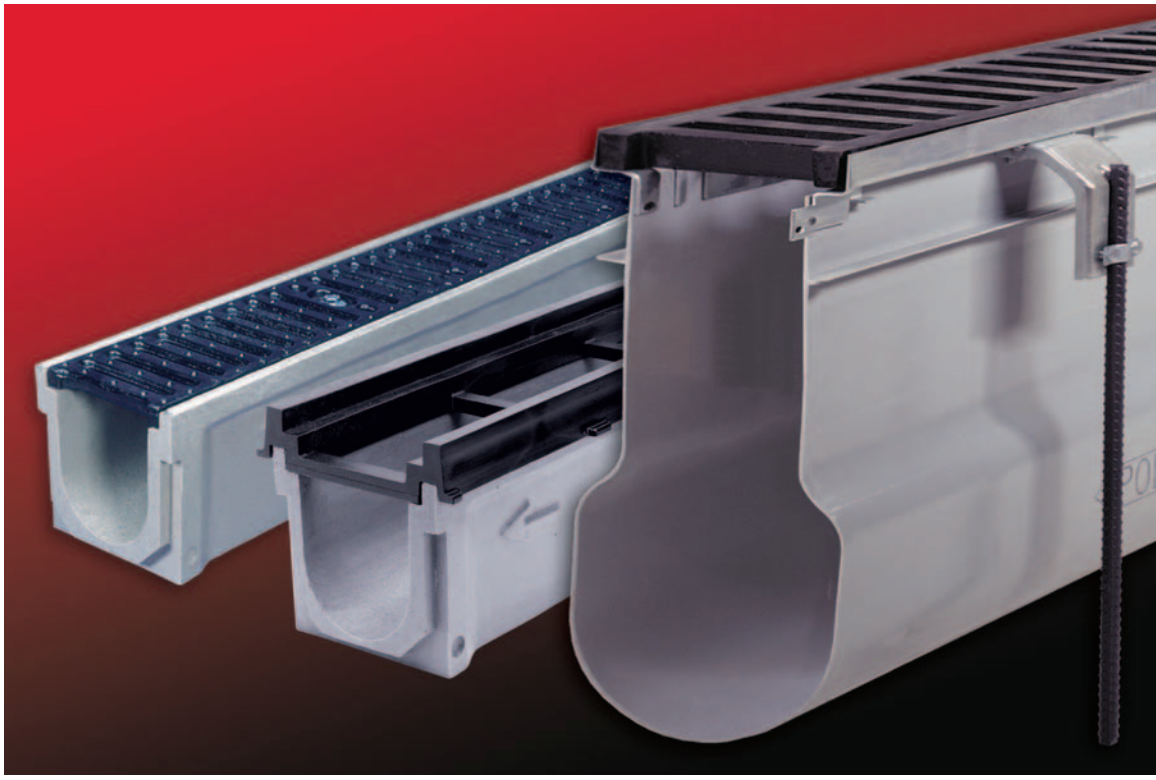
STRONGWELL

POLYCAST®

PRESLOPED TRENCH DRAIN SYSTEMS



INDUSTRIAL

- Dow Chemical
- Chrysler
- Coors
- Iowa Beef Products
- Dole Pineapple, Bud of California
- Phillips Petroleum, Drisco Pipe
- Southern Pacific Railroad
- Pfizer Chemical
- Oceanside Water Treatment Plant, San Francisco
- Boeing
- Long Island Railroad
- IBM
- Ford Motors
- Georgia Pacific
- Monsanto

COMMERCIAL

- Keystone Foods
- U.S. Post Office (general mail facilities)
- Midas Muffler
- Pep Boys
- Sears
- Beringer Winery
- Steven-Swan Humane Society
- Pennsylvania Turnpike
- Forty-Niner Training Camp
- Orlando Magic
- Albertson's Supermarkets
- Wal-mart
- Fulton Fish Market
- Federal Express

Airport

City Street

Distillery

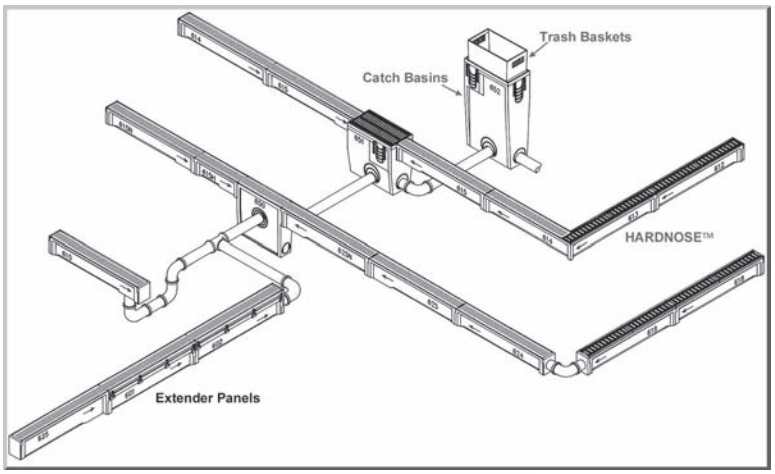
Car Wash

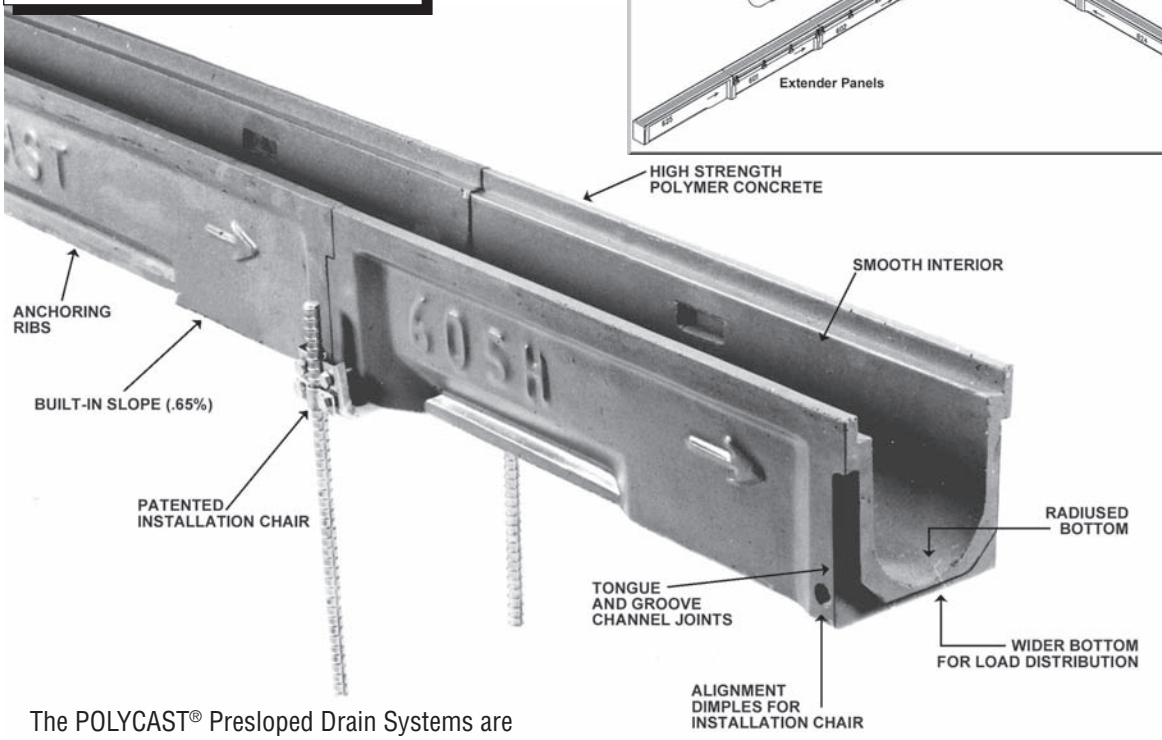
Drain System

The 20% Advantage

48" vs. Meter channel lengths

- Fewer Channels
- Fewer Joints
- Fewer Problems
- Faster Installation





The POLYCAST® Presloped Drain Systems are designed for a variety of applications, both indoors and outdoors. POLYCAST® is made of a high strength, chemical resistant, composite material. As a result, POLYCAST® drains offer a high degree of chemical resistance and have a water absorption value of less than one percent (ASTM C140).

Rapid drainage, durability and resistance to freeze/thaw cycles (ASTM C666) make POLYCAST® ideal for outdoor applications. POLYCAST® is more than four times stronger than ordinary Portland Cement Concrete. The 24" and 48" components make POLYCAST® extremely versatile. With the proper components, a flow rate of 900 GPM per outlet is attainable.

The POLYCAST® 3000 Series high capacity drain system (a pultruded FRP drain), can achieve flow rates of more than 3000 GPM for 120' of drain.

Combining simplified installation, high durability and lower overall cost, POLYCAST® systems are proven superior in surface drainage.

Applications

INDUSTRIAL

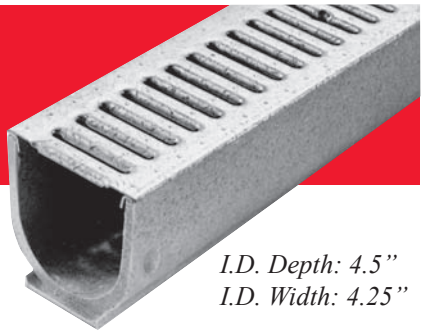
- Manufacturing
- Chemical Plants
- Bottling
- Food Processing
  (USDA Approved)

COMMERCIAL

- Vehicle Maintenance
- Airports
- Highway and Roads/Curbs
- Schools

ABOVE — Smooth interior finish of drain assures complete drainage

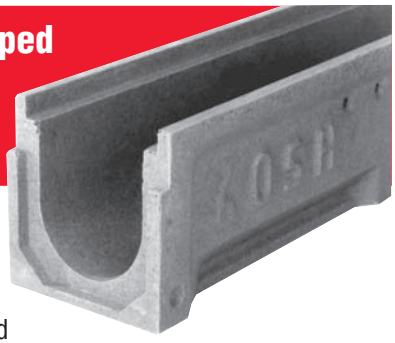
400 Series Residential & Sport System



I.D. Depth: 4.5”
I.D. Width: 4.25”

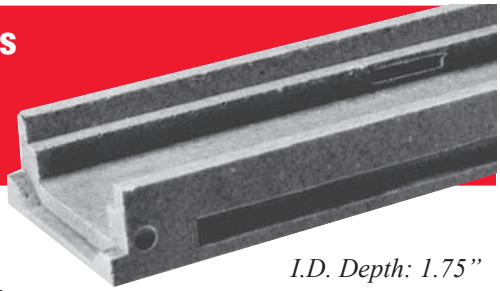
The POLYCAST® 400 Series is a complete surface drainage system with a precast polyester polymer concrete trench and a tight-fitting galvanized steel grate. The steel grate is bicycle and wheelchair resistant and will support automobile traffic. The precast trench and grate is available in 2’ and 4’ lengths. Every 4’ section has a 4” bottom cut-out for a pipe connection. Solid and drain end caps are available for 3” PVC pipe. Inexpensive and long lasting, POLYCAST® 400 Series is the perfect drainage system for tennis courts, swimming pools, walkways, patios, garage entrances, etc. Use with Installation Chair DA0634. Grating hold-down device DA0642 is recommended.

600 Series Presloped Heavy Duty/Light Duty



The POLYCAST® 600 Series Presloped System is ideally suited for a variety of commercial and industrial applications. It is designed to have **flow rates equal to or greater than, most larger poured-in-place trench drains**. With the proper components, flow rates of 470 GPM per outlet are attainable. The precast trench sections and grates are made up of 2’ and 4’ lengths. Certain 4’ channels and all half channels have 4” bottom cut-outs for pipe connections. POLYCAST® 600 Series is available in either polyester or Vinyl Ester polymer concrete. The polyester polymer concrete is used for most drainage applications. Vinyl ester polymer concrete is used for high corrosive and high temperature applications. *The 600 Series Drains are designed for pneumatic tire traffic only.*

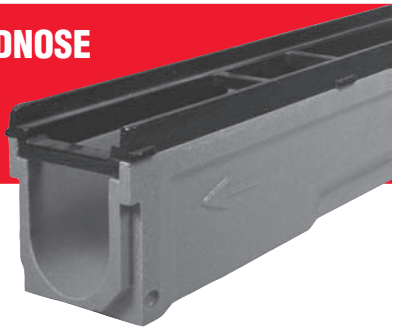
500 Series Deck Drain



I.D. Depth: 1.75”

The POLYCAST® 500 Series Deck Drain System is ideally suited for a variety of above grade applications requiring drainage of incidental water run-off. The 500 Series is Strongwell’s shallowest drain, measuring: O.D. 48” x 6.25” x 2.5” and I.D. of 48” x 4.25” x 1.75”. It is designed to be installed in suspended slab applications such as parking structures, pool deck areas and many other thin slab applications. The precast sections are made up of 4’ lengths. Each section has a 4” bottom cut-out for pipe connections. Gratings available for this system are the slotted galvanized and stainless steel grates, part numbers DG0640 and DG0647, and fiberglass grates, part number DG0644. POLYCAST® 500 Series is available in either polyester or Vinyl Ester polymer concrete. The polyester polymer concrete would be used for most drainage applications. Vinyl ester polymer concrete is used for high corrosive and high temperature applications. The 500 Series drains are designed for pneumatic tire traffic only. For added depth and/or solid tire forklift (full traffic) applications, the 700 Series (HARDNOSE) frame can be added. Grating hold-down device DA0542 is recommended.

700 Series HARDNOSE Presloped Extra Heavy Duty

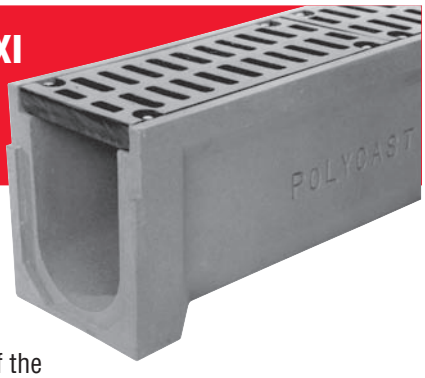


The POLYCAST® 700 Series Channels are designed for heavy commercial and military aircraft traffic, hard wheel forklifts, pallet jacks, solid wheel carts, construction equipment and off-road vehicles at moderate speeds (exceeds FAA Airport Pavement Design loads per AC 150/5320-6D). The flow rates are comparable to the conventional 600 Series. The 700 Series assembly consists of cast iron frames inlaid on the top of the conventional 600 Series polymer concrete Channel and fitted with either Cast Iron (DG0641) or Ductile Iron (DG0641D) slotted grates. Optional anchoring bolts are available.

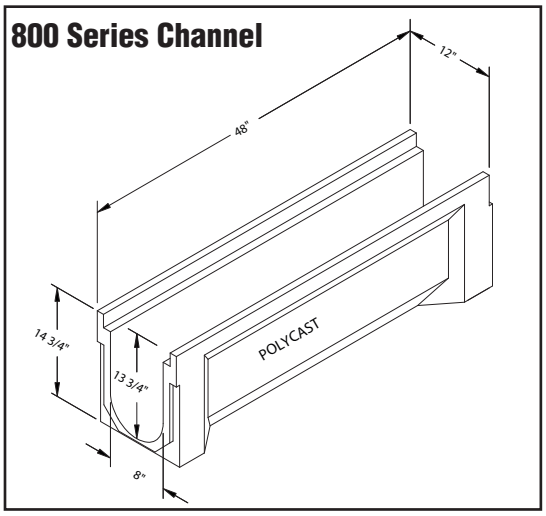
All Sizes and Styles of POLYCAST® Trench Drains are Available in Polyester or Vinyl Ester

NOTE: Prolonged exposure to ambient, service or surface temperatures of 120° F or greater requires the use of Vinyl Ester channels.

800 Series MAXI Heavy Duty



The POLYCAST® 800 Series Channel is designed for those high volume situations that exceed the capacity of the POLYCAST® 600 Series. The channel, with a width of 12", is approximately double the width of the standard 600 Series channels. The 825 Section is a neutral channel with interlocking tongue-and-groove joints. The 825 channel is designed for areas of high volume cross-flow interception, or areas where the larger cross-section is necessary. Channels can also be used as a corrosion resistant, secondary containment system. The 825 channel is available in either polyester or Vinyl Ester polymer concrete. The polyester polymer concrete is used for most drainage applications; the Vinyl Ester polymer concrete should be used for highly corrosive situations or higher temperature applications. All POLYCAST® 800 Series gratings, except the fiberglass grating, are 2' long with two gratings required for the 4' channel. The fiberglass grate is 4' in length. The iron gratings and covers for the 825 channel come with locking bolts. The bolts fit threaded inserts in the channel bearing ledges. The bolts are recessed to fit below the grating surface. Three different end caps are available for the 825 channel. The closed end cap is designed to fit either end of the channel. Drain end caps fit the downstream end and can be ordered with a 6" or 8" pipe stub. The flow rate of the 825 channel varies with the slope of the installation. The 825 channel is not presloped and any slope required should be designed into the slab.



DURAGUARD® Channel Frame System

The POLYCAST® DURAGUARD® Series is an innovative design that improves heavy load impact performance. Utilizing a high density polyethylene composite, the DURAGUARD® channel frame reinforces the channel edge to dramatically improve the load performance and impact resistance of the standard 600 Series polymer concrete channel. In addition, DURAGUARD® is extremely resistant to environmental exposure and many corrosive chemicals. The anchoring flanges on the outer edge of the DURAGUARD® frame permanently and mechanically engage the frame into the concrete. Less expensive than the POLYCAST® Series 700, DURAGUARD® is ideal for many markets including transportation, utilities, agriculture, food processing, public/government housing, industry, manufacturing, recreational and chemical plants.

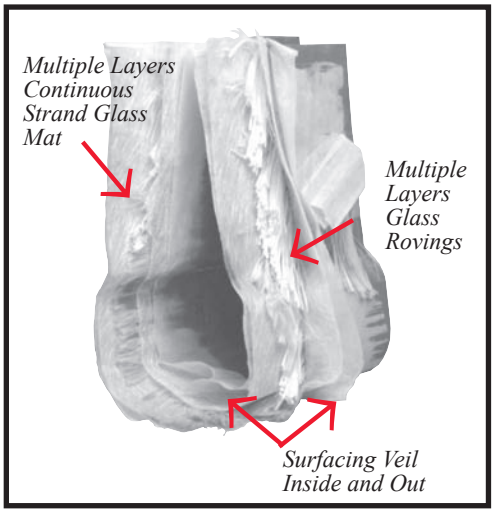
All Sizes and Styles of POLYCAST® Trench Drains are Available in Polyester or Vinyl Ester

NOTE: Prolonged exposure to ambient, service or surface temperatures of 120° F or greater requires the use of Vinyl Ester channels.

