

# WATTS POLYCAST®

Installation Guide for 600 and 800 Series Trench Drain Systems



## Installation Hints

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- Lay POLYCAST® channels alongside the excavation prior to placement.
- Excavate to ensure at least 4" of concrete (or amount equal to slab thickness, whichever is greater) under all POLYCAST® channels.
- Make the proper piping connections on the catch basin after it is supported in the excavation and then pour the bedding concrete.
- Remove all cutouts by predrilling the cutouts, spacing the holes as close as possible, then use a cold chisel to remove the bridges between the holes.
- Begin the installation at the discharge (deepest) end of each run (i.e. highest numbered channels) and proceed upstream.
- Set the channel using POLYCAST® Installation Chairs (Part No. DA0633).
- Caulk the joints with appropriate sealant if corrosive solutions will be carried in the channels.
- POLYCAST® grates must be in place during concreting (remember to cover the grates first to ease cleanup and ensure easy removal of grates).
- Be sure to secure the channels to prevent "floating" during concrete placement.
- Do not utilize the POLYCAST® channels as expansion, control or construction joints and do not groove the concrete next to the channel.
- Stagger grates across channel joints to aid in channel alignment.
- For sanitary sewer conditions, the channels may be edge sealed with an appropriate semi-rigid epoxy or polyurethane joint filler. Filler must be installed in such a way as not to leave the edge of the channels unsupported against the traffic.
- Prolonged exposure to ambient, service or surface temperatures of 120°F or greater requires the use of vinyl ester channels.



### **POLYCAST® Presloped Trench Drain is easy and economical to install!**

- For new construction
- Industrial/commercial retrofit
- Eliminates the need for expensive and time consuming on-site forming
- Results in reduced labor cost and downtime

A positive slope built into the channel sections ensures proper drainage. Pipe connections are easily made with the use of the built-in pipe cutouts, drain end caps and catch basins. The following photographs and installation methods will assist you in completing your POLYCAST® installation quickly and easily.

**SPECIAL NOTE:** When the POLYCAST® Drain System is being installed, care must be taken to assure that the structural integrity of the slab is maintained. Bedding concrete dimensions and/or reinforcing steel requirements must be specified by a structural engineer.



# New Construction Installation

## Step 1. Excavation and System Layout

The sub-base must be excavated sufficiently to ensure a minimum of 4" of concrete cover underneath (or an amount equal to the slab thickness, whichever is greater) and on both sides of the finished drain system. Slope the edges of the excavation to provide a smooth transition to the slab subgrade. Slope the bottom of the excavation to approximately follow the slope of the POLYCAST® channels. The excavation should be made along the centerlines of all the proposed drainage runs. Prepare a deeper excavation for all appropriate catch basins (if used) to ensure a minimum of 4" of bedding concrete underneath. Once the excavations are complete, place all of the required POLYCAST® components (in the correct order) next to the excavation. It is often helpful at this point to set an alignment "string line" over the proposed trench run to indicate the finished grade elevation.



## Step 2. Catch Basin Installation

The catch basin should be located near the discharge piping stub-in. Carefully drill out the cutouts which correspond to the desired pipe size to be used. Make the appropriate discharge pipe connections. Place the catch basin into the excavation and support it with bricks. Place the bedding concrete into the catch basin and level it to the correct surface elevation.

**NOTE: Do not remove channel knockouts at this time. (See Step 6)**



## Step 3. Channel Installation

Begin the installation of the channels at the discharge end of the trench run with the deepest (highest number) channel. If a catch basin is being used at the discharge point, connect this channel to the catch basin (arrows always point downstream). If a catch basin is not being used, attach the proper end cap to the discharge end of the channel. If a channel "bottom cutout" is being used, remove the appropriate size and install the channel over the outlet drain stub-in. The succeeding channels should be installed with the POLYCAST® Installation Chair under the channel at the channel joints being connected. Tighten the chair alignment bolts into channel dimples. Place the pre-cut rebar (minimum 1/2" diameter #4) through rebar connecting clamps. Drive the rebar into the subgrade enough to provide stability and prevent floating during concreting. Adjust the chair, raising the channel to the string line height, and secure the rebar clamps.

**NOTE: The top of the rebar should be a minimum of 2" below the finished grade. If Extender Panels are to be used, refer to Drawing Details.**

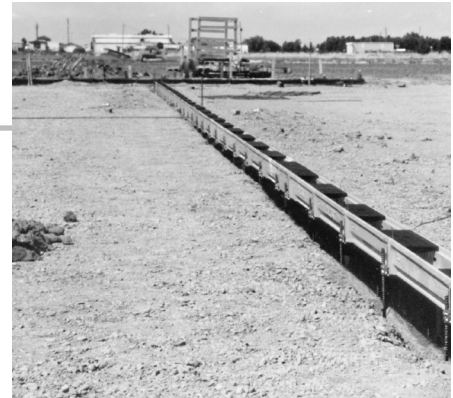


# New Construction Installation continued

## Step 4. Grate/Frame Installation

The proper POLYCAST® grate must be secured in the channels prior to concreting to prevent the channels from flexing inward from the pressure of the wet concrete. Grates should be wrapped in plastic prior to installation (2 wraps of 6 mil. visqueen is recommended) to facilitate cleanup after concreting and to provide adequate spacing for grate removal. Care must be taken not to spread the channel walls.

