

How to Size a Trench Shield

Soil Classifications, Calculating Depth Ratings, and Sizing a Shield

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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