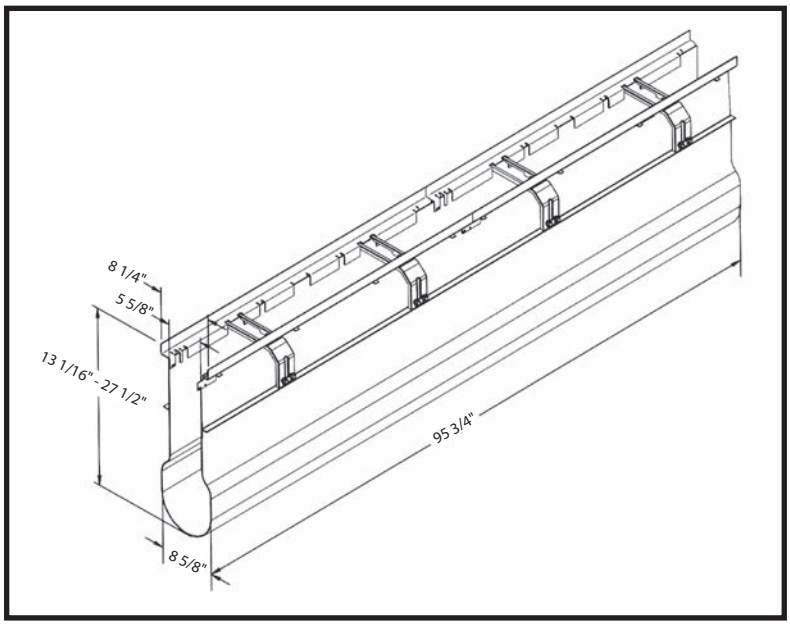
3000 Series
High Capacity Drain

POLYCAST® 3000 is a high capacity presloped drain system designed for airports, roadways and other applications needing high volume flow rates. The unique bulb shaped design, combined with the continuous 1% slope, provides the largest flow capacity of any similar presloped trench drain on the market today. The flow rates for POLYCAST® 3000 are more than 3000 GPM (gallons per minute) or 6.73 cfs (cubic feet per second) for 120' of drain. Competitive drain systems often require extender panels for comparable flowrates.

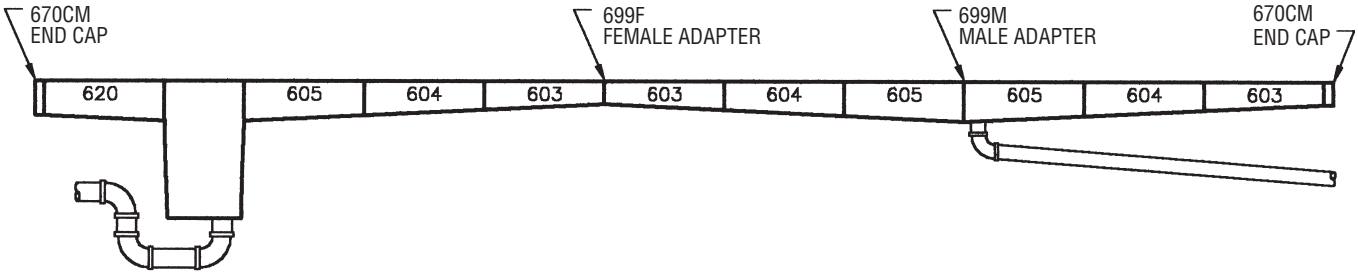
The system channels are manufactured using the pultrusion process to produce a lightweight, high strength fiber reinforced polymer composite channel. The polymer material limits water absorption to less than 1% and provides excellent chemical resistance. The pultruded fiberglass construction provides extremely strong vertical sidewalls. This reduces sidewall deflection during the concrete pour and maintains maximum flow capacity. The sidewalls of many other drain systems tend to collapse during this critical process, resulting in substantially reduced flows. The coefficient of thermal expansion for POLYCAST® 3000 (4.5 x 10^{-6} in/in/°F) is similar to that of concrete (6 x 10^{-6} in/in/°F) so it will not buckle or break apart from thermal expansion stresses. This ensures that the structural integrity of the channel side walls and the flow rates remain constant. These basic design considerations reduce the need for special parts inventory and expensive accessories.



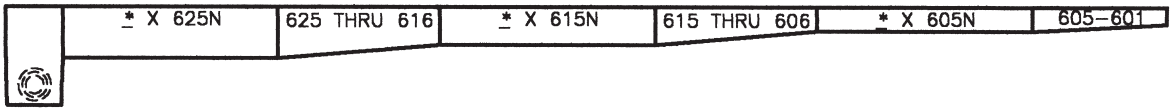
- Flow 6.73 cfs, 3014 GPM
- 100% concrete encasement of grate frames
- Grate frames will not trap air
- Sturdy sidewalls resist deflection
- UV stable
- 56% glass content by weight in channels
- CTE 4.5 x 10^{-6} in/in/°F
- 120' continuous slope at 1%
- Manufactured in ISO-9001 plant
- No formwork
- 100' per hour installation rates possible
- **Single lift concrete placement**



OUTLET VARIATIONS

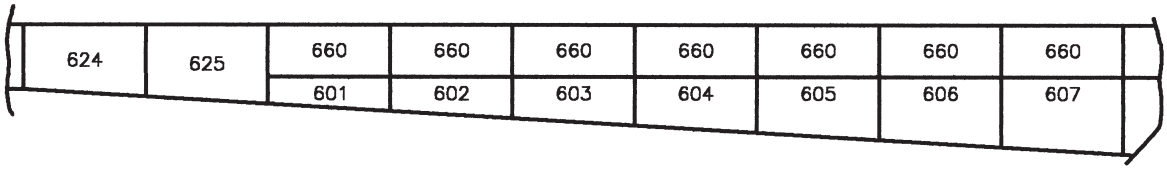


USE OF NEUTRAL CHANNELS FOR LONG RUNS

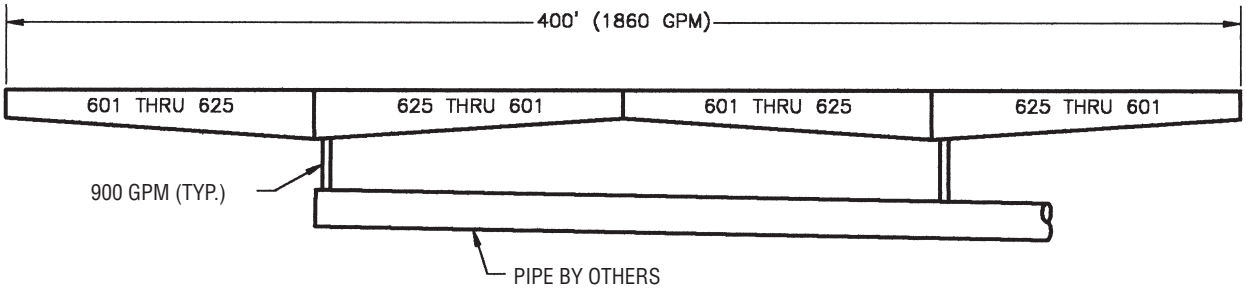


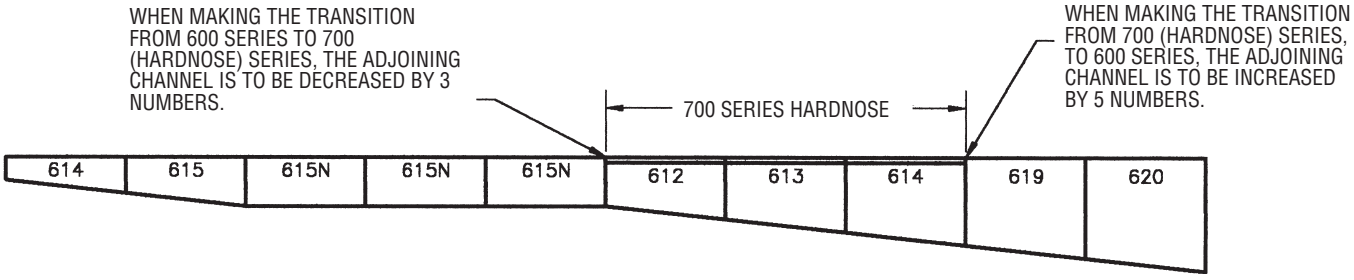
*Number of non-sloped channels grouped together.

EXTENDER PANELS



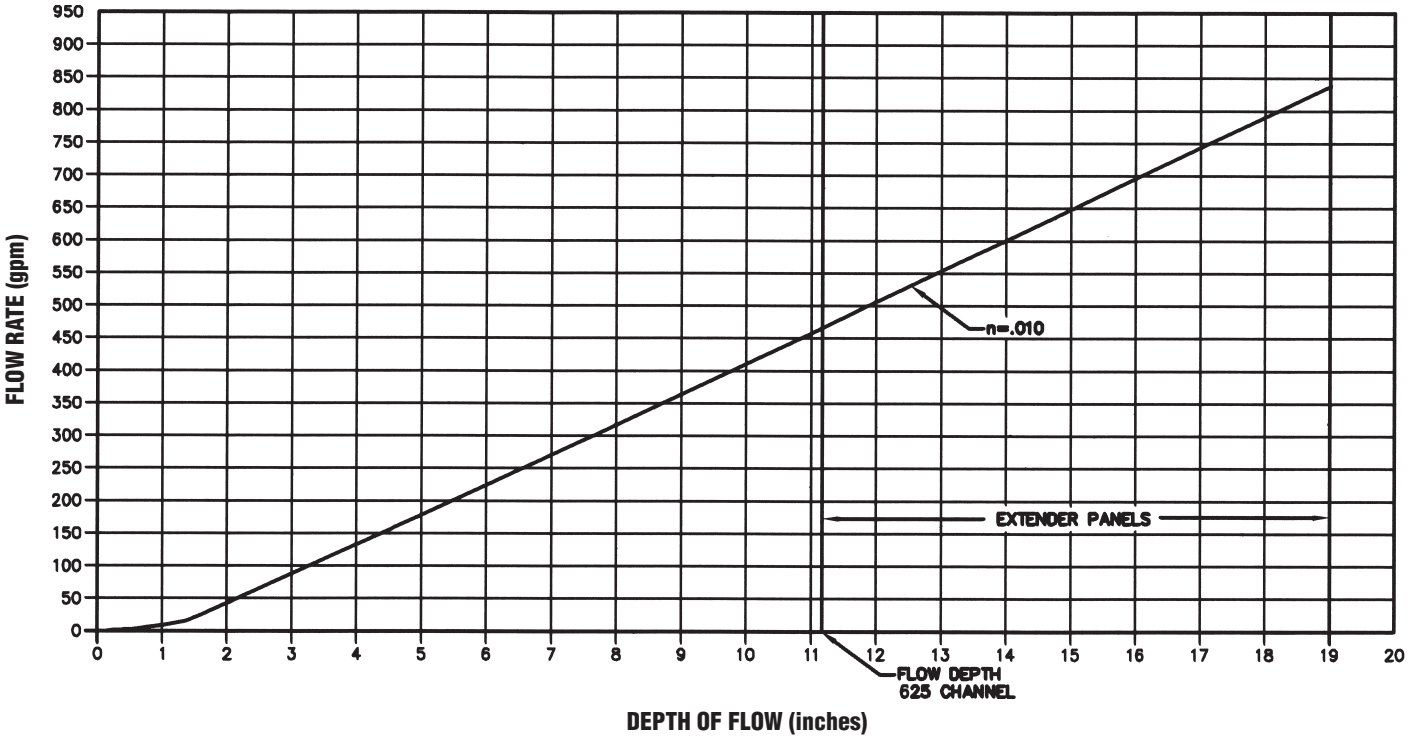
HIGH VOLUME FLOW



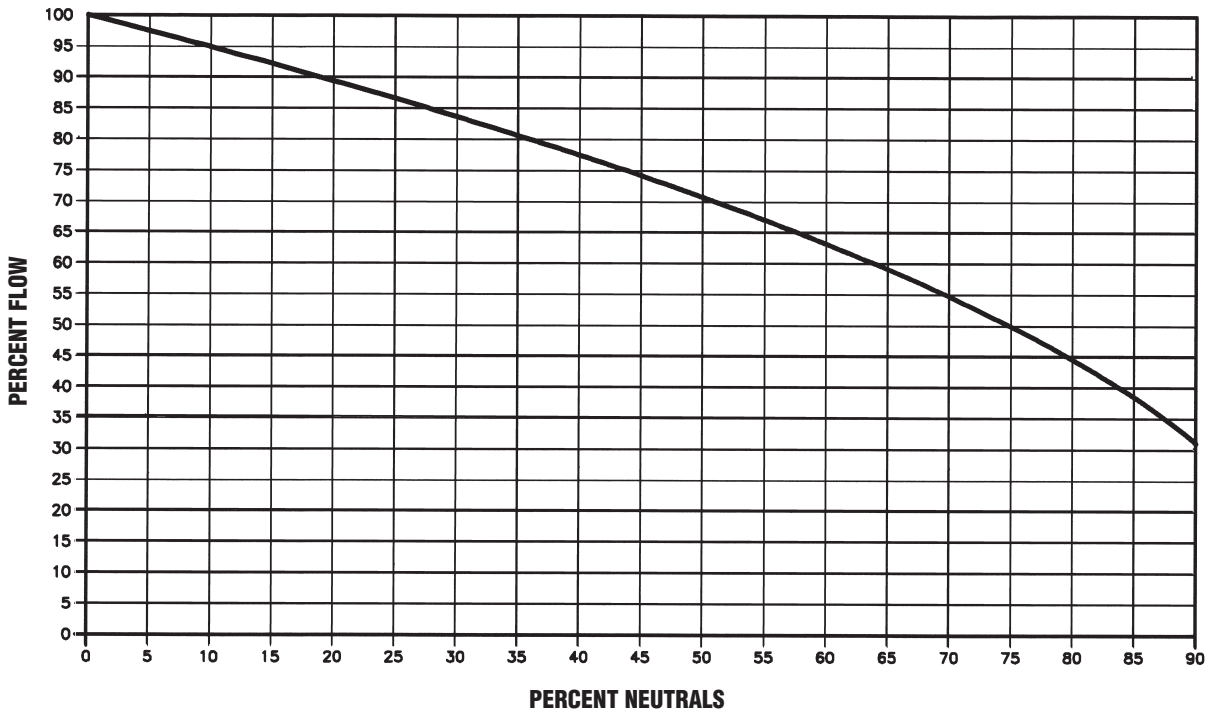


PERFORMANCE GRAPHS FOR 600, 700 AND 900 SERIES

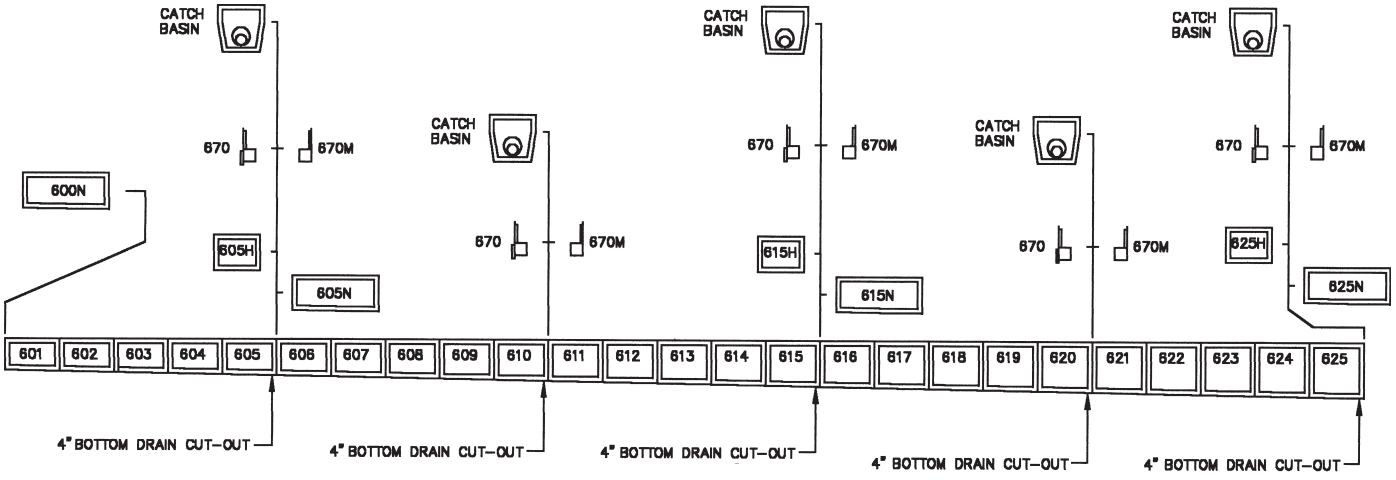
FLOW CAPACITY



EFFECT OF NEUTRALS ON FLOW CAPACITY



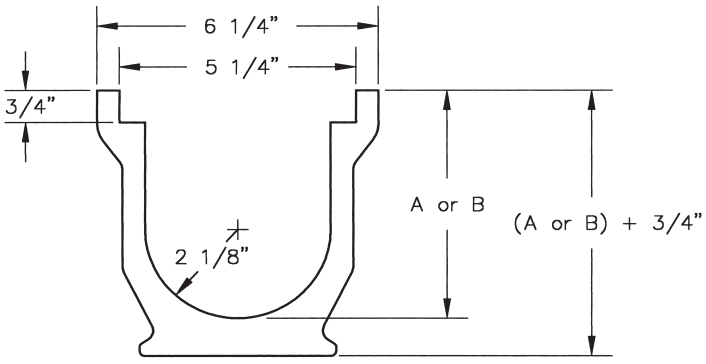
* This graph is based on the Manning Equation.



NOTE 1: All half and neutral channels have bottom cut outs. NOTE 2: All half and neutral channels accept the corresponding end caps.

Channel Number	Weight Lbs.	Inlet DIM 'A'	Outlet DIM 'B'
600N (nonsloped)	37	4-1/16	4-1/16
601	38	4-1/16	4-3/8
602	43	4-3/8	4-11/16
603	43	4-11/16	5
604	44	5	5-5/16
605	45	5-5/16	5-5/8
605N (nonsloped)	46	5-5/8	5-5/8
605H (nonsloped 24")	22	5-5/8	5-5/8
606	47	5-5/8	5-15/16
607	50	5-15/16	6-1/4
608	51	6-1/4	6-9/16
609	52	6-9/16	6-7/8
610	54	6-7/8	7-3/16
611	55	7-3/16	7-1/2
612	56	7-1/2	7-13/16
613	57	7-13/16	8-1/8

Channel Number	Weight Lbs.	Inlet DIM 'A'	Outlet DIM 'B'
614	59	8-1/8	8-7/16
615	60	8-7/16	8-3/4
615N (nonsloped)	61	8-3/4	8-3/4
615H (nonsloped 24")	30	8-3/4	8-3/4
616	61	8-3/4	9-1/16
617	62	9-1/16	9-3/8
618	63	9-3/8	9-11/16
619	64	9-11/16	10
620	67	10	10-5/16
621	68	10-5/16	10-5/8
622	71	10-5/8	10-15/16
623	73	10-15/16	11-1/4
624	75	11-1/4	11-9/16
625	76	11-9/16	11-7/8
625N (nonsloped)	77	11-7/8	11-7/8
625H (nonsloped 24")	38	11-7/8	11-7/8



700 Series HARDNOSE and DURAGUARD® frames add 1-3/16" to dimensions A or B.

Extender Panels add 7-13/16" to dimensions A or B.

