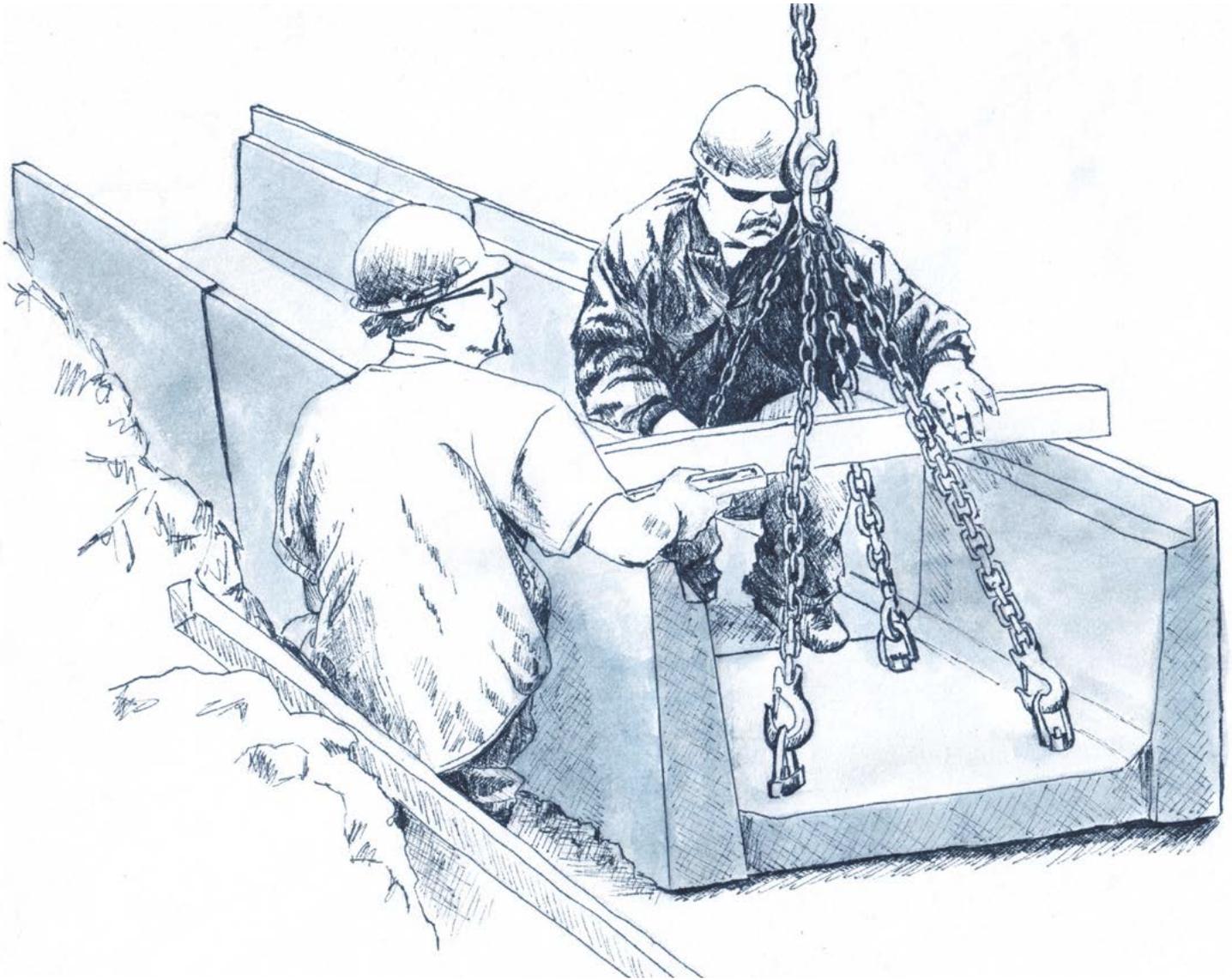


CONCAST

Fibercrete®

PRECISELY ENGINEERED HIGH STRENGTH CONCRETE



TRENCH SYSTEM INSTALLATION GUIDELINES



Trench Installation Guidelines

The following guideline is provided to assist in the installation of the Concast Trench System. Please read through the guideline in its entirety before beginning the installation.

