



GRP Trench Drain Installation Guide



April 25, 2022

1. Preparations

- **Check all components required for the installation.**

Check all components are correct and on hand for your channel section trench layout and installation including:

- | | |
|---|--|
| <input type="checkbox"/> Channels | <input type="checkbox"/> Universal End/Outlet Caps |
| <input type="checkbox"/> Grates | <input type="checkbox"/> Catch Basin & Sediment Bucket (if required) |
| <input type="checkbox"/> Bottom Outlet (if required) | |
| <input type="checkbox"/> Installation Devices (2 per meter) | |

- **Tools and layout materials required:**

- | | |
|---|---|
| <input type="checkbox"/> #4 or #5 Rebar or All-Thread | <input type="checkbox"/> Measuring Square/Marketing Tools |
| <input type="checkbox"/> Nuts & Washers | <input type="checkbox"/> Phillips Screwdrivers |
| <input type="checkbox"/> Caulking Gun | <input type="checkbox"/> Pliers |
| <input type="checkbox"/> One Part Polyurethane Sealant | <input type="checkbox"/> Shovel |
| <input type="checkbox"/> Concrete Vibrator | <input type="checkbox"/> String-line |
| <input type="checkbox"/> Hammer | <input type="checkbox"/> Tie Wire (for rebar), if necessary |
| <input type="checkbox"/> Jig Saw or Plastic Saw | <input type="checkbox"/> 4" Angle Grinder and Blades |
| <input type="checkbox"/> Level or Laser Line | |
| <input type="checkbox"/> Metric & Imperial Socket Set w/ Drive Wrench | |

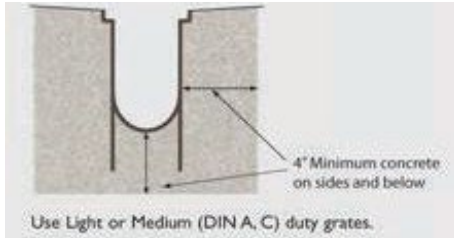
Site Prep:

Excavate the ground to allow the clearance for concrete placement according to the slab design. Typically, a string line is used to establish the top edge of the elevation of the finished slab. When channels are placed, they should be set approximately 1/8 inch below the finished floor elevation.

2. Excavate the trench

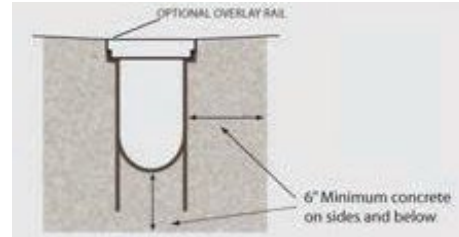
Prepare the trench for the GRP Channel with appropriate concrete-surround by load class as detailed by the Engineer on record:

Light and medium duty



Use Light and Medium (DIN A, B, C) duty grates

Heavy and special duty



Use Heavy and special (DIN E) duty grates.

These are suggestions only and are to be confirmed by the Engineer's concrete surround detail.

LOAD CLASS	EACH SIDE-MINIMUM	DEPTH BELOW-MINIMUM
CLASS A	4.00" (102mm)	4.00" (102mm)
CLASS B	4.00" (102mm)	4.00" (102mm)
CLASS C	6.00" (153mm)	6.00" (153mm)
CLASS D	8.00" (204mm)	8.00" (204mm)
CLASS E	8-10" (204-254mm)	8-10" (204-254mm)

****Recommendations for asphalt installation is to incase the drain in the concrete (see above) and about the concrete with the asphalt. ***add drawing***

Recommended Concrete Suggestions

General notes on installation

- Consult with the civil/structural engineer for actual concrete design.
- Concrete to have minimum 28-day compressive strength of 4,000 psi.
- GRP channels to be anchored via rebar/all-thread to prevent flotation.
- Concrete to cure at least 24 hours prior to form removal.
- If required, install waterstops per manufacturer's instructions.

3. Assembly

Always start the layout beginning at the outlet and work from the deepest to the shallowest channel. If a catch basin is utilized, start with the catch basin and work from deep to shallow. If no catch basin is needed, the deepest channel is to be installed and connected to either a bottom or end outlet.

For sloping or non-sloping, the END CAP OUTLET would be attached to the deepest channel section being installed.