Bottom of Channel Cut-Out

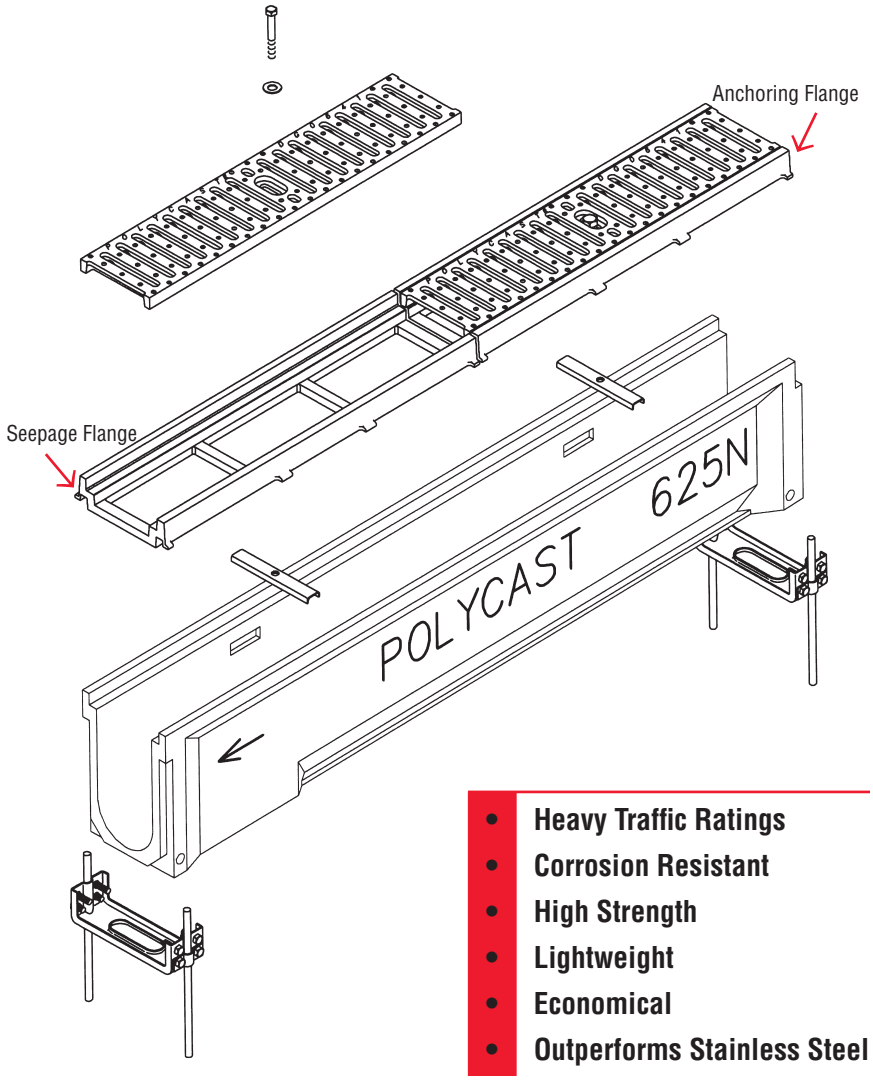
DURAGUARD® CHANNEL FRAME ASSEMBLY

Traffic Conditions Requiring Channel Reinforcement (700 Series Frames, DURAGUARD®, POLYGUARD)

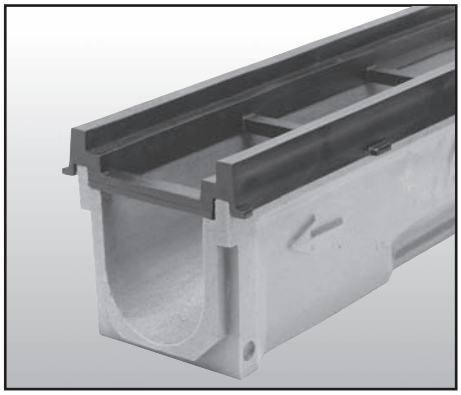
- **Solid Tires**
- **High Speed (over 15 mph)**
- **Frequent Traffic**

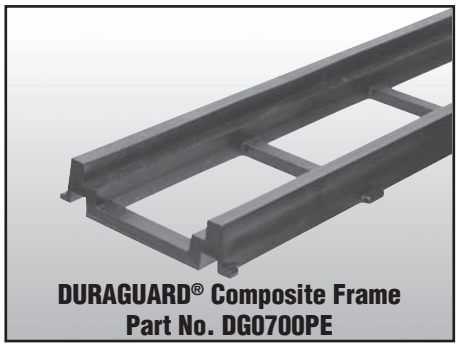
The POLYCAST® DURAGUARD® Channel Frame is extremely chemical resistant and greatly improves the impact and wear resistance of the standard 600 Series channels. When combined with the rugged slotted ductile iron grating Part No. DG0641D, you get a drainage system with superior chemical resistance. The system is suitable for lightly loaded forklifts and highway vehicles at low to moderate speeds (i.e. parking areas, driveways, warehouses). Exceeds FAA Airport Pavement Design Loads per AC 150/5320-6D.

The flow rates are comparable to the conventional 600 Series. **Grating hold-down devices are available and must be used. Gratings must be in place and grate hold-down devices installed and secure prior to concrete placement.** Locking devices should be maintained secure during service.



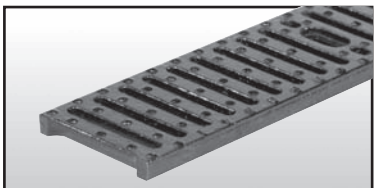
- **Heavy Traffic Ratings**
- **Corrosion Resistant**
- **High Strength**
- **Lightweight**
- **Economical**
- **Outperforms Stainless Steel**





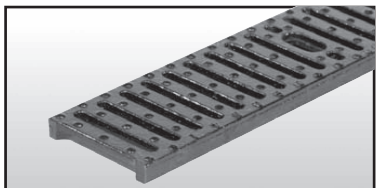
DURAGUARD® Composite Frame Part No. DG0700PE

Application Load Class E **(pg.39)**



Gray Iron Slotted Grating Part No. DG0641

For heavy traffic applications, the DURAGUARD® frame and Part No. DG0641 gray iron slotted grating provide an economical means to improve impact resistance and durability (described in more detail on page 27). Uses grate hold-down device Part No. DA0642BH.



Ductile Iron Slotted Grating Part No. DG0641D

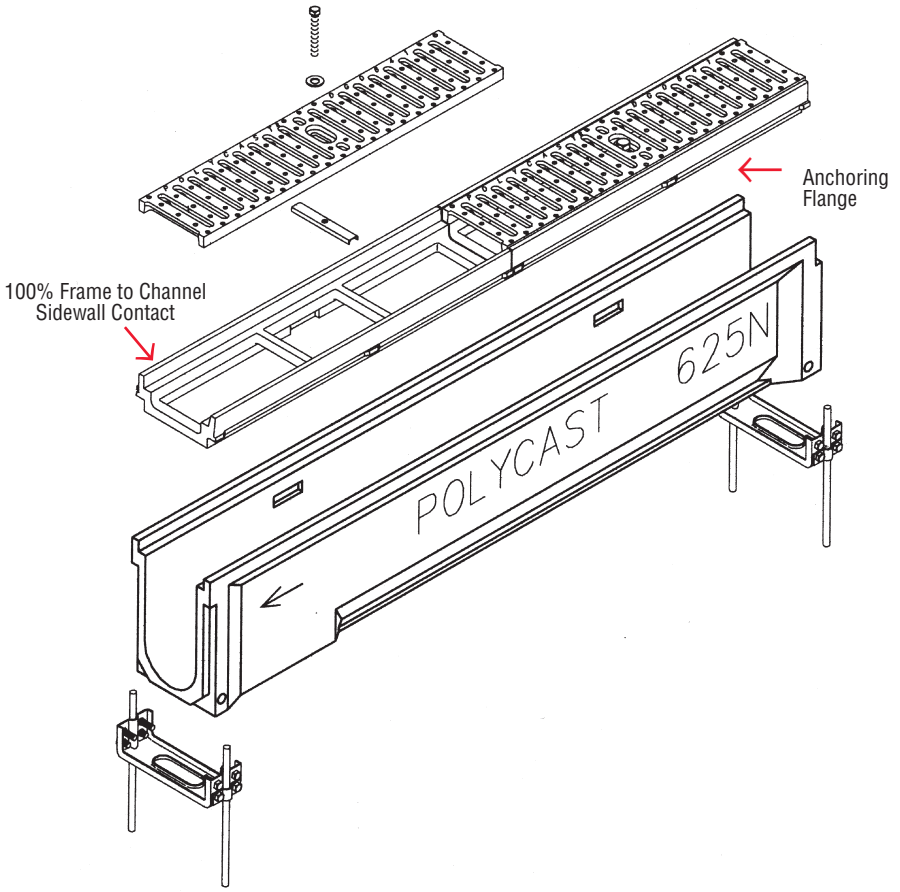
The DURAGUARD® frame and Part No. DG0641D grating offer superior chemical resistance and high strength for general to moderately heavy use applications (described in more detail on page 27). Uses grate hold-down device Part No. DA0642BH.

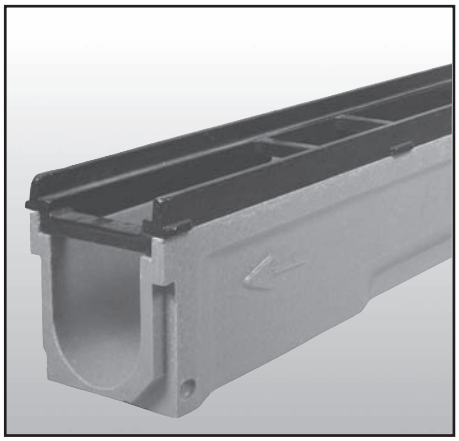
Traffic Conditions Requiring Channel Reinforcement (700 Series Frames, DURAGUARD®, POLYGUARD)

- **Solid Tires**
- **High Speed (over 15mph)**
- **Frequent Traffic**

The POLYCAST® 700 Series offers exceptional impact resistance. Designed for extreme loads, the HARDNOSE cast iron frame strengthens the grating and drain assembly for extra durability. The POLYCAST® 700 Series is recommended for heavy commercial and military aircraft taxi-ways at moderate speeds, hard wheel forklift, pallet jacks, solid wheel carts, construction equipment and off-road vehicles. It meets FAA Airport pavement design loads per AC 150/5320-6D.

The flow rates are comparable to the conventional 600 Series. **Grating hold-down devices are available and must be maintained secure to reduce grate movement during loading.**

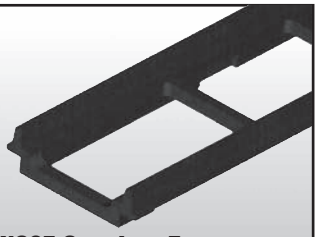




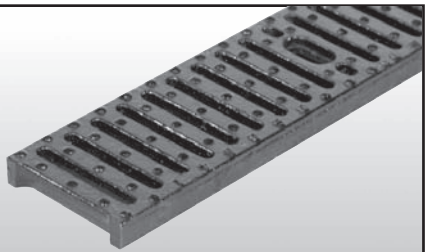
The 700 Series assembly consists of HARDNOSE cast iron frames inlaid on the top of the conventional 600 Series polymer concrete Channel and fitted with either Gray Iron or Ductile Iron Slotted Grates (described in more detail on page 27). Uses grate hold-down device Part. No. DA0642BH.

Application Load Class E **(pg.39)**

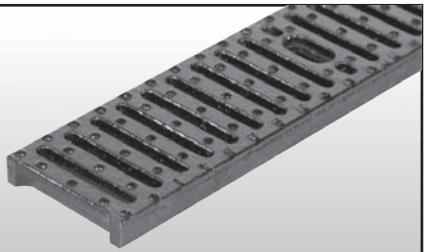
Application Load Class F **(pg.39)**



HARDNOSE Gray Iron Frame
Part No. DG0700AA
Part No. DG0970 (not shown) includes anchoring bolts



Gray Iron Slotted Grating
Part No. DG0641



Ductile Iron Slotted Grating
Part No. DG0641D

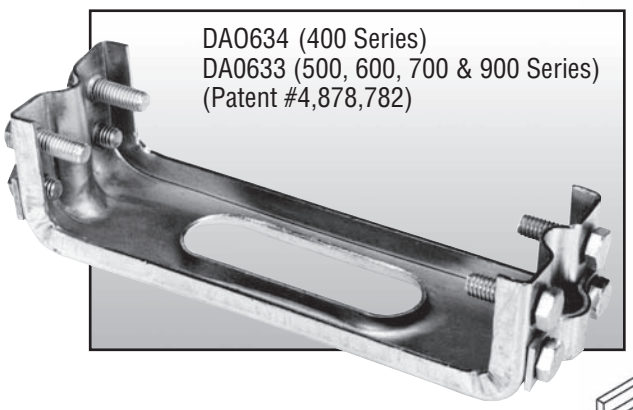
Installation Rates of 60'- 90' Per Hour Are Easily Attainable With a 2-Person Crew.

The POLYCAST® Installation Chair is the most efficient and economical means of setting a precast trench system. The installation chair supports the ends of the channels, aligns and locks the joint rigidly together and prevents the channels from floating. Adjusting channel elevation is easy with the POLYCAST® Installation Chair.

The installation chair is attached 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 connecting clamp on the installation chair and driven into the sub-base. The channels are then aligned and adjusted to achieve the proper elevation.

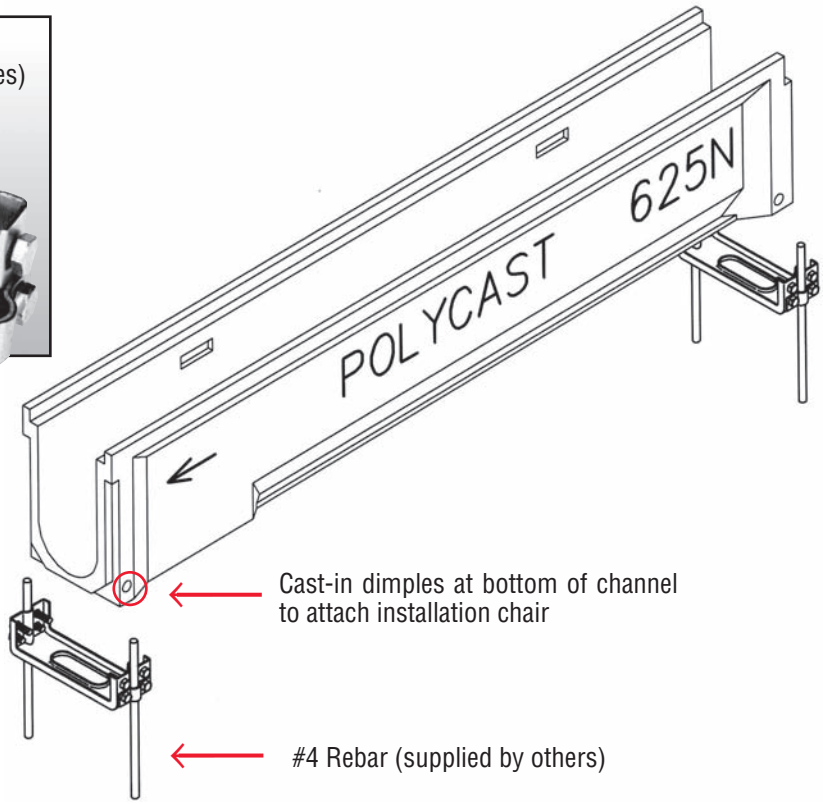
One chair per joint required.

NOTE: For use with 400, 500, 600, 700 and 900 Series Channels.



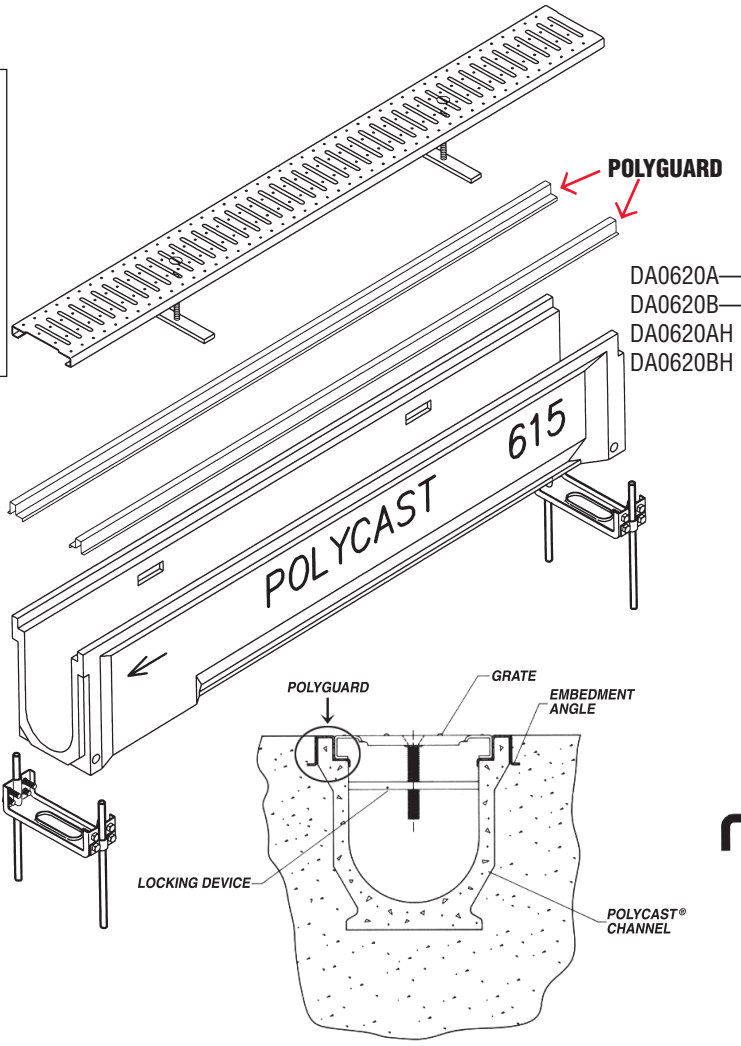
DAO634 (400 Series)
DA0633 (500, 600, 700 & 900 Series)
(Patent #4,878,782)

- **Rapid, accurate installation**
- **Aligns channels**
- **Sets elevation**
- **Tightens joint**
- **Reduces leakage during concrete placement**
- **Prevents channels from floating during concreting**



Traffic Conditions Requiring Channel Reinforcement (700 Series Frames, DURAGUARD®, POLYGUARD)

- **Solid Tires**
- **High Speed (over 15mph)**
- **Frequent Traffic**



DA0620A—galvanized steel (48" lg.)
DA0620B—stainless steel (48" lg.)
DA0620AH (24" lg.)
DA0620BH (24" lg.)

POLYGUARD

POLYCAST® POLYGUARD protects the exposed upper edge of the POLYCAST® channels for unmatched strength and protection against chipping and scarring in frequent or heavy traffic. POLYGUARD also gives extra architectural versatility.

POLYGUARD easily installs over the top edge of the 600 Series POLYCAST® channel and covers the upper horizontal and vertical surfaces of the POLYCAST® channel. It comes in 48" and 24" lengths.

POLYGUARD's keying feature locks into the adjacent concrete to help disperse destructive lateral loads away from the drain channel. This same feature also prevents the rails from slipping as can occur in other systems that rely only on mechanically bonding directly to the channel.