Step 1: Site Preparation

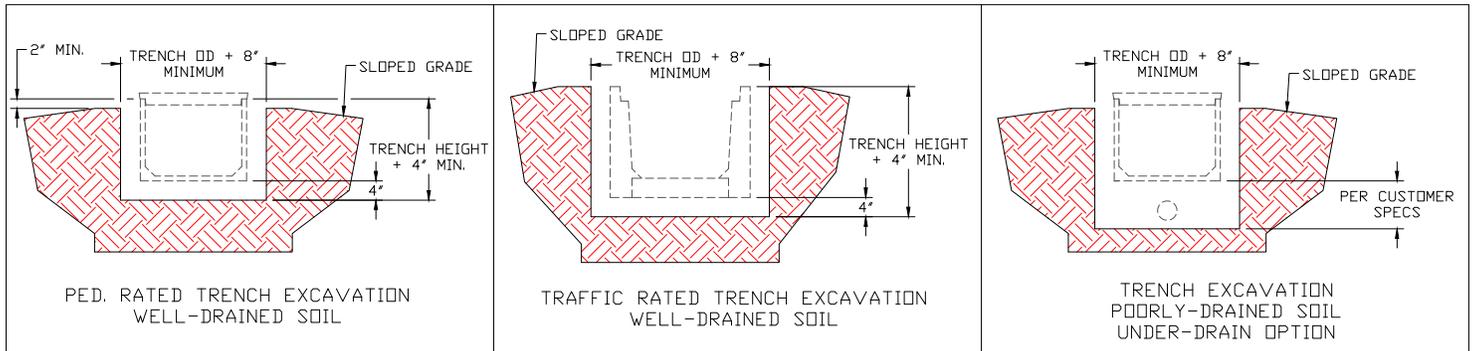
The yard and pavement adjacent to the trench should slope away from the trench to result in positive drainage. Additionally, the trench should slope away from control houses and utility buildings to provide positive drainage away from these buildings. Review project documents and plans. If a specific trench under-drain or drainage system design is included in the documents & plans, ensure that the installation includes all aspects of that design. Often these under-drains will tie into concrete structures and have specific slopes called out. This work must be completed before the installation of the trench product. If the project does not include specific documents and plans related to the trench product under-drain, then this installation document will govern.

Step 2: Layout

Using the drawings provided by Concast, lay out the proposed trench run on the ground using marking paint and/or a string line.

Step 3: Excavation

Referencing Concast's drawings, determine the outside dimensions on the trench product. Excavate an opening in the ground that is at least 8 inches wider than the trench product. If specified, excavate and install an under-drain in accordance with the plans and/or contract documents. If an under-drain is not specified, excavate 4 inches below the bottom surface of the trench product.

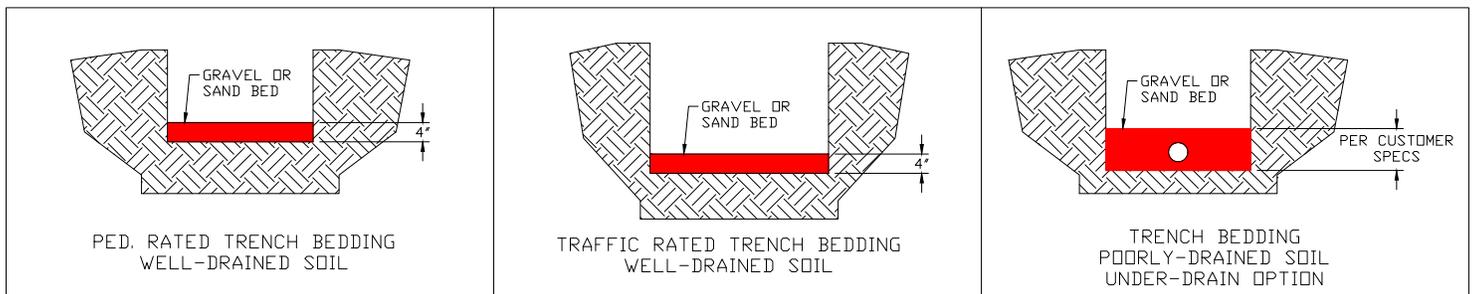


Step 4: Inspection

Inspect the soil on the bottom and sides of the excavation. Remove any organic or other unsuitable materials as directed by a soils engineer. Verify the soil has the required bearing strength for the selected trench per Concast drawings. If the native soil contains fine silts and/or clay, place a geotextile filter fabric on the sides and the bottom of the excavation.

Step 5: Bedding

Install a bed of granular free-draining sand or soil at least 4" thick in the bottom of the excavation. #57 stone or other material that is recommended by the soils engineer may be used for the bedding. All bedding material is to be well compacted and flat prior to installation of the trench. Using the drawings provided by Concast, verify that the top of the bedding is at the correct elevation to allow the top of the trench to be flush with the adjacent ground surface. Reference soil bearing pressure charts next page to ensure that the proper bedding material is used.



