



T1400 Install Guide

1. Preparations

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

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

- | | |
|--|--|
| <input type="checkbox"/> Channels | <input type="checkbox"/> Outlets |
| <input type="checkbox"/> Grates | <input type="checkbox"/> Top Finish Caps |
| <input type="checkbox"/> Grate Lock Downs | <input type="checkbox"/> Catch Basin & Sediment Bucket |
| <input type="checkbox"/> Blank Grate Inserts (re-usable) | <input type="checkbox"/> Quick Clips |
| <input type="checkbox"/> End Caps | <input type="checkbox"/> Self-Tapping Screws |

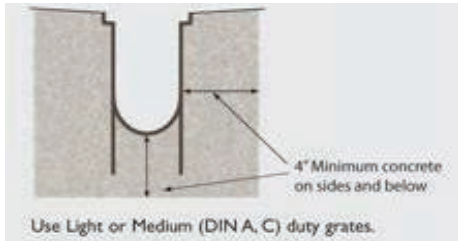
- **Tools and layout materials required:**

- | | |
|--|--|
| <input type="checkbox"/> #3 Rebar or Threaded Rod/nuts | <input type="checkbox"/> Measuring Square/Marketing Tools |
| <input type="checkbox"/> Caulking gun | <input type="checkbox"/> Philips Screwdrivers |
| <input type="checkbox"/> Caulk | <input type="checkbox"/> Pliers |
| <input type="checkbox"/> Concrete vibrator | <input type="checkbox"/> Shovel |
| <input type="checkbox"/> Hammer | <input type="checkbox"/> String-line |
| <input type="checkbox"/> Jig Saw or Plastic Saw | <input type="checkbox"/> Tie Wire (for rebar) |
| <input type="checkbox"/> Level or Laser Line | <input type="checkbox"/> Wrenches/14mm socket
(req. for Hex. bolt type grate lockdowns) |

2. Excavate the trench

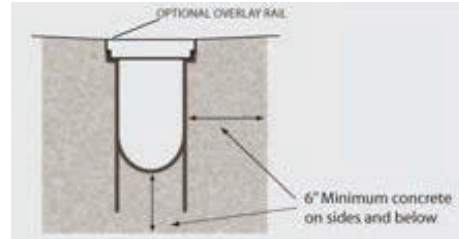
Prepare the trench for the T1400 with a minimum concrete-surround by load class:

Light and medium duty



Use light or medium (DIN A, C) duty gratings

Heavy and special duty



Use Medium or Special (DIN,C,E) duty gratings. Overlay rail required for special duty. If used for special duty, grate must be secured to Overlay Rail by bolts at each corner.

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)

*Installations in asphalt require the same concrete encasement for LOAD CLASS.

Recommended Concrete Plan- T1400

General notes on installation

- Concrete to have minimum **28 day** compressive strength of 3,000 psi.
- Concrete to be vibrated in place to eliminate entrapped air on all sides and bottom.
- T1400 channels to be anchored via rebar to prevent flotation.
- Concrete to cure at least **24 hours** prior to form removal.
- If required, install waterstops per manufacturer's instructions at least 3 inches below concrete surface.
- Waterstops and elastomeric joint sealants to be inspected and repaired on a regular basis.

3. Assembly

A. OUTLETS: Start the trench layout from the **LOWEST** point to the **HIGHEST** point of area. The section containing the **outlet** will be your starting channel: The flow arrows on the channel always point towards the outlet end.

For **CONTINUOUS FALL** – the **END CAP OUTLET** would be assembled to the highest numbered channel section being installed.

For **STEPPED FALL** – the **END CAP OUTLET** would be assembled to the highest numbered Neutral channel section being installed.

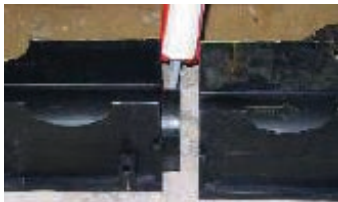
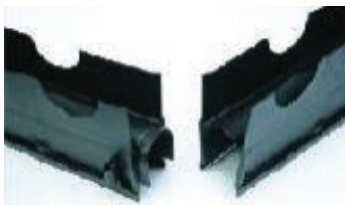
For **NO SLOPE/NEUTRAL** – the **END CAP OUTLET** would be assembled to the highest numbered neutral channel section being installed.



End Cap Outlet Assembly:

End cap outlets are fastened to any channel downstream **male** end with our mechanical quick clip. Simply cut the end caps to appropriate channel height and position on channel making sure to cut low enough to accommodate the top finish cap. Clip together by sliding the quick clip over the mounting brackets. Apply appropriate sealant on tongue and recessed area! (See Page 7 for end cap measuring and cutting).

B. CHANNEL ASSEMBLY:



Channel Assembly:

All 19 channels have the same exterior profile. The channels are all tongue and recess to allow for an easy fit with the next sequenced channel either upstream or downstream. Follow the flow arrows on the bottom of each channel and reference each channel number to stay in sequence.

