

# NDS CHANNEL FLOW CAPACITIES

## MICRO CHANNEL DRAIN

Part #: 8001, 8002, 8003

### CHANNEL FLOW CAPACITIES

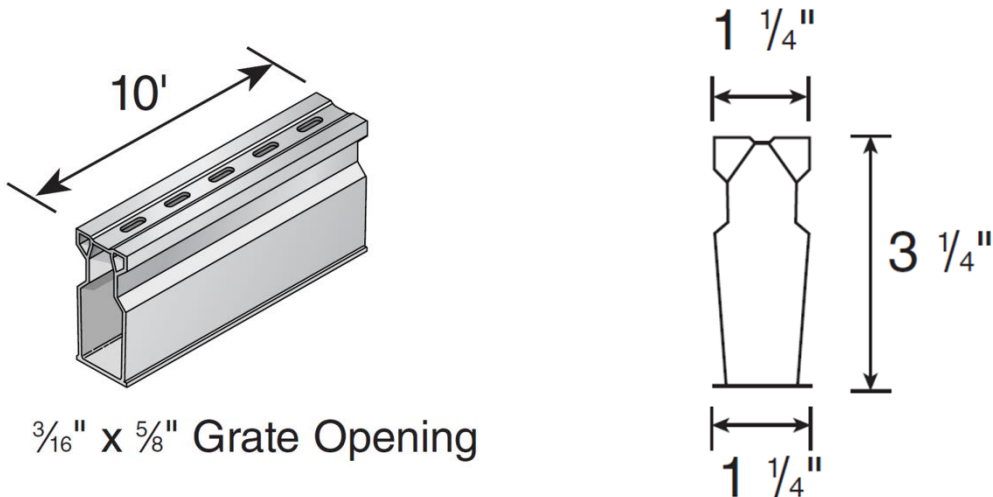
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.16	0.003	1.3
0.25	0.79	0.014	6.3
0.5	1.12	0.020	9.0
0.75	1.37	0.025	11.2
1	1.58	0.029	13.0
2	2.23	0.041	18.4
3	2.73	0.50	22.4
4	3.15	0.057	25.6
5	3.53	0.064	28.7

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
8001, 8002, 8003	Class A	3.06

### OUTLET FLOW CAPACITIES

Part #	Flow Rate	Pipe Connection
8461, 8462, 8463	7.37	1-1/2" Sch. 40 Fittings
8501, 8502, 8503	5.33	
8511, 8512, 8513	4.34	



## MINI CHANNEL DRAIN

Part #: 500

### CHANNEL FLOW CAPACITIES

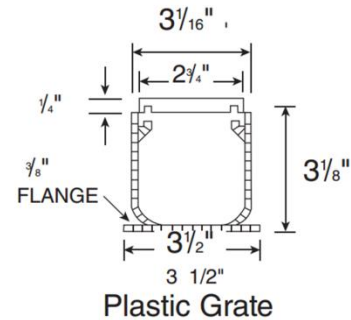
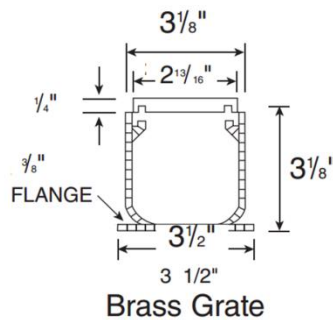
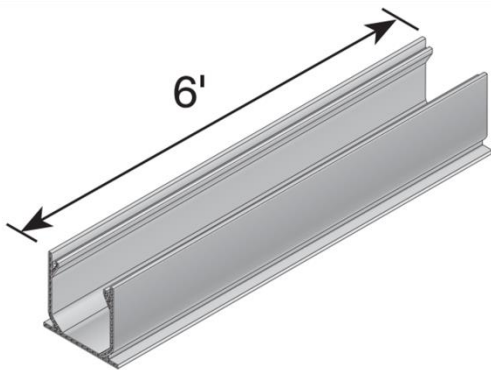
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.29	0.01	4.5
0.25	1.44	0.07	31.4
0.5	2.04	0.10	44.9
0.75	2.50	0.12	53.9
1	2.88	0.14	62.8
2	4.08	0.19	85.3
3	4.99	0.24	107.7
4	5.76	0.28	125.7
5	6.44	0.31	139.1

