

# PolyDrain Design

## The PolyDrain Trench Drain System

The PolyDrain Trench Drain System consists of 30 interlocking sloped channels and 4 non-sloped channels. The non-sloping channels can be inserted at specified intervals in order to extend channel runs. Catch basins, horizontal outlet plates, closed end plates and vertical outlet plate adapters can be installed at designated locations. Closed end plates terminate channel runs. To determine number of channels required simply divide footage by 3.27.

PolyDrain channels are a nominal meter (39.19 in., 3.27 ft.) long. Standard channels have a 0.6% built in slope. The 30 standard channels are positioned sequentially in numerical order from 010 to 300, creating a continuously sloped channel run. With PolyDrain, runs of almost any length are possible by varying outlet placements, integrating non-sloping channels and using PolyWall Sidewall Extensions for increased depth. Channel runs can be designed with intersections or miters and fabricated onsite utilizing commercial grade cutting tools.

## Channel Specifications

Use this chart to estimate flow capacities and invert elevations. Add a minimum of 4" to overall depths to estimate necessary excavation or as recommended by Structural Engineer. Actual depth of excavation is governed by slab or pavement thickness. When using the Model 510 Series frame and grate systems, add 1.2 in. (31 mm) to the overall depths.

Note:

- Always begin at the appropriate outlet channel, working towards the shallow end.

Notes:

- Subtract 1 in. (25 mm) from minimum and maximum depths shown to obtain invert elevations.
- Red part numbers indicate non-sloping channels.
- Hydraulic data does not have a grate locking device in flow area.
- PolyDrain systems can be extended to greater lengths by insertion of any number of non-slope channels (No. 021, 091, 096, 191, and 291) at the appropriate locations, or by the addition of PolyWall sidewall extensions.

