4 ft wide x depth	
3/4" Omni Form		Steel sheet piling	
3/4" plyform, Class 1 Exterior		Aluminum sheet piling	
3/4" HDO, High Density Overlay		Buildable box panels	
3/4" HDO, High Density Overlay		Shore-Mat	
3/4" 14 Ply Artic White Birch			
1-1/8" CDX			
2 sheets of 3/4" CDX			
Timber Lagging Set Horizontal			
Thickness	Soil Type/Span		
	A	B	C-60
2"	4 ft		
3"	5 ft	4 ft	
4"	8 ft	6 ft	4 ft
DF#2 or Oak			





## TABULATED DATA FOR HYDRAULIC SHORING

### CONDITIONS FOR USE OF TABULATED DATA

1. This Tabulated Data has been prepared by a Registered Professional Engineer as required to comply with the OSHA standard 29 CFR Part 1926 Subpart P.
2. HYDRAULIC SHORING must be used in a manner consistent with safe working procedures, Federal, State and Local regulations.
3. A "competent person", who has trained in the proper use of hydraulic shoring, safe excavation practices and soil classification must direct and control the use of the vertical hydraulic shoring system according to the spacing required in the depth chart.
4. The "competent person" must be knowledgeable and capable of complying with all federal regulations, state and local laws and ordinances.
5. The Soil Types A – 25, B – 45, are as defined in the OSHA standard. Soil Type C – 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged. This soil can be cut vertically and will stand long enough to safely install the protective system.
6. The "competent person" must monitor the excavation for any signs of deterioration or condition change that may alter soil classifications.
7. "Competent person" is also one who is 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.
8. Any topic not covered by this data shall be governed by the OSHA Standard.
9. Cascade Shoring LLC shall not be liable for damage or injury resulting from improper use of the Hydraulic Shores. Improper use of, or modification to the Hydraulic Shores, or use of components not specifically authorized by Cascade Shoring LLC without the written consent of Cascade Shoring LLC shall void this data and all manufacturer's warranty.

### DESIGN CRITERIA AND LIMITATIONS

1. Depth and chart tables include a three-foot high spoil pile within a distance from the face of the excavation equal to the depth of excavation. Hydraulic Shores are not designed to support heavier surcharge loads, such as those imposed by building foundations. If Hydraulic Shores are used near building foundations, those foundations may need to be underpinned to prevent any settlement.
2. Hydraulic Shore struts are not designed to support any vertical loads and shall not be used as a ladder to provide access or egress to the trench.
3. This data is valid for Hydraulic Shores that are in structurally sound condition. Any significant damage will void this data, and all manufacturers' warranty. Any damaged Hydraulic Shores shall not be used.
4. The excavation and adjacent areas shall be monitored daily, after every rainstorm, and after every event that might change the stability of the excavation.
5. Surface water shall be diverted away from the excavation and water must be pumped out of the excavation bottom. The excavation shall be monitored in these conditions to prevent the water from generating excessive lateral pressure on the Hydraulic Shore.

### NOTES FOR TABULATED DATA

1. The top cylinder of the Hydraulic Shore shall be no less than twelve inches and no more than twenty-four inches below the top of the trench.
2. The lowest cylinder of a Hydraulic Shore shall be no more than forty-eight inches above the bottom of the excavation.
3. If sheeting is required, the sheeting shall extend from the top of the excavation to a maximum of two feet off the bottom of the excavation. Some soils may require that the sheeting be extended to the full depth of the excavation. (Maximum horizontal gap between sheets not to exceed 24").
4. When an Oversleeve is required, the Oversleeve shall extend the full collapsed length of the cylinder.
5. If a Hydraulic Shore is positioned on a joint between two pieces of sheeting, the shore shall be spaced on the seam equally.
6. The Hydraulic cylinders shall be energized and maintain 750 psi. If the initial pressure cannot be maintained because the soil is too soft, another protective system will be required.
7. An approved shoring system shall consist of a minimum of two Hydraulic Shores in trenches less than 12 ft long and 3 shores in trenches greater than 12 ft long, spaced in accordance with this data, and the safe working area shall be between two consecutive shores.
8. In Type A soil trenches less than 7 ft wide do not require end shoring. In Type B soil trenches less than 7 ft wide do not require end shoring. In Type C-60 soil trenches less than 5 ft wide do not require end shoring. Workers are allowed to work between shores only.

**This tabulated data applies to all hydraulic shoring and parts manufactured by, Cerda Industries Inc., Speed Shore Corporation, Efficiency Production, Inc., Pacific Shoring LLC, Pro-Tec Equipment, Cantel, Inc., Allied Shoring, and GME Corporation. Parts may be intermixed on the shore.**