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
540, 541, 542, 543, 544, 551	Class B	30.29
552B, 552PB	Class A	28.14
554, 554GY, 554GR, 554S	Class B	16.43
554CI	Class B	15.08
555, 555GY, 555GR, 555S	Class B	17.54
555CI	Class B	12.56

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
546	17.35	2" Sch. 40 Fittings
550	31.79	



**SPEE-D CHANNEL DRAIN**  
**Part #: 400, 400-10**

**CHANNEL FLOW CAPACITIES**

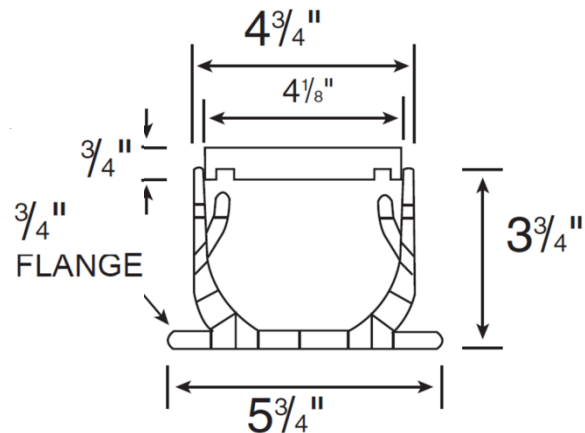
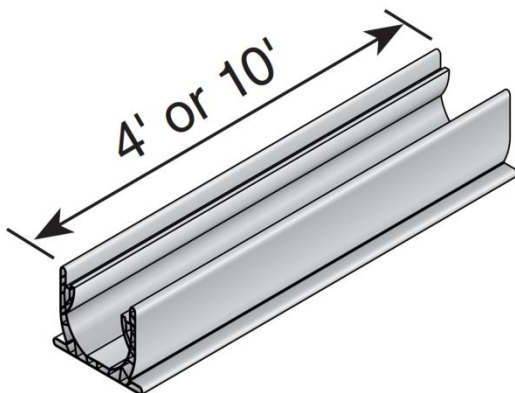
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.33	0.02	9.0
0.25	1.65	0.10	44.9
0.5	2.33	0.15	67.3
0.75	2.86	0.18	80.8
1	3.30	0.21	94.3
2	4.66	0.30	134.6
3	5.71	0.36	161.6
4	6.60	0.42	188.5
5	7.38	0.47	211.0

**FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE**

Part #	Load Capacity	Flow Rate (GPM per linear foot)
240, 241, 242, 243, 251	Class B	59.04
252, 252S, 252GR, 252GY	Class B	28.90
252CI	Class B	23.70
253, 253S, 253GR, 252GY	Class B	33.40
253CI	Class B	32.50

**OUTLET FLOW CAPACITIES**

Part #	Flow Rate (GPM)	Pipe Connection
234	62.16	3" & 4" S&D Fittings
246	19.82	2" Sch. 40 Fittings
249	19.73	3" S&D Pipe, 4" S&D Fittings



