



T1400 - INSTALLATION GUIDE

1 PREPARATIONS.

A) CHECK ALL COMPONENTS REQUIRED FOR THE INSTALLATION.

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

CHANNELS (correct sections for your layout)
GRATES (+ Frames if applicable.)
GRATE LOCK DOWNS
PVC COVER BOARDS (Optional & Re-usable)
END CAPS
OUTLETS
TOP FINISH CAPS
CATCH BASIN & SEDIMENT BUCKET (if applicable.)
BODY CLIPS (for Securing Channels, Outlets and End caps.)
SELF-TAPPING SCREWS (for all Bottom Outlets.)

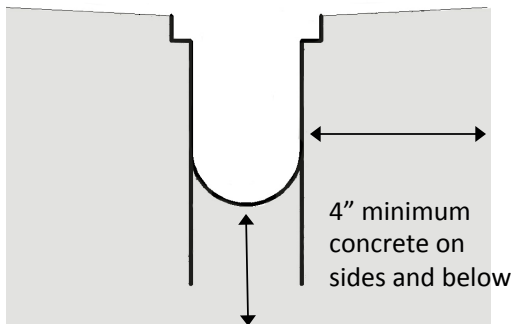
B) TOOLS AND LAYOUT MATERIALS REQUIRED.

- ◆ #3 Rebar or All-thread Rod/nuts/washers
- ◆ 3" Hole Saw & Centering Drill (Req. for Bottom Outlets)
- ◆ Adhesive (For Top Finish Caps)
- ◆ Caulking gun
- ◆ Caulk
- ◆ Concrete vibrator
- └ Hammer
- └ Jig Saw or Plastic saw
- └ Level or laser line
- └ Measuring Square and marking tools
- └ Philips screwdrivers
- └ Pliers
- └ Shovel
- └ String-line
- └ Tie wire (for rebar)
- Wrenches/14mm Socket (req. for Hex. Bolt type grate lockdowns)

2 EXCAVATE THE TRENCH

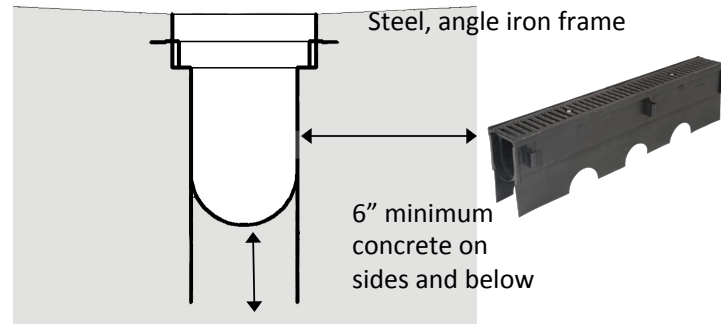
Prepare the trench for the **T1400** with a minimum concrete-surround by load class:

LIGHT AND MEDIUM DUTY



Use **Light or Medium (DIN A, C) duty** grates.

HEAVY AND SPECIAL DUTY



Use **Medium or Special (DIN C, E) duty** grates.

Steel, angle iron frame required for special duty. If used for special duty, grate must be secured to steel, angle iron frame.

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 water-stops per manufacturer's instructions at least 3 inches below concrete surface.
- Water-stops 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 Body 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 Body Clip over the mounting brackets. **Apply appropriate sealant on tongue and recessed area! (SEE PAGE 7 For End Cap measuring, cutting and End Caps for when using Bottom Outlets).**

Finish Caps Assembly:

All Starting and Ending End Caps are fitted with Top Finish Caps (Black caps) after cutting end caps to appropriate channel heights. Top Finish Caps fit multiple positions by simply cutting the appropriate inside tabs. They push on for a snug fit but use adhesive if necessary.

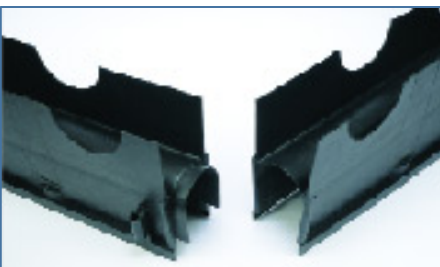


Top Finish Cap.

B. CHANNEL ASSEMBLY:

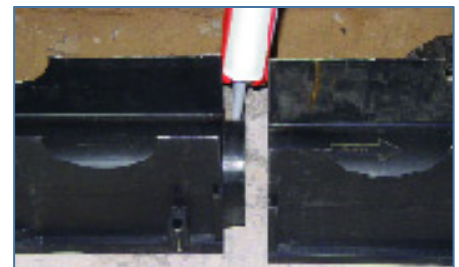
Channel Assembly:

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.



