SWIFTDRAIN

INSTALLATION GUIDE

SWIFTDRAIN SIERRA

SIERRA 5 · SIERRA 8 · SIERRA 12

Step-by-step installation of Sierra polymer trench drain channels in shallow and deep profiles, from layout and excavation through encasement, finishing and maintenance.

20″ SECTIONS · CLIP-IN JOINTS · FIELD MODIFIABLE

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BEFORE YOU BEGIN

Sierra channels are light enough to carry by hand and simple to join, but a trench drain is only as good as the concrete around it. Read this guide through once before you excavate, and keep it on site during the pour.

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PHOTO · CUTTING 2×4 CROSS MEMBERS ON SITE

TOOLS

Laser level or transit, string line and line level, tape measure, shovel or mini-excavator, plate compactor, sledge for stakes, fine-tooth hand saw or circular saw with a fine plastic-cutting blade, file or deburring tool, concrete float, edging tool and trowel.

MATERIALS

Sierra channels, grates and end caps; outlet adapters as ordered; rebar tie-clips (included); #4 (1/2") rebar for stakes and, at Class C, for continuous reinforcement; ready-mix or bagged concrete per the load-class table; PVC primer and solvent cement for pipe connections; duct tape or plastic sheeting to protect the grates; a joint sealant where a watertight run is required.

SAFETY. Call 811 to locate buried utilities before digging. Wear eye protection when cutting, gloves when handling grates and concrete, and follow OSHA trenching rules on any excavation deeper than you would stand in comfortably.

CHECK THE DELIVERY. Count channels, grates, end caps and outlets against the packing list before you excavate, and confirm the profile (shallow or deep) matches the drawings.

SECTION 02

SYSTEM OVERVIEW

Swiftdrain Sierra is a modular polymer trench drain family in three widths. Every model shares the same architecture: thick-walled, side-ribbed, UV-inhibited channels with clip-in interlocking joints, grates that sit flush in the channel throat, and outlets that can be placed anywhere along the run.

	SIERRA 5	SIERRA 8	SIERRA 12
Nominal width	5½″ OD	8″	12″
Profiles	Shallow & deep	Shallow 4½″ · deep 7¼″	Shallow & deep
Channel length	20″ shallow · 40″ deep	20″	20″
Grate length	20″ (two per deep channel)	20″	20″
Grate options	Ductile iron · polymer	Slotted ductile iron · ADA HDPE · vehicular	Ductile iron standard
Load class	A–B	A, B, C	Up to C
Typical use	Patios, pool decks, residential driveways	Driveways, walks, light commercial	Wide aprons, plazas, garage thresholds

CHANNELS

Clip-in ends lock section to section and ride out concrete expansion and contraction. Side ribs key the body into the encasement.

GRATES

Grates drop into the channel throat. Keep them installed during the pour; they hold the channel walls at the correct width.

ACCESSORIES

End caps close each open end. Side and bottom outlets connect to sewer & drain or SCH 40 pipe. Rebar tie-clips anchor the run to stakes.

KNOW THE LIMIT. Sierra is a light- to medium-duty system. For forklifts, tractor-trailers, loading docks or anything above Class C, specify the Swiftdrain 200 or 300 series instead.

PHOTO · SIERRA CHANNEL

WHAT ARRIVES ON SITE

Each channel ships ready to assemble, with its grates seated in the throat. The pictured channel carries two slotted ductile iron grates and a fitted end outlet ready to take pipe.

Leave the grates in the channels from delivery through the pour. They protect the throat, keep the walls at the correct width, and are the reference surface for every grade check.

SECTION 03

PLANNING THE RUN

Most installation problems are layout problems. Settle the outlet position, the flow direction and the finished grade before any digging starts.