n=0.010

| Part No. | Channel Only                      |             |                                   |                    | Channel With PolyWall I           |             |                                   |                    | Channel With PolyWall II          |             |                                   |                    | Part No. |
|----------|-----------------------------------|-------------|-----------------------------------|--------------------|-----------------------------------|-------------|-----------------------------------|--------------------|-----------------------------------|-------------|-----------------------------------|--------------------|----------|
|          | Overall Channel Depth<br>in. (cm) |             | Maximum<br>Flow Rate<br>gpm (lpm) | Weight<br>lbs (kg) | Overall Channel Depth<br>in. (cm) |             | Maximum<br>Flow Rate<br>gpm (lpm) | Weight<br>lbs (kg) | Overall Channel Depth<br>in. (cm) |             | Maximum<br>Flow Rate<br>gpm (lpm) | Weight<br>lbs (kg) |          |
|          |                                   |             |                                   |                    |                                   |             |                                   |                    |                                   |             |                                   |                    |          |
| 010      | 5.1 (12.9)                        | 5.3 (13.5)  | 106.7 (403.8)                     | 31.1 (14.1)        | 12.2 (30.9)                       | 12.4 (31.5) | 389.9 (1476.1)                    | 82.9 (37.6)        | 19.3 (48.9)                       | 19.5 (49.5) | 678.3 (2567.6)                    | 106.5 (46.3)       | 010      |
| 020      | 5.3 (13.5)                        | 5.6 (14.1)  | 115.8 (438.3)                     | 32.8 (14.9)        | 12.4 (31.5)                       | 12.6 (32.1) | 399.5 (1512.4)                    | 84.6 (38.4)        | 19.5 (49.5)                       | 19.7 (50.1) | 687.9 (2604.1)                    | 108.2 (47.1)       | 020      |
| 021      | 5.6 (14.1)                        | 5.6 (14.1)  | —                                 | 32.0 (14.5)        | 12.6 (32.1)                       | 12.6 (32.1) | —                                 | 83.8 (38.0)        | 19.7 (50.1)                       | 19.7 (50.1) | —                                 | 107.4 (46.7)       | 021      |
| 030      | 5.6 (14.1)                        | 5.8 (14.7)  | 125.0 (473.1)                     | 33.6 (15.2)        | 12.6 (32.1)                       | 12.9 (32.7) | 409.1 (1548.7)                    | 85.4 (38.7)        | 19.7 (50.1)                       | 20.0 (50.7) | 697.6 (2640.5)                    | 109.0 (47.4)       | 030      |
| 040      | 5.8 (14.7)                        | 6.0 (15.3)  | 134.2 (508.0)                     | 34.3 (15.5)        | 12.9 (32.7)                       | 13.1 (33.3) | 418.7 (1584.9)                    | 86.1 (39.0)        | 20.0 (50.7)                       | 20.2 (51.3) | 707.2 (2677.0)                    | 109.7 (47.7)       | 040      |
| 050      | 6.0 (15.3)                        | 6.3 (15.9)  | 143.5 (543.0)                     | 33.8 (15.3)        | 13.1 (33.3)                       | 13.3 (33.9) | 428.3 (1621.2)                    | 85.6 (38.8)        | 20.2 (51.3)                       | 20.4 (51.9) | 716.8 (2713.5)                    | 109.2 (47.5)       | 050      |
| 060      | 6.3 (15.9)                        | 6.5 (16.5)  | 152.7 (578.2)                     | 35.2 (16.0)        | 13.3 (33.9)                       | 13.6 (34.5) | 437.9 (1657.6)                    | 87.0 (39.5)        | 20.4 (51.9)                       | 20.7 (52.5) | 726.5 (2750.0)                    | 110.6 (48.2)       | 060      |
| 070      | 6.5 (16.5)                        | 6.7 (17.1)  | 162.1 (613.5)                     | 36.2 (16.4)        | 13.6 (34.5)                       | 13.8 (35.1) | 447.5 (1693.9)                    | 88.0 (39.9)        | 20.7 (52.5)                       | 20.9 (53.1) | 736.1 (2786.4)                    | 111.6 (48.6)       | 070      |
| 080      | 6.7 (17.1)                        | 7.0 (17.7)  | 171.4 (648.9)                     | 37.0 (16.8)        | 13.8 (35.1)                       | 14.0 (35.7) | 457.1 (1730.2)                    | 88.8 (40.3)        | 20.9 (53.1)                       | 21.1 (53.7) | 745.7 (2822.9)                    | 112.4 (49.0)       | 080      |
