

TECHNICAL SPECIFICATION GUIDE

Radius Trench Drain Specifications

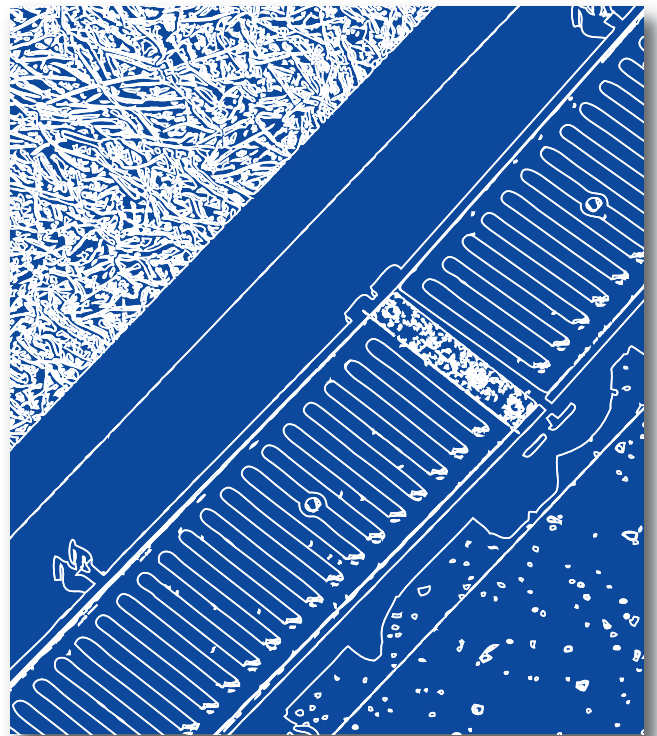


TABLE OF CONTENTS

Overview1

Product Specifications.....2

Product Features.....3

Trench Drain System.....4-5

Trench Drain Grates.....6

Radius Coupling7

Radius Coupling Grates8

Ductile Iron Frame.....9

Catch Basin10

Trash Bucket11

Applications12-15

Load Class Installation16

Overview

The Radius Trench Drain System is comprised of dependable, high-quality HDPE and the new Radius Couplings. Designed specifically for radius installations, the radius coupling allows 3 degrees of movement between each channel section, making an 80 to 120 foot radius easily achievable. With its lightweight channel and interlocking pieces that snap smoothly into place, the radius system saves time and labor while providing a superior drainage system that is simple to maintain.

Each component of the Trench Drain System has been specifically designed and manufactured to ensure strength, structural integrity, and durability while incorporating excellent hydraulic characteristics and chemical resistance. The new radius system presents an economical and lightweight alternative to traditional polymer concrete trench drain systems, while offering ease of installation.

Radius

Product Specifications

Trench Drains

Material	Manufactured from molded, structural foam HDPE with UV inhibitors.
Channel Sizes	48" length, 6" width, 3.998" to 12.062" inner depth range.
Strength	Material withstands a compressive strength of 2,900 psi, with a material tensile stress of 4,550 psi and material flexural strength of 5,800 psi.
Weight per Unit	Ranges between 7.452 lbs. for shallow trench drains to 16.06 lbs for deep trench drains
Pre-Sloped Run Lengths	194 feet of continuous slope; 266 feet with neutral sections added.
Pipe Outlet Sizes	3", 4", 6", 8" pipe.

Trench Drain Grates

Materials	Cast iron, ductile iron, plastic (structural foam polyolefin).
Sizes	24" length, 6" width.
Weight per Unit	Ranges between 2.92 lbs. for polyolefin to 16.0 lbs. for ductile iron.
Colors	Black, gray, white, green, sand, red.
Load Class	Loads are based upon encasing the product in concrete, and on grate selection. Plastic (structural foam polyolefin) meets Class B load rating (61-175 psi), while ductile iron and cast iron meet Class D load rating (326-575 psi).

Radius Couplings

Material	Manufactured from molded, structural foam HDPE with UV inhibitors.
Sizes	All couplings are 1.125" long and 6.95" wide, and are available with inner depths of 6.35", 7.36", 8.37", and 9.37".

Radius Coupling Grates

Materials	Plastic (structural foam polyolefin)- Solid
Sizes	1.125" length, 6" width.
Colors	Gray, Black
Load Class	Loads are based upon encasing the product in concrete, and on grate selection.