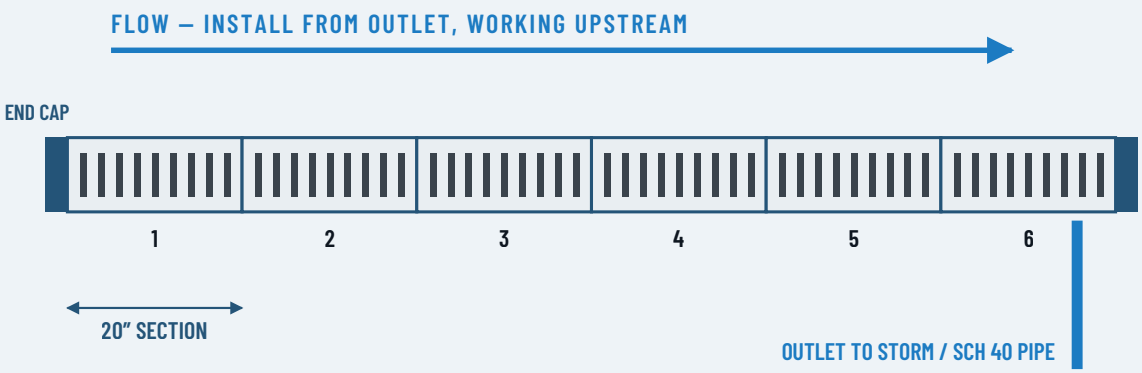

FIG 3.1 · TYPICAL RUN IN PLAN N.T.S.

OUTLET AND FLOW

Locate the outlet first, at the low point where the run will discharge to the storm system, dry well or daylight. Install from the outlet and work upstream so each joint laps in the direction of flow. Sierra channels have no built-in slope, so the fall comes from setting the channel to grade. Where the surrounding surface is level, pitch the run itself toward the outlet, or add outlets to shorten the distance water has to travel.

SURFACE GRADING

Grade the surrounding paving to fall toward the drain on both sides, typically 1 to 2 percent. The drain intercepts sheet flow; it cannot pull water uphill.

COUNTING SECTIONS

Most Sierra channels are 20" long, so three sections cover 5 feet and six cover 10 feet. Sierra 5 deep channels are 40", with two 20" grates each. Round the run up to the next full section and cut the last one to fit (see Section 08).

RUN	20" SECTIONS	SIERRA 5 DEEP (40")
10 ft	6	3 + 6 grates
18 ft	11	6 + 12 grates
25 ft	15	8 + 16 grates

EXPANSION JOINTS. Align slab control and expansion joints so they meet the channel at a channel joint, never mid-section.

SECTION 04

LOAD CLASS & ENCASEMENT

The grate sets the load class, but the concrete encasement carries the load. Size the trench from the table below and the channel's outside dimensions.