## 3" PRO SERIES CHANNEL DRAIN

Part #: 710

### CHANNEL FLOW CAPACITIES

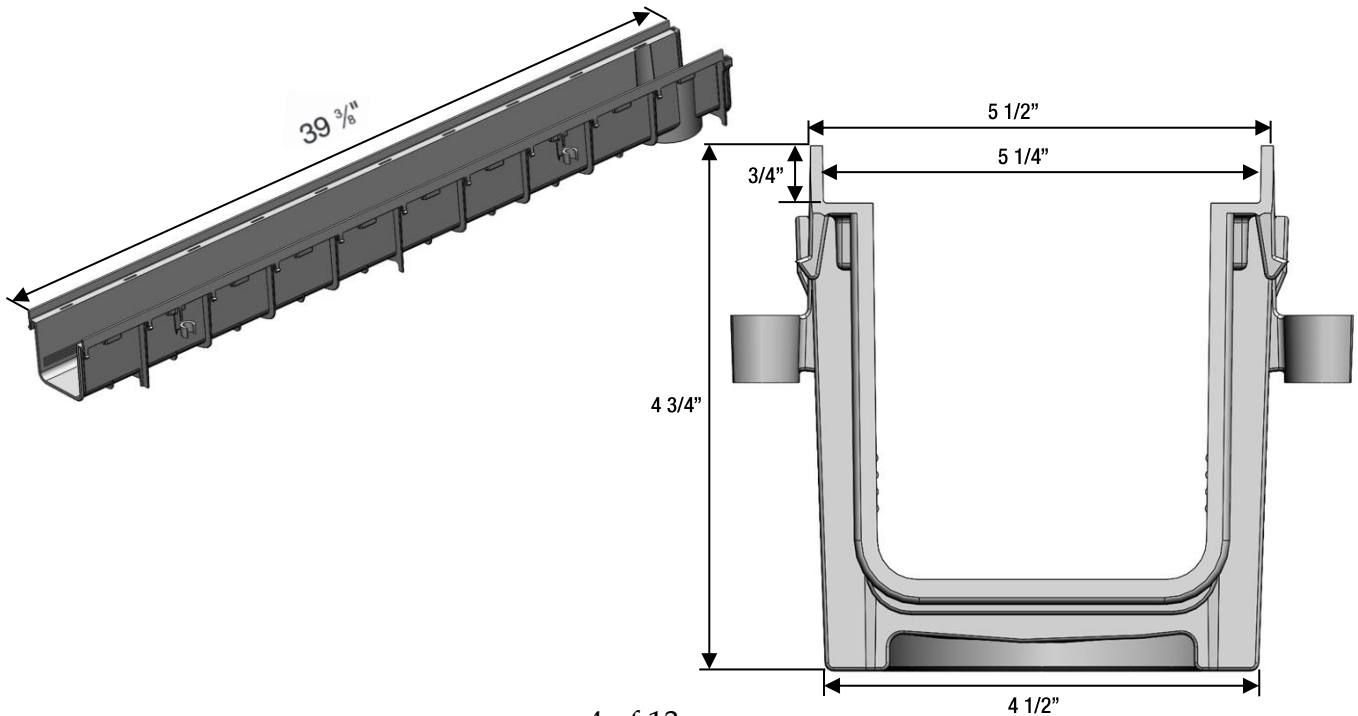
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.33	0.20	9.0
0.25	1.63	0.11	49.4
0.5	2.31	0.16	71.8
0.75	2.83	0.19	85.3
1	3.27	0.22	97.8
2	4.62	0.32	143.6
3	5.66	0.39	175
4	6.54	0.45	202
5	7.31	0.5	224.4

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
714	Class B	72.29

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
713	36.59	3" S&D Fittings
Bottom Outlet	39.54	