Product Features

Durable Material:

Polyethylene is tough and hard to break, not brittle like polymer concrete, reducing breakage and eliminating costly delays. UV inhibitors protect against deterioration and discoloration due to exposure to sunlight.

Lightweight:

light and easy to carry. At 7.5 to 16 lbs. per trench drain section, there's less time and effort spent to install.

Ease of Assembly:

Interlocking tongue and groove joints on both trench drains and radius couplings allow parts to slide into place easily, then lock with a snap. No special tools, clamps or screws are needed.



Curved Radius Forms Quickly and Easily:

The radius coupling has a $\pm 3^\circ$ range of angular motion. This feature allows trench drains to form a curved radius at the end of the track.

Flexibility of Design:

The Radius system allows for flexibility of design by allowing various radii to be created. Extended to its maximum range of 3.18° , the tightest radius possible with one radius coupling between each trench drain section would be 72 ft. This would consist of 60 4-foot trench drain sections and 59 radius couplings. To obtain a larger radius, simply add additional trench drains and couplings to the length of the run. With radius couplers, the most common track radii of 80' - 120' is easily obtained.

Reduced Clogging of System:

6-inch-wide grates on the trench drains and radius couplings mean less debris build up and clogging than a slot drain, with a higher inflow capacity. To clean out the drain, simply remove the grate.

Neutral and Sloped Sections Available:

While the radius sections remain neutral to allow for the insertion of the radius coupling, radius straight runs may be sloped or neutral due to the offerings of the product line. For an example of an application with both neutral and sloped sections, please refer to the Radius Applications" section of this guide.

Joints Locked on Straight Runs:

Integral joint lock between sections of trench drain prevent joint movement during installation, securing alignment and ensuring straight trench drain runs.

Various Grate Options:

Standard grates are solid

Blank Grates and Grate Screws Included:

Each section of trench drain comes with a blank grate insert that eliminates the use of plywood. Each radius coupling includes a standard grate, which can be used as a blank or as a functioning grate. Grate screws are included with all trench drains and radius couplings.

Traffic Rated:

Depending on the grate selection Couplers have solid grates

Trench Drain System

Material Composition

Manufactured from molded, structural foam HDPE with UV inhibitors, with a nominal outside top dimension of 6-5/8"(168.3mm). Trench drain has an inside nominal flow path width of 4"(101.6mm), with a bottom radius of 2" (50.8mm) to facilitate sediment removal. The system includes neutral and pre-sloped sections to provide variable trench depth as required by site conditions. Pre-sloped sections have a slope of 0.7%.

Trench drain and grates are designed to withstand loads up to Load Class D (up to 575psi), when installed per the appropriate installation methods (see NDS installation instructions and grate specifications included in the catalog). Grates are installed per manufacturer load rating recommendations, and are attached to the trench drain using stainless steel screws with the manufacturer-supplied locking system. The trench drain includes integral re-bar supports located at 24" (60cm) intervals along each side of the trench drain to provide height adjustment using #4 re-bar (1/2") during installation. The trench drain has tongue and groove joints that ensure precise alignment during installation, with snap-lock mechanisms to eliminate joint movement.

Molding Technique

Proudly manufactured in the U.S.A. in Lindsay, California. The trench drains are injection molded to exacting specifications to a temperature range that will not damage the molecular chain of the polymer. The use of high quality resins coupled with computerized manufacturing technologies guarantees the trench drain system will preserve in strength over time.

Testing Methods

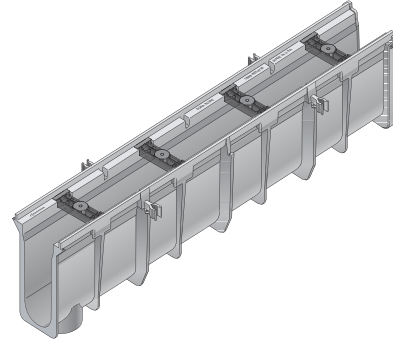
The trench drain and grates undergo a battery of tests with each production run, as is the process with all of the products manufactured. All of the manufacturing tests are conducted within the manufacturing cycle to assure a quality-finished product.

Compression tests are used to determine the load strength of trench drains. Material absorption rate shall not exceed .01%. Material shall withstand a compressive strength of 2900 psi. Material tensile stress shall be 4550 psi and material flexural strength shall be 5800 psi. The System has the ability to withstand freeze/thaw cycles and provide chemical resistance, including road salt.