- **Catch Basins:**

Locate and install the catch basin. The catch basin should be located near the discharge piping stub in. Choose the outlet on the catch basin that is going to be utilized. Carefully, cut the end portion of the outlet position creating an opening for evacuation. Use a suitable method, such as the MI-FLEX coupling (400, 600, 800), to attach to the discharge piping stub. Place the catch basin into the excavation and support it with cinder blocks to ensure clearance for concrete encasement under the basin. Make sure that it is level and set to the correct surface elevation (1/8" below the finished floor height). Place concrete around the base of the catch basin and let the concrete set. This may take several hours to occur. This will give you a starting point for installing the channels. Run a string line from the top of the catch basin as a guide for your channels. You will notice at each end of the catch basin there is a void that would be filled with either an end cap or filler plates, these filler plates are designed to accept channel number 20, 10 and 0 channels. Start the installation with the channel that will attach to the catch basin. Ensure the arrow on that channel points towards the catch basin. The male (deep end) of the channel will rest on the catch basins filler plate(s), if utilized. See install and pour recommendations for next steps.

- **End Cap Outlet Assembly (PEO):**

End cap outlets are attached to the deep end of the outlet channel. Simply cut the end caps to appropriate channel height and position on channel. Apply appropriate sealant and secure.

- **Channel Assembly:**

All channels have the same exterior profile. The channels provide a 5/8" lap joint to allow for an easy fit with the next sequenced channel either upstream or downstream. Follow the numbers printed on the UPC code stickers on the bottom of each channel to stay in sequence.

- **Multiple Channel Assembly:**

For accuracy of assembly, lay the entire run on the ground next to the area of installation. Make sure every channel is flowing toward the outlet and every channel in the sequence is in the proper order by depth.

- **Sealant:**

Apply the required sealant to the inside of channels, in the sealant groove, only if the Engineer determines it to be a necessity (reference Joint Sealant Guide)

- **Bottom Outlet Position:**

All depth channels have the ability to attach a bottom outlet. The bottom outlet can easily be attached to the channel on the area that is cast to accept the outlet. It is located on the exterior bottom of the channel. The bottom outlet is cut or drilled from the outside to create the outlet hole. The adapter is attached with 2 screws (included) and use sealant if required.

- **Side Inlet/Outlet Assembly:**

Once you have located the side inlet/outlet configuration on the exterior side of the channel, the side connector is positioned and secured with 2 screws (included) and the channel is then cut or drilled to allow for the side outlet to be installed.

- **Directional Change Assembly (if needed):**

There are 3 locations in the GRP system that allow for directional changes utilizing channels designed to achieve directional flow changes. This occurs when there is desire to split the flow direction in one continuous run of channels. Typically this is when there is an outlet at both ends of a long run.

- **Shallow End Cap Assembly:**

Shallow End caps are attached to the shallowest channel at the upstream (female) end. Simply cut the end caps to the appropriate channel height and position on channel. Cut lines are visible on each cap to help with straight cut to allow for appropriate fit of Finish Cap.

4. Install and Pour

Remember, always start the installation beginning at the outlet and work from the deepest to shallowest channel.

- **Place the length of run into the excavation:**

Rebar or all-thread to be located at regular intervals of +/- 19 inches and to be placed in advance of the channels. Rebar/all-thread needs to be driven into the ground until there is enough resistance that they are firmly held in place. The installation devices (REB T1400, T2000 or T3000) should be attached two per channel, until tight over the channels lower profile, push the adjustable slide against the channels lower profile until tight engagement and tighten the screw. Next, starting at the deepest position, place the channel over the 4 rebars designated for each meter of product and adjust to elevation. Tighten the bolts to secure to the rebar. If using all-thread in place of rebar, adjust the nuts on the top and bottom position of the installation devices to appropriate elevation. Additional minor elevation changes may be necessary. Continue this process until the run is completed.

NOTE: If a bottom outlet is to be used, connect the bottom outlet with the two screws (included) and if necessary, use the polyurethane sealant between the outlet and the channel. Before pouring concrete, make sure all end caps are in place. The end caps can either be caulked in place or duct tape can be used to hold them onto the channel ends.

- **To limit GRP trench shifting:**

If not careful, all trenches tend to float when the concrete is poured around them. To minimize floating, an initial concrete pour should be placed up to and above the bottom profile of the channel approximately 1-2 inches on both sides. This would occur in the initial pour to secure the entire length of the run. This will ensure that the channels do not float. A second concrete pour to the finished floor height should be done after the initial pour to prevent a cold joint.

Please ensure the grate seat is protected to prevent concrete or debris entering during the pour. One can place plywood (or pour board) in the grate seat for protection during the concrete pour.