## 5" PRO SERIES DEEP PROFILE CHANNEL DRAIN

Part #: 800

### CHANNEL FLOW CAPACITIES

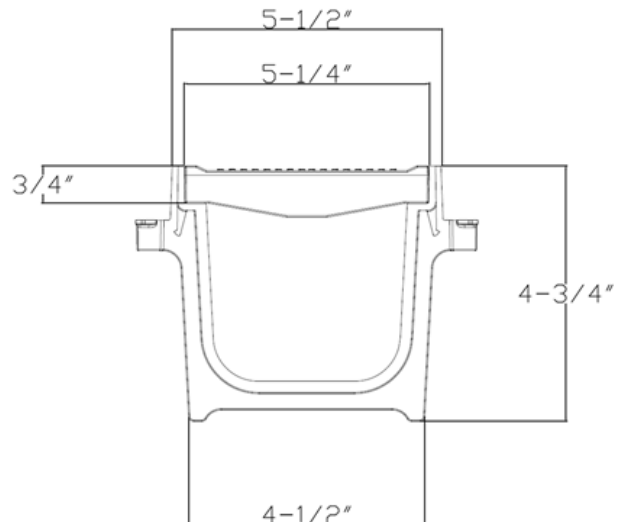
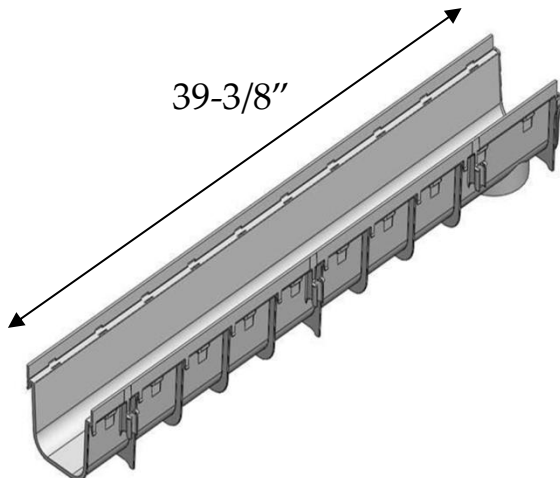
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.40	0.004	18
0.25	1.99	0.21	94
0.5	2.81	0.30	135
0.75	3.45	0.37	166
1	3.98	0.43	193
2	5.63	0.60	269
3	6.89	0.74	332
4	7.96	0.85	382
5	8.9	0.96	431

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
826	Class A	14.87
814, 815, 816, 817, 818, 819	Class B	76.85
828	Class D	47.54
823	Class C	76.57

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
811	46.26	3" S&D Pipe, 4" S&D Fittings
Bottom Outlet	71.47	3" & 4" S&D Fittings



## 5" PRO SERIES SHALLOW PROFILE CHANNEL DRAIN

Part #: 820

### CHANNEL FLOW CAPACITIES

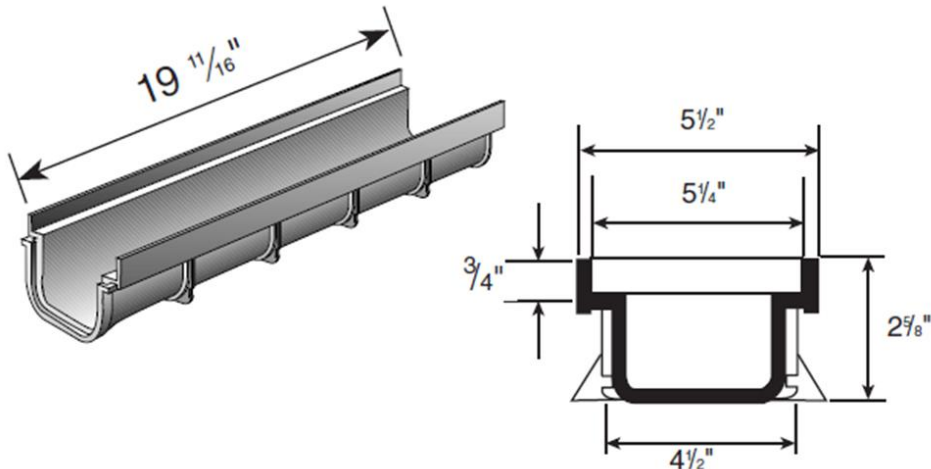
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.32	0.01	4
0.25	1.58	0.07	31
0.5	2.23	0.10	45
0.75	2.73	0.12	54
1	3.15	0.14	63
2	4.46	0.20	90
3	5.46	0.25	112
4	6.31	0.29	130
5	7.05	0.32	144