TRENCH DRAINS

6-5/8" wide, 4-foot-long trench drain system. Each trench drain section is molded of gray structural foam polyethylene with UV inhibitors, and has a 4" inside diameter with a 2" radius bottom. The system consists of 4-foot trench drain sections, including 24 pre-sloped trench drain sections and 9 neutral trench drain sections. The sloped trench drain sections have a built-in slope of 0.7%, and enable the system to extend to a length of 96 feet with a continuous slope.

Offering trench drains in both neutral and pre-sloped sections of various depths allow for flexibility of design, and make the trench drain system ideal for a wide range of radius applications.

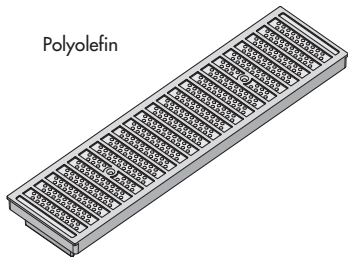
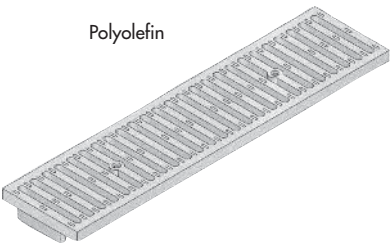
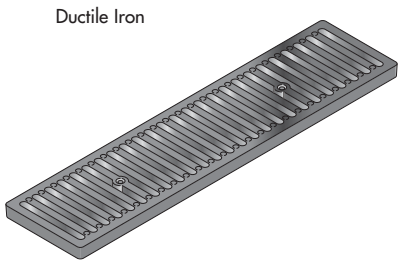


Part No.	Description	Flow Rate GPM	Min. Inner Depth	Max. Inner Depth	Min. Outer Depth	Max. Outer Depth	Wt. Ea. (lbs.)
90N	3.99" Deep Neutral Dura Slope™ Trench Drain	75	3.998	3.998	5.354	5.760	7.45
091	3.99" to 4.34" Deep Dura Slope™ Trench Drain	75	3.998	3.998	5.690	5.770	7.52
091N	4.34" Deep Neutral Dura Slope™ Trench Drain	89	4.334	4.334	5.692	6.103	7.81
092	4.34" to 4.67" Deep Dura Slope™ Trench Drain	89	4.334	4.670	6.062	6.106	7.92
093	4.67" to 5.00" Deep Dura Slope™ Trench Drain	103	4.670	5.006	6.362	6.442	8.27
094	5.00" to 5.34" Deep Dura Slope™ Trench Drain	117	5.006	5.342	6.698	6.778	8.64
094N	5.34" Deep Neutral Dura Slope™ Trench Drain	131	5.342	5.342	6.700	7.111	8.93
095	5.34" to 5.68" Deep Dura Slope™ Trench Drain	131	5.342	5.678	7.034	7.114	8.99
096	5.68" to 6.01" Deep Dura Slope™ Trench Drain	145	5.678	6.014	7.370	7.450	9.36
097	6.01" to 6.35" Deep Dura Slope™ Trench Drain	159	6.014	6.350	7.706	7.786	9.74
097N	6.35" Deep Neutral Dura Slope™ Trench Drain	173	6.350	6.350	7.708	8.119	10.04
098	6.35" to 6.69" Deep Dura Slope™ Trench Drain	173	6.350	6.686	8.042	8.122	10.11
099	6.69" to 7.02" Deep Dura Slope™ Trench Drain	187	6.686	7.022	8.378	8.458	10.48
100	7.02" to 7.36" Deep Dura Slope™ Trench Drain	201	7.022	7.358	8.714	8.794	10.86
100N	7.36" Deep Neutral Dura Slope™ Trench Drain	215	7.358	7.358	8.716	9.127	11.16
101	7.36" to 7.69" Deep Dura Slope™ Trench Drain	215	7.358	7.694	9.050	9.130	11.23
102	7.69" to 8.03" Deep Dura Slope™ Trench Drain	229	7.694	8.030	9.386	9.466	11.60
103	8.03" to 8.37" Deep Dura Slope™ Trench Drain	243	8.030	8.366	9.722	9.802	11.98
103N	8.37" Deep Neutral Dura Slope™ Trench Drain	257	8.366	8.366	9.724	10.135	12.27
104	8.37" to 8.70" Deep Dura Slope™ Trench Drain	257	8.366	8.702	10.058	10.138	12.34
105	8.70" to 9.04" Deep Dura Slope™ Trench Drain	271	8.702	9.038	10.394	10.474	12.71
106	9.04" to 9.37" Deep Dura Slope™ Trench Drain	285	9.038	9.374	10.730	10.810	13.07
106N	9.37" Deep Neutral Dura Slope™ Trench Drain	299	9.374	9.374	10.732	11.143	13.39
107	9.37" to 9.70" Deep Dura Slope™ Trench Drain	299	9.374	9.710	11.066	11.146	13.4
108	9.70" to 10.05" Deep Dura Slope™ Trench Drain	313	9.710	10.046	11.402	11.482	13.83
109	10.05" to 10.38" Deep Dura Slope™ Trench Drain	327	10.046	10.382	11.738	11.818	14.20
109N	10.38" Deep Neutral Dura Slope™ Trench Drain	341	10.382	10.382	11.740	12.151	14.50
110	10.38" to 10.71" Deep Dura Slope™ Trench Drain	341	10.382	10.718	12.074	12.154	14.57
111	10.71" to 11.05" Deep Dura Slope™ Trench Drain	355	10.718	11.054	12.410	12.490	14.95
112	11.05" to 11.39" Deep Dura Slope™ Trench Drain	368	11.054	11.390	12.746	12.826	15.32
112N	11.39" Deep Neutral Dura Slope™ Trench Drain	382	11.390	11.390	12.785	13.158	15.6
113	11.39" to 11.72" Deep Dura Slope™ Trench Drain	382	11.390	11.726	13.082	13.162	15.69
114	11.72" to 12.06" Deep Dura Slope™ Trench Drain	396	11.726	12.062	13.418	13.498	16.06