Sealant:

Apply the required sealant to the tongue and recess of each channel.

3. Assembly - Continued



Install Quick Clips:

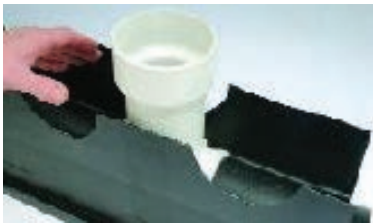
The quick clip (inset) performs a mechanical lock to secure each channel together. Each channel provides a slide groove that matches up with the attaching channel allowing the quick clip to lock the channels together. (The quick clip is also used on the various end caps).



Assemble Multiple Channels:

For greater ease and robust assembly the entire length of run can be pre-assembled with the quick clips, grate lock downs, blank grate inserts, end caps and outlet components prior to inserting into the trench.

C. BOTTOM OUTLETS



Bottom Outlet Position:

Bottom outlets can be installed on any channel. Simply locate the lowest point on the pre-sloped channel, mark the hole and drill out with 3" hole saw. We recommend using self-tapping screws for mounting along with a sealant. The bottom outlet has bosses that flush out against the channel legs to tap into.

(See Section C. Figure 1-8) for same channel gender-mending bottom outlet connections!

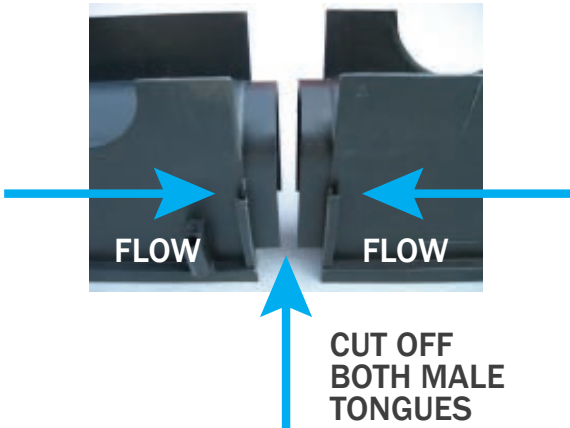


Bottom Outlet Assembly:

Once you have positioned the outlet, use 1/2" #8-10 self-tapping screws. The outlets have side bosses that flush out against the channel walls/feet. Tap (2) screws through the outside of the wall into the boss areas on each side of the outlet.

3. Bottom Outlets - Continued Gender-Mending of Channel Sections

FIGURE 1



Connect two of the same part body numbers for center bottom outlet by simply:

FOR DOWNSTREAM.

1. Cutting off the **Male Tongue** from each channel. (See Figure 1-8/STEPS 1-8)
2. Apply appropriate sealant in joint area. (Figure 7)
3. Clip together with (2) quick clips. (Figure 3)

FOR UPSTREAM.

1. Form upstream connection by just clipping **Female Ends** together with (2) quick clips.
2. Apply appropriate sealant in joint area.

Special Note: Channels for both upstream and downstream connections need to be the same part body number. Neutral channels are normally recommended for these connections, but two of any part body numbers can be connected. (See Figure's 1-8 below)



FIGURE 2

STEPS 1 & 2 Cut & Deburr: (Downstream):

Remove both male tongues (with a suitable saw) by cutting them off flush to the quick clip tab end faces and deburr for any sharp edges and loose material. (See Figure's 1 & 2).



FIGURE 3

STEP 3 Install Quick-Clips (2):

Butt together the (2) previously cut channel ends and install the (2) quick clips to secure!
A hammer may be required to tap down the quick clips.



FIGURE 4:

STEP 4 Mark for Center and Cut 3" Hole:

Measure for the center of the channel section at the joint and cut out using a 3" hole saw.

3. Bottom Outlets - Continued Gender-Mending of Channel Sections

FIGURE 5



Step 5: Deburr All Sharp Edges

Remove all sharp edges and debris around the hole. (Rough grit sandpaper does a great job of this)

FIGURE 6



Step 6: Position the Bottom Outlet

Position the bottom outlet on center, measure and mark for the locations of the suggested 1/2" long #8-10 Self-tapping screws. (Self drilling screws can also be used). The bottom outlets have side bosses on both sides to pilot drill and Tap/screw into. (See Figure's 6 & 7).

FIGURE 7



Step 7: Apply a Sealant and Fasten

Apply a suitable sealing caulk to the Bottom outlet and channel sealing faces and fasten both sides to secure. Apply additional sealant to any gaps that may be evident in the channel sides near the quick clips. (See Figure 7).

FIGURE 8

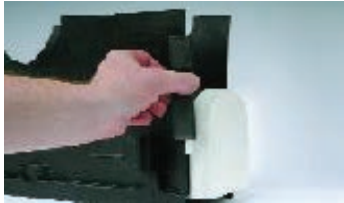


Step 8: Clean-Up to Complete

Wipe off any excess sealant. The connection task of the bottom outlet is now completed.