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
826	Class A	14.87
814, 815, 816, 817, 818, 819	Class B	76.85
828	Class D	47.54
823	Class C	76.57

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
821	8.13	1-1/2" Sch. 40 Pipe
822	Side: 12.54 Bottom: 57.74	1-1/2" Sch. 40 Pipe 3" S&D Fittings



## 8" PRO SERIES SHALLOW PROFILE CHANNEL DRAIN

Part #: 830

### CHANNEL FLOW CAPACITIES

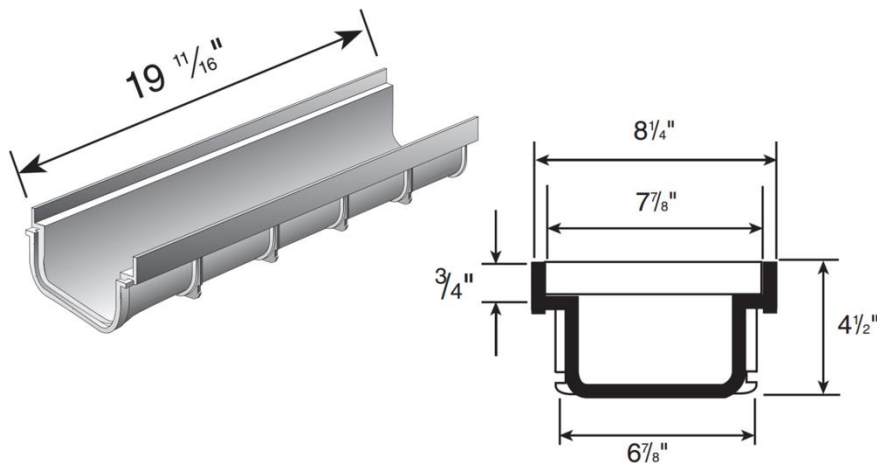
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.46	0.06	27
0.25	2.28	0.32	144
0.5	3.22	0.45	202
0.75	3.94	0.55	247
1	4.55	0.64	287
2	6.44	0.90	404
3	7.89	1.11	498
4	9.11	1.28	575
5	10.18	1.43	642

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
836	Class A	35.79
837	Class B	82.41
838	Class C	94.37
888	Class C	126.19

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
831	38.84	3" S&D Fittings
832	Side: 45.62 3" Bottom: 67.04 4" Bottom: 164.26	3" S&D Fittings 3" S&D Fittings 4" S&D Fittings



## 8" PRO SERIES DEEP PROFILE CHANNEL DRAIN

Part #: 820

### CHANNEL FLOW CAPACITIES

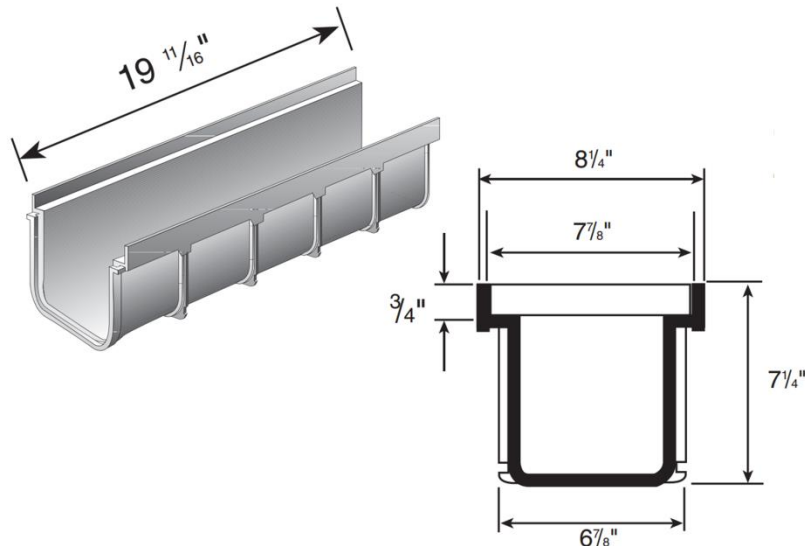
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.52	0.13	58
0.25	2.61	0.64	287
0.5	3.7	0.91	408
0.75	4.53	1.12	503
1	5.23	1.29	579
2	7.39	1.82	817
3	9.05	2.23	1001
4	10.46	2.58	1158
5	11.69	2.88	1293