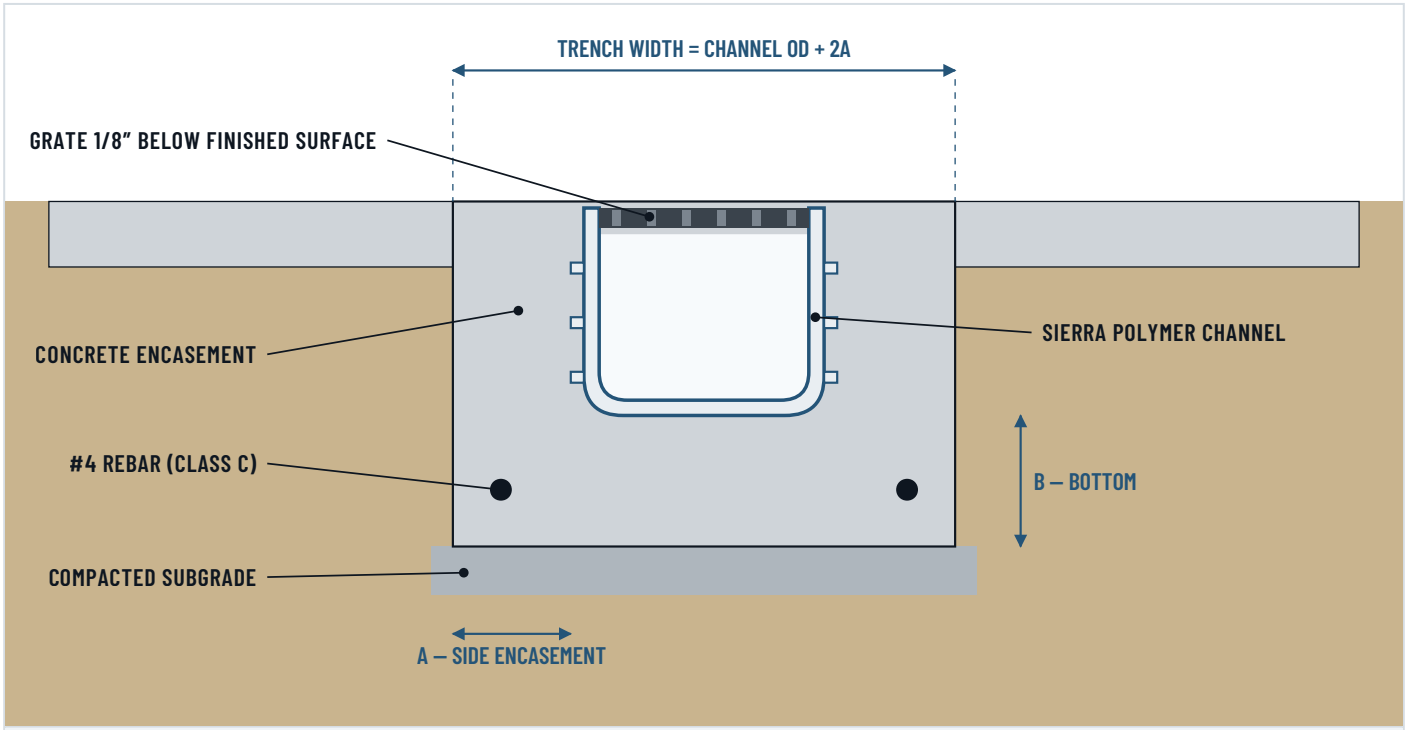

FIG 4.1 · TYPICAL SECTION, SIERRA CHANNEL IN CONCRETE — N.T.S.

CLASS	TYPICAL TRAFFIC	A · SIDES	B · BOTTOM	CONCRETE	REINFORCEMENT
A	Pedestrians, bicycles, pool decks, patios	4″	4″	3,000 psi	None required
B	Residential driveways, cars, light pickups	6″	6″	3,000 psi	Recommended
C	Commercial drives and lots, slow-moving delivery vans	6″	6″	4,000 psi	#4 rebar, continuous, each side

TRENCH SIZE

Width equals the channel's outside width plus twice the side encasement. Depth equals the channel depth (shallow or deep profile) plus the bottom encasement, plus any base course called for by the site engineer. Example: a Sierra 8 deep channel (7¼″) at Class B needs a trench about 13¼″ below finished grade.

SUBGRADE

Excavate to firm, undisturbed soil and compact the bottom. Remove soft spots and replace with compacted aggregate. In frost-prone regions, follow local practice for base depth under rigid paving.

> **ENGINEER'S DRAWINGS GOVERN.** These are minimums for typical sites. Project specifications, soil reports or local code take precedence where they call for more.

SECTION 05

INSTALLATION, STEPS 1–4

1 LAY OUT AND SET THE STRING LINE

Mark the centerline of the run and the outlet location. Set a string line at the finished surface elevation along the full length, offset from the centerline so it stays clear of the excavation. Every channel will be set from this line.

2 EXCAVATE AND COMPACT

Dig the trench to the width and depth from Section 04. Keep the walls as straight as practical, compact the bottom, and add a bedding layer of concrete or compacted aggregate if the channel needs to sit higher at any point along the run.

3 DRIVE STAKES AND FIT TIE-CLIPS

Drive #4 rebar stakes into the subgrade on both sides of the trench at every channel joint, plus one mid-span pair on Sierra 5 deep 40" channels. Snap the rebar tie-clips onto the channel ribs; they slide onto the stakes and hold the channel at height and in line through the pour. Where stakes cannot be driven, or when retrofitting into an existing slab, hang the run from wood instead (Section 06).