Neutral Channels

4" Bottom Cut-Outs

605H (705H)
615H (715H)
625H (725H)

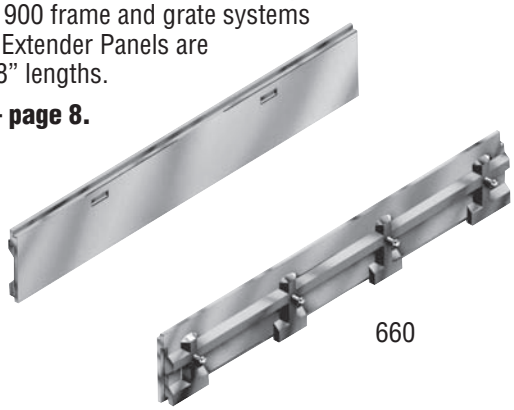
600N (700N)
605N (705N)
615N (715N)
625N (725N)

Extender Panel

The Extender Panel Set (660) provides additional design flexibility in meeting requirements of extended run lengths and/or higher flow capacities.

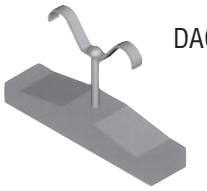
The Extender Panel adds an additional depth of 7-13/16". All 600, 700 and 900 frame and grate systems are available. Extender Panels are available in 48" lengths.

See detail — page 8.

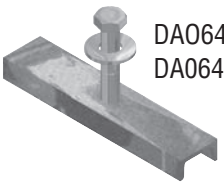


660

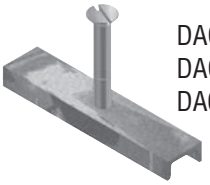
LOCKING DEVICES



DAO642F



DAO642B
DAO642BH

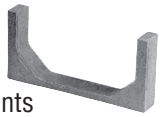


DAO642
DAO642S (stainless)
DA0642H

Locking Devices are to be used with all grating systems where wheel traffic occurs. This is necessary to provide system integrity.

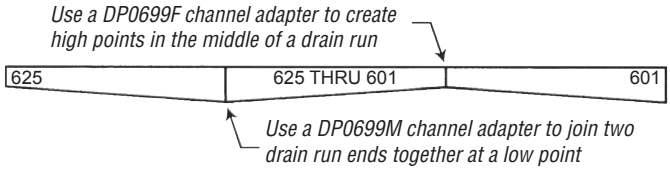
CHANNEL ADAPTERS

699F
Female/Female Joints



699M
Male/Male Joints

Male and Female Transition Devices (699F & 699M) are available where channel runs are in opposite directions and two channels are set either female to female or male to male. A female transition piece (699F) is used to fill the top space of the female to female joint (this applies to 600 Series only). An epoxy grout or urethane sealer can be used to smooth over the gap on the inside bottom of the channel. A male transition piece (699M) is used to lap under the male to male joint.



END CAPS

POLYCAST® end caps are used to enclose or provide piping transitions to the female and male ends of the channels where catch basins are not being used. They fit all channels ending in five (5), zero (0), neutrals (N) and halves (H).

ABS Plastic End Caps

DAO670*
FEMALE
Universal
Closed/Outlet
(cutout)

DAO670M*
MALE
Universal
Closed/Inlet
(cutout)

Patent #6,027,283

Male End Caps

POLYCAST® Universal male end caps are used to enclose or provide 4" pipe inlets to the female channel ends. Inlets accommodate 4" pipes.

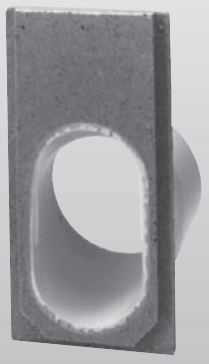
Female End Caps

POLYCAST® Universal female end caps are used to enclose or provide 4" pipe inlets to the male channel ends. Inlets accommodate 4" pipes.

Fits ALL POLYCAST® (600, 700 & 900 Series) Channels

Polymer Concrete End Caps

**
620D6 (720D6)
625D6 (725D6)



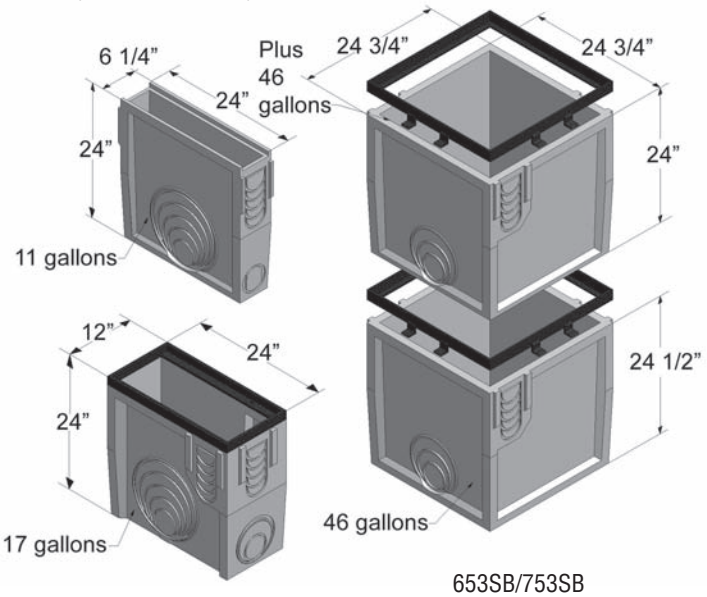
625DL6**
(725DL6)

These inlets and outlets accommodate 6" pipes.

***** Fits CORRESPONDING POLYCAST® 600, 700 & 900 Series Channels***

653OB/753OB
(See Fig. 3, pg. 17)

650/750
(See Fig. 1, pg. 17)



651/751
(See Fig. 2, pg. 17)

653SB/753SB
(See Fig. 4, pg. 17)

The POLYCAST® Catch Basins are an important part of the versatile POLYCAST® Presloped Drain System. The Catch Basins are manufactured with the same high strength, corrosion resistant polyester and Vinyl Ester polymer concrete used for the POLYCAST® Drain Channels. The Catch Basins are designed to be used as collection points, drain run transitions and interceptors to collect solid debris. POLYCAST® Catch Basins are designed to accommodate all drain channel sizes and have cut-outs designed specifically for channels with catalog numbers ending in 5, 0, N and H. POLYCAST® Catch Basins have a selection of grates available for specific needs.

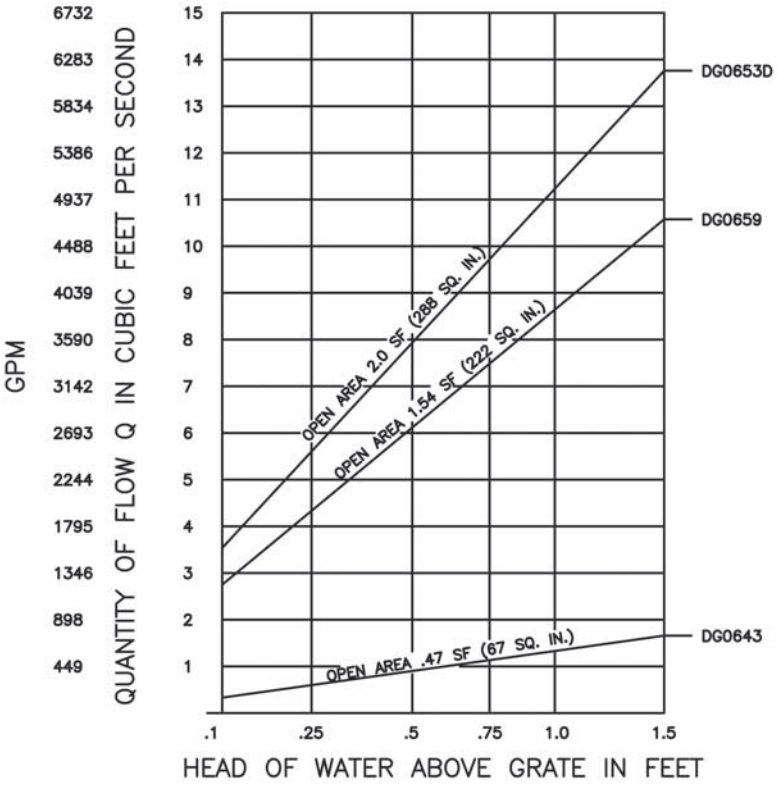
The POLYCAST® Catch Basins can be used with the POLYCAST® Drain System or can be used as an individual catch basin. In either case, costly labor-intensive on-site forming is eliminated.

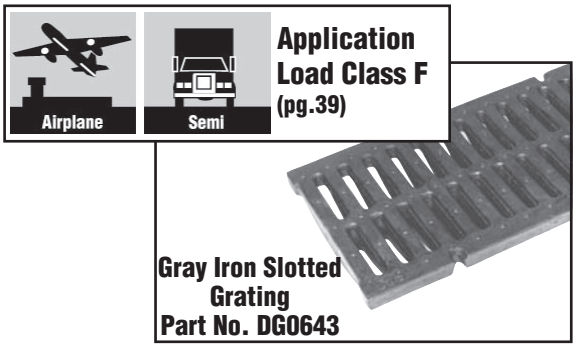
POLYCAST® 700 Series HARDNOSE Catch Basins are also available. They have the same features as the corresponding 600 Series Catch Basin. The 700 Series Catch Basins have a one-piece metal assembly for additional grating load distribution. HARDNOSE Catch Basins should be used in areas where solid tire and heavy commercial vehicles are anticipated.

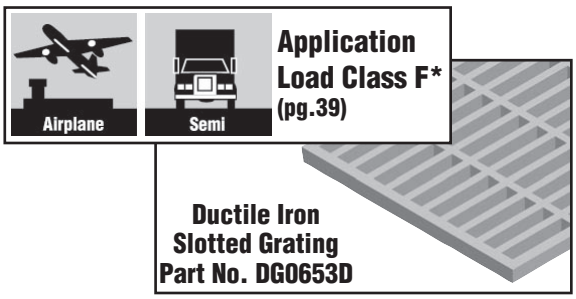
The 650 Catch Basin is available with any of the gratings/covers available for the 600 Series Channels (shown in detail on pages 23-26). The 651 Catch Basin is available with cast iron or fiberglass grates (shown in detail on page 29). The 653OB and 653SB Catch Basins are available with cast iron or fiberglass grates (shown in detail on page 29).

Quantity of Flow Through Grates

Based on 1 Foot Catch Basin
Computed using Orifice Equation $Q=CA\sqrt{2gh}$







* Class F grates with spans of 12" or more are rated for a 120,000 lb. wheel load over a 10" x 20" footprint per ASTM C-857.

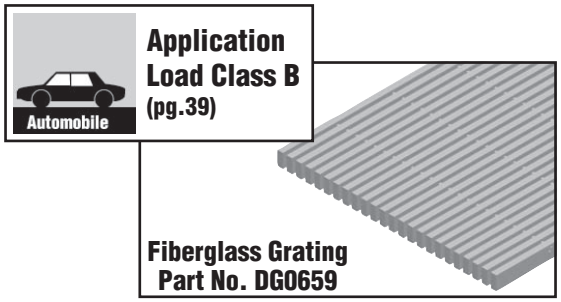
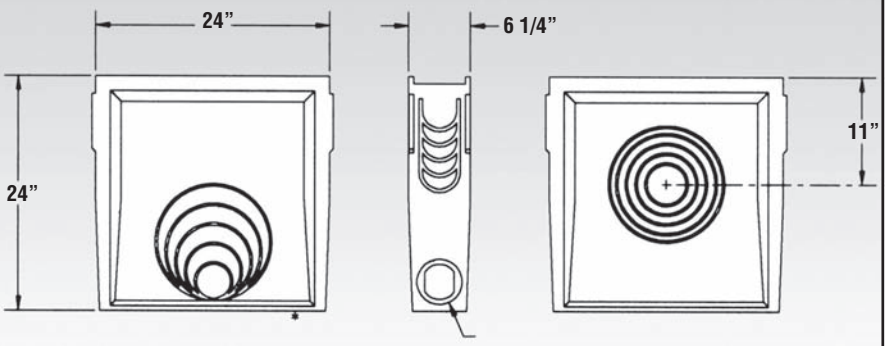
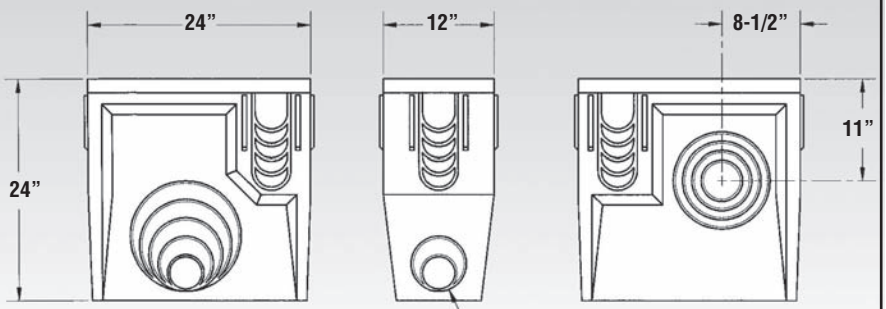


Fig. 1 650/750 Catch Basin
Wt. 90 lbs./105 lbs. - 11 Gallon Capacity



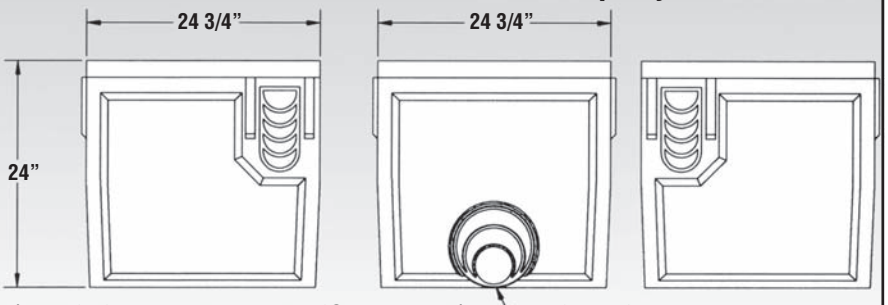
(Add 1 3/16" to the depth for the 750 catch basin) 4"knockout each end

Fig. 2 651/751 Catch Basin
Wt. 160 lbs./180 lbs. - 17 Gallon Capacity



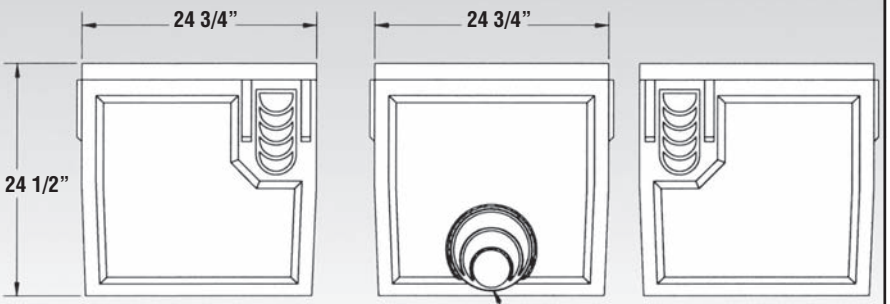
(Add 1-3/16" to the depth for the 751 catch basin) 4", 6" knockout

Fig. 3 6530B/7530B Catch Basin (Open Bottom Stacking)
Wt. 142 lbs./154 lbs. - 46 Gallon Capacity



(Add 1 3/16" to the depth for the 753SB catch basin) 4", 6" and 8" knockout

Fig. 4 653SB/753SB Catch Basin (Solid Bottom)
Wt. 165 lbs./177 lbs. - 46 Gallon Capacity (92 gallons with (1) 6530B)



(Add 1 3/16" to the depth for the 753SB catch basin) 4", 6" and 8" knockout

4" and 6" Bottom Cut-Outs

Catch Basin cut-outs accept the following channels: *605, 610, 615, 620, 625 and their corresponding halves and neutrals.*

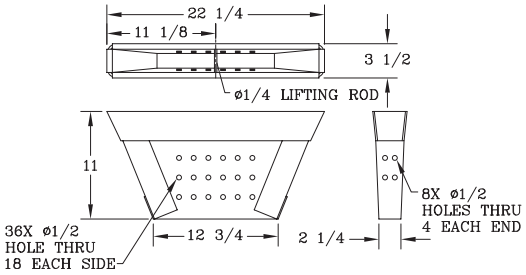
Drain channel cut-out connections are located on both ends of the catch basin. Pipe discharge cut-outs for 4", 6", 8", 10" and 12" pipe are located on both sides. The pipe cut-outs are located near the bottom of the catch basin on one side and on the other side the pipe cut-outs are located toward the middle. The catch basins also have one 4" pipe cut-out on each end and one 4" and 6" pipe cut-out on the bottom.

Debris Baskets

Corrugated plastic debris baskets are available for the 650/750 and 651/751 catch basins. A galvanized steel debris basket is also available for the 650/750 catch basin (not shown).

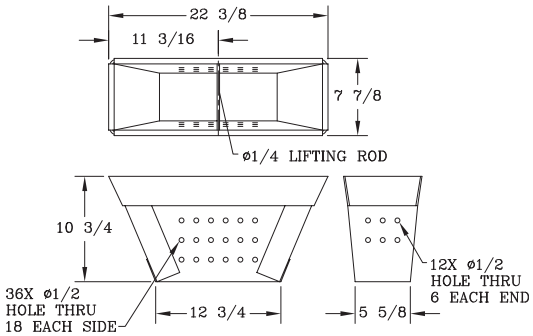
HDPE Corrugated Plastic Debris Basket for 650/750 Catch Basin

Part No. DA0650TA



HDPE Corrugated Plastic Debris Basket for 651/751 Catch Basin

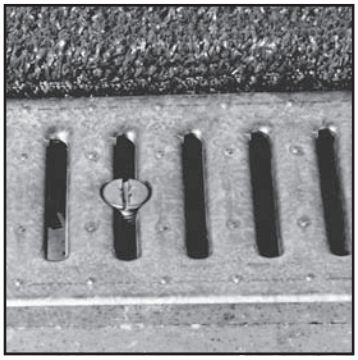
Part No. DA0651TA



NOTE: A debris basket is not available for the 653 catch basins.

For artificial turf and running track installations.

- Easy to Install
- Maintenance-Free
- Durable
- Economical

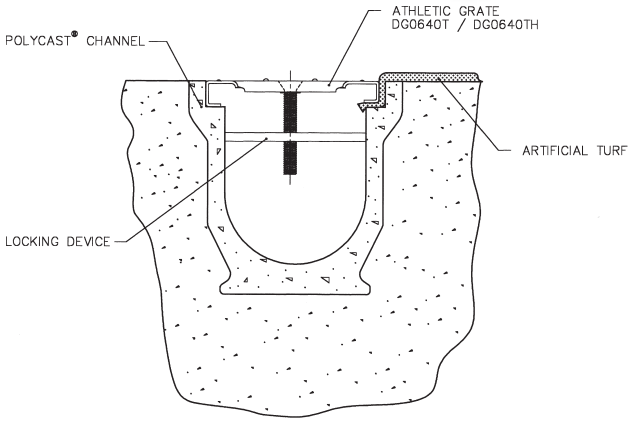


ABOVE: *(600 Series only)* Specially designed grate anchors astro-turf to drain and maintains a level surface.