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
826	Class A	14.87
814, 815, 816, 817, 818, 819	Class B	76.85
828	Class C	47.54
823	Class C	76.57

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
834	4.25" O.D.: 95.37 3.25" O.D.: 63.01	4" S&D Fittings 3" S&D Fittings





## 12" PRO SERIES SHALLOW PROFILE CHANNEL DRAIN

Part #: 840

### CHANNEL FLOW CAPACITIES

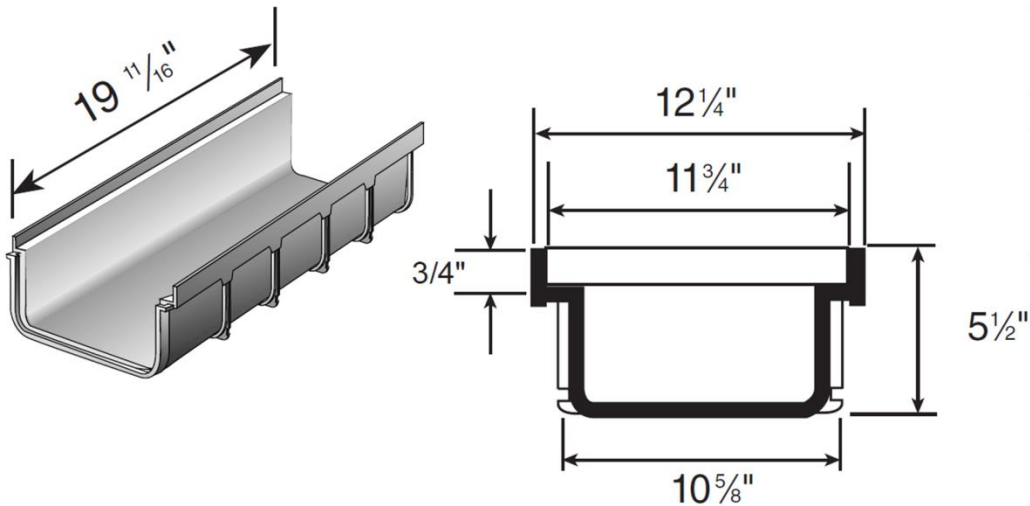
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.59	0.18	81
0.25	2.95	0.89	399
0.5	4.17	1.26	566
0.75	5.10	1.55	696
1	5.89	1.79	803
2	8.34	2.53	1136
3	10.21	3.1	13.91
4	11.79	3.58	1607
5	13.18	4	1795

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
847	Class B	210.99
845	Class C	142.86

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
841	4.9" O.D.: 78.83 4.3" O.D.: 71.98 3.9" O.D.: 67.41	4" S&D Fittings