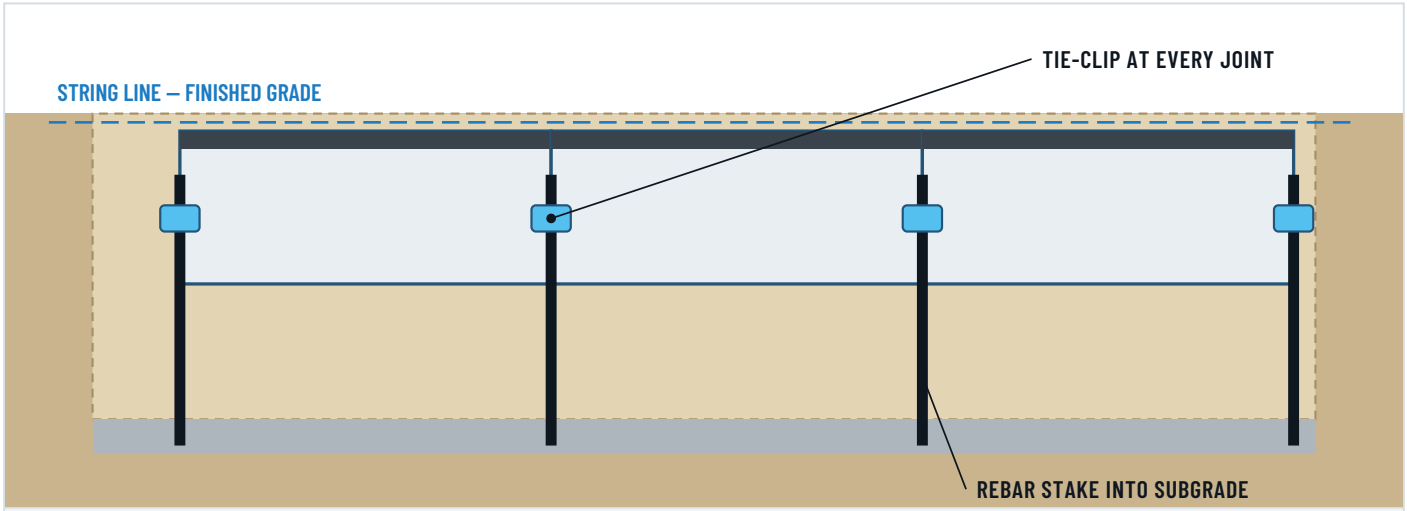

FIG 5.1 · CHANNELS HUNG FROM STAKES, SET TO STRING LINE N.T.S.

4 ASSEMBLE THE CHANNELS

Start at the outlet section and work upstream. Align each new section with the last and press the clip-in ends together until they seat fully, with no gap at the top edge. Fit end caps to both open ends of the run. Where the run must be watertight, run a bead of joint sealant around each joint before seating.

> **GRATES IN.** Install all grates now and leave them in through the pour. They keep the channel walls parallel when the concrete pushes against them.

SECTION 06 · ALTERNATE TO STEP 3

WOOD SUSPENSION METHOD

Instead of standing the channel on rebar stakes, hang it from 2×4 cross members that span the trench. Use it for retrofits cut into an existing slab, rocky or very hard subgrade where stakes will not drive, or soft ground where they will not hold.