| 090      | 7.0 (17.7)                        | 7.2 (18.3)  | 180.8 (684.3)                     | 38.0 (17.2)        | 14.0 (35.7)                       | 14.3 (36.3) | 466.7 (1766.5)                    | 89.8 (40.7)        | 21.1 (53.7)                       | 21.4 (54.3) | 755.4 (2859.4)                    | 113.4 (39.4)       | 090      |
| 091      | 7.2 (18.3)                        | 7.2 (18.3)  | —                                 | 37.4 (17.0)        | 14.3 (36.3)                       | 14.3 (36.3) | —                                 | 89.2 (40.5)        | 21.4 (54.3)                       | 21.4 (54.3) | —                                 | 112.8 (49.2)       | 091      |
| 096      | 7.2 (18.3)                        | 7.2 (18.3)  | —                                 | 20.1 (9.1)         | 14.3 (36.3)                       | 14.3 (36.3) | —                                 | 71.9 (32.6)        | 21.4 (54.3)                       | 21.4 (54.3) | —                                 | 95.5 (41.3)        | 096      |
| 100      | 7.2 (18.3)                        | 7.4 (18.9)  | 190.2 (719.9)                     | 37.6 (17.1)        | 14.3 (36.3)                       | 14.5 (36.9) | 476.3 (1802.9)                    | 89.4 (40.6)        | 21.4 (54.3)                       | 21.6 (54.9) | 765.0 (2895.9)                    | 113.0 (49.3)       | 100      |
| 110      | 7.4 (18.9)                        | 7.7 (19.5)  | 199.6 (755.5)                     | 39.8 (18.1)        | 14.5 (36.9)                       | 14.8 (37.5) | 485.9 (1839.2)                    | 91.6 (41.5)        | 21.6 (54.9)                       | 21.9 (55.5) | 774.7 (2932.4)                    | 115.2 (50.3)       | 110      |
| 120      | 7.7 (19.5)                        | 7.9 (20.1)  | 209.0 (791.2)                     | 40.6 (18.4)        | 14.8 (37.5)                       | 15.0 (38.1) | 495.5 (1875.6)                    | 92.4 (41.9)        | 21.9 (55.5)                       | 22.1 (56.1) | 784.3 (2968.9)                    | 116.0 (50.6)       | 120      |
| 130      | 7.9 (20.1)                        | 8.2 (20.7)  | 218.5 (826.9)                     | 42.4 (19.2)        | 15.0 (38.1)                       | 15.2 (38.7) | 505.1 (1912.0)                    | 94.2 (42.7)        | 22.1 (56.1)                       | 22.3 (56.7) | 793.9 (3005.4)                    | 117.8 (51.4)       | 130      |
| 140      | 8.2 (20.7)                        | 8.4 (21.3)  | 227.9 (862.7)                     | 42.8 (19.4)        | 15.2 (38.7)                       | 15.5 (39.3) | 514.7 (1948.4)                    | 94.6 (42.9)        | 22.3 (56.7)                       | 22.6 (57.3) | 803.6 (3041.9)                    | 118.2 (51.6)       | 140      |
| 150      | 8.4 (21.3)                        | 8.6 (21.9)  | 237.4 (898.6)                     | 42.6 (19.3)        | 15.5 (39.3)                       | 15.7 (39.9) | 524.3 (1984.7)                    | 94.4 (42.8)        | 22.6 (57.3)                       | 22.8 (57.9) | 813.2 (3078.4)                    | 118.0 (51.5)       | 150      |
| 160      | 8.6 (21.9)                        | 8.9 (22.5)  | 246.9 (934.4)                     | 44.2 (20.0)        | 15.7 (39.9)                       | 15.9 (40.5) | 533.9 (2021.1)                    | 96.0 (43.5)        | 22.8 (57.9)                       | 23.0 (58.5) | 822.9 (3114.9)                    | 119.6 (52.3)       | 160      |
| 170      | 8.9 (22.5)                        | 9.1 (23.1)  | 256.3 (970.4)                     | 45.1 (20.5)        | 15.9 (40.5)                       | 16.2 (41.1) | 543.5 (2057.5)                    | 96.9 (44.0)        | 23.0 (58.5)                       | 23.3 (59.1) | 832.5 (3151.4)                    | 120.5 (52.7)       | 170      |
| 180      | 9.1 (23.1)                        | 9.3 (23.7)  | 265.8 (1006.3)                    | 46.1 (20.9)        | 16.2 (41.1)                       | 16.4 (41.7) | 553.2 (2093.9)                    | 97.9 (44.4)        | 23.3 (59.1)                       | 23.5 (59.7) | 842.1 (3187.9)                    | 121.5 (53.1)       | 180      |
| 190      | 9.3 (23.7)                        | 9.6 (24.3)  | 275.4 (1042.3)                    | 46.8 (21.2)        | 16.4 (41.7)                       | 16.7 (42.3) | 562.8 (2130.3)                    | 98.6 (44.7)        | 23.5 (59.7)                       | 23.7 (60.3) | 851.8 (3224.4)                    | 122.2 (53.4)       | 190      |