T1400 - INSTALLATION GUIDE

3 ASSEMBLY – Continued.



Install Body Clips:

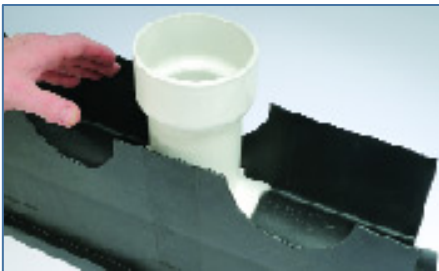
The Body Clip (inset) performs a mechanical lock to secure each channel together. Each channel provides a slide groove that matches up with the attaching channel allowing the Body Clip to lock the channels together. (The Body Clip is also used on the various End Caps).



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. FIG.1 thru. 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.

T1400 - INSTALLATION GUIDE

C. BOTTOM OUTLETS: Cont. Gender-Mendering of Channel Sections.

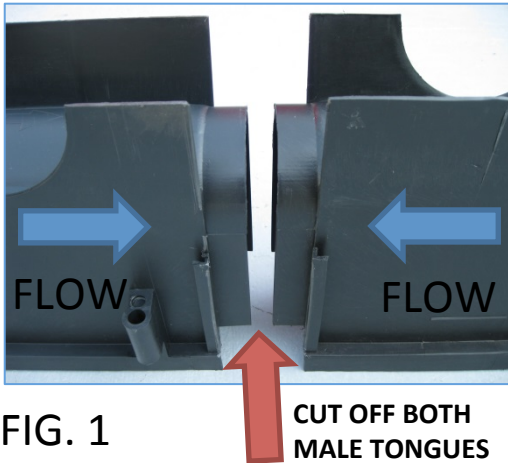


FIG. 1

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 FIG.1-8/STEPS 1-8)
- 2) Apply appropriate sealant in joint area. (FIG.7)
- 3) Clip together with (2) Body Clips. (FIG.3)

FOR UPSTREAM.

- 1). Form Upstream connection by just clipping FEMALE ENDS together with (2) Body 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 FIG's 1 thru. 8 Below).



FIG.2

STEPS 1 & 2. Cut & De-burr: (Downstream)

Remove Both Male tongues (with a suitable saw) by cutting them off flush to the Body Clip tab end faces and de-burr for any sharp edges and loose material. (See FIG's 1 & 2).



FIG.3

STEP 3. Install Body Clips (2):

Butt together the (2) previously Cut Channel Ends and install the (2) Body Clips to secure!

A hammer may be required to Tap down the Body Clips.



FIG.4

STEP 4. Mark for Center & Cut 3" Hole:

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

T1400 - INSTALLATION GUIDE

C. BOTTOM OUTLETS: Cont. Gender-Mendering of Channel Sections.



FIG.5

STEP 5. De-burr All Sharp Edges:

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



FIG.6

STEP 6. Position the Bottom Outlet:

Position the Bottom Outlet on center, measure and mark for the locations of the suggested ½" 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 FIG's 6 & 7).

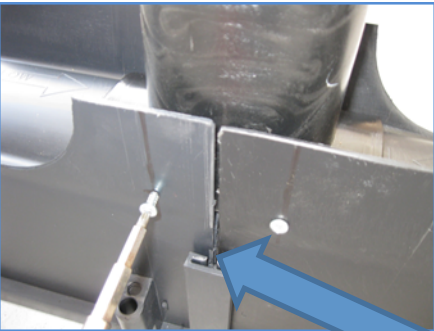


FIG.7

STEP 7. Apply a Sealant & 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 Body Clips. (See FIG.7).



FIG.8

STEP 8. Clean-Up to Complete:

Wipe off any excess sealant.
The Connection task of the Bottom Outlet is now completed.

T1400 - INSTALLATION GUIDE

3 ASSEMBLY – Continued.

D. STARTING END CAPS:



Starting End Cap Assembly:

Starting end cap outlets are fastened to any channel upstream end with our mechanical Body Clip. Simply cut the end caps to the appropriate channel height and position on the channel making sure to cut end low enough to accommodate the Top Finish Cap. Clip together by sliding the Body Clips over the mounting brackets.



End Caps measuring:

To measure for end cap fit, slide end cap into the 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!



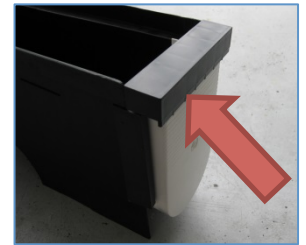
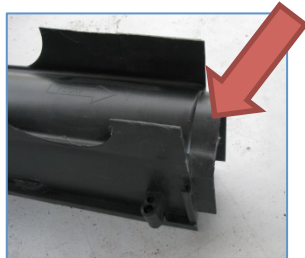
End Cap cutting:

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.