Note: All dimensions are nominal. All weights are for shipping purposes only. Availability is subject to change.

Radius

TRENCH DRAIN GRATES



Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Inflow Capacity (GPM)	Specifications
660	2 ft. Trench Drain Grate	White	12	2.92	27	2 ft. structural foam polyolefin secured trench drain grate with UV inhibitors. ADA compliant. Open surface area 20.61 square inches per foot.
661	2 ft. Trench Drain Grate	Dark Gray	12	2.92	27	
661LG	2 ft. Trench Drain Grate	Gray	12	2.92	27	
662	2 ft. Trench Drain Grate	Green	12	2.92	27	
663	2 ft. Trench Drain Grate	Black	12	2.92	27	
664	2 ft. Trench Drain Grate	Sand	12	2.92	27	
665	2 ft. Trench Drain Grate	Brick Red	12	2.92	27	
670	2 ft. Plastic Perforated Trench Drain Grate	Gray	12	3.0	11.3	2 ft. structural foam polyolefin, secured trench drain grate with UV inhibitors, light traffic rated, heel-proof, ADA compliant. Open surface area 9.36 square inches per foot. .
231	2 ft. Cast Iron Trench Drain Grate	Black	1	15.00	22.6	2 ft. heavy duty cast iron trench drain grate. ADA compliant Open surface area 15.27 square inches per foot. H-20 Load Rating.
232	2 ft. Ductile Iron Trench Drain Grate	Black	1	16.00	22.6	2 ft. heavy duty ductile iron trench drain grate. ADA compliant Open surface area 15.27 square inches per foot. H-20 Load Rating.

Trench Drain Grates are ADA Compliant
 Part No. 670 is Heel-Proof

Radius

Trench Drain System

RADIUS COUPLINGS

Radius couplings are made from 100%high density polyethylene, and are injection molded to exacting specifications.

Each radius coupling comes with a plastic (HDPE) standard grate attached with two grate screws. The standard grate can be utilized as a blank grate insert (eliminating the use of plywood during installation), but also functions as a plastic grate with a Class B load rating of 61-175 psi.

