

SHORING REQUIREMENTS

General

Excavations and shoring requirements, in regards to permits and contractors workmen, shall comply with the California Division of Industrial Safety's Construction Safety Orders, Article 6, and Section 3 of UGS-100.1.

The following requirements shall apply to excavations by contractors in which Department personnel must work. Normally, it will not be necessary to shore trenches or excavations encountered during the work of Department personnel. This is because it is seldom necessary to enter deep trenches or excavations. Where exceptions exist and workers must enter trenches or excavations to push or pull cables under obstructions, the contractor shall provide either proper trench wall slope or shoring, etc. at the direction of the Department's inspector, so that trench may be entered in a safe manner.

Requirements

It will be permissible for Department personnel to enter concrete BTE enclosures without any other type of shoring around the excavation provided the top of the enclosure is no lower than one foot below surrounding ground level. Plastic BTE's will only be entered if excavation is dug with an auger; or backfilled to within 48" of the top of the excavation. Department personnel will not be allowed to enter BTE enclosures (concrete or plastic) when only the bottom half is installed unless there is some other means of protection or shoring in the upper half of the excavation.

Department personnel will not work in an excavation or trench 5 feet or more in depth unless it is shored, laid back to a stable slope (see Figure 1) or protected by some other equivalent means (such as plastic or concrete enclosures under conditions stated above).

RIVERSIDE PUBLIC UTILITIES DEPT. - UNDERGROUND STRUCTURES

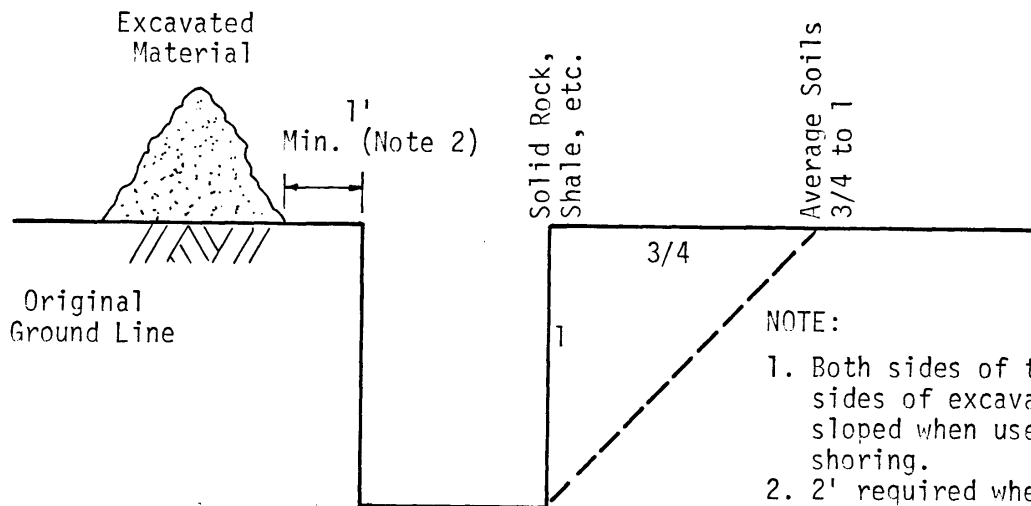


Figure 1

Sloping Requirements

NOTE:

1. Both sides of trench and all sides of excavation must be sloped when used in lieu of shoring.
2. 2' required when trench or excavation 5' or more deep.
3. Unstable soils require greater than 3/4 to 1 slope.

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 Chief Utility Engineer New Standard

Trenches less than 5 feet in depth shall also be effectively protected when examination of the ground indicates hazardous ground movement may be expected. The suggested method of supplying protection in trenches less than 5 feet in depth is the use of 3/4" plywood sheeting with wood 4x4 cross braces. Metal expanding trench jacks may be used in lieu of 4x4 cross bracing.

TABLE 1

Soil Type	Depth	Uprights		Braces		Stringers	
	Feet	Size Inches	Horiz. Spacing Feet	Size Inches	Horiz. Spacing Feet	Size Inches	Vert. Spacing Feet
Hard, compact	5-10	2x8	8	4x4	8		*
Unstable	5-10	2x8	4	4x4	4		*
		2x8	2	4x4	2		*
Running	4-8	2x8	Solid	4x4	6	4x6	4

*Generally not required

Table 1 shows the minimum requirements for trench shoring. Whether shoring is required or not, all trenches and excavations 4 feet or more in depth shall be ascended and descended with ladders. There shall be a ladder no more than 25 feet from any workman occupying the trench and it shall extend at least three feet out of the excavation.