

Duraslot[®]

The most cost-effective slotted and trench surface drain systems.



THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™



A SENSIBLE ALTERNATIVE TO METAL AND CONCRETE

Since 1987, Duraslot® surface drains have been providing reliable storm water collection in applications ranging from residential driveways to multi-lane super highways.

The product is made from dual-wall corrugated polyethylene pipe with an aluminum slot mounted on top. It is designed to intercept sheet flows of water across paved or cleared areas. It is a cost-effective substitute for corrugated steel slotted drains, precast trench drains, cast-in-place trench drains, catch basins and curb inlets.

Duraslot drains use N-12® pipe, manufactured by Advanced Drainage Systems. An outer corrugated wall provides strength and durability, while the smooth interior lining gives exceptional hydraulics.

SYSTEM COMPONENTS

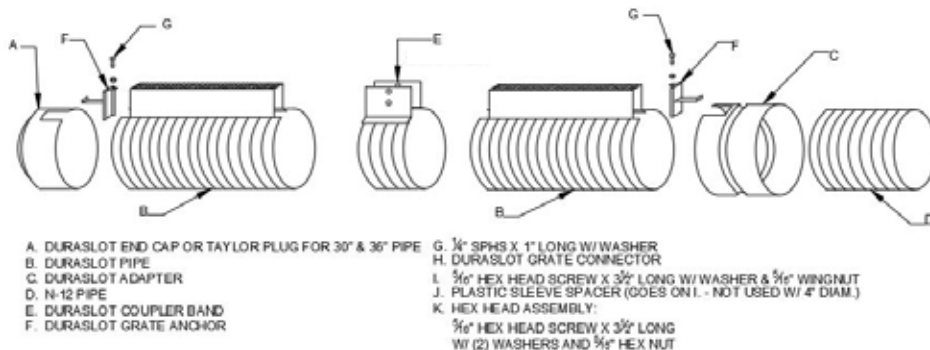
Coupler Band: Connects Duraslot drain to Duraslot drain. A modified pipe band with angles extended up is used to clamp together the ends of the two slots being joined. A hex head screw and wing nut fasten the band angles onto the ends of the slots. A grate connector is included.

Grate Connector: Joins the grates at the ends of the slots, and can be easily removed to allow a hose to flush out the pipe.

Pipe Adapter: Connects Duraslot drain to N-12 pipe. A corrugated pipe coupler that is modified to accept Duraslot drain on one end and N-12 pipe on the other. A grate anchor is included.

End Cap: Modified to close the upstream end of Duraslot drain. A grate anchor is included.

Grate Anchor: Used at the end of each Duraslot run to close off the end of the slot, anchor the end of the grate into the concrete or asphalt surrounding the slot, and keep the grate in tension for added strength.



PHYSICAL DETAILS

Slot Height:

- 2.5" (63 mm) for residential and pedestrian areas
- 6" (150 mm) for H-20 loading in vehicular traffic areas
- Taller slots are available on special order
- Variable height slot to provide slope in the pipe invert at level grade (special order)

Pipe Length: 10' (3 m)

Pipe Diameter: 4"-36"
(100-900 mm)

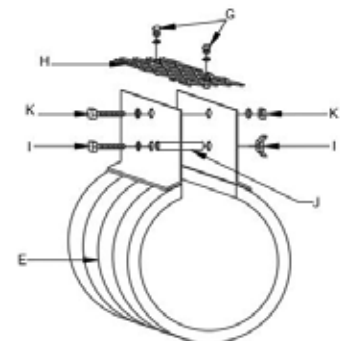
Slot Opening:

- 1.25" (32 mm) wide in 4" (100 mm) diameter pipe
- 1.75" (44 mm) wide in 6" (150 mm) diameter and larger pipe

Grate Options:

- 1/2" (13 mm) #13 galvanized steel
- Open top without grate
- Other types of grating available on special order

Duraslot Coupler Detail



APPLICATIONS

Duraslot drains are linear drains designed to capture sheet flow of water from sloping paved surfaces or cleared areas. They have the same inlet as corrugated steel pipe slotted drains. A 1¼" (45 mm) wide opening runs the length of the pipe and special connectors provide for a continuous slot of virtually unlimited length. For curb and gutter applications, the inlet acts as an orifice and the AISI Handbook* method can be used to determine hydraulic capacity.

For interception of sheet flow the inlet acts as a weir. Testing done by the Federal Highway Administration (FHWA) concluded that for inlets as narrow as 1" (25 mm) wide virtually all the flow - 0.04 cfs (1.13 l/s) per one foot of inlet - could be intercepted under most design conditions.