Radius Coupling Depths

Radius couplings are available in four neutral depths, and were designed to connect neutral trench drain sections of the same depth. For a guide to the Trench drain sections and their corresponding radius coupling, see the table below:



DSRCS-103

DSRCS-097

Radius Coupling Part Number and Description	Corresponding Trench Drain
DSRCS-097: 6.35" Deep Radius Coupling	097N: 6.35" Deep Neutral Trench Drain
DSRCS-100: 7.36" Deep Radius Coupling	100N: 7.36" Deep Neutral Trench Drain
DSRCS-103: 8.37" Deep Radius Coupling	103N: 8.37" Deep Neutral Trench Drain
DSRCS-106: 9.37" Deep Radius Coupling	106N: 9.37" Deep Neutral Trench Drain

RADIUS COUPLING GRATES

Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Load Class	Specifications
660MG	1.25" Plastic Slotted Radius Coupling Grate	White	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
661MG	1.25" Plastic Slotted Radius Coupling Grate	Dark Gray	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
661LGMG	1.25" Plastic Slotted Radius Coupling Grate	Light Gray	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
662MG	1.25" Plastic Slotted Radius Coupling Grate	Green	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
663MG	1.25" Plastic Slotted Radius Coupling Grate	Black	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
664MG	1.25" Plastic Slotted Radius Coupling Grate	Sand	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
665MG	1.25" Plastic Slotted Radius Coupling Grate	Brick Red	6	0.08	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
681LGMG	1.25" Plastic Standard Radius Coupling Grate	Light Gray	6	0.16	Class B (61-175 psi)	Structural Foam Polyolefin Radius Coupling Mini Grate with UV inhibitors
232MG	1.25" Ductile Iron Radius Coupling Grate	Black	6	0.93	Class D (326-575 psi)	Heavy Duty Ductile Iron Radius Coupling Mini Grate

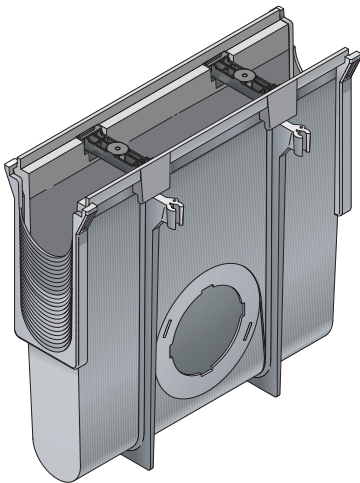
All Radius Coupling Grates are ADA Compliant Part No.

Radius

Trench Drain Systems

CATCH BASIN

The in-line Catch Basin is designed to fit all depth ranges of the trench drain sections. Catch basin inlets are designed to be sized as required to accept the trench drain section. The catch basin is 2 feet long and 2 feet deep with an outlet on both sides of the basin. One Universal Adapter Plug, one blank grate insert and two grate screws are included with each in-line catch basin. Universal basin outlets are used to adapt the catch basin to 3", 4", 6" and 8" pipe.

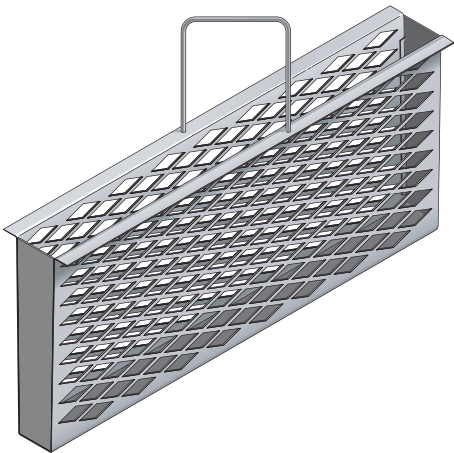


Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class
340	In-line Catch Basins	Gray	1	12.00	25DS
Note: All dimensions are nominal. All weights are for shipping purposes only. Availability is subject to change.					

Trench Drain

TRASH BUCKET

The Trash Bucket is made to fit inside the Catch Basin (part number 340). It has a handle for easy removal to clean leaves and debris; it requires removal of the grate. Made of zinc plated steel, it is durable to climatic conditions. The Trash Bucket is not intended for use with any of the trench drains.



Part No.	Description	Color	Pkg. Qty.	Wt. Ea. (lbs.)	Product Class
240	Trash Bucket	Steel Zinc Plated Steel	1	5.0	25DS

Note: All dimensions are nominal. All weights are for shipping purposes only. Availability is subject to change.

Radius

Radius Applications

The majority of full track applications will require a radius within 70 –130 feet,).

Depth of the trench drain, sloped vs. non-sloped runs, and number of catch basins required per system will vary with the volume of water and surface area requiring drainage, and should be assessed on a site-to-site basis.

Following are two potential track applications and the materials list for each.