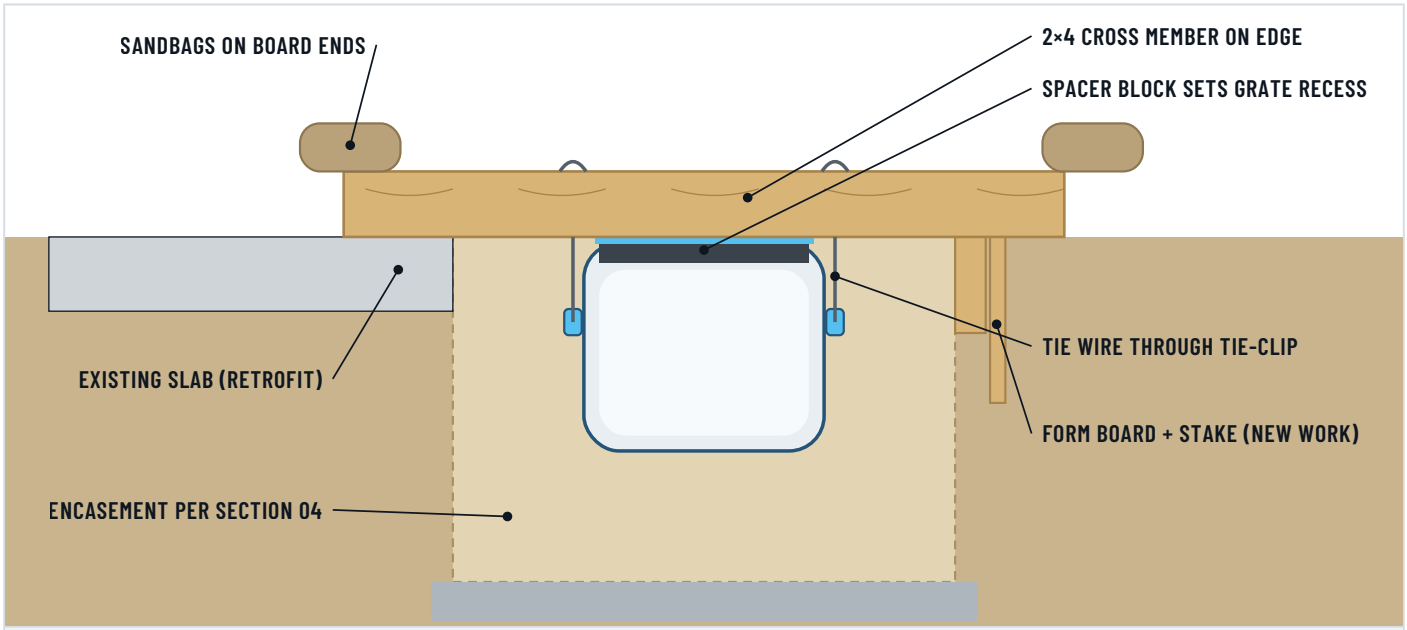

FIG 6.1 · CHANNEL HUNG FROM A 2×4 CROSS MEMBER — N.T.S.

A PREPARE THE BEARING

In a retrofit, the cross members bear on the existing slab. In new work, stake a straight form board along each side of the trench with its top at finished grade; the form boards double as screed rails.

B CUT AND PLACE CROSS MEMBERS

Cut straight 2×4s about 24″ longer than the trench is wide and set them on edge at every channel joint (every 20″), plus mid-span on Sierra 5 deep 40″ channels.

C HANG THE CHANNELS

Assemble the run as in Step 4 with grates in and taped. Loop tie wire through the tie-clips on both sides, over the cross member, and twist to snug.

D SET THE RECESS

Place a spacer block between the board and the taped grate equal to the recess: 1/8″ for concrete, 1/4″ for asphalt or pavers. Tighten the wire until the grate pulls up against it. Wire holds the channel up, the block holds it down, and the run is locked at grade. Weight the board ends with sandbags or block.

E FIRST LIFT, THEN STRIKE THE BOARDS

Place the first lift to the lower third of the channel. Once it is stiff enough to hold the run, cut the wires flush, lift out the boards and blocks, and finish with Steps 7–8.

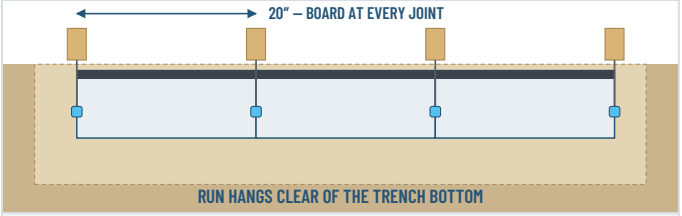

FIG 6.2 · ELEVATION — N.T.S.