Another purpose of the plywood or pour board is to maintain the grate seat width and to prevent the channels from closing to a dimension that won't allow the grates to be inserted. Ensure plywood or pour board spans the channel joint to aid with alignment.

- **Finish Pour:**

Concrete should always be evenly poured on both sides during the pour. Note: If a concrete vibrator is utilized, use at the discretion of the contractor to prevent concrete segregation.

5. **Finish Clean-Up**

- **Clean-Up Installation:**

After the concrete has set for at least 24 hours, install the grates with ClipFix locking mechanisms. Grate should be aligned to fit the channel and pressured (step-on) into place.

- **Set-Up Time and Loading**

Follow the concrete manufacturers recommendations for the appropriate set-up time and loading.

GRP Trench Drain FAQ

- **WHEN INSTALLING A TRENCH DRAIN, WHICH END DO YOU START FROM?**

Always start at the outlet end with the deepest channel or preferably a catch basin. The male/female profile at the end of the channel makes this an easy process.

- **IF I AM MISSING A CHANNEL NUMBER, WHAT SHOULD I DO?**

The best solution is to call MIFAB or your local distributor to order a replacement channel.

- **IF A SYSTEM SEEMS TO NOT BE GOING TOGETHER, WHAT COULD BE TWO REASONS?**

1. The channels are not in numerical sequence.
2. The arrows showing direction of flow are pointing away from the outlet pipe. This will give the impression that every piece is out by 5/16th of an inch. Turn the system so the arrows point to the outlet to correct this.

- **HOW MUCH CONCRETE SHOULD YOU PUT AROUND A TRENCH DRAIN SYSTEM?**

Always defer to the civil/structural engineer for this guidance.

- **SHOULD YOU PUT THE GRATES IN WHEN YOU ARE POURING THE CONCRETE SURROUND?**

All systems that do not have a frame with cross bars should have something in the top of the channel during installation. This can be either plywood, pour boards or grates wrapped in plastic and turned upside down. Span them across the end of two channels to help with alignment. This also helps keep concrete out of the grate seat area.

- **HOW DO I CONNECT A 4" BOTTOM OUTLET TO AN 8" DRAINAGE PIPE?**

Utilize a 4" to 8" adapter in conjunction with a MIFAB MI-FLEX flexible coupling.

- **SHOULD YOU INSTALL TRENCH ON DIRT OR GRAVEL?**

Never. You should always install trench drain in a concrete surround.

- **WHEN DO YOU USE CATCH BASINS INSTEAD OF BOTTOM OUTLETS?**

Catch basins are always preferred in any installation as they allow unrestricted hydraulic flow from the channel into the catch basin. Catch basins also have more outlet options making it easier to attach to piping. Also, catch basins have a sediment bucket internally that will capture any debris so it cannot enter the piping systems and cause clogging.

- **WHY DO YOU LOCK DOWN GRATES?**

As these systems can take dynamic loads, locking the grates makes the system more integral and aids with longevity. It also deters theft.

- **CAN GALVANIZED GRATES BE INSTALLED WITH STAINLESS STEEL CHANNELS?**

This is not recommended as they are too similar metals. Ductile iron grates can be used with both base materials.

- **WHAT IS THE DIFFERENCE BETWEEN AN EXPANSION JOINT AND A CONTROL JOINT?**

A control joint is the shallow groove you see in a concrete slab. If the concrete cracks, and it will, it is hoped to crack at the control joint. An expansion joint is a material placed in the slab to help absorb expansion and contraction. A full depth expansion joint is highly recommended. It extends from the top of the pour to bottom. These are most often used with slab on grade applications and are located parallel to the trench drain and frequently between 6-18" away from the side of the channel.

- **WHERE SHOULD YOU USE A STAINLESS-STEEL TRENCH DRAIN INSTEAD OF A GRP CHANNEL?**

Stainless steel trench drains should be installed in food preparation, pharmaceutical and other high sanitary areas because of the hygienic benefits of stainless-steel material.

- **WHAT IS THE SLOPE OF THE GRP TRENCH DRAIN SYSTEMS?**

0.5%

- **DO NON-SLOPING CHANNELS DRAIN WATER?**

Yes, non-sloping channels do drain water. They would drain at a slightly slower rate but typically this is not an issue for most applications.

- **DO DUCTILE IRON GRATES RUST?**

Grates are delivered with a temporary coating on them. Over a period, the coating comes off and the grates start to transform into their neutral state. Like a manhole cover they turn a dull brown/black color. This is a "PATINA" finish which is created by the surface oxidation of the iron grate.