Soil Bearing Pressures



Soil Bearing Pressures for Open Bottom Straight Standard Channels		
Open Bottom Inside Widths	H-20 Rated	H-40 Rated
6"	3500 PSF	7000 PSF
10"	3000 PSF	5500 PSF
12"	3000 PSF	5500 PSF
20"	3000 PSF	4000 PSF
24"	3000 PSF	3500 PSF
30"	3000 PSF	3000 PSF
40"	3000 PSF	3000 PSF
50"	3000 PSF	3000 PSF

Soil Bearing Pressures for Solid Bottom Straight Standard Channels		
Solid Bottom Inside Widths	H-20 Rated	H-40 Rated
6"	3500 PSF	7000 PSF
10"	3000 PSF	5000 PSF
12"	3000 PSF	5000 PSF
20"	3000 PSF	3500 PSF
24"	3000 PSF	3000 PSF
30"	3000 PSF	3000 PSF
40"	3000 PSF	3000 PSF
50"	3000 PSF	3000 PSF

Soil Bearing Pressures for 22.5 Degree Angled Channels		
Solid Bottom Inside Widths	H-20 Rated	H-40 Rated
6"	3500 PSF	7000 PSF
10"	3000 PSF	5500 PSF
12"	3000 PSF	5500 PSF
20"	3000 PSF	5500 PSF
24"	3000 PSF	5500 PSF
30"	3000 PSF	5500 PSF
40"	3000 PSF	5500 PSF
50"	3000 PSF	5500 PSF

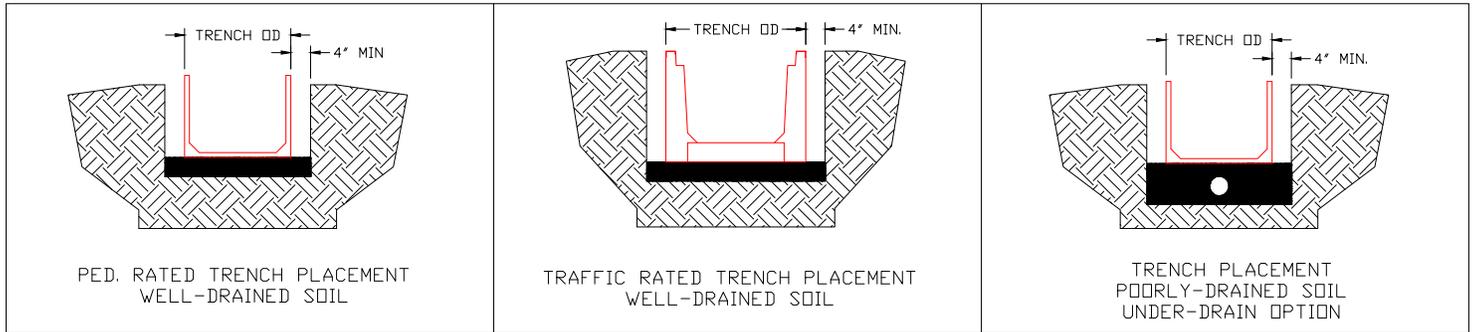
Soil Bearing Pressures for 45 Degree Angled Channels		
Solid Bottom Inside Widths	H-20 Rated	H-40 Rated
6"	3500 PSF	7000 PSF
10"	3000 PSF	5500 PSF
12"	3000 PSF	5500 PSF
20"	3000 PSF	5500 PSF
24"	3000 PSF	5500 PSF
30"	3000 PSF	5500 PSF
40"	3000 PSF	N/A
50"	3000 PSF	N/A