**NOTE: Set the grates (and frames, if applicable) into the channel and install the locking devices.**



## Step 5. Concreting

After the placement of the system at the proper grade has been completed, check to ensure that the channels will not “float” when the concrete is placed. When installed properly the POLYCAST® Installation Chair will prevent “floating” by its positive engagement into the sides of the channels. Consideration should be given for the use of reinforcing steel in the concrete beam which encases the POLYCAST® system. The type of reinforcing must be determined by the slab designer. When placing the concrete, be sure it is placed under the channels and is properly consolidated. The concrete that is placed under and around the channels may be placed as part of a monolithic slab pour.

**NOTE: The DURAGUARD® frames, if used, will float off the channel unless they are properly secured in place with a grating and locking device.**

**NOTE: The POLYCAST® drain system must not be utilized as an expansion joint, control joint or construction joint.**

Parallel slab joints should be formed no closer than 6" from the edge of the system or a distance equal to the slab thickness, whichever is greater. When expansion joints are perpendicular to and intersect the system, an expansion joint must be incorporated in the drain system. Use the installation chairs to support the ends of the channels at this location, but do not engage the alignment bolts (it takes 2 chairs at the expansion joint). After completing the slab pour, concrete finishing should proceed in the usual manner.

**NOTE: DO NOT tool finish or radius the edge of the concrete along the drain channels. Finish-trowel only to the top edge of the drain channels.**



## Step 6. Clean-Up

After the concrete slab is hard enough to walk on, remove the wrapping from the grates. Remove the appropriate catch basin channel and end cap knockouts at this time.

**NOTE: To minimize spalling, use a small hammer to tap out the knockout from inside the catch basin. Clean out any debris in the system and be sure that the outlet pipes are clear. Install accessories such as strainers, trash baskets, etc. Reset and lock down all grates in the proper position. The system is now ready for service.**

# Retrofit Installation

## Step 1

When installing the POLYCAST® system for a retrofit application, the trench drain channels can be installed by suspending the system within the excavated trench. This can be accomplished by cutting the existing slab a minimum of 14" wide to ensure at least 4" of working room around the POLYCAST® system.

## Step 2

Excavate the trench deep enough to ensure a minimum of 4" or an amount equal to the slab thickness of concrete below each channel. The channels can now be suspended by using 2" x 4" boards approximately 30" in length to span the width of the trench and be supported by the existing slab. A slab designer should be consulted to determine if concrete reinforcing steel will be required.

## Step 3

Drill a 1/2" hole into the 2" x 4"s along the centerline of the new trench. Then insert a 3/8" - 16UNC x 4 1/2" bolt and washer (supplied by others) through the 2" x 4"s and thread into the locking bar (available from Watts).

## Step 4

The channels may then be lifted into place and fastened by inserting the locking bars into the channel locking bar pockets. To prevent birdbaths next to the channel, place a shim between the top of the channel and the 2" x 4" to ensure that the channel will be slightly lower than the existing slab.

## Step 5

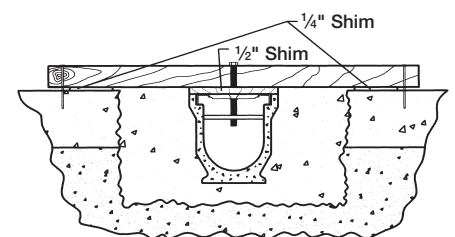
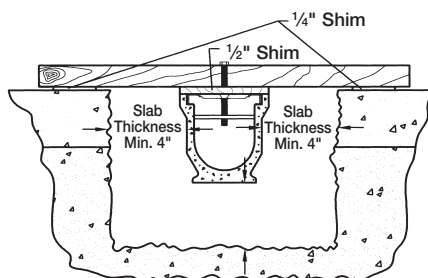
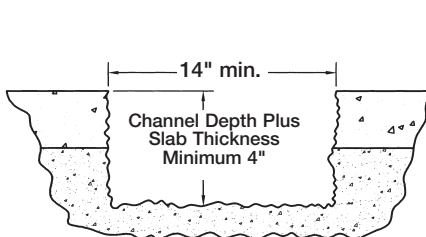
The bolts can now be tightened, and the 2" x 4"s must be fastened down to prevent the channels from floating. Gratings should be wrapped with 6 mil. visqueen (for ease of clean-up), placed between the 2" x 4"s and installed into the channels to prevent the wet concrete from squeezing the channel sidewalls inward.

## Step 6

Place the concrete, using industry standards, and remove the 2" x 4"s once the concrete has reached initial set. Finish concrete to match existing floor finish and reinstall gratings and locking devices.