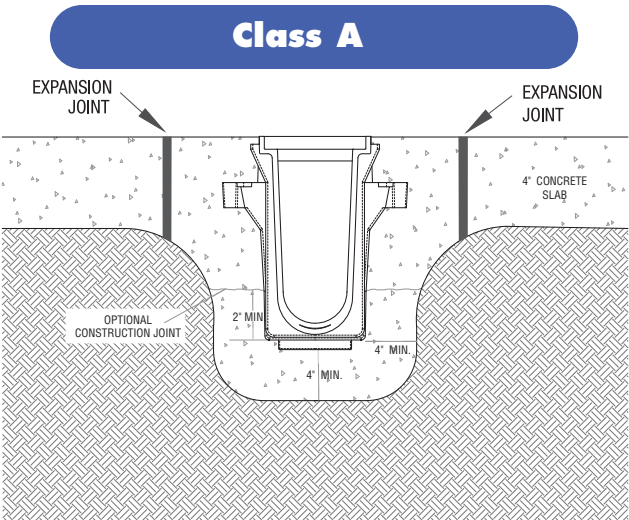
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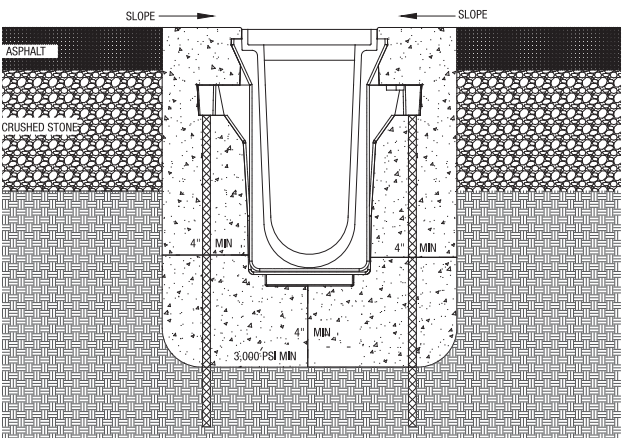
LOAD CLASS INSTALLATION

Note: For all load class installations recess Channel below grade: 1/4" for vehicular traffic, 1/8" for pedestrian traffic.

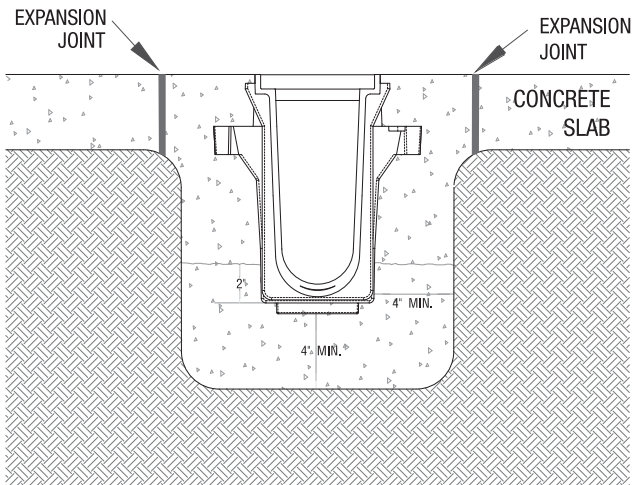


Set trench drain in channel surrounded by 4" of concrete or thickness of the concrete slab with a minimum of 2,500 psi.

Class B



Set trench drain in channel surrounded by 4" of concrete with a minimum of 3,000 psi. Install #4 re-bar to stabilize drain while concrete is being poured. Make sure re-bar is 1" below finished surface.

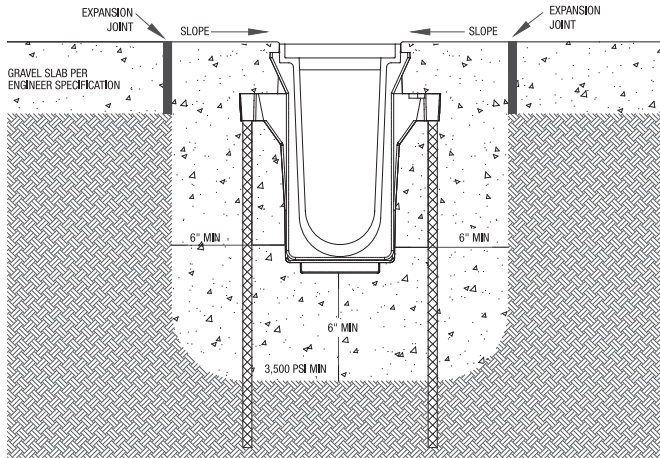


Set trench drain in channel surrounded by 4" of concrete or thickness of the concrete slab with a minimum of 3,000 psi.