| 191      | 9.6 (24.3)                        | 9.6 (24.3)  | —                                 | 46.6 (21.1)        | 16.7 (42.3)                       | 16.7 (42.3) | —                                 | 98.4 (44.6)        | 23.7 (60.3)                       | 23.7 (60.3) | —                                 | 122.0 (53.3)       | 191      |
| 200      | 9.6 (24.3)                        | 9.8 (24.9)  | 284.9 (1078.3)                    | 46.9 (21.3)        | 16.7 (42.3)                       | 16.9 (42.9) | 572.4 (2166.8)                    | 98.7 (44.8)        | 23.7 (60.3)                       | 24.0 (60.9) | 861.4 (3260.9)                    | 122.3 (53.5)       | 200      |
| 210      | 9.8 (24.9)                        | 10.0 (25.5) | 294.4 (1114.4)                    | 48.6 (22.0)        | 16.9 (42.9)                       | 17.1 (43.5) | 582.0 (2203.2)                    | 100.4 (45.5)       | 24.0 (60.9)                       | 24.2 (61.5) | 871.1 (3297.4)                    | 124.0 (54.2)       | 210      |
| 220      | 10.0 (25.5)                       | 10.3 (26.1) | 303.9 (1150.5)                    | 49.8 (22.6)        | 17.1 (43.5)                       | 17.4 (44.1) | 591.6 (2239.6)                    | 101.6 (46.1)       | 24.2 (61.5)                       | 24.4 (62.1) | 880.7 (3333.9)                    | 125.2 (54.8)       | 220      |
| 230      | 10.3 (26.1)                       | 10.5 (26.7) | 313.5 (1186.6)                    | 50.0 (22.7)        | 17.4 (44.1)                       | 17.6 (44.7) | 601.3 (2276.0)                    | 101.8 (46.2)       | 24.4 (62.2)                       | 24.7 (62.7) | 890.4 (3370.4)                    | 125.4 (54.9)       | 230      |
| 240      | 10.5 (26.7)                       | 10.7 (27.3) | 323.0 (1222.7)                    | 51.5 (23.4)        | 17.6 (44.7)                       | 17.8 (45.3) | 610.9 (2312.5)                    | 103.3 (46.9)       | 24.7 (62.7)                       | 24.9 (63.3) | 900.0 (3406.9)                    | 126.9 (55.6)       | 240      |
| 250      | 10.7 (27.3)                       | 11.0 (27.9) | 332.6 (1258.9)                    | 50.5 (22.9)        | 17.8 (45.3)                       | 18.1 (45.9) | 620.5 (2348.9)                    | 102.3 (46.4)       | 24.9 (63.3)                       | 25.2 (63.9) | 909.7 (3443.4)                    | 125.9 (55.1)       | 250      |
| 260      | 11.0 (27.9)                       | 11.2 (28.5) | 342.1 (1295.0)                    | 52.4 (23.7)        | 18.1 (45.9)                       | 18.3 (46.5) | 630.1 (2385.3)                    | 104.2 (47.2)       | 25.2 (63.9)                       | 25.4 (64.5) | 919.3 (3480.0)                    | 127.8 (55.9)       | 260      |
| 270      | 11.2 (28.5)                       | 11.5 (29.1) | 351.7 (1331.2)                    | 53.0 (24.0)        | 18.3 (46.5)                       | 18.5 (47.1) | 639.8 (2421.8)                    | 104.8 (47.5)       | 25.4 (64.5)                       | 25.6 (65.1) | 929.0 (3516.5)                    | 128.4 (56.2)       | 270      |
| 280      | 11.5 (29.1)                       | 11.7 (29.7) | 361.2 (1367.4)                    | 54.5 (24.7)        | 18.5 (47.1)                       | 18.8 (47.7) | 649.4 (2458.2)                    | 106.3 (48.2)       | 25.6 (65.1)                       | 25.9 (65.7) | 938.6 (3553.0)                    | 129.9 (56.9)       | 280      |
| 290      | 11.7 (29.7)                       | 11.9 (30.3) | 370.8 (1403.6)                    | 54.9 (24.9)        | 18.8 (47.7)                       | 19.0 (48.3) | 659.0 (2494.7)                    | 106.7 (48.4)       | 25.9 (65.7)                       | 26.1 (66.3) | 948.2 (3589.5)                    | 130.3 (57.1)       | 290      |
| 291      | 11.9 (30.3)                       | 11.9 (30.3) | —                                 | 53.4 (24.2)        | 19.0 (48.3)                       | 19.0 (48.3) | —                                 | 105.2 (47.7)       | 26.1 (66.3)                       | 26.1 (66.3) | —                                 | 128.8 (56.4)       | 291      |
| 300      | 11.9 (30.3)                       | 12.2 (30.9) | 380.4 (1439.9)                    | 55.6 (25.3)        | 19.0 (48.3)                       | 19.3 (48.9) | 668.7 (2531.2)                    | 107.4 (48.7)       | 26.1 (66.3)                       | 26.3 (66.9) | 957.9 (3626.0)                    | 131.0 (57.4)       | 300      |