## 12" PRO SERIES DEEP PROFILE CHANNEL DRAIN

Part #: 843

### CHANNEL FLOW CAPACITIES

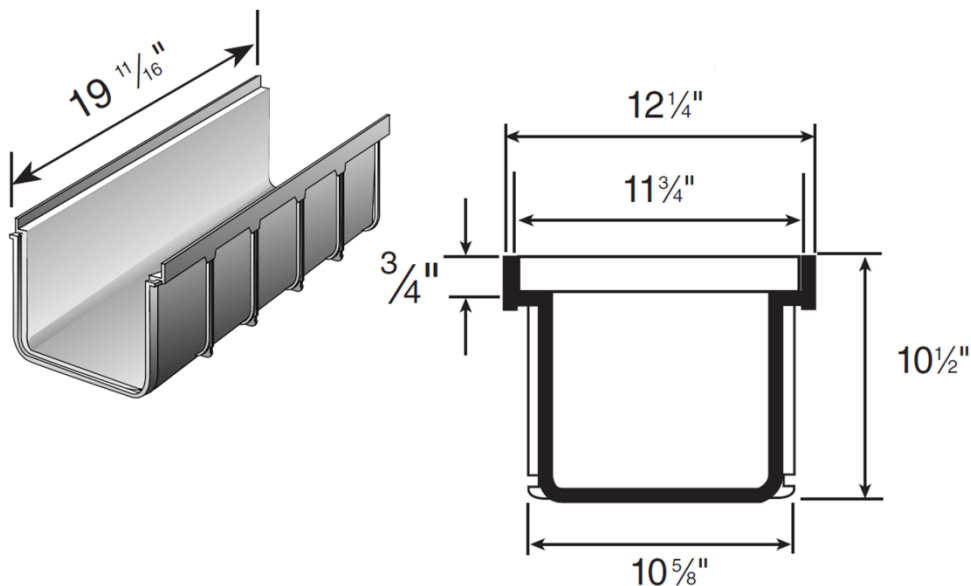
Slope (%)	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)
0.1	0.72	0.45	202
0.25	3.58	2.23	1001
0.5	5.06	3.16	1418
0.75	6.19	3.87	1737
1	7.15	4.46	2002
2	10.12	6.31	2832
3	12.39	7.73	3469
4	14.30	8.93	4008
5	15.99	9.98	4479

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
847	Class B	210.99
845	Class C	142.86

### OUTLET FLOW CAPACITIES

Part #	Flow Rate (GPM)	Pipe Connection
844	3.9" O.D.:114.04 4.3" O.D.:136.71 4.8" O.D.: 174.28	4" S&D Fittings





## DURA SLOPE CHANNEL DRAIN

Part #	Flow Velocity (ft/sec)	Flow Discharge (ft <sup>3</sup> /sec)	Flow Discharge (GPM)	Bottom Outlet Discharge (GPM)	End Outlet Discharge (GPM)
DS-090N	3.35	0.34	154	140.26	63.76
DS-091	3.35	0.34	154	140.26	63.76
DS-091N	3.41	0.38	170	144.42	72.45
DS-092	3.41	0.38	170	144.42	72.45
DS-093	3.45	0.42	187	148.46	80.21
DS-094	3.5	0.46	205	152.40	87.28
DS-094N	3.5	0.48	235	156.23	93.81
DS-095	3.5	0.48	235	156.26	93.81
DS-096	3.56	0.53	237	159.98	99.92
DS-097	3.61	0.57	256	163.66	105.71
DS-097N	3.63	0.61	273	167.21	111.14
DS-098	3.63	0.61	273	167.21	111.14
DS-099	3.67	0.67	299	170.72	116.34
DS-100	3.68	0.68	307	174.15	121.33
DS-100N	3.70	0.72	325	177.51	126.11
DS-101	3.70	0.72	325	177.51	126.11
DS-102	3.72	0.76	342	180.82	130.72
DS-103	3.73	0.80	359	184.06	135.17
DS-103N	3.74	0.85	376	187.25	139.48
DS-104	3.74	0.85	376	187.25	139.48
DS-105	3.75	0.88	393	190.38	143.66
DS-106	3.76	0.91	410	193.47	147.72
DS-106N	3.77	0.95	428	196.45	151.61
DS-107	3.77	0.95	428	196.45	151.61
DS-108	3.80	0.99	445	199.49	155.53
DS-109	3.82	1.03	462	202.44	159.29
DS-109N	3.83	1.07	479	205.34	162.97
DS-110	3.83	1.07	479	205.34	162.97
DS-111	3.84	1.11	497	208.20	166.56
DS-112	3.85	1.15	514	211.03	170.07
DS-112N	3.86	1.18	531	213.81	173.52
DS-113	3.86	1.18	531	213.81	173.52
DS-114	3.86	1.22	548	216.57	176.90