FOR CHANNEL ENDING WITH BOTTOM OUTLETS:

Please see the below four photos.

- A. Remove the 1" Male Tongue and de-burr.
- B. Follow same steps as End Caps measuring and cutting above.
- C. Apply sealant to tongue and Secure with Body Clips. Glue on Cap.



Grate Lock Downs and PVC Cover Boards:

Optionally for extra rigidity you can install the Grate Lock downs and PVC Cover Boards before placing your T1400 Channel section assembly in the prepared trench!

FIG.9 Shows the installed Grate Lock down in place (before pour) and the 4.980" wide PVC Cover Board/s (reusable) which is offset to the T1400 channels joints.

4 INSTALL & POUR



FIG. 10

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

FIG's. 10 & 11 Shows all PVC Cover Boards in place and offset staggered to the Channel joints for extra rigidity during pour. (You can Install outside the trench if desired). Install any steel angle iron frames. (if applicable).

Ensure that all Grate Lock Downs are in place before pouring concrete! They cannot be installed later!

(See FIG.9 on Page 7).

Insert rebar or All-thread into the Integral Ears, drive into the ground about 6" to 12" inches or until firmly held in place. (See FIG.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.

B. To limit T1400 trench shifting:

1st 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.

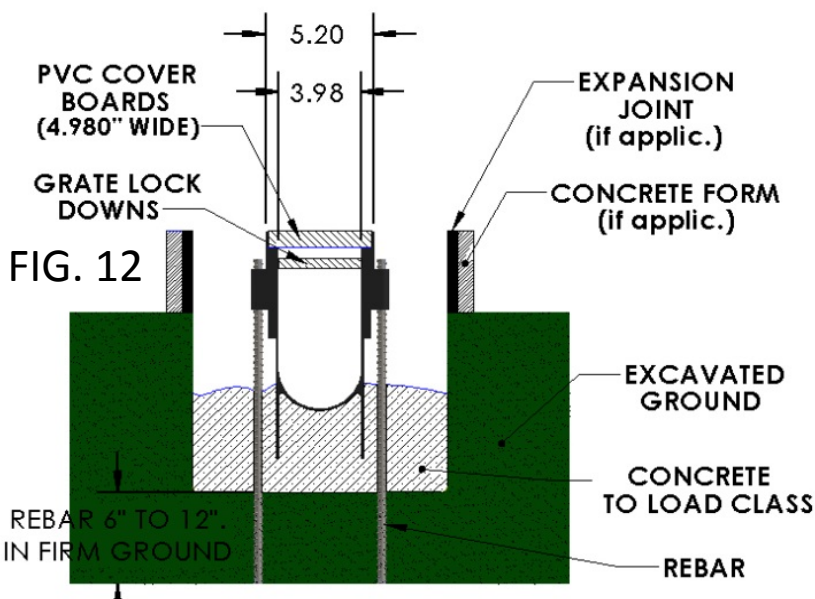


FIG. 12

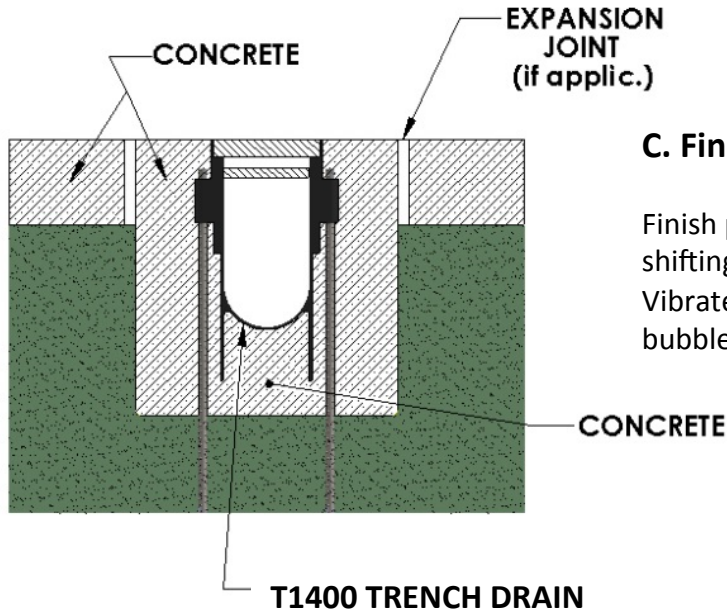
**! Offset the PVC Cover Boards to the channel joints .
(Cover boards also fit steel angle iron frames)**



FIG. 11

T1400 - INSTALLATION GUIDE

4 INSTALL & 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 the 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.