Trench Installation Guidelines

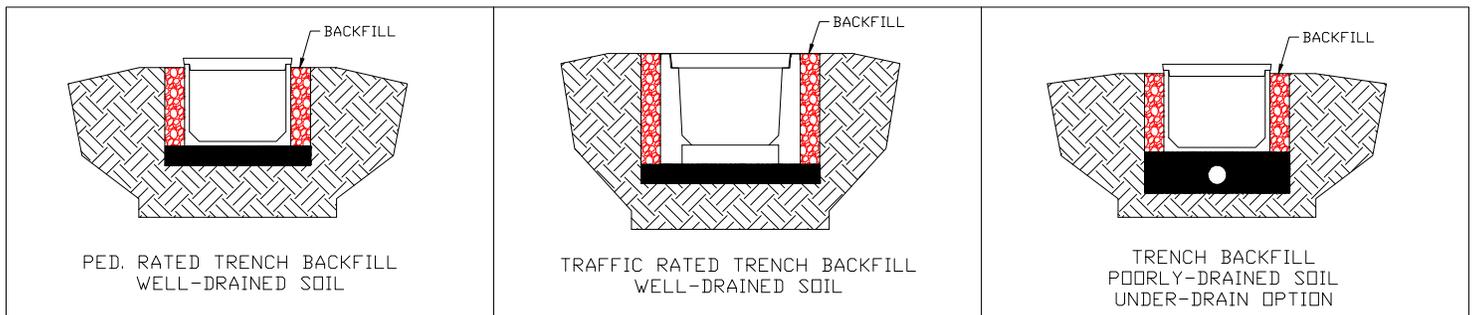
Step 6: Trench Placement

Each trench part is labeled and should be placed as shown in the drawings by Concast. Some channels are light enough to be set by hand. Lift heavier sections with a 4-way lifting chain (P/N: 9003) and swivel hoist rings (P/N: 9002). The rings can be installed via the cast-in lifting inserts. The swivel hoist ring needs to be fully seated into the cast-in lifting insert prior to lifting. Start at one end of the trench run, and work towards the other end by placing one section at a time. The end of each trench section is keyed male or female. Place the trench section into the excavation such that the male end of one trench abuts the female end of the adjacent trench. Install endplates on the last section of the trench as shown in the Concast drawings.



Step 7: Backfill

Place the spreader boards or trench covers on top of each trench section. If provided, neoprene bearing pad should be installed prior to placing the covers onto the trench channels (see details in step 8). **Covers should be placed so that they do not span any joints in the trench.** Backfill the excavation adjacent to the trench walls with a granular free-draining material such as #57 stone. The backfill material, once properly compacted, should have a unit weight of 120 pcf or less and an internal friction angle of 30 degrees for more.



A bed of coarse rock is recommended to bring the yard up to final grade. The final grade must be maintained flush with the top of the road crossing sections. At high frequency traffic areas, the earth should be well compacted. A cement slurry or a concrete apron is also recommended. This will reduce impact loading and possible chipping and cracking on the edges of channels.

Traffic rated trench products are intended to support standard AASHTO truck loadings with highway tires inflated to 80 psi. Some construction equipment's tires do not conform to standard AASHTO guidelines. During construction, if non-conforming tires are to be traversed over the trench system; the axle load must be equal to or less than the specified design load for the trench system, and have a 3/4" steel plate placed over the trench system to help distribute the load.

Step 8: Optional Accessories

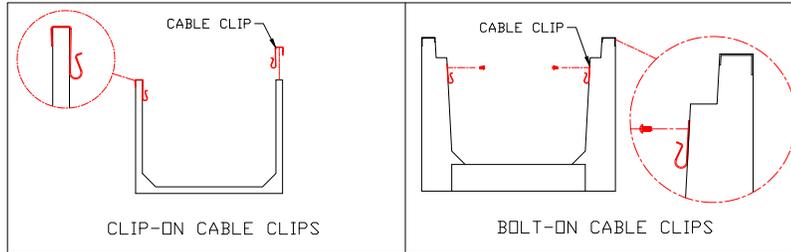
Joint Sealant: Seal joints between the trench sections using polyurethane caulk such as Vulkem (Concast part number 8004) to reduce the amount of moisture and fine particles entering the trench.

Neoprene Bearing Pad: If neoprene bearing pad has been included, it should be installed onto the cover ledge prior to cover installation. This is done to provide additional protection to the channel cover ledge and to the cover itself on projects with a higher volume of traffic. This neoprene pad comes standard on projects with 6.5" thick H-40 rated covers.

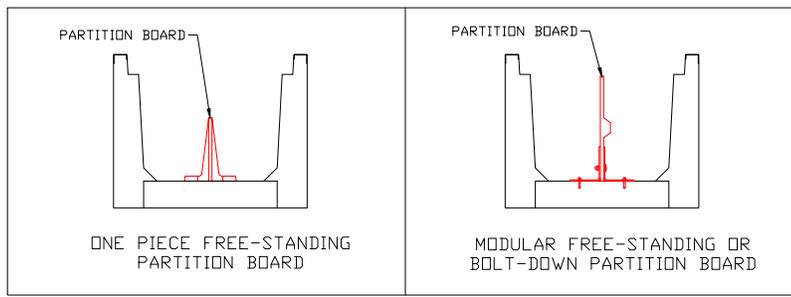


Trench Installation Guidelines

Cable Clips: If cable clips are included with the order, they should be installed by hanging them over the top of the channel at the provided notches (clip-on style - standard and PT pedestrian channel). Or, they should be installed with hardware provided (bolt-on style - flush pedestrian and traffic rated trench).



Partition Board: If partition boards are included with order, they should be installed by either placing into base of the channel (free-standing type), or installed with the hardware provided at the desired location (bolt-down type).



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Fibercrete® Trench System