Typical applications for Duraslot drains include the following:

- Public Streets
- Highways
- Sidewalks
- Parking lots
- Plazas
- Loading docks
- Industrial floors
- Parks and athletic fields

COMPETITIVE BENEFITS

Duraslot surface drains offer a number of cost and performance benefits compared to corrugated metal, polymer trench drain and cast-in-place systems:

- **Reduced maintenance costs:** Vacuum trucks are not needed for cleanouts as Duraslot systems are more shallow and can be easily cleaned from the surface
- **Resilient materials:** Corrosion-resistant polyethylene and aluminum are impervious to most acids, storm water contaminants, and road salt
- **Greater hydraulic efficiency:** Water flow through the smooth inner wall of polyethylene pipe is superior to corrugated steel pipe



Parking Lot



Loading Docks



Public Street



Highway

* American Iron and Steel Institute Handbook of Steel Drainage and Highway Construction Products, 1994, pages 218-223, "Hydraulics of Storm Water Inlets"

- **Lower installation costs:** Lightweight sections quickly and easily set in place with no heavy machinery or extra manpower
- **Lower material costs:** Most cost-effective compared to other systems that support vehicular traffic
- **Longer pipe:** Longer lay lengths compared to 3' (1 m) lengths of polymer trench drain, 10' (3 m) Duraslot drains speed installation time and make it much easier to maintain constant slope
- **Impact resistant:** Polyethylene withstands storage and handling. Durable construction provides no waste due to deformation or breakage

FABRICATED FITTINGS

Design flexibility is enhanced with a complete line of fabricated fittings in all standard pipe sizes. Styles include elbows in virtually any angle up to 90°, tees, wyes, reducing tees, and other fittings custom fabricated to your specifications.



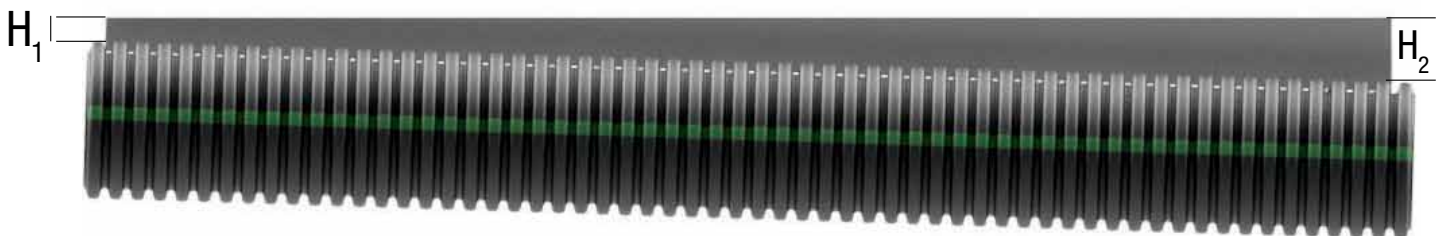
Fabricated Fittings

VARIABLE HEIGHT SLOT

In addition to the standard fixed slot height style, Duraslot drains are available with a variable height slot to permit slope in the pipe invert when grade is level. The standard change in slot height is 5/8" (16 mm) per 10' (3 m) length (H_2 minus H_1 in drawing) providing an approximate 0.5% slope. Other slopes are also available and the product is delivered in sequentially numbered sections to facilitate installation. Slot heights of more than 30" (750 mm) have been installed. Contact ADS for complete product and installation details.



Variable Height Slot



INSTALLATION BASICS

Duraslot surface drains are made from a flexible conduit designed to attain its structural strength utilizing ring compression derived from soil pressure. For this to occur, a minimum cover height of 12" (300 mm) is typically required with N-12 pipe in traffic applications. This cannot be achieved with Duraslot drains because the tops of the grates must be set to finish grade. Therefore, where vehicle traffic may be present, the drain must be backfilled with concrete to support the pipe and provide a non-eroding surface at the top of the slot where water enters the inlet.

Backfill requirements for the Duraslot drain depend on the type of loading on the drain:

- **Heavy traffic (Figure 1):** Surrounded by concrete for critical loading applications. This would include frequent high-speed H-20 traffic (i.e. highways, loading docks, etc.). The dimension 'S' should be a minimum 6" (150 mm) for all heavy traffic applications. Expansion joints and concrete and/or asphalt is designed by others.
- **Moderate traffic (Figure 2):** Surrounded by concrete to below the center of the pipe. This type of installation has been used when traffic loads are not as heavy (H-10 loads, retail parking lots, against curbs, etc.). The soil below the pipe and concrete must be high quality and well compacted. Expansion joints and concrete and/or asphalt pavement is designed by others.
- **Residential/pedestrian traffic (Figure 3):** Concrete, asphalt, or soil concrete slab at grade. For non-vehicular installations (patios, sidewalks, against foundations, landscaping, etc.) there still must be a surface adjoining the slot which will not erode where stormwater flows into the slotted inlet. Concrete and/or pedestrian pavement is designed by others.