SECTION 07

INSTALLATION, STEPS 5–8

5 SET FINAL GRADE

Adjust each section on its stakes or wire hangers until the top of the grate sits 1/8" below the finished concrete surface, or 1/4" below asphalt or pavers. Check the run end to end against the string line and with a level across the grates. Correct any high or low joint now; it cannot be fixed after the pour.

6 CONNECT THE OUTLET AND PROTECT THE RUN

Connect outlet pipe as described in Section 08 and support it on compacted fill so it cannot pull the channel out of position. Cover the grates with duct tape or plastic sheeting so concrete and slurry cannot enter the channel.

7 POUR IN LIFTS

Place the first lift evenly on both sides up to roughly the lower third of the channel and consolidate it under the body. Hold until it stiffens enough to resist uplift, then place the second lift to finished grade. Never fill one side at a time; uneven pressure pushes the channel off line, and a full-height pour on fresh concrete can float the run.

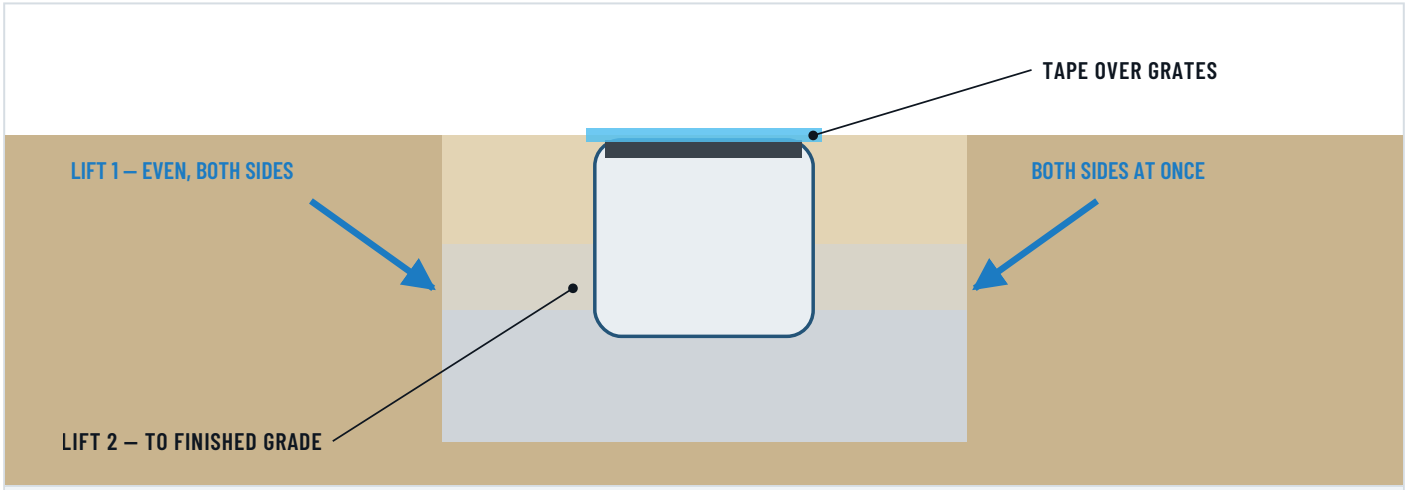

FIG 7.1 · TWO-LIFT POUR, EVEN ON BOTH SIDES N.T.S.

8 FINISH, CURE AND OPEN

Float and trowel the concrete so it finishes just proud of the grate, and tool a clean edge along both sides of the channel. Cure according to the concrete supplier's instructions. Remove the tape, flush the run with a hose to confirm it drains to the outlet, and keep vehicles off until the concrete reaches its design strength.

SECTION 08

CUTTING, OUTLETS & SURFACES

FIELD CUTTING

Sierra channels are field modifiable. Each section can be cut at any of its 4" increments to close out a run or fit around an obstruction. Use a fine-tooth saw, cut square, and deburr the edge so the end cap or adjoining section seats cleanly. Cut grates to match with a metal-cutting blade for ductile iron, and file any sharp edges.

