

How to Order a Trench Shield

Soil Classifications, Calculating Depth Ratings, and Sizing a Shield

Depth of cut* _____

Soil conditions* _____

Type A (25#) _____

Type B (45#) _____

Type C-60 (60#) _____

Type C-80 (80#) _____

Hydrostatic _____

*see depth certification chart

Outside Pipe Diameter _____

(Shield should be a minimum of 12 in. wider than the pipe)

Pipe Length _____

(Shield should be 2 to 4 ft. longer than the pipe)

Bucket Width _____

(Inside shield: 12 in. less than shield)

Machine Lift Capacity _____

(1.5 times shield weight at 20 degrees radius or as a rule of thumb.

The shields weight should not exceed 60% of the machines lift capacity)

The following will explain how to determine the specifications listed above.

How to determine depth of cut:

- Slope must start 18 in or 1 1/2 ft. below the top of the Shield.

How to determine the width of a trench shield:

- Trench Shield width determined by Outside Diameter (OD) of the pipe or the OD of the excavator bucket
- Allow 6 in. of clearance on each side of pipe bell
- Shield should be a minimum of 12 in wider than the excavator bucket OD

How to determine the length of a trench shield:

- Inside length clearance of pipe is approximately 2 ft. less than the overall length of the shield
- Shield must be 2 to 4 ft. longer than the pipe

How to determine machine lift capacity:

- Lift capacity is 1.5 times the shield weight at 20 ft. radius at grade.

Calculating Depth Ratings:

- PSF ratings and depths are based on temporary loading

Lateral pressure per foot of depth:

Type "A" Soil= 25 lbs.

Type "B" Soil= 46 lbs.

Type "C-60" Soil= 60 lbs.

Type "C-80" Soil= 80 lbs.

Depth rating using shield capacity (e.g. 1200 lbs):

1200 / 25 = 48 ft.

1200 / 45 = 27 ft.

1200 / 60 = 20 ft.

1200 / 80 = 15 ft.

No soil is Type "A" if:

- It is fissured.
- It is subject to vibration.
- It has been previously disturbed.
- It is part of 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 classifications 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 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 or 4H:1V, or steeper