POLYCAST® 400 & 600 Series SPORT-TRAC Drains

POLYCAST® SPORT-TRAC drains are designed for running track and artificial turf playing field applications. SPORT-TRAC drains offer all of the physical and chemical resistance features of the standard POLYCAST® 400 and 600 Series drain systems. The SPORT-TRAC 600 Series grating clamps the artificial turf in place.

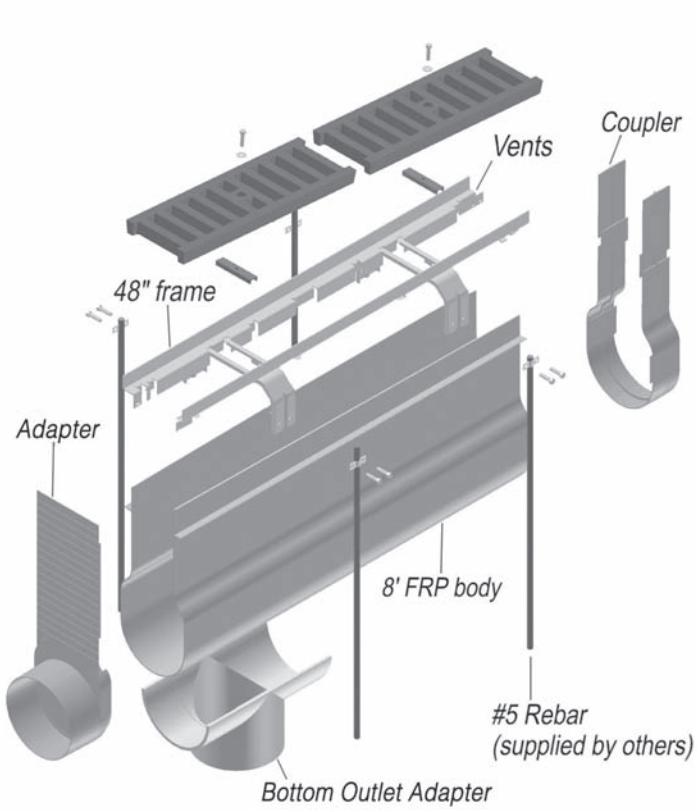
Both the 400 Series and the 600 Series SPORT-TRAC systems provide efficient drainage while maximizing life cycle costs because of their exceptional durability. Their strong polymer concrete construction and smooth interior surface walls make the systems virtually maintenance-free. The ease of installation and the modular design of the SPORT-TRAC drain systems also reduce construction costs, making them an economical solution for track and field applications.



600 Series

HIGH CAPACITY DRAIN SYSTEM

- **More Than 3000 GPM Flow Rate**
- **8-foot Channel Sections**
- **Lightweight**
- **Corrosion Resistant**
- **Rapid Installation**
- **Utilizes Standard Grating**
- **Single Lift Concrete Placement**



The POLYCAST® 3000 Series is a high capacity drain system designed for airports, roadways and other applications needing high volume flow rates. The flow rates for POLYCAST® 3000 are more than **3000 GPM (gallons per minute) or 6.73 cfs (cubic feet per second)** for 120' of drain. The channels are pultruded fiberglass and are available in either a polyester or a Vinyl Ester resin system. The polymer material limits water absorption to less than 1% and provides excellent chemical resistance. The **strong vertical sidewalls** reduce sidewall deflection during the concrete pour and therefore maintain maximum flow capacity. The sidewalls of many other drain systems tend to collapse during this critical process, resulting in substantially reduced flows.

The POLYCAST® 3000 Series is designed for a distributed proof load in excess of 40,000 lbs. as outlined in federal specification A-A-60005 and AASHTO M306. These standards require the proof load to be held for 60 seconds. Destructive testing of gray iron grates has shown the POLYCAST® 3000 Series grates to have an ultimate capacity of 57,500 lbs. For comparison purposes, the 57,500 lb. test load is distributed over an area that results in a pressure of 710 psi.

According to FAA publication AC150/5320, inlet grates for spans of less than 24" (POLYCAST® Part No. DG3041 spans 8") that are subject to direct heavy aircraft loads should be designed for a uniform live load of 250 psi. Among large and midsize airliners and the Concorde, the Boeing 747 has the highest tire-to-pavement bearing pressure . The pressure on the pavement at Maximum Takeoff Weight for this aircraft is 207 psi.

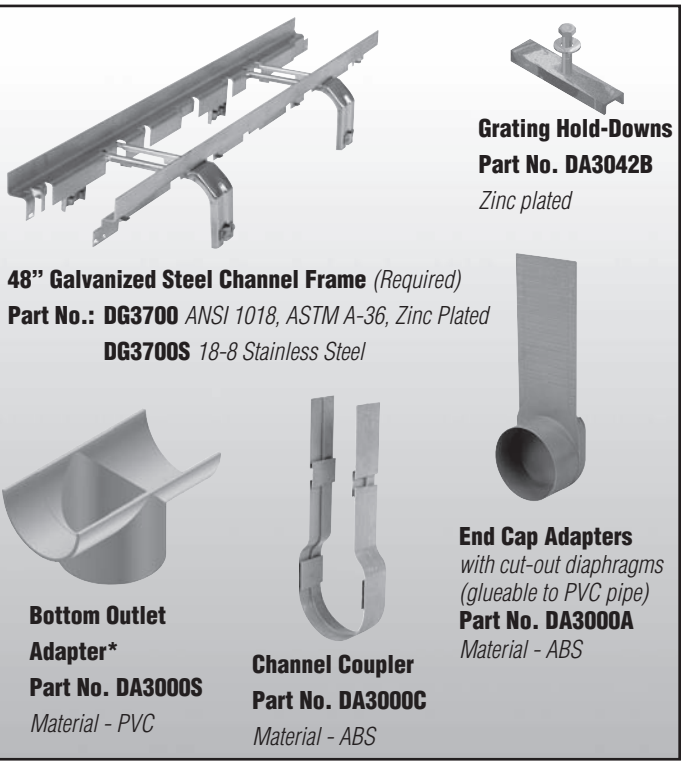
POLYCAST® 3000 Series exceeds FAA airport pavement design loads per AC 150/5320-6D and exceeds heavy duty dynamic wheel load for AASHTO-H029. All grates and frames resist pullout forces in excess of 10kN per meter (685 lbs. per foot) of length in grated line drains.

POLYCAST® 3000 System Accessories

The channel frame, an integral required part of the drain system, is available in either plated steel or stainless steel.

Channel couplers and end cap adapters are ABS plastic. The specially designed end cap adapter can be used to close off the system or the diaphragm can be cut out to allow connections to standard 8" PVC pipe.

A selection of three gratings (shown in detail on page 27) are provided for various traffic, weight load or chemical resistance requirements. See page 20 for gratings and flow-through graph.



48" Galvanized Steel Channel Frame *(Required)*
Part No.: DG3700 *ANSI 1018, ASTM A-36, Zinc Plated*
DG3700S *18-8 Stainless Steel*

Grating Hold-Downs
Part No. DA3042B
Zinc plated

Bottom Outlet Adapter*
Part No. DA3000S
Material - PVC

Channel Coupler
Part No. DA3000C
Material - ABS

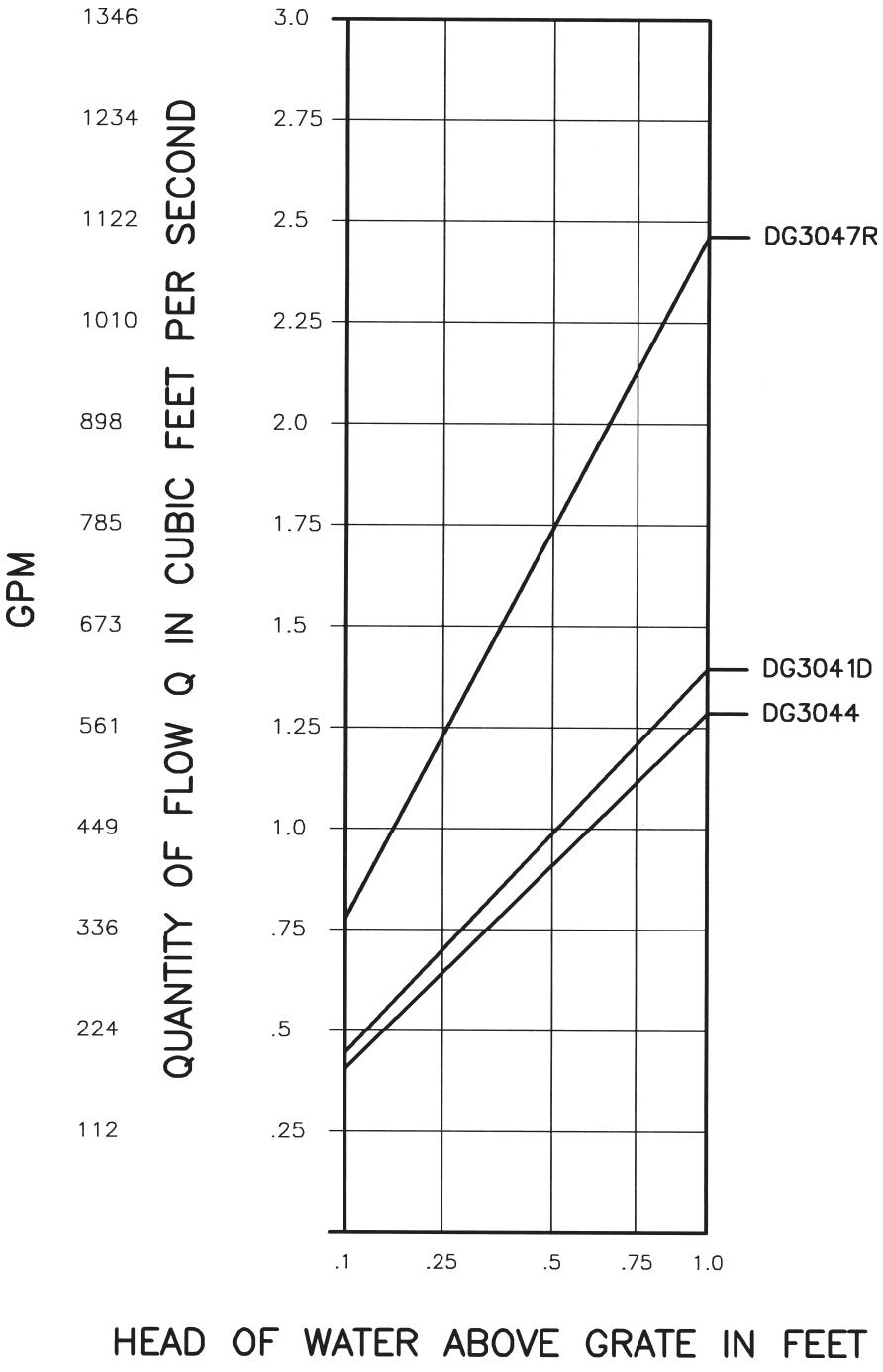
End Cap Adapters
with cut-out diaphragms (glueable to PVC pipe)
Part No. DA3000A
Material - ABS

* Installation Instructions (if applicable) - Place bottom outlet adapter in desired location and mark channel for pipe cutout. For best results, cut channel with jig saw. Attach bottom outlet adapter with two sheet rock screws.

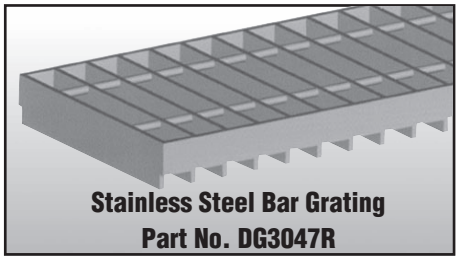
3000 Series Grating

Quantity of Flow Through Grates

Based on 1 foot 3000 Series Channel
Computed using Orifice Equation $Q=CA\sqrt{2gh}$



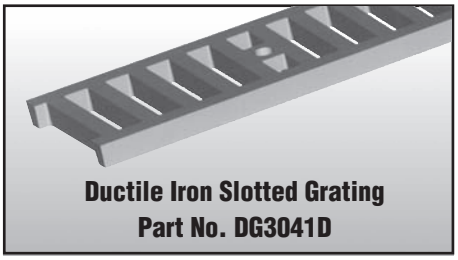
Application Load Class F (pg. 39)



Stainless Steel Bar Grating
Part No. DG3047R

See page 28 for more details and technical information.

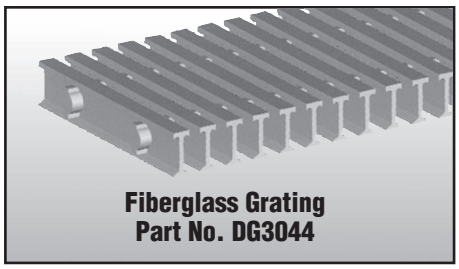
Application Load Class F (pg. 39)



Ductile Iron Slotted Grating
Part No. DG3041D

See page 28 for more details and technical information.

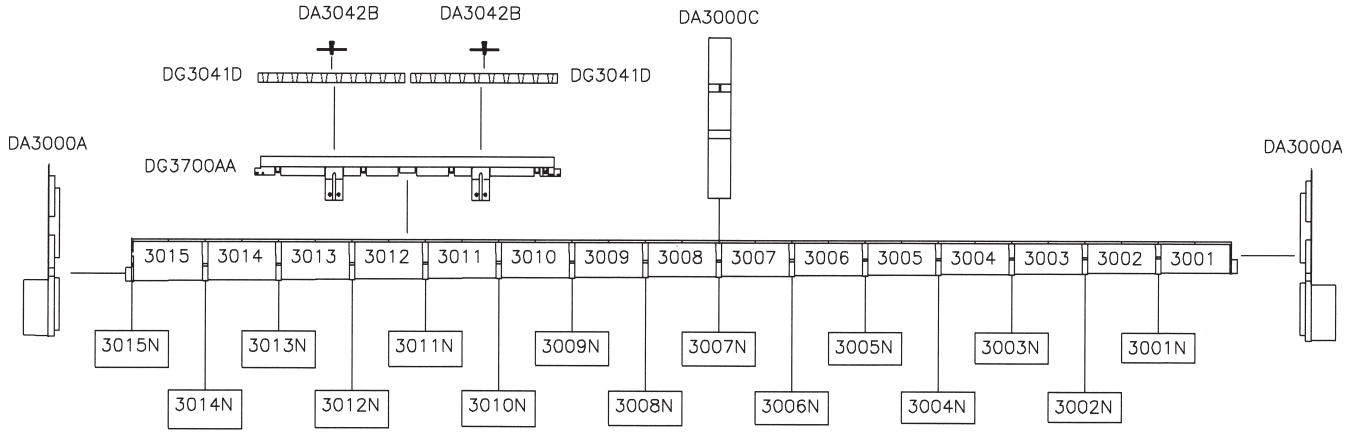
Application Load Class D (pg. 39)



Fiberglass Grating
Part No. DG3044

See page 29 for more details and technical information.

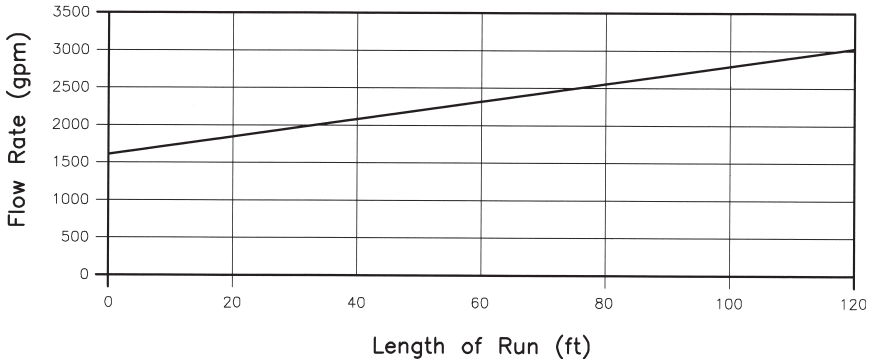
Drain Configuration



Part Number	Inlet Depth(in)	Outlet Depth(in)	Flow (gpm)	Flow Velocity(fps)	Wt.(lbs)
3001	13.06	14.00	1713	5.8	24.84
3002	14.00	15.00	1806	5.8	26.01
3003	15.00	15.94	1899	5.8	27.53
3004	15.94	16.88	1992	5.8	29.05
3005	16.88	17.81	2085	5.8	30.57
3006	17.81	18.81	2178	5.8	32.09
3007	18.81	19.75	2271	5.8	33.61
3008	19.75	20.75	2363	5.8	35.13

Part Number	Inlet Depth(in)	Outlet Depth(in)	Flow (gpm)	Flow Velocity(fps)	Wt.(lbs)
3009	20.75	21.69	2456	5.8	36.65
3010	21.69	22.69	2549	5.8	40.75
3011	22.69	23.63	2642	5.8	42.27
3012	23.63	24.56	2735	5.8	43.79
3013	24.56	25.56	2828	5.8	45.31
3014	25.56	26.50	2921	5.8	46.83
3015	26.50	27.50	3014	5.8	48.35

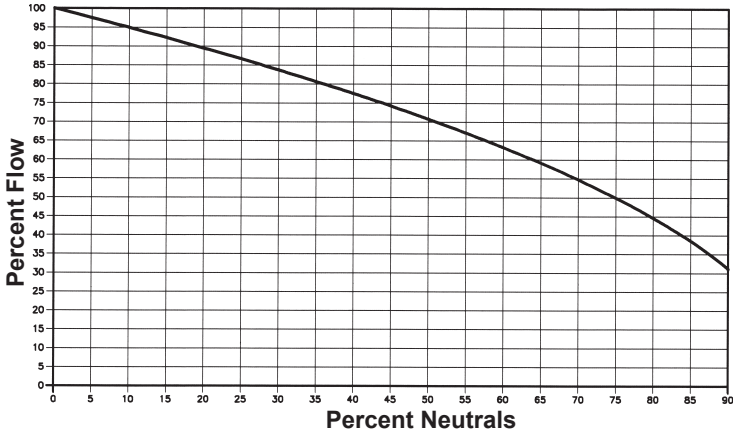
System Performance



Flow Capacity with 1% Continuous Built-in Slope

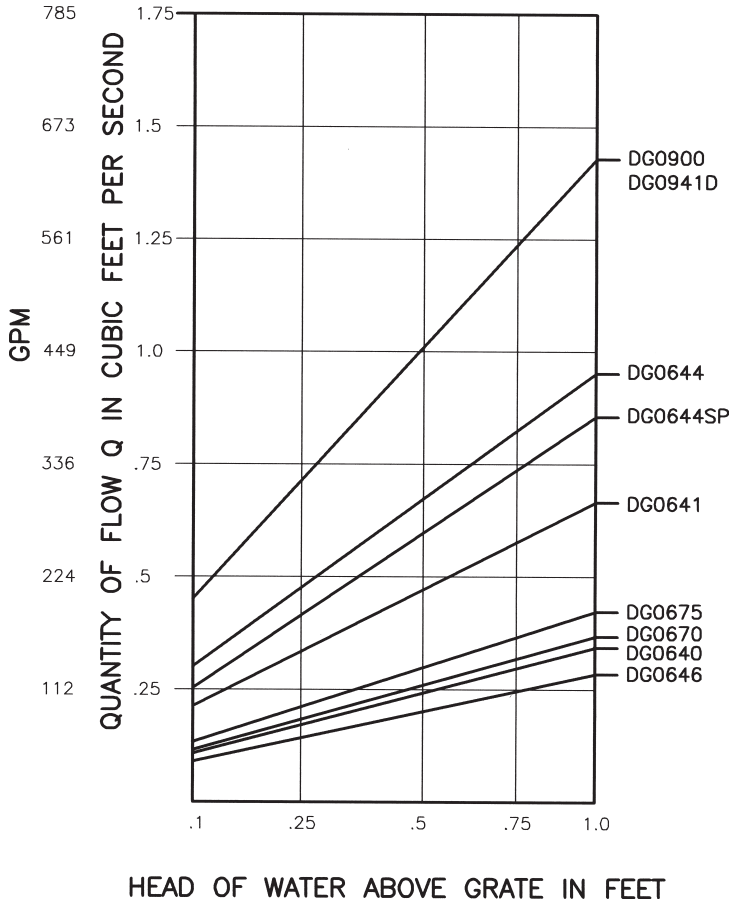
Effect of Neutrals on Flow Capacity

* This graph is based on the Manning Equation.