**NOTE: DO NOT groove the concrete along the channels!**

Joint sealant may be applied during installation if required by specification or local code. Single part urethanes or Vinyl Ester sealants are recommended.

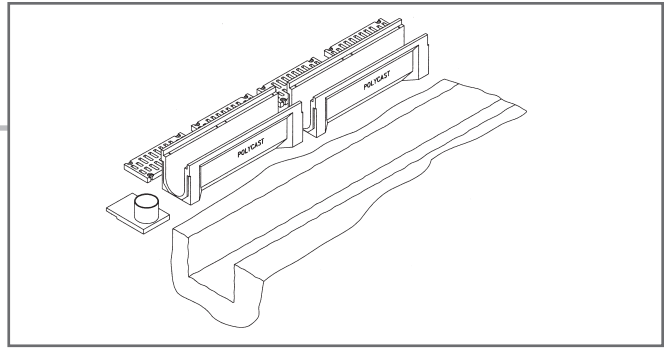




# POLYCAST® 800 Series Installation

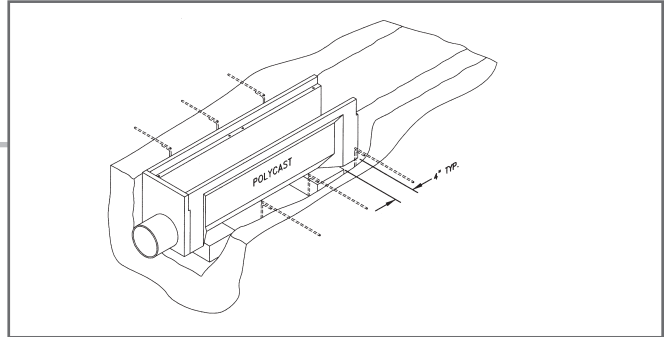
## Step 1

An excavation must be provided that will ensure a minimum of 4" of concrete under and on both sides of the finished drain system (consult slab designer). In every case, the excavation should be deep and wide enough to provide concrete cover equal to the slab thickness or 4", whichever is greater. Slope the edges of the excavation to provide a smooth transition to the slab upgrade. Place all of the required system components next to the excavation. Next, set level and alignment strings over the trench to indicate the installed location of the top of the drainage system.



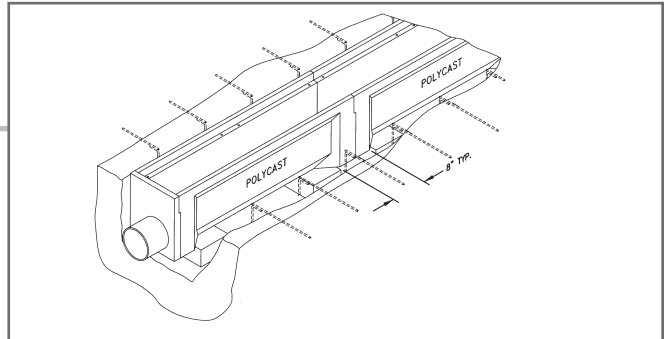
## Step 2

Begin at the discharge end of the run and place the channel on two 4" tall concrete blocks. These blocks should be 4" from each end of the channel to allow the proper amount of concrete embedment along and under the entire length of each channel.



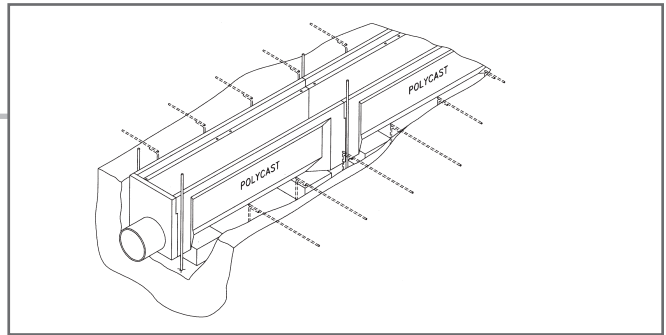
## Step 3

Proceeding upstream, install next channel on bricks at the joints, locking it into the grooves of the proceeding channel. Be sure to place bricks 4" from end of channel. Adjust for alignment.



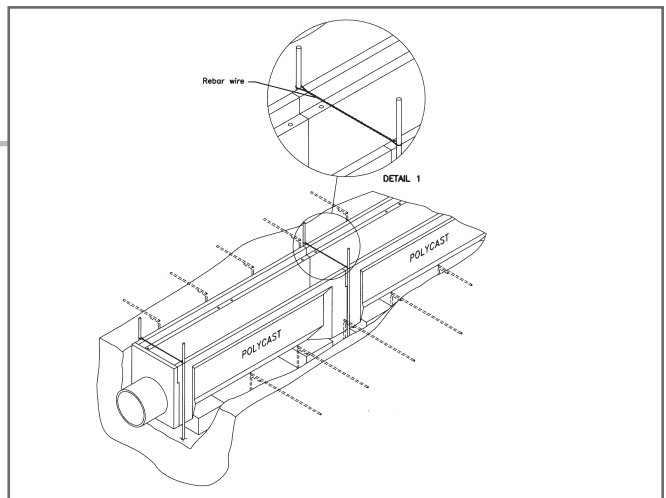
## Step 4

With channels aligned, drive two rebar stakes at the upstream end and at the joint of the next succeeding channel.