INSTALLATION NOTES (Suggested installation steps)

1. Excavate trench to correspond with the traffic application for which Duraslot Pipe is being installed. (See applications)
2. Place base material to desired elevation. Depth of base (B) shall be determined by taking the final elevation (E), minus slot riser recess (R) (depending on the application*), minus actual height of slot (H), minus inner pipe diameter (ID), minus the pipe corrugation thickness (T). (Figure 4)
The equation for the depth of base material:

$$B = E - R - H - ID - T$$



Figure 1



Figure 2



Figure 3

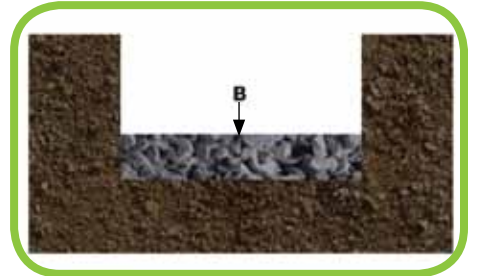


Figure 4



Figure 5

INSTALLATION NOTES (CONTINUED)

3. Place Duraslot pipe in bottom of trench, on top of base material.
4. Before Duraslot pipe is braced in the trench, the slot opening should be covered to prevent the concrete or asphalt from entering the system. An accepted way to do so is to run a piece of $\frac{1}{4}$ "- $\frac{1}{2}$ " (6-13 mm) plywood over the grates, then use 2" (50 mm) duct tape to hold it over the grate. (Figure 6) This will help prevent clogging the grate and help achieve the recess for Duraslot pipe.
5. Duraslot pipe must be secured in place. (Figure 5) Suggestions include:
 - a) Stake rebar or wood in bottom of trench to cradle the HDPE pipe
 - b) Place 2x4s vertically alongside of trench
 - c) Span 2x4s transversally across Duraslot slot riser and connect to vertical bracing
 - d) Attach angle braces at the middle of lateral bracing to keep the slot from tipping
6. When placing Duraslot pipe, it is highly suggested to place the concrete simultaneously to both sides of the slot. To help accomplish this, take a 4" or 6" (100 or 150 mm) , 4' (1.2 m) length of scrap plastic pipe, field cut a 2 $\frac{1}{2}$ " (64 mm) wide strip out and saddle it around the slot riser. Place the concrete directly over the saddled pipe. This will allow the concrete to distribute evenly to both sides. Move the pipe as you continue to place concrete down the run. (Figure 7)
7. There should be two separate pours during the installation process. (Figure 8). The first pour should reach the level where the pipe meets the slot. Remove the bracing and place second layer of concrete to achieve the designed final grade.

* The top of the slot should be recessed $\frac{1}{4}$ " (6 mm) for pedestrian applications and $\frac{1}{2}$ " (13 mm) for heavy applications, below finished grade. (Figure 9) This allows surface run-off to enter the inlet efficiently and protects the grate and flanges from snowplows and the like. A mason's tool can be used to knurl the edges after tape and plywood have been removed.

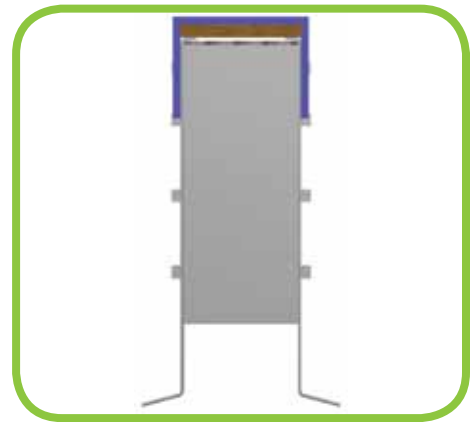


Figure 6

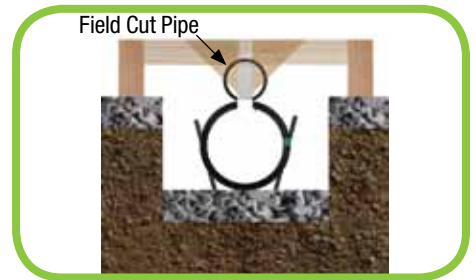


Figure 7

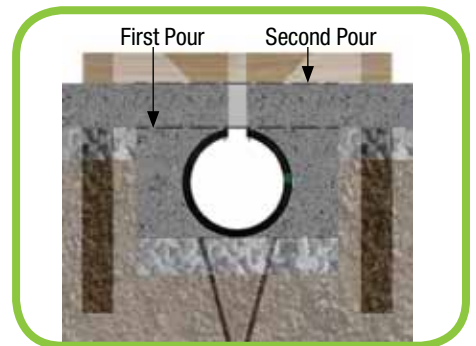


Figure 8



Figure 9

SCOPE

This specification describes 4"-36" (100 to 900 mm) ADS Duraslot pipe for use in surface drain applications.