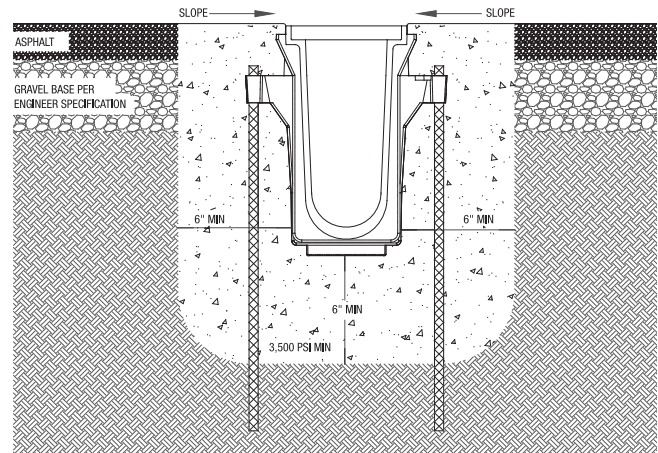
LOAD CLASS INSTALLATION

Note: For all load class installations recess Channel below grade: 1/4" for vehicular traffic, 1/8" for pedestrian traffic. When using iron frame DS-200 no additional recess is needed.

Class C

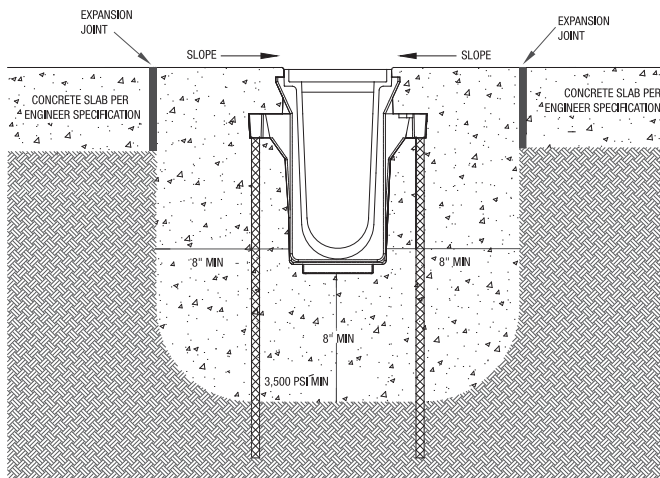


Set trench drain in channel surrounded by 6" of concrete with a minimum of 3,500 psi. Install #4 re-bar to stabilize drain while concrete is being poured. Make sure re-bar is 1" below finished surface.

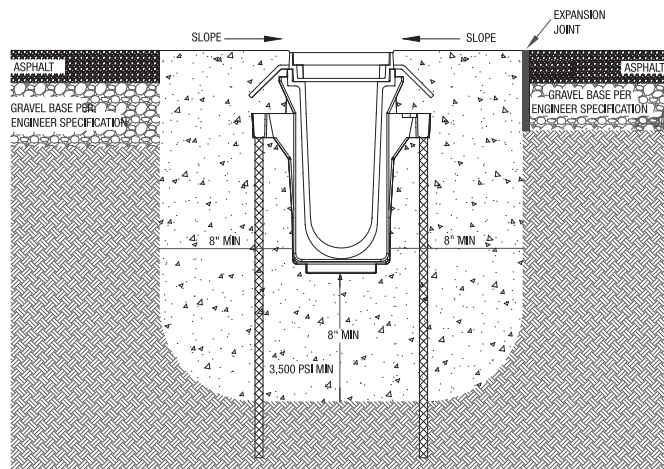


Set trench drain in channel surrounded by 6" of concrete with a minimum of 3,500 psi. Install #4 re-bar to stabilize drain while concrete is being poured. Make sure re-bar is 1" below finished surface.

Class D



Set trench drain in channel surrounded by 8" of concrete with a minimum of 3,500 psi. Install #4 re-bar to stabilize drain while concrete is being poured. Make sure re-bar is 1" below finished surface.



Set trench drain in channel surrounded by 8" of concrete with a minimum of 3,500 psi. Install #4 re-bar to stabilize drain while concrete is being poured. Make sure re-bar is 1" below finished surface.