## Step 5

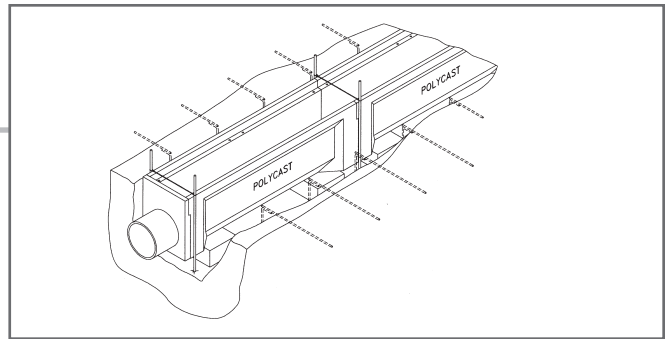
With tie wire, secure rebar together to ensure a set alignment and to prevent the possibility of floating. See Detail 7.



# POLYCAST® 800 Series Installation

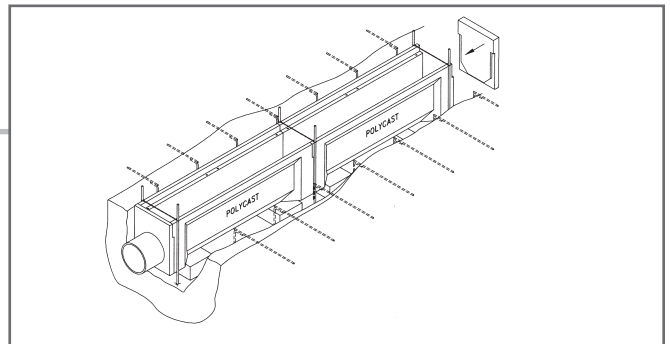
## Step 6

Whether draining out of an outlet end cap or into a catch basin, the proper drain connections should be made at this time. If using an end cap, it should be glued.



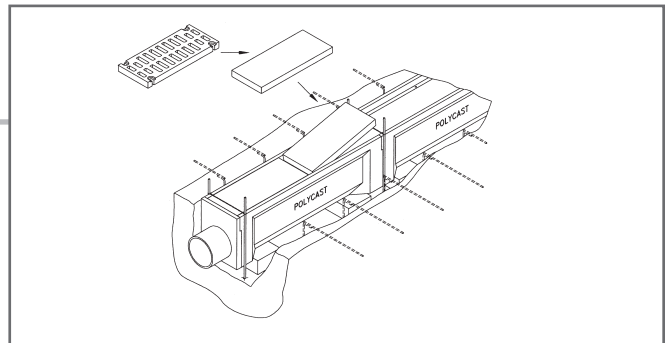
## Step 7

After repeating steps 4 and 5 until the last channel of the run is installed, attach appropriate end cap and secure into place.



## Step 8

Grates may be wrapped in plastic or masked prior to installation to facilitate clean-up after concreting. Grates must be in place while the concrete is poured around the channels to assure proper alignment.



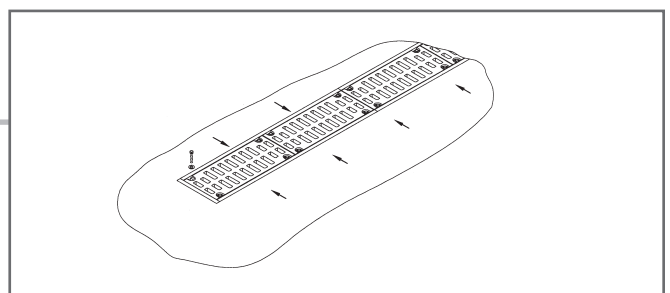
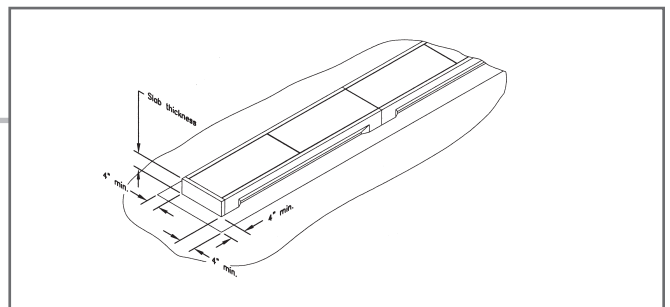
## Step 9

After the system is in place, rigidly anchored and at the correct line and grade, concreting may commence. Concrete should be worked well under the channels and properly vibrated with a finger vibrator. Once the concrete begins to set, the rebar stakes holding the channels in place should be pulled out. The stake hole may be filled by tamping with the stake as it is removed.