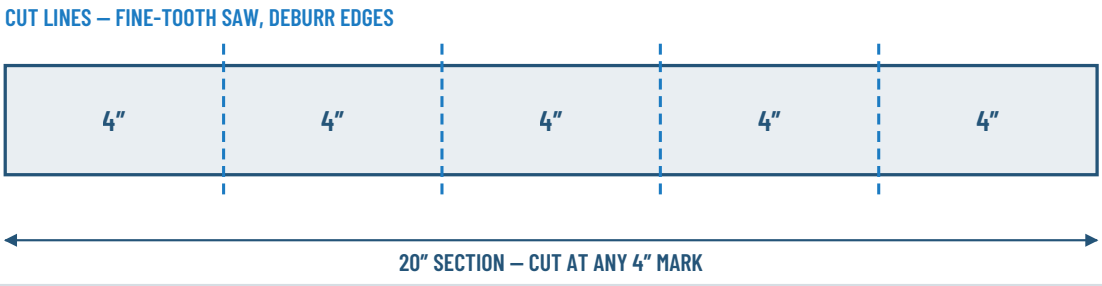

FIG 8.1 · 4" CUT INCREMENTS N.T.S.

OUTLETS

Bottom outlet. Mark the outlet position on the channel floor, cut the opening to the adapter size, and fit the adapter. Glue the pipe to the adapter with PVC primer and solvent cement.

Side outlet. Use where the pipe must leave horizontally, such as daylighting to a slope. Cut the opening in the channel wall, fit the adapter and connect to sewer & drain or SCH 40 pipe.

End outlet. An end cap with outlet closes the downstream end of the run and connects directly to pipe.

Bed and backfill all pipe on compacted material, and slope it at least 1/8" per foot away from the drain.

SURFACE TYPES

SURFACE	GRATE BELOW FINISH	NOTES
Concrete	1/8"	Tool a clean edge both sides
Asphalt	1/4"	Keep concrete encasement; asphalt butts to it, never laid directly against the channel
Pavers	1/4"	Concrete encasement under the soldier course; pavers set on top, cut tight to the edge
Turf / gravel	Flush to 1/4"	Concrete collar around the channel at Class A minimum

CORNERS AND TEES

Miter-cut the channels and grates to meet, seal the joint, and encase the junction with the same concrete section as the run.

SECTION 09

INSPECTION & COMMON MISTAKES

PRE-POUR CHECKLIST

- ☐ Outlet location, invert and pipe connection confirmed
- ☐ Trench width and depth match the load class
- ☐ Subgrade compacted; soft spots replaced
- ☐ Stakes and tie-clips, or wood cross members and tie wire, at every joint
- ☐ All clip-in joints fully seated; end caps fitted
- ☐ Grate tops 1/8" (concrete) or 1/4" (asphalt, pavers) below finish
- ☐ Run straight and true to the string line
- ☐ All grates installed and taped over
- ☐ Class C reinforcement placed, if required

POST-POUR CHECKLIST

- ☐ Concrete finished slightly proud of the grate, edges tooled
- ☐ Tape removed; channel clear of slurry and debris
- ☐ Run flushed and draining to the outlet
- ☐ Traffic held off until concrete reaches design strength

AVOID THESE

MISTAKE	RESULT
Pouring without grates installed	Channel walls bow in or out; grates no longer fit
Filling one side at a time	Run pushed off line
Full-height pour in one lift	Channel floats above grade
Grate set flush or high	Tires and snowplows strike the grate edge
Wood cross members left in for the full pour	Boards locked in concrete; rough, unfinished edge
Thin or missing encasement	Concrete cracks along the channel; grate rocks
Asphalt laid against the channel	Edge breaks down under traffic
Using Sierra above Class C	Overloaded grates and channel; step up to Swiftdrain 200 or 300

QUESTIONS ON SITE? Call 646-227-0910 before the pour, not after. We would much rather solve it with you while the trench is still open.