# How to Size a Trench Shield

## Soil Classifications, Calculating Depth Ratings, and Sizing a Shield

### *For Your Project:*



### Efficiency Production's Mission Statement

*Efficiency Production's Mission is to be the Underground Construction Industry's Shoring Manufacturer of Choice, providing shoring equipment and services that consistently exceed customer expectations and build long term working relationships.*

## How to Size a Trench Box

**Soil Condition*** (Lateral pressure per foot of depth):

- ☐ Type B Soil = 45 lbs.
- ☐ Type C-60 Soil = 60 lbs.
- ☐ Type C-80 Soil = 80 lbs.

**Depth of Cut*** _____

**Refer to depth certification chart*

**Pipe O.D.** _____

**Pipe Length** _____

**Bucket Width** _____

**Machine Size** _____

### Depth of Cut

- Depth of Cut starts top of grade to bottom of excavation
- If sloping is used with trench shields, slope must start 18 in. below top of the shield

### Machine Lift Capacity

- Lift capacity should be 1.5 times the shield weight at 20 ft. radius at grade
- Alternatively, a machine may handle approx. 20 percent of it's weight

### Calculating Depth Rating

- Ratings are based upon temporary loading conditions
- Surcharge loads of 72 psf are included in the tabulated data

### Depth rating using Shield Capacity (PSF), e.g. 1,200 lbs.

- Type B Soil: 1,200 / 45 = 27 ft.
- Type C-60 Soil: 1,200 / 60 = 20 ft.
- Type C-80 Soil: 1.200 / 80 = 15 ft.

### Width & Length of Shield

Contact your local dealer or factory representative to discuss specific shoring requirements.

### No soil is Type "A" if:

- It is fissured
- It is subject to vibration
- It has been previously disturbed
- It is part of a sloped, layered system which dips into the excavation on a slope of four horizontal to one vertical [4H:1V] or greater
- It is subject to other factors requiring classification as less stable

### Type "B" Soil:

- Cohesive soil with unconfined compressive strength greater than 0.5 tons per square foot (tsf). but less than 1.5 tsf.
- Granular cohesion-less soils, e.g., gravel, silt, silt loam, sandy loam
- Type "A" fissured or subject to vibration
- Unstable dry rock
- It is part of a sloped, layered system which dips into the excavation on a slope less steep than 4H:1V, but only if the material would otherwise be classified as Type "B"

### Type "C" Soil:

- Cohesive/non-cohesive soils with unconfined compressive strength of 0.5 tsf or less
- Granular soils including gravel, sand, and loamy sand
- Submerged soil or soil from which water is freely seeping
- Submerged rock that is not stable
- Sloped, layered system which slopes into an excavation at an angle of 4H:1V, or steeper