**NOTE: POLYCAST® drain channels must be isolated from slab movement, and must not be used as construction joints, control joints or expansion joints.**

## Step 10

When pouring the slab, a slope of  $\frac{1}{8}$ " or more per foot is preferred for 2' on each side of the channel to ensure complete drainage of the slab. After slab has cured, grates should be unwrapped and, if necessary, bolted to channel.



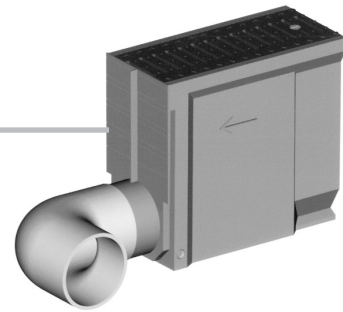
# Accessories

## System Turns and Intersections

The POLYCAST® drain system may be assembled with right turns, tee intersections and angled turns in either of two ways:

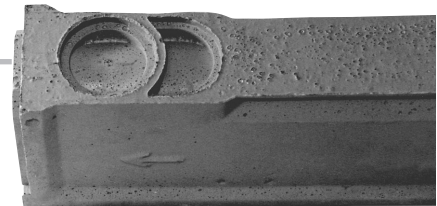
**1) Pipe Outlet Caps:** Outlet end caps fit 4" Schedule 40 PVC pipe and are available to fit all channels ending with a 5, 0, N or H.

**2) Channel Mitters and Tees:** Turns and tees in the system may also be accomplished by sawing the channels and assembling them directly. A right turn is made by sawing the two channels involved with a miter cut and then bonding them together with an epoxy adhesive. Tee intersections require both channels being joined to be cut. On the side of the channel being entered, make two vertical saw cuts 5¼" apart from the top of the channel to the bottom of the tongue on the entering channel. Then cut horizontally across the bottom of the two vertical cuts. Remove the piece just formed with a hammer. Make two vertical cuts on the entering channel, 1" from the end down and 2" down. Remove the two small pieces with a hammer and fit the two channels together. Epoxy grout can be used on the rough edges of these joints after assembly is complete.



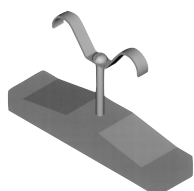
## Piping Connections

Cutouts are designed into several components of the POLYCAST® drain system for connection to 4" or 6" PVC drainage piping. The connecting pipes set against the recessed lip in the knockout. Remove the knockout by predrilling the cutout, closely spacing the holes, then place the bridges between the holes from the inside surface with a hammer (and cutting around the groove of the knockout with a sharp cold chisel if needed). Fit the pipe into place and grout, using urethane caulk or an epoxy grout. When making connections to cast iron pipe, special rubber adapter gaskets are available to set a PVC nipple into the bell of a cast iron pipe. If a 4" PVC nipple is used, this connection can easily be embedded in concrete so the joint cannot loosen or leak. If direct connection between the cast iron and the channel is required, the knockout may be removed and the opening ground out with a small drill-mounted grinding wheel until the pipe fits. Then grout into place.

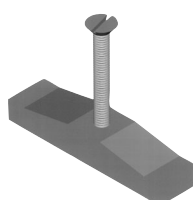


## Locking Devices

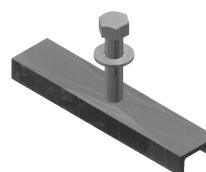
Locking devices are available to prevent grate chatter and damage to channels. The locking device, a flat bar twisted into the offset pockets inside each channel and bolted to the grate, can be easily removed to clean the channels.



DA0642F



DA0642, DA0642S



DA0642B

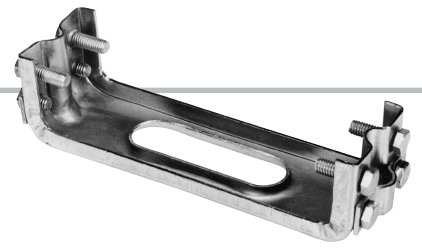


# Accessories

## POLYCAST® Installation Chair

The POLYCAST® Installation Chair supports the ends of the channels, aligns and locks the joint rigidly together, prevents the channels from floating and allows for the easy adjustment of channel elevation. The Chair is attached under the channels being joined by tightening the alignment bolts into the channel "dimples". Two pieces of rebar are set every 4' to correspond with the channel joints, placed through the rebar connecting clamp on the alignment chair and driven into the sub-base. The channels are then aligned and adjusted to achieve the proper elevation.

**NOTE:** It is sometimes easier to set the channels slightly high. Then lower the channel to the proper height by tapping the rebar down. Channel elevations can be checked with a laser level or string line.