PIPE REQUIREMENTS

ADS Duraslot pipe shall have a smooth interior and annular exterior corrugations with an aluminum slot mounted longitudinally along the length of the pipe to accept the grate frame while maintaining the original pipe diameter.

- 4"-10" (100 to 250 mm) pipe shall meet AASHTO M252, Type S.
- 12"-36" (300-900 mm) pipe shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

The aluminum grate frame shall be manufactured from 0.063" (1.6 mm) tempered commercial aluminum, consisting of two parallel plates separated by spaces spanning the slot on 6" (150 mm) centers. The grating shall be ½" (13 mm) #13 galvanized steel. The flange at the bottom of the aluminum grate shall be riveted to the pipe with a minimum of two rivets per linear foot.

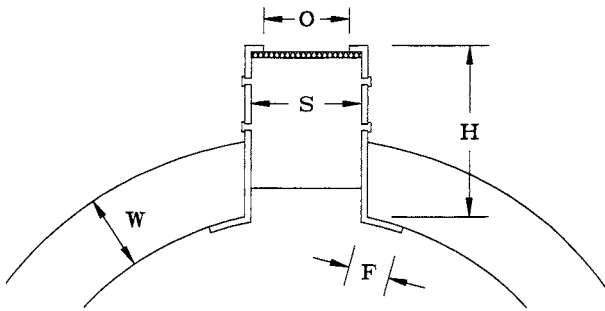
FITTINGS

Pipe fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F2306.

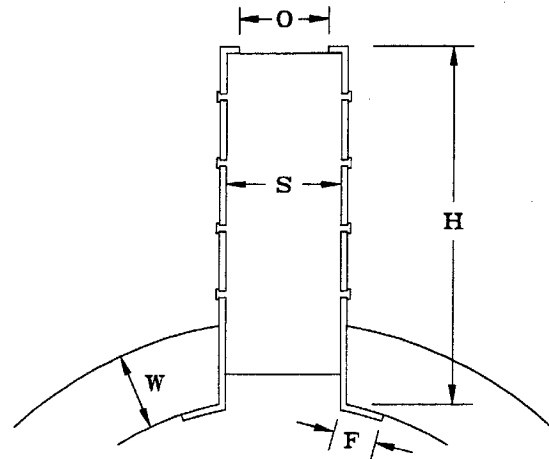
INSTALLATION

Contact your local ADS representative for a copy of the installation guidelines from Duraslot.

PHYSICAL DIMENSIONS



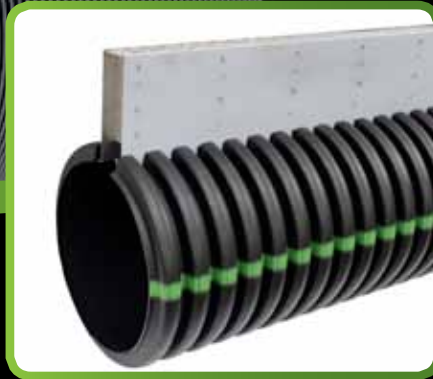
2.5" Slot shown with 1/2 - #13 Galvanized Grating



6" Slot shown without Grating (Open Top)

	Pipe Diameter, in (mm)									
	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)
H (2.5" (64 mm) Nominal Slot)	2.75 (70)	3.0 (75)	3.0 (75)	3.0 (75)	3.5 (90)	3.75 (95)	4.0 (100)	4.75 (120)	5.0 (125)	5.25 (130)
H (6" (150 mm) Slot)	6.25 (160)	6.5 (165)	6.5 (165)	6.5 (165)	7.0 (175)	7.0 (175)	7.0 (175)	7.25 (185)	8.25 (210)	8.25 (210)
W (Corrugation Height)	0.34 (9)	0.46 (12)	0.61 (15)	0.73 (18)	1.15 (30)	1.30 (33)	1.57 (40)	1.86 (47)	2.55 (65)	2.85 (72)
F (Flange Length)	0.5 (13)	0.75 (19)	0.75 (19)	0.75 (19)	0.75 (19)	0.75 (19)	0.75 (19)	1 (25)	1 (25)	1 (25)
O (Opening Width)	1.25 (32)	1.75 (45)	1.75 (45)	1.75 (45)	1.75 (45)	1.75 (45)	1.75 (45)	1.75 (45)	1.75 (45)	1.75 (45)
S (Slot Width)	1.75 (45)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)	2.25 (57)
L (Drain Grate Length)	118 (3000)	118 (3000)	118 (3000)	118 (3000)	116 (2950)	116 (2950)	116 (2950)	116 (2950)	116 (2950)	116 (2950)
E (Pipe End Length)	1 (25)	1 (25)	1 (25)	1 (25)	2 (50)	2 (50)	2 (50)	2 (50)	2 (50)	2 (50)

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