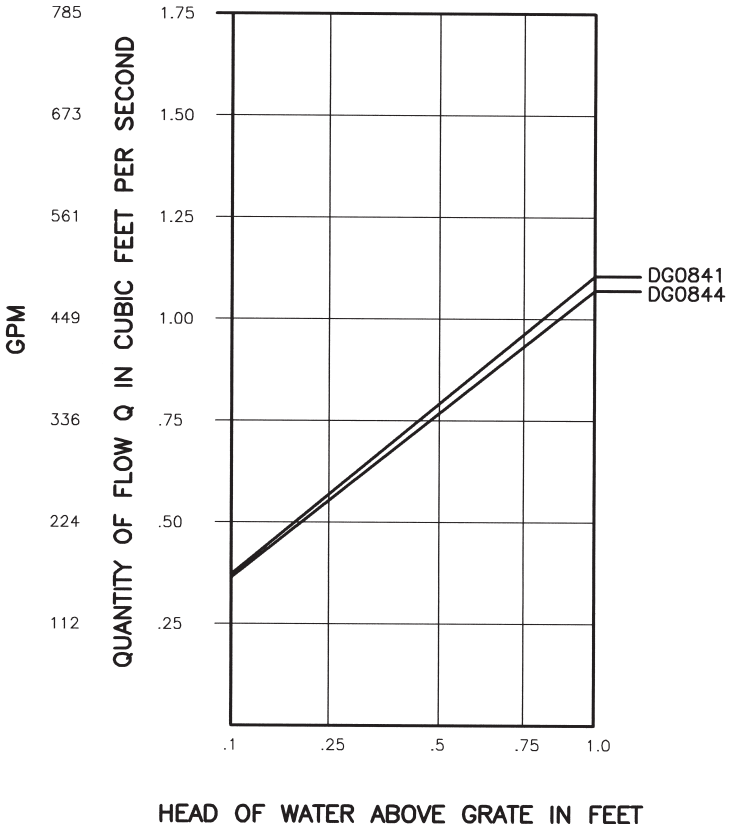
Quantity of Flow Through 600 Series Grates

Based on 1 foot 600 Series Channel
Computed using Orifice Equation $Q=CA\sqrt{2gh}$



Quantity of Flow Through 800 Series Grates

Based on 1 foot 825 Channel
Computed using Orifice Equation $Q=CA\sqrt{2gh}$



Pedestrians

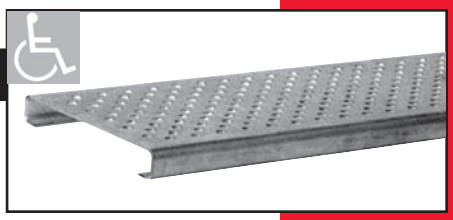
Application Load Class A
(pg. 39)

Galvanized Steel Perforated — Part No. DG0646

Designed for use in pedestrian areas to minimize heel hazard and prevent entrance of large objects. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

ADA Compliant

Open Area: 8.5 in^2/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 4 lbs. or 8 lbs.
For use with 500/600 Series Channels
Perforation Diameter: 1/4"
Grate In-Flow: See chart pg. 22

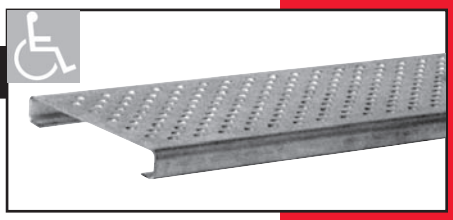


Stainless Steel Perforated — Part No. DG0657

Designed for use where sanitary conditions are essential, as well as the need for heel-resistant gratings. Grating hold-down device Part No. DA0642S (not shown) should be used and maintained secure.

ADA Compliant

Open Area: 8.5 in^2/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 4 lbs. or 8 lbs.
For use with 500/600 Series Channels
Perforation Diameter: 1/4"
Grate In-Flow: See chart pg. 22

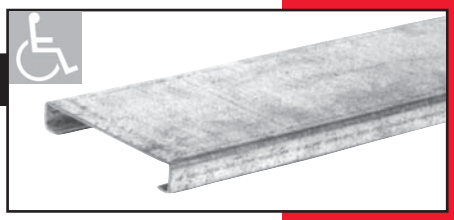


Galvanized Steel Solid — Part No. DG0645

Designed for pipe runs, e.g., secondary containment or cable runs. Removable cover allows full access. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

ADA Compliant

Dimensions: 5-1/4" x 24" or 48"
Weight: 4 lbs. or 8 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22

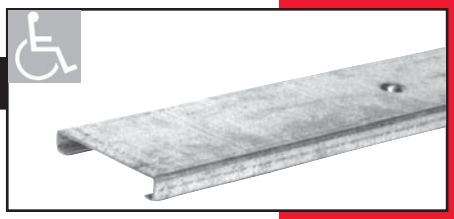


Stainless Steel Solid — Part No. DG0667

Designed for pipe runs, e.g., secondary containment or cable runs. Especially suited for areas exposed to mild acids or bases. Removable cover allows full access. Grating hold-down device Part No. DA0642S (not shown) should be used and maintained secure.

ADA Compliant

Dimensions: 5-1/4" x 24" or 48"
Weight: 4 lbs. or 8 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22



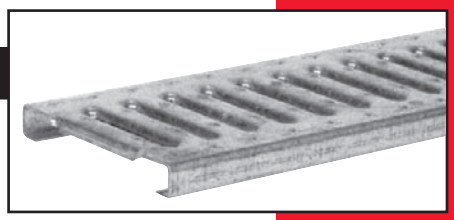
NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

Application Load Class B
(pg. 39)

Stainless Steel Slotted — Part No. DG0647

Application for use where sanitary conditions are essential. Grating hold-down device Part No. DA0642S (not shown) should be used and maintained secure.

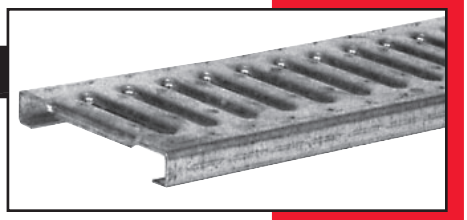
Open Area: 10.2 in^2/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 4 lbs. or 8 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22



Galvanized Steel Slotted — Part No. DG0640

An economical alternative, the galvanized grate is appropriate for many general use conditions. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

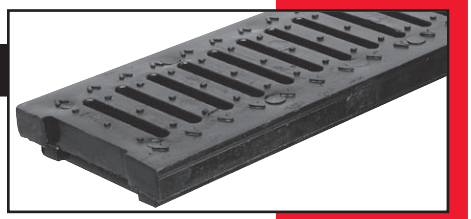
Open Area: 10.2 in^2/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 4 lbs. or 8 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22



DURAGUARD® Slotted — Part No. DG0670

A high density polyethylene slotted grate appropriate for corrosive applications or where sanitary conditions are necessary. Provides excellent chemical resistance and durability. Polyethylene construction helps protect bare feet. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

Open Area: 11 in^2/Linear Foot
Dimensions: 5-1/4" x 24"
Weight: 4 lbs.
For use with 600 Series Channels
Grate In-Flow: See chart pg. 22
NOTE: Part No. DG0670G available, color: gray

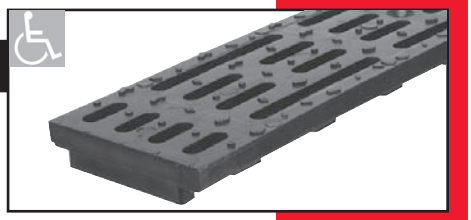


DURAGUARD® Transverse — Part No. DG0675

A versatile and economical alternative high density polyethylene composite grate. When used in high velocity transverse sheet flow applications, the longitudinal slots create turbulence to improve entry of flow into the channel. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

ADA Compliant

Open Area: 12.6 in^2/Linear Foot
Dimensions: 5-1/4" x 24"
Weight: 3.5 lbs.
For use with 600 Series Channels
Grate In-Flow: See chart pg. 22
NOTE: Part No. DG0675G available, color: gray



NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

Application Load Class C
(pg. 39)

Double Galvanized Steel Perforated — Part No. DG0646R

Designed for use in pedestrian areas to minimize heel hazard and prevent entrance of large objects. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

ADA Compliant

Open Area: 8.5 in²/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 7 lbs. or 14 lbs.
For use with 600 Series Channels
Perforation Diameter: 1/4"
Grate In-Flow: See chart pg. 22

Double Stainless Steel Perforated — Part No. DG0657R

Designed for use where sanitary conditions are essential, as well as the need for heel-resistant gratings. Grating hold-down device Part No. DA0642S (not shown) should be used and maintained secure.

ADA Compliant

Open Area: 8.5 in²/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 6 lbs. or 12 lbs.
For use with 600 Series Channels
Perforation Diameter: 1/4"
Grate In-Flow: See chart pg. 22

Double Galvanized Steel Slotted — Part No. DG0640R

An economical alternative, the galvanized reinforced slotted grate is appropriate for many heavy use applications. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

Open Area: 10.2 in²/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 6 lbs. or 12 lbs.
For use with 600 Series Channels
Grate In-Flow: See chart pg. 22

Double Stainless Steel Slotted — Part No. DG0647R

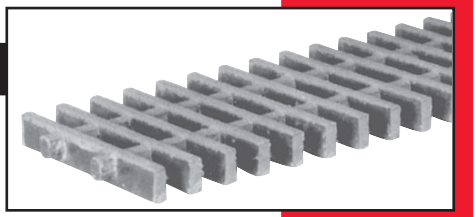
Designed for use where sanitary conditions are essential. Grating hold-down device Part No. DA0642S (not shown) should be used and maintained secure.

Open Area: 10.2 in²/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 6 lbs. or 12 lbs.
For use with 600 Series Channels
Grate In-Flow: See chart pg. 22

Fiberglass — Part No. DG0644

Designed for use with POLYCAST® Vinyl Ester trench in areas requiring extreme chemical resistance. The clear opening between the bars is 5/8". Grating hold-down device Part No. DA0642F (not shown) should be used and maintained secure.

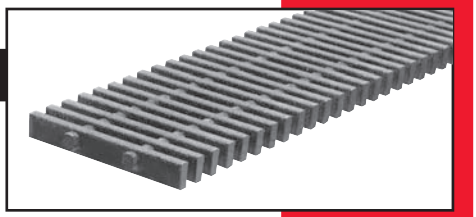
Open Area: 29.6 in²/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 2-1/2 lbs. or 5 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22



Fiberglass — Part No. DG0644SP

Designed for use with POLYCAST® Vinyl Ester trench in areas requiring extreme chemical resistance. The clear opening between the bars is 3/8". Grating hold-down device Part No. DA0642F (not shown) should be used and maintained secure.

Open Area: 25.5 in²/Linear Foot
Dimensions: 5-1/4" x 24" or 48"
Weight: 3 lbs. or 6 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22



NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

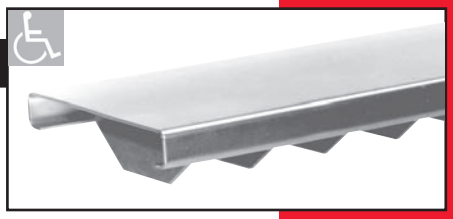
Application Load Class C **(pg. 39)**

Double Stainless Steel Solid — Part No. DG0667R

Designed for pipe runs, e.g., secondary containment or cable runs. Especially suited for areas exposed to mild acids or bases. Removable cover allows full access. Grating hold-down device Part No. DA0642S (not shown) should be used and maintained secure.

ADA Compliant

Dimensions: 5-1/4" x 24" or 48"
Weight: 7 lbs. or 14 lbs.
For use with 600 Series Channels
Grate In-Flow: See chart pg. 22

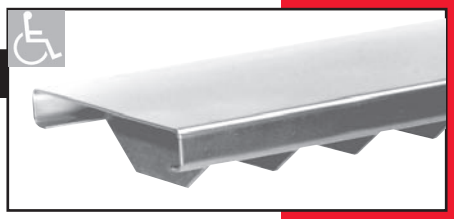


Double Galvanized Steel Solid — Part No. DG0645R

Designed for pipe runs, e.g., secondary containment or cable runs. Removable cover allows full access. Grating hold-down device Part No. DA0642 (not shown) should be used and maintained secure.

ADA Compliant

Dimensions: 5-1/4" x 24" or 48"
Weight: 7 lbs. or 14 lbs.
For use with 600 Series Channels
Grate In-Flow: See chart pg. 22

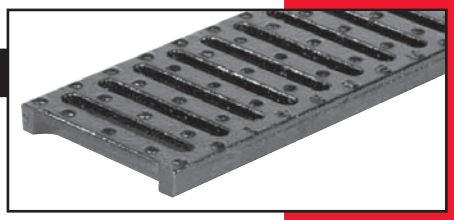


Application Load Class D **(pg. 39)**

Gray Iron Slotted — Part No. DG0641

The gray iron grate is appropriate for many general use conditions. Grating hold-down device Part No. DA0642B (not shown) should be used and maintained secure.

Open Area: 19.8 in^2/Linear Foot
Dimensions: 5-1/4" x 24"
Weight: 15 lbs.
For use with 600/700 Series Channels
Grate In-Flow: See chart pg. 22

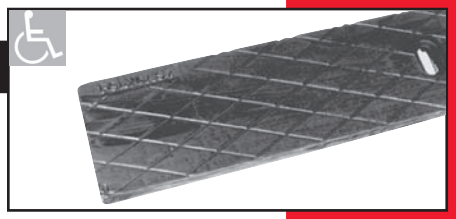


Gray Iron Solid — Part No. DG0641S

Designed for pipe raceway, e.g., secondary containment and cable runs. Removable cover allows full access. Grating hold-down device Part No. DA0642B (not shown) should be used and maintained secure.

ADA Compliant

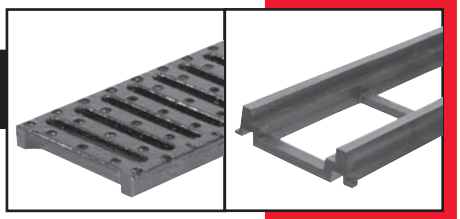
Dimensions: 5-1/4" x 24"
Weight: 18 lbs.
For use with 600 Series Channels
Black Finish
Grate In-Flow: See chart pg. 22



NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

Application Load Class E **(pg. 39)**

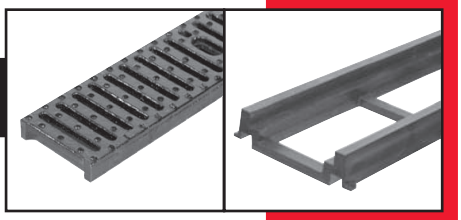
DURAGUARD® Frame w/Gray Iron Slotted — Part No. DG0700PE w/ DG0641



DG0700PE Series Frame and Part No. DG0641 gray iron are designed for moderate heavy use conditions. Grating hold-down device Part No. DA0642BH (not shown) **must be used and maintained secure.** Improves strength and impact resistance.

Open Area: 19.8 in²/Linear Foot
Dimensions: 6-1/4" x 24"
Weight (grate plus frame): 16 lbs.
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22
NOTE: Grates & locking devices must be in place and secure prior to concrete placement.

DURAGUARD® Frame w/ Ductile Iron Slotted — Part No. DG0700PE w/ DG0641D



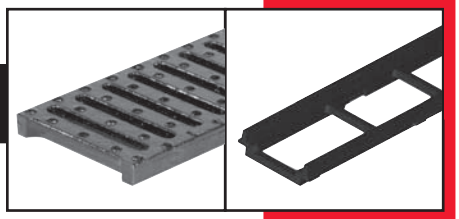
The DURAGUARD® Frame and Ductile Iron Slotted Grate, Part No. DG0641D, provide increased strength and durability for general to moderately heavy use applications. Offers exceptional corrosion resistance and low maintenance. Grating hold-down device Part No. DA0642BH (not shown) **must be used and maintained secure.**

Open Area: 20.9 in²/Linear Foot
Dimensions: 6-1/4" x 24"
Weight (grate plus frame): 16 lbs.
ASTM A536 Class 65-45-12
For use with 500/600 Series Channels
Grate In-Flow: See chart pg. 22
NOTE: Grates & locking devices must be in place and secure prior to concrete placement.

700 SERIES CHANNEL FRAME SYSTEM

Application Load Class E **(pg. 39)**

700 Series HARDNOSE Gray Iron Frame w/Gray Iron Slotted — Part No. DG0700 w/DG0641

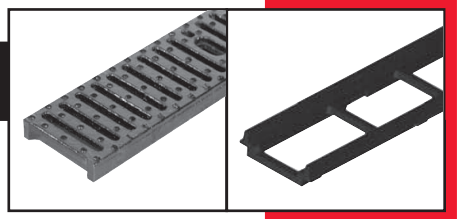


DG0700 Series Frame and Part No. DG0641 grates used in areas exposed to heavy traffic and solid tire vehicles. Grating hold-down device DA0642B must be maintained secure. Offers exceptional impact resistance.

Open Area: 19.8 in²/Linear Foot
Dimensions: 6-1/4" x 24"
Weight (grate plus frame): 30 lbs.
For use with 500/600 Series Channels
Black Finish
Grate In-Flow: See chart pg. 22

Application Load Class F **(pg. 39)**

700 Series HARDNOSE Gray Iron Frame w/Ductile Iron Slotted — Part No. DG0700 w/DG0641D



DG0700 Series Frame and Part No. DG0641D grates used in areas exposed to heavy traffic and solid tire vehicles. Grating hold-down device DA0642B must be maintained secure. Offers exceptional impact resistance.