## Extender Panels

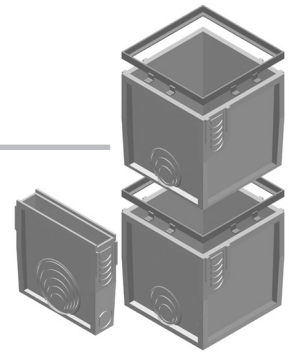
The Extender Panel Set provides additional design flexibility in meeting requirements of extended run lengths and/or higher flow capacities. The Extender Panel adds an additional depth of 7 13/16". All 600, 700 and 900 frame and grate systems are available. Extender Panels are available in 48" and 24" lengths.



Part No. 660 for 48" lg. and Part No. 660H for 24" lg.

## Catch Basins

Catch Basins are available for collection points, drain run transitions and interceptors to collect solid debris. They are designed to accommodate all drain channel sizes.



## End Caps

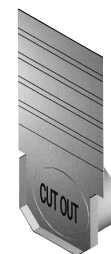
Solid end caps, male inlets and drain outlets in a variety of sizes for pipe connections.



620D6, 625D6



625DL6, 725DL6



DA0670

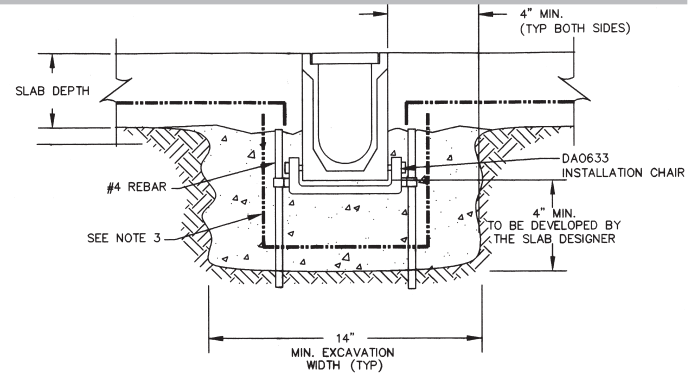


DA0670M

# Detail Drawings

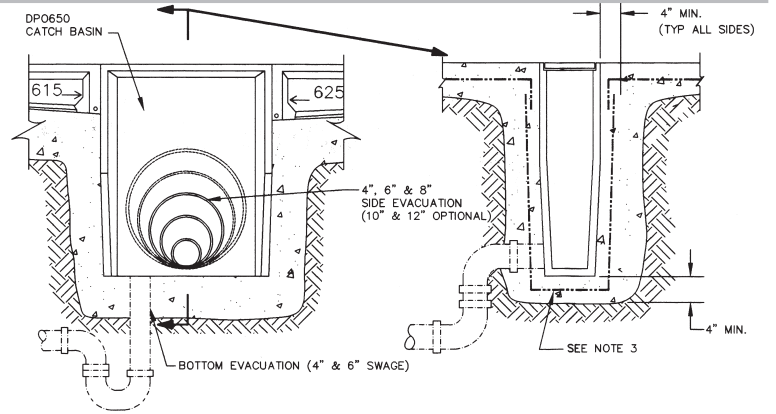
## Detail 1 Standard Chair Installation

Secure chair in bottom dimples on the channels.



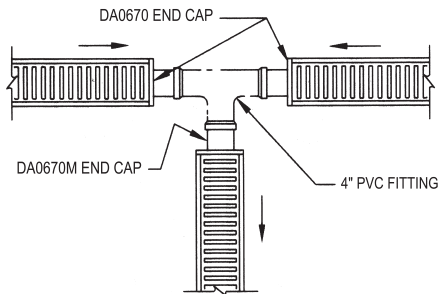
## Detail 2 Catch Basin Installation

Secure chair in bottom dimples on the channels.



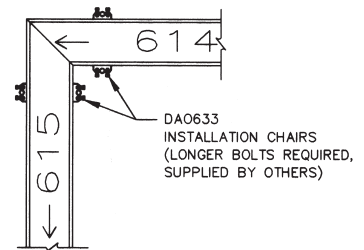
## Detail 3 PVC Connection

All end caps are to be secured with an adhesive.



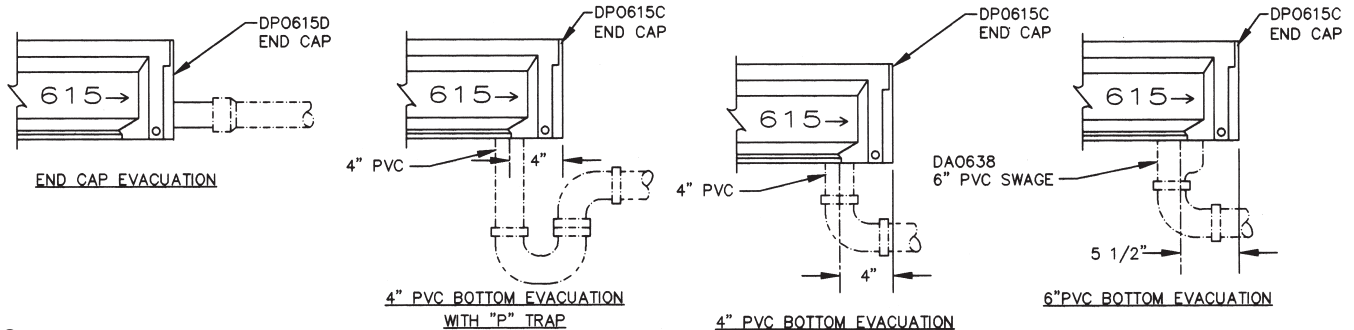
## Detail 4 Chair Placement on 90° Corners

Grates not shown for clarity.