3. Bottom Outlets - Continued

D. STARTING END CAPS



Starting End Cap Assembly:

Starting end cap outlets are fastened to any channel upstream end with our mechanical quick clip. Simply cut the end caps to appropriate channel height and position on channel making sure to cut end low enough to accommodate top finish cap. Clip together by sliding the quick clips over the mounting brackets.



Measuring End Caps:

To measure for end cap fit, slide end cap into tongue and recess portion of the channel the end cap is being assembled to. Mark the end cap level with the grate ledge! (Not the Top of the channel). **For overlay rail applications: measure and cut to suit the extra depth of rail.**



Cutting End Cap:

After appropriate measurements are completed, mark across the face of the end caps. Cut lines are visible on each end cap to help with straight cut to allow for appropriate fit of Finish Cap. Cut along appropriate line with saw.



Grate Lock Downs and Blank Grate Inserts:

Optionally for extra rigidity you can install the grate lock downs and blank grate inserts before placing your T1400 channel section assembly in the prepared trench.

Figure 9 Shows the installed Grate Lock down in place (before pour) and the Blank Grate Insert (reusable) which is offset to the T1400 channel's joints.

FIGURE 9

4. Install and Pour



FIGURE 10

A. Place the pre-assembled length of run into your trench:

- Figure's 10 and 11 show all blank grate inserts in place and offset staggered to channel joints for extra rigidity during pour. (You can install outside the trench if desired). **Ensure that all Grate Lock Downs are in place before pouring concrete! They cannot be installed later!** (See Figure 9 on Page 7).
- Insert rebar into the integral ears, drive rebar into the ground about 6" to 12" inches or until firmly held in place. (See Figure 12)
- Set the T1400 trench to desired grade level and align for straightness and secure with tie wire. (Adjust nuts if using Threaded Rod Method.)
- Connect to all Planned drainage fittings.

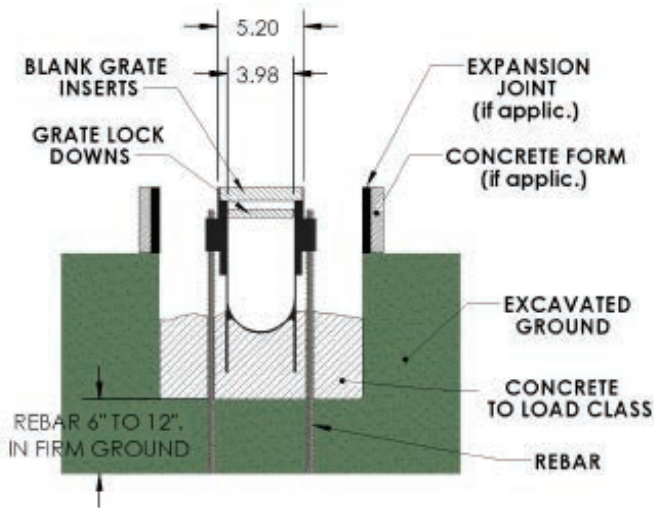


FIGURE 12

B. To limit T1400 trench shifting:

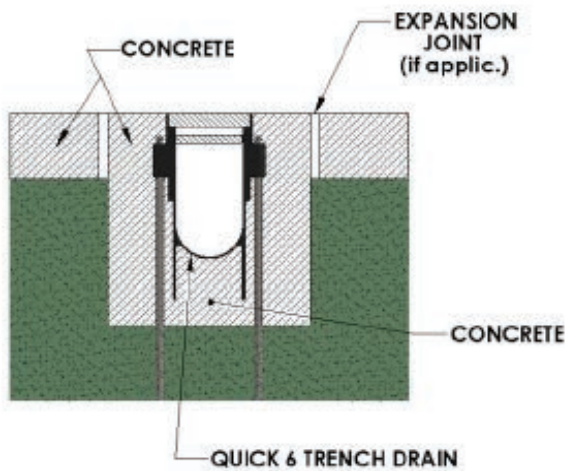
First, pour concrete to cradle around the rebar or threaded-rod, supports and under the trench through the side-skirt cut-outs to minimize shift of the trench-run. Repeat for each pair of trench channels.

OFFSET THE BLANK GRATES TO THE CHANNEL JOINTS



FIGURE 11

4. Install and Pour - Continued



C. Finish Pour:

Finish pour evenly to prevent the trench from shifting! Vibrate the concrete to remove any trapped air bubbles.

5. Finish Clean-Up



A. Clean-Up Installation:

After the concrete has set for at least **24 hours**, Remove the blank grate Inserts and install the actual grates being used. Securely fasten the grates using a Posi-Drive screwdriver or a 14mm socket for hex bolt type grate lock downs.

B. Set-Up Time and Loading

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