Open Area: 19.8 in²/Linear Foot
Dimensions: 6-1/4" x 24"
Weight (grate plus frame): 30 lbs.
ASTM A536 Class 65-45-12
For use with 500/600 Series Channels
Black Finish
Grate In-Flow: See chart pg. 22

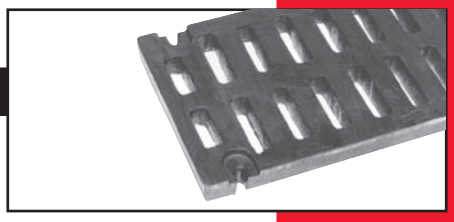
NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

Application Load Class E **(pg. 39)**

MAXI/Gray Iron Slotted — Part No. DG0841

Designed for general use. Grating hold-down devices are included and should be maintained secure.

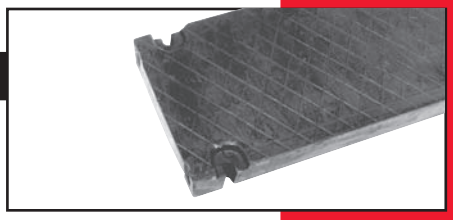
Open Area: 32 in²/Linear Foot
Dimensions: 10" x 24"
Weight: 62 lbs.
For use with 800 Series Channels
Black Finish
Grate In-Flow: See chart pg. 22



MAXI/Gray Iron Solid — Part No. DG0842

Designed for pipe raceway, e.g., secondary containment and cable runs. Removable cover allows full access. Grating hold-down devices are included and should be maintained secure.

Dimensions: 10" x 24"
Weight: 75 lbs.
For use with 800 Series Channels
Grate In-Flow: See chart pg. 22

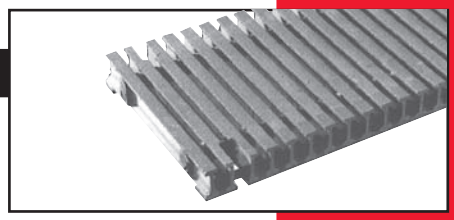


Application Load Class D **(pg. 39)**

MAXI/Fiberglass — Part No. DG0844

Designed for use with the POLYCAST® Vinyl Ester trench in areas requiring extreme chemical resistance. Securing bolts are included and should be used and maintained secure.

Open Area: 31 in²/Linear Foot
Dimensions: 10" x 48"
Weight: 15 lbs.
For use with 800 Series Channels
Grate In-Flow: See chart pg. 22



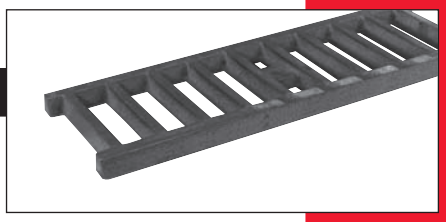
3000 SERIES GRATINGS

Application Load Class F **(pg. 39)**

Ductile Iron Slotted — Part No. DG3041

A heavy duty grate suitable for frequent traffic applications. Exceeds AASHTO H-20, FAA requirements for pavement design and exceeds Federal Specification RR-F-621E.

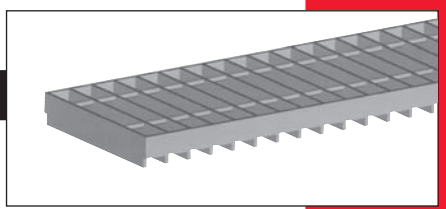
Open Area: 42 in²/Linear Foot
Dimensions: 8" x 24" x 1.5"
Weight: 36 lbs.
ASTM A536 Class 65-45-12
Grate In-Flow: See chart pg. 20



Stainless Steel Bar — Part No. DG3047R

Designed for meat processing plants and other areas requiring stainless steel gratings. Structural banded. 3/16" bar thickness.

Open Area: 80 in²/Linear Foot
Dimensions: 8" x 24" x 1.5"
Weight: 27 lbs.
Grate In-Flow: See chart pg. 20



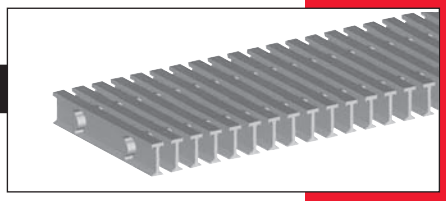
NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

Application Load Class D **(pg. 39)**

Fiberglass — Part No. DG3044

Designed for use with POLYCAST® 3000 Vinyl Ester channels in areas requiring extreme chemical resistance.

Open Area: 38 in²/Linear Foot
Dimensions: 8" x 48" x 1.5"
Weight: 12 lbs.
Grate In-Flow: See chart pg. 20



CATCH BASIN GRATINGS 651/751/653OB/653SB/753OB/753SB

Application Load Class F **(pg. 39)**

Gray Iron Slotted — Part No. DG0643

Designed for frequent heavy traffic. Grating hold-down devices are included and should be maintained secure.

Open Area: 32 in²/Linear Foot
Dimensions: 10-3/4" x 22-3/4"
Weight: 63 lbs.
For use with 651/652 Basins
Black Finish
Grate In-Flow: See Chart pg. 16

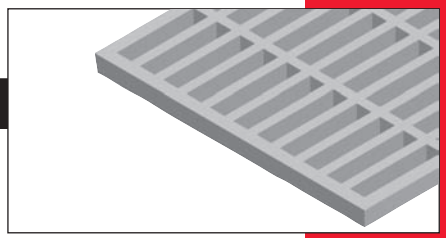
Application Load Class F* **(pg. 39)**

* Class F grates with spans of 12" or more are rated for a 120,000 lb. wheel load over a 10" x 20" footprint per ASTM C-857.

Ductile Iron Slotted — Part No. DG0653D

Designed for frequent heavy traffic.

Open Area: 288 in²/Linear Foot
Dimensions: 23-3/4" x 23-3/4"
Weight: 130 lbs.
ASTM A536 Class 65-45-12
For use with 653OB/653SB Basins
Black Finish
Grate In-Flow: See chart pg. 16

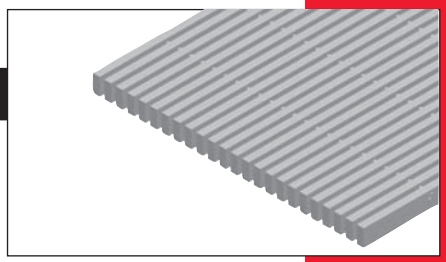


Application Load Class B **(pg. 39)**

Fiberglass — Part No. DG0659

Designed for use with the POLYCAST® Vinyl Ester Catch Basins in areas requiring extreme chemical resistance.

Open Area: 222 in²/Linear Foot
Dimensions: 23-3/4" x 23-3/4"
Weight: 20 lbs.
For use with 653OB/653SB Basins
Vinyl Ester
Grate In-Flow: See chart pg. 16



NOTE: ADA Code—4.5.4 gratings. If gratings are located in walking surfaces, then they shall have spaces no greater than 1/2" (13mm) wide in one direction. If gratings have elongated openings, then they shall be placed so that the long dimension is perpendicular to the dominate direction of travel.

For those highly corrosive drainage situations, Strongwell-Lenoir City Division (with plants in Lenoir City, TN and San Jose, CA), manufactures polymer concrete drainage components with DERAKANE®* 470 Vinyl Ester resin. This includes all series of precast drainage systems and components.

The Vinyl Ester trench drains can be ordered with a highly corrosion resistant Vinyl Ester fiberglass grating.

A corrosion resistant fiberglass locking device is also available. The Vinyl Ester trench drains can also be ordered with any of the gratings offered.

POLYCAST® polymer concrete products fabricated with DERAKANE®* 470 Vinyl Ester resin are ideally suited for drainage and handling of most highly corrosive fluids.

The POLYCAST® Vinyl Ester based drains are especially suitable for drainage in areas where manufacturers must concentrate and contain corrosive materials to meet EPA pollution control requirements.

POLYCAST® drain components are manufactured with only quality polyester and Vinyl Ester resins.

DERAKANE® 470 Vinyl Ester Resin:

- Performs very well at high temperatures
- Can be used in many applications involving combinations of acids, halogenated organics, caustics and solvents
- Displays high resistance to chlorinated solvents
- Has proven track record for many industrial applications

* DERAKANE® is a registered trademark of Dow Chemical Co.

CHEMICAL	% CONCENTRATION	MAX TEMP °F
A		
Acetaldehyde	100	N.R.
Acetic Acid	10	180
Acetic Acid, Glacial	100	N.R.
Acetic Anhydride	100	N.R.
Acetone	10	150
Acetone	100	N.R.
Acrylamide	50	65
Adipic Acid	23	150
Alum	All	180
Aluminum Chloride	All	180
Aluminum Chlorohydrate	All	180
Aluminum Nitrate	100	150
Aluminum Potassium Sulfate	All	180
Aluminum Sulfate	All	180
Ammonium Acetate	65	65
Ammonium Bicarbonate	50	135
Ammonium Bifluoride	100	125
Ammonium Bromide	43	135
Ammonium Carbonate	All	125
Ammonium Chloride	All	180
Ammonium Fluoride	All	125
Ammonium Hydroxide	20	125
Ammonium Nitrate	All	180
Ammonium Persulfate	All	150
Ammonium Phosphate, dibasic	All	180
Ammonium Sulfate	All	180
Ammonium Thiocyanate	20	180
Aniline	100	N.R.

CHEMICAL	% CONCENTRATION	MAX TEMP °F
B		
Barium Carbonate	All	180
Barium Chloride	All	180
Barium Cyanide	All	135
Barium Hydroxide	All	125
Beer		100
Benzene	100	N.R.
Benzoic Acid	Sat'd.	180
Benzyl Alcohol	All	N.R.
Benzyl Chloride	100	N.R.
Black Liquor (Pulp Mill)	All	150
Bleaches:		
Calcium Hypochlorite	All	150
Chlorine Dioxide, Wet	Sat'd.	170
Sodium Hypochlorite	18	153
Borax	100	180
Boric Acid	All	180
Brine	All	180
Bromine, Liquid	100	N.R.
Bunker C Fuel Oil	100	180
Butyl Acetate	100	100
Butyl Alcohol	All	100
Butyric Acid	100	65
C		
Calcium Bisulfite	All	150
Calcium Bromide	All	180
Calcium Carbonate	All	150
Calcium Chlorate	All	180
Calcium Chloride	All	180

CHEMICAL	% CONCENTRATION	MAX TEMP °F
Calcium Hydroxide	100	180
Calcium Hypochlorite	All	150
Calcium Nitrate	All	180
Calcium Sulfate	All	180
Calcium Sulfite	All	180
Capric Acid	All	65
Carbon Disulfide	100	N.R.
Carbon Tetrachloride	100	125
CARBOWAX Polyethylene Glycol	100	150
Carboxylethyl Cellulose	10	150
Castor Oil	100	125
Chlorine Water	Sat'd	200
Chlorine, Wet Gas	100	180
Chloroacetic Acid	25	100
Chlorobenzene	100	N.R.
Chloroform	100	N.R.
Chloropyridine (tetra)	100	100
CHLOROTHENE SM 1,1,1-Trichloroethane inhibited	100	85
Chromic Acid	120	130
Citric Acid	All	180
Coconut Oil	All	150
Copper Chloride	All	180
Copper Nitrate	All	180
Copper Sulfate	All	180
Corn Oil		150
Corn Starch	Slurry	180
Crude Oil	100	180
Cyclohexane	100	100
D		
Di-ammonium Phosphate	65	180
Dibutyl Sebacate	All	100
Dichloropropane	100	N.R.
Diesel Fuel	100	150
Diethanolamine	100	100
Dimethyl Formamide	100	N.R.
Dimethyl Phthalate	100	125
Dioctyl Phthalate	100	125
Diphenyl Oxide	100	65
E		
ESTERON Herbicide	100	100
Esters, Fatty Acid	100	150
Ethanol	95	65
Ethanolamine	100	N.R.
Ethyl Acetate	100	N.R.
Ethylene Glycol	All	180
Ethylenediaminetetraacetic Acid		85
F		
Ferric Chloride	All	180
Ferric Sulfate	All	180
Ferrous Chloride	All	180
Ferrous Sulfate	All	180
Fluosilicic Acid	10	150

CHEMICAL	% CONCENTRATION	MAX TEMP °F
Formaldehyde	All	125
Formic Acid	10	150
Fuel Oil	100	150
G		
Gasohol (5% MEOH)	100	100
Gasoline, Aviation	100	150
Gasoline, No Lead, No Methanol	100	100
Glyconic Acid	50	150
Glucose	100	180
Glycerine	100	180
Glycolic Acid (Hydroxyacetic)	70	85
H		
Herbicides		100
Hydraulic Fluid	100	150
Hydrazine	100	N.R.
Hydrobromic Acid	48	125
Hydrochloric Acid	20	150
Hydrofluoric Acid	10	125
Hydrogen Peroxide	30	125
Hypophosphorous Acid	50	100
I		
Insecticides		100
Isodecanol		100
Isopropyl Alcohol	All	100
Isopropyl Myristate	100	100
J		
Jet Fuel (JP-4)	100	150
K		
Kerosene	100	150
L		
Lactic Acid	All	180
Lauryl Alcohol	100	125
Lead Acetate	All	180
Linseed Oil	100	180
Lithium Chloride	Sat'd	180
Lithium Hypochlorite	All	150
M		
Magnesium Carbonate	All	150
Magnesium Chloride	All	180
Magnesium Fluosilicate	All	150
Magnesium Hydroxide	100	180
Magnesium Sulfate	All	180
Maleic Acid	100	180
Manganese Chloride	All	180
Mercurous Chloride	All	180
Methanol	5	100
Methyl Ethyl Ketone	100	N.R.
Milk	100	180
Mineral Oils	100	180
Molasses	100	100
Molybdenum Disulfide (Manufacturing)		170
Morpholine	100	N.R.
Motor Oil		180

CHEMICAL	% CONCENTRATION	MAX TEMP °F
Myristic Acid	100	180
N		
Nickel Chloride	All	180
Nickel Sulfate	All	180
Nitric Acid	20	100
Nitrobenzene	100	N.R.
O		
Octanoic Acid (Caprylic Acid)	100	150
Oleic Acid	All	180
Olive Oils	100	180
Oxalic Acid	Sat'd.	100
P		
Palmitic Acid	100	180
Paper Mill Effluent		150
Peanut Oil	100	150
Perchlorethylene	100	65
Perchloric Acid	10	125
Perchloric Acid	30	85
Phosphoric Acid	100	180
Phosphorous Trichloride		N.R.
Pine Oil	100	N.R.
Polyethyleneimine	12	125
Polyvinyl Alcohol	All	85
Potassium Bicarbonate	50	150
Potassium Carbonate	50	150
Potassium Chloride	All	180
Potassium Dichromate	All	180
Potassium Hydroxide	10	125
Potassium Iodide	All	100
Potassium Nitrate	All	180
Potassium Permanganate	All	180
Potassium Persulfate	All	180
Potassium Sulfate	All	180
Propionic Acid	50	155
Pyridine	100	N.R.
Q		
R		
S		
Salicylic Acid	100	115
Skydrol	100	100
Sodium Acetate	All	180
Sodium Aluminate	All	100
Sodium Benzoate	100	155
Sodium Bicarbonate	Sat'd	155
Sodium Bisulfate	All	180
Sodium Borate	Sat'd	180
Sodium Bromide	All	180
Sodium Carbonate	35	155
Sodium Chlorate	50	180
Sodium Chloride, pH 5-10, Cl_2	Sat'd	155
Sodium Ferricyanide	All	180
Sodium Fluoride	All	155
Sodium Hydroxide	10	155
Sodium Hydroxide	50	180
Sodium Hypochlorite	18	180
Sodium Lauryl Sulfate	All	135
Sodium Phosphate	10	180
Sodium Sulfate	All	180
Sodium Sulfide	All	180
Sodium Sulfite	All	180
Sodium Thiosulfate	All	155
Sorbital Solutions	All	135
Stearic Acid	All	180
Styrene	100	N.R.
Styrene-Butadiene Latex		110
Surfuric Acid	70	155
Surfuric Acid	75	85
T		
Tartaric Acid	All	180
Tetrachloroethylene (Perchloroethylene)	100	65
Thioglycolic Acid (Mercaptoacetic Acid)	All	N.R.
Thionyl Chloride		N.R.
Toluene	100	65
Trichloracetic Acid	50	180
Trisodium Phosphate	All	180
Turpentine	100	125
U		
Urea	50	125
V		
Vinegar	100	180
W		
X		
Xylene	100	65
Y		
Z		
Zinc Chloride	70	180
Zinc Sulfate	All	180

Strongwell polymer concrete products are manufactured using polyester resin for normal environments and ***Vinyl Ester*** resins when higher temperature capabilities or increased corrosion resistance is required. Additional benefits include high strength-to-weight ratio, excellent impact resistance, low water absorption and nonconductivity.

This bulletin lists various chemical reagents and provides recommended corrosion resistance data for each. The recommendations are based upon tests performed by Strongwell's Vinyl Ester resin suppliers using coupons of the binding polymer under laboratory conditions. These laboratory tests may not be representative of the conditions in your application. This bulletin is intended to be used as a guide only and specifically for ***Vinyl Ester*** resin products manufactured by Strongwell. At the time of publication, the information and recommendations contained herein were considered accurate and reliable.

Strongwell recommends that a coupon of polymer concrete be exposed to the environment for a minimum period of 60 days to verify suitability. Strongwell will provide these coupons upon request and can analyze the effects of the exposure if the coupons are returned to our laboratory.

SECTION [02635] [03155] [15165] TRENCH DRAIN AND GRATE

Specifier: Use Division 2 when the trench drain is outside of the structure (building) and Division 15 when inside the structure. Use Division 3 only when the project scope is small and bundling all concrete embedment items (i.e. trench drain) in 03150 "Concrete Accessories" is more efficient than separate sections.

Specification Number 050702

1.0 General Requirements

1.1 This specification outlines the requirements for a precast, presloped polymer concrete drain system. No substitute product shall be accepted unless previously approved.

1.2 This document describes the design of the channels, the associated hardware, the materials to be used, the technical characteristics of the channels and the requirements for packaging and shipping.

1.3 This document does not cover the manufacture of the product in detail and is intended only to define specific requirements. In all respects not covered by this document, the product shall be in accordance with the standard practice of the supplier.

1.4 The method of manufacturing, handling and shipping and the quality of materials used shall be such as to ensure for the finished product the properties specified in this specification.

1.5 Where dimensions are given in this document without specific tolerances, or where no dimensions are given, the tolerances and the dimensions permitted by good shop practices shall be considered acceptable.

1.6 No merchandise shall be furnished for field use until written approval is received or unless the supplier is specifically authorized to the contrary. This approval shall not be construed as waiving the requirements of this document.

1.7 The design architect and/or engineer must be notified in advance, and a written approval obtained, for any changes in material or design of the product.

1.8 The design architect and/or engineer reserves the right to remove this item from the Approved Products List if the item falls below standards, as presented.

1.9 All components of the system shall be from one manufacturer and shall be Strongwell POLYCAST® or an approved substitute.

2.0 Specific Requirements

2.1 The precast, presloped polymer concrete channels are designed to remove rain, melting snow and ice and the specific chemicals outlined in this document.

2.2 The precast, presloped polymer concrete drain system is designed to be installed flush to grade.

2.3 The precast, presloped polymer concrete drain system is designed for installation in paved traffic ways. The components supplied shall be _____ channels, _____ frames, and _____ grates. (See POLYCAST® catalog to match components with load application and environmental conditions.)