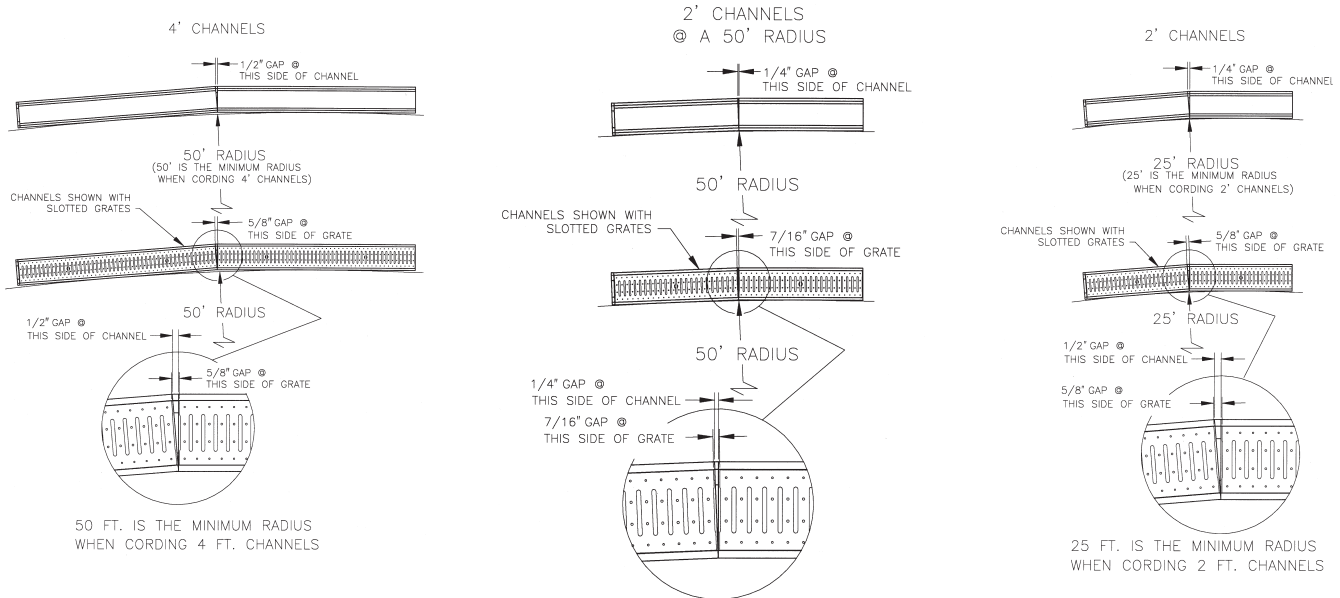
## Detail 5 Channel Evacuation Details

All end caps are to be secured with an adhesive.

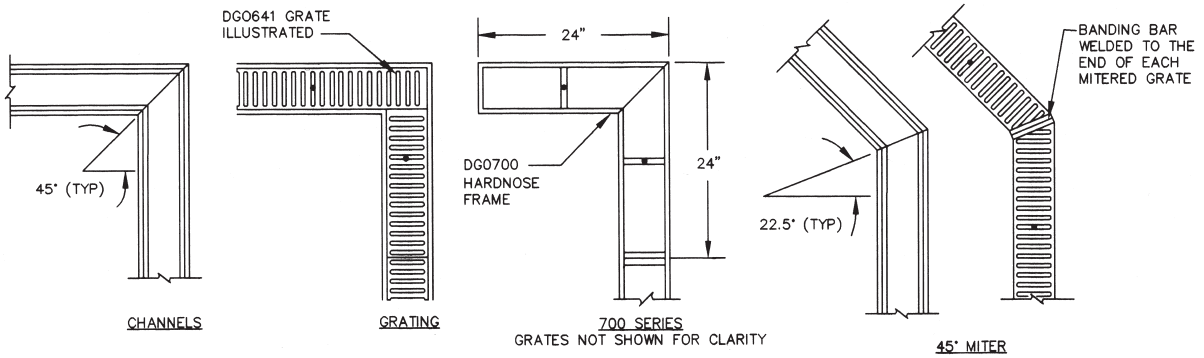


# Detail Drawings

## Detail 6 Corded 600 Series Channels

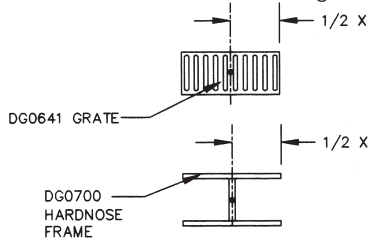


## Detail 7A Mitered Corner



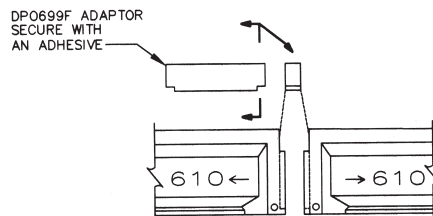
## Detail 7B Partial Channel Cuts

To maintain the lockdown mechanism on a HARDNOSE™ frame and grate that measures less than 24", the HARDNOSE™ frame and grate should be cut equal lengths off the center of the frame and grate.



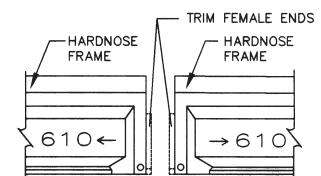
## Detail 8A Female to Female

For use with 600 Series only.



## Detail 8B Female to Female

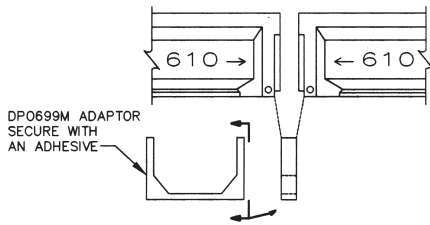
For use with 500 & 700 Series.





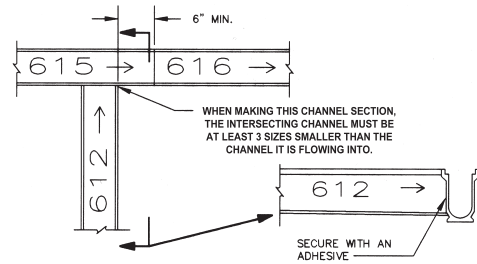
# Detail Drawings

## Detail 9 Male to Male Connection Detail

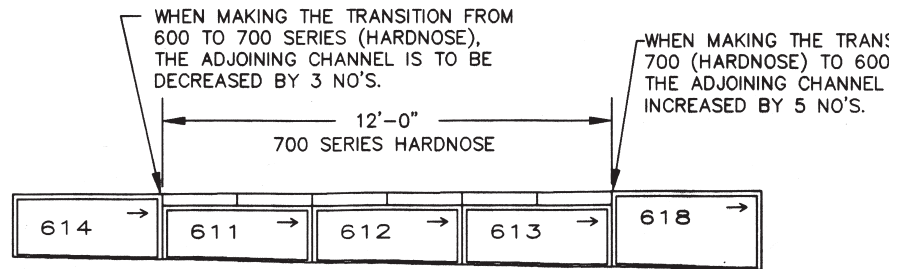


## Detail 10 Channel Connection

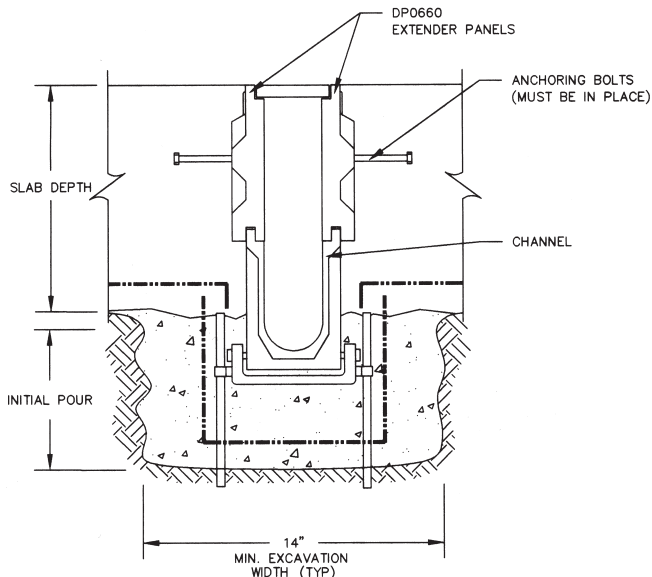
Grates not shown for clarity



## Detail 11 Hardnose™ to Standard Transition



## Detail 12 Extender Panel Installation



## Notes

1. The grates must be secured with the lock down mechanism when the system is in use.
2. Spacers must be installed between the grate and the POLY-CAST® channel on one side prior to pouring concrete to alleviate tight fitting grates.
3. All reinforcement bar details and expansion joints are to be developed by the slab designer. Parallel expansion joints should be no closer than 6" from side of drain channel.
4. The average slope of each sloped channel is 0.64%.
5. In the event that any non-pneumatic tire traffic or traffic which exceeds 20mph is to occur on any part of the drain surface or grate, 700 Series HARDNOSE™ channels must be used for these areas.
6. Prolonged exposure to ambient, service or surface temperatures of 120°F or greater requires the use of vinyl ester channels.
7. Miter cuts shown are to be field cut by others.

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