2.4 The precast, presloped polymer concrete drain components must have a minimum average slope of 0.65%. Non-sloping drain components may be used in accordance with the project documents.

3.0 Design and Dimensions

3.1 Each channel shall be four (4) feet in length or two (2) feet in length for half channels.

3.2 Provide two (2) lockdown mechanisms per four (4) foot section and one (1) per two (2) foot section. Lockdown bolts shall be provided with each channel and grate assembly. The lockdown bolts shall be 3/8" - 16 UNC stainless steel. A round washer shall be placed between the bolt head and the grate. The lockdown mechanism shall be designed for an installation torque of ten (10) ft./lbs.

3.3 Male and female end caps shall be provided where required. Each type of end cap shall be available with a removable diaphragm for flow through applications. (See Figures 1-2)

3.4 Transition pieces for female to female connections and male to male connections shall be available and provided where specified. (See Figures 4 & 5)

SECTION [02635] [03155] [15165] TRENCH DRAIN AND GRATE

3.5 Each precast, presloped polymer concrete channel shall be designed with a means of mechanical engagement into the adjacent concrete. This locking key shall be along the bottom on both sides. This key must be centered and run along at least 60% of the length of each channel. The transition from the locking key to the channel shall be developed in a manner which minimizes any stress concentrations on the channel or the adjacent concrete.

3.6 Alignment chairs shall be available which support the channel at the joint and aid in holding two corresponding channels together. These chairs shall not require special tools or techniques to install and adjust.

3.7 Catch basins shall also be available which have nominal outlet drain pipe provisions of 4", 6" and 8" or 10" and 12".

4.0 Materials Technical Requirements

4.1 Materials used in the manufacture of the precast, presloped polymer concrete drain system shall have the properties specified in this section.

4.2 Compressive strength shall be 12,000 psi and flexural strength shall be 3,000 psi when tested in accordance with ASTM C579 and C78 respectively.

4.3 Three specimens shall be tested for accelerated service in accordance with ASTM D756, Procedure E, with the exception that the specimen conditioning may be deleted.

4.4 Three specimens shall be exposed to each of the following chemical reagents in accordance with ASTM D543, Section 7, Procedure 1, using standard laboratory atmosphere and seven days for all tests.

Polyester Resin

Chemical	Concentration
Sodium Chloride	5%
Sulfuric Acid	0.1 N
Ethylene Glycol	100%
Naptha	100%
Sodium Sulfate	0.1 N
Hydrochloric Acid	0.2 N
Sodium Hydroxide	0.1 N
Acetic Acid	5%
Kerosene	Per ASTM D543
Diesel Fuel	100%
Fuel Oil	100%
Motor Oil	100%
Glycol	100%
Hydraulic Fluid (Standard)	100%
Jet Fuel JP-4	100%
Skydrol	100%

4.5 After testing for accelerated service and chemical resistance, the material shall retain at least 75% of the strength of the control specimens and there shall be no more than 2% change in weight or any dimension.

4.6 Three specimens shall be tested for water absorption in accordance with ASTM D570, Sections 5 and 6.1. The specimens shall weigh approximately 9 ounces and have a thickness of 1/2". There shall be no more than a 2% change in weight or any dimension.

4.7 The test specimens, with the exception of the flammability test specimens, shall show no visual cracking, crazing, checking, blistering or surface pitting. Changes in color will be permitted only if the change does not indicate degradation of the material and, in the opinion of the user, the change will not be detrimental to the overall appearance of the product.

SECTION [02635] [03155] [15165] TRENCH DRAIN AND GRATE

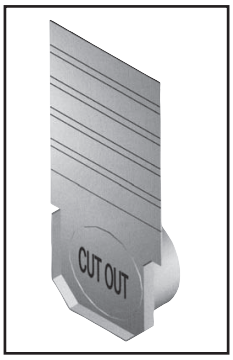


Figure 1.
DA0670 Female End Cap

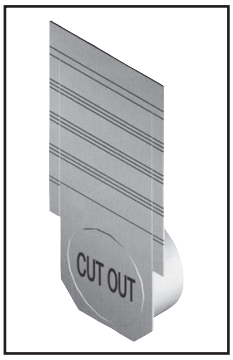


Figure 2.
DA0670M Male End Cap

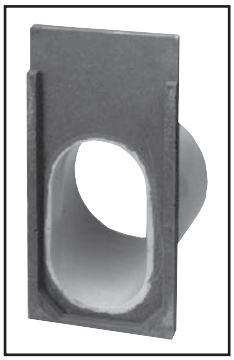


Figure 3.
DP0625D6 - 6" Outlet End Cap

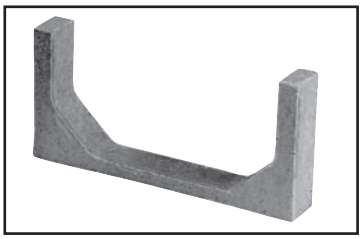


Figure 4.
DP0699M Male Joint Channel Adapter

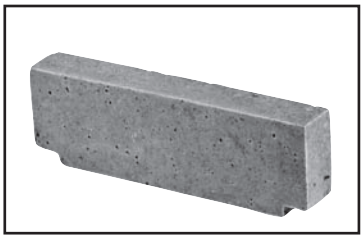


Figure 5.
DP0699F Female Joint Channel Adapter

5.0 Packaging and Shipping

5.1 The precast, presloped polymer concrete drain system shall be shipped with all of the necessary hardware securely fastened to the channels or the shipping pallet.

6.0 Supplementary Specifications

The most recent issue of the following unattached documents shall be supplementary to this specification:

Federal Aviation Administration (FAA) Advisory Circular Airport Pavement Design and Evaluation (AC 150/5320-6D Appendix 3 Design of Structures for Heavy Aircraft)

ASTM Standard D229, Method of Testing Rigid Sheet and Plate Materials Used for Electrical Insulation

ASTM Standard D543, Test Method for Resistance of Plastics to Chemical Reagents

ASTM Standard D570, Test Method for Water Absorption of Plastics

ASTM Standard D576, Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service Conditions

ASTM Standard G53, Recommended Practice for Operating Light and Water Exposure Apparatus for Exposure of Non-Metallic Materials

ASTM Standard C78, Test Method for Flexural Strength of Concrete

ASTM Standard C579, Test Method for Compressive Strength of Chemical Resistant Mortars and Monolithic Surfacings

AASHTO Highway Drainage Guidelines

AASHTO Standard Specification for Highway Bridges

SECTION [02635] [03155] [15165] TRENCH DRAIN AND GRATE

Specifier: Use Division 2 when the trench drain is exterior of the structure (building) and Div. 15 when inside the structure. Use Div. 3 only when the project scope is small, and bundling all concrete embedment items (i.e. trench drain) in 03150 “Concrete Accessories” is more efficient than separate sections.

Specification Number 050802

1.0 General Requirements

1.1 This specification outlines the requirements for a preformed, presloped surface drain system. No substitute product shall be accepted unless previously approved.

1.2 This document describes the design of the channels, the associated hardware, the materials to be used, the technical characteristics of the channels and the requirements for packaging and shipping.

1.3 This document does not cover the manufacture of the product in detail and is intended only to define specific requirements. In all respects not covered by this document, the product shall be in accordance with the standard practice of the supplier.

1.4 The method of manufacturing, handling and shipping and the quality of materials used shall be such as to ensure for the finished product the properties specified in this specification.

1.5 Where dimensions are given in this document without specific tolerances, or where no dimensions are given, the tolerances and the dimensions permitted by good shop practices shall be considered acceptable.

1.6 No merchandise shall be furnished for field use until written approval is received or unless the supplier is specifically authorized to the contrary. This approval shall not be construed as waiving the requirements of this document.

1.7 The design architect and/or engineer must be notified in advance and a written approval obtained for any changes in material or design of the product.

1.8 The design architect and/or engineer reserves the right to remove this item from the Approved Products List if the item falls below standards, as presented.

1.9 All components of the system shall be from one manufacturer and shall be Strongwell POLYCAST® or an approved substitute.

2.0 Specific Requirements

2.1 The preformed, presloped channels are designed to remove rain, melting snow and ice and the specific chemicals outlined in this document.

2.2 The preformed, presloped drain system has been designed to be installed flush to grade.

2.3 The preformed, presloped drain system shall be designed for installation in paved traffic ways.

2.4 The preformed, presloped drain components must have a minimum average slope of 1%. The minimum length of continuously sloped channels shall be 120 feet. Non-sloping drain components may be used in accordance with the project documents.

2.5 At full channel conditions, the system flow rate shall not be less than 6.73 cfs and the flow velocity not less than 5.8 fps for continuously sloped runs.

2.6 Glass fiber reinforced polymer components shall have a minimum of 65% glass reinforcement and UV surfacing veil on inner and outer surfaces.

3.0 Design and Dimensions

3.1 Each channel shall be eight (8) feet in length.

3.2 Provide four (4) lockdown mechanisms per eight (8) foot section. Lockdown bolts shall be provided with each channel and grate assembly. The lockdown bolts shall be 3/8” - 16 UNC stainless steel. A round washer shall be placed under the bolt head. The lockdown mechanism shall be designed for an installation torque of ten (10) ft./lbs.

3.3 End caps shall be provided where required. Each end cap shall be available in closed style with a scored line to allow adaptation to an 8” pipe opening. (See Figure 1)

3.4 Transition pieces for inlet to inlet connections shall be available and provided where specified.

3.5 The shape of the channel shall lock into the concrete for the entire length of the channel. Channels deeper than 20" shall have an integral longitudinal stiffening rib reinforcement that locks into the concrete. Channel sidewall deflection shall not impede fluid flow or exceed 0.20" during concrete placement. The bottom shall be 8-5/8" inside to match 8" pipe diameter and be fully rounded. Radiused longitudinal transitions between vertical wall sections having a nominal inside width of 5-5/8" and the channel bottom are acceptable.

3.6 Integral chairs shall be incorporated into the frame to support the channel and aid in holding two corresponding channels aligned. These chairs shall not require special tools or techniques to adjust. The design of the chair shall be such that it can be used to support the channels from the bottom of the trench or hang the channels from the top of the trench.

3.7 The frame shall provide a concrete interlock. It shall also capture and support the channel sidewall. Frames shall not restrict the longitudinal movement of the drain body due to thermal expansion.

3.8 No composite material shall be between the frame grate bearing member and the encasing concrete.

3.9 The coefficient of thermal expansion for the channel bodies shall not exceed 4.5 x 10^6 in/in/F.

3.10 The frame shall incorporate an integral air vent of a design and frequency to release air from under the bearing structure.

3.11 The frame material shall be _____ (galvanized steel) (stainless steel) as required.

3.12 The grate material shall be _____ (fiberglass) (stainless steel) (ductile iron) as required.

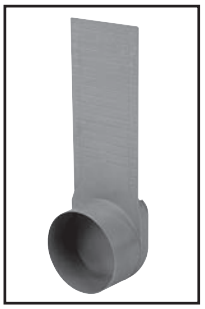


Figure 1. DA3000A End Cap/Adapter

4.0 Materials Technical Requirements

4.1 Materials used in the manufacture of the preformed, presloped drain system shall have the properties specified in this section.

4.2 Compressive strength shall be 10,000 psi and flexural strength shall be 8,000 psi when tested in accordance with ASTM D695 and D790 respectively.

4.3 Three specimens shall be tested for accelerated service in accordance with ASTM D756, Procedure E, with the exception that the specimen conditioning may be deleted.

4.4 Three specimens shall be exposed to each of the following chemical reagents in accordance with ASTM D543, Section 7, Procedure 1, using standard laboratory atmosphere and seven days for all tests.

4.5 After testing for accelerated service and chemical resistance, the material shall retain at least 75% of the strength of the control specimens and there shall be no more than 2% change in weight or any dimension.

Polyester Resin

Chemical	Concentration
Sodium Chloride	5%
Sulfuric Acid	0.1 N
Ethylene Glycol	100%
Naptha	100%
Sodium Sulfate	0.1 N
Hydrochloric Acid	0.2 N
Sodium Hydroxide	0.1 N
Acetic Acid	5%
Kerosene	Per ASTM D543
Diesel Fuel	100%
Fuel Oil	100%
Motor Oil	100%
Glycol	100%
Hydraulic Fluid (Standard)	100%
Jet Fuel	100%
Skydrol	100%

SECTION [02635] [03155] [15165] TRENCH DRAIN AND GRATE

4.6 Three specimens shall be tested for water absorption in accordance with ASTM D570. There shall be no more than a 2% change in weight or any dimension.

4.7 The test specimens, with the exception of the flammability test specimens, shall show no visual cracking, crazing, checking, blistering or surface pitting. Changes in color will be permitted only if the change does not indicate degradation of the material and, in the opinion of the user, the change will not be detrimental to the overall appearance of the product.

4.8 All metallic components of the frame and lockdown mechanism shall be subjected to the salt spray test in accordance with ASTM B-117 for 1000 hours. After salt removal there shall be no more than a 2% reduction in weight. All parts must remain functional with no detrimental effect on welds.

5.0 Packaging and Shipping

5.1 The preformed, presloped drain system shall be shipped with all of the necessary hardware securely fastened to the channels or the shipping pallet.

5.2 All packaging, dunnage and construction debris must be removed by the installer prior to completion.

6.0 Supplementary Specifications

The most recent issue of the following unattached specifications shall be supplementary to this specification:

Federal Aviation Administration (FAA) Advisory Circular Airport Pavement Design and Evaluation (AC 150/5320-6D Appendix 3 Design of Structures for Heavy Aircraft)

ASTM Standard D229, Method of Testing Rigid Sheet and Plate Material Used for Electrical Insulation

ASTM Standard D543, Test Method for Resistance of Plastics to Chemical Reagents

ASTM Standard D570, Test Method for Water Absorption of Plastics

ASTM Standard D576, Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service Conditions

ASTM Standard G53, Recommended Practice for Operating Light and Water Exposure Apparatus for Exposure of Non-Metallic Materials

ASTM Standard D695, Test Method for Compressive Properties of Rigid Plastics

ASTM Standard D790, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulation Materials

AASHTO Highway Drainage Guidelines

AASHTO Standard Specification for Highway Bridges

Application Load Class A

Pedestrian, bicycles, golf carts. Designed for a distributed load of 23 psi (3300 pounds per square foot). ADA compliant for accessible routes. Meets ASTM C-857.

Application Load Class B

Automobiles, light pickup trucks, general aviation aircraft, low speeds (parking areas, driveways). Designed for a distributed load of 62 psi (9,000 pounds per square foot).

Application Load Class C

Pneumatic tire vehicles and highway vehicles, low to moderate speeds, (parking areas, driveways). Designed for a distributed pressure of 260 psi (37,440 pounds per square foot).

Application Load Class D

Highway vehicles, commercial aircraft (exceeds FAA Airport Pavement Design Loads per AC 150/5320-6D), low to moderate speeds, (parking areas, driveways, warehouses). Designed for 450 psi (64,800 pounds per square foot) distributed

Application Load Class E

Hard wheel forklifts, construction equipment, off-road vehicles, transport and fighter category commercial and military cargo aircraft. Designed for a distributed load of 550 psi (79,200 pounds per square foot). Exceeds AASHTO H-20, FAA requirements for pavement design per AC 150/5320-6D. Moderate speeds (loading docks, terminal areas).

Application Load Class F

Interstate highway traffic rated. Designed for a distributed load of 900 psi (130,000 pounds per square foot). Exceeds AASHTO H-20, FAA requirements for pavement design per AC 150/5320-6D. High speed vehicles (roadway and runway applications).

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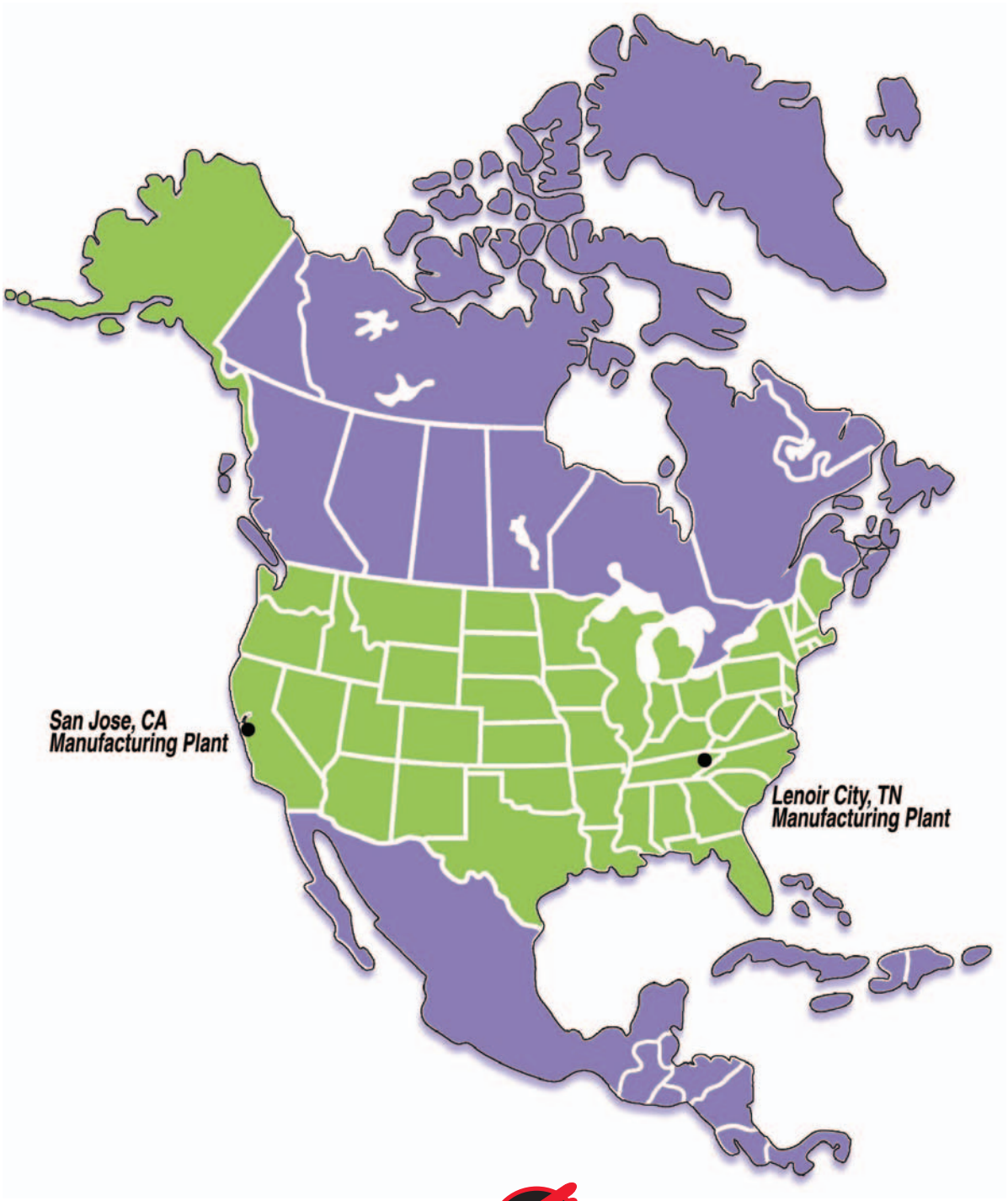

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