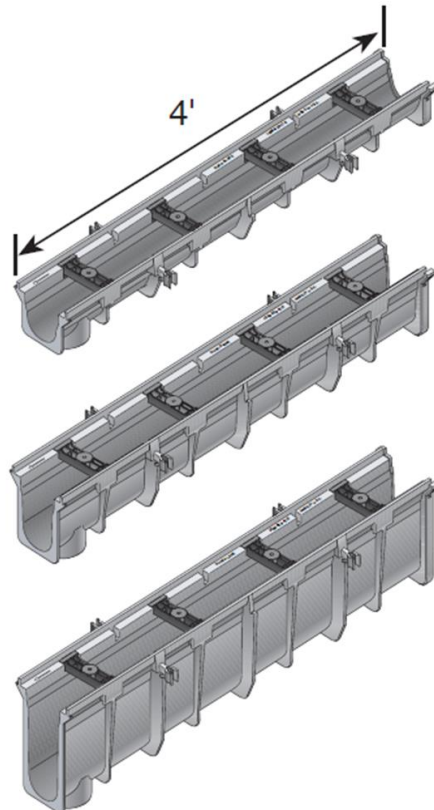
## DURA SLOPE CHANNEL DRAIN CONTINUED

### FLOW RATES THROUGH THE GRATE WITH 1/2" HEAD PRESSURE

Part #	Load Capacity	Flow Rate (GPM per linear foot)
660, 661, 661LG, 662, 663, 664	Class B	77.70
DS-670, DS-671	Class B	28.63
DS-226, DS-228	Class A	24.23
DS-231, DS-232	Class D	46.71
DS-221	Class C	60.72
DS-601	Class D	20.65
DS-602	Class D	29.21
DS-603	Class D	24.32
DS-604	Class D	34.72
DS-609	Class D	51.24

### OUTLET PIPE CONNECTIONS

Part #	Pipe Connection
DS-227	4" S&D Pipe
Bottom Outlet	4" Sch. 40 Fittings
Bottom Outlet With DS-126	4" S&D Pipe



## NOTES:

Channel flow rates are based on the Manning's Open Channel Flow Equation with the channel being full of water.

- $V = \frac{1.486}{n} * R^{\frac{2}{3}} * S^{\frac{1}{2}}$ 
  - Where:
    - V = Average velocity
    - n = Manning's coefficient (0.009)
    - R = Hydraulic Radius
    - S = Slope (Dura Slope Channel calculations use 0.7% slope)
- $Q = V * A$ 
  - Where:
    - Q = Flow Discharge
    - V = Average Velocity
    - A = Cross-sectional Area

Grate and outlet flow rates are calculated using the Orifice Flow Rate Equation:

- $Q = C_d * A_o * \sqrt{2 * g * H}$ 
  - Where:
    - Q = Flow rate
    - C<sub>d</sub> = Discharge coefficient (0.60)
    - A<sub>o</sub> = Open area of grate or outlet
    - g = Gravitational Constant (32.2 ft/sec<sup>2</sup>)
    - H = Head pressure (1/2")

## LOAD RECOMMENDATION GUIDE

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### Load Recommendation Guide

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#### Class A

- Loads of 1-60 psi.
- Recommended for pedestrians, bicycles and wheel chair traffic.



#### Class C

- Loads of 176-325 psi.
- Recommended for heavy-duty pneumatic tire forklifts and tractor trailers at speeds less than 20 m.p.h., H-20 rated.



#### Class B

- Loads of 61-175 psi.
- Recommended for medium-duty pneumatic tire traffic, autos and light trucks at speeds less than 20 m.p.h.



#### Class D

- Loads of 326-575 psi.
- Recommended for heavy-duty hard tire forklifts at speeds less than 20 m.p.h., H-20 rated.

**Note:** Some installations may require a concrete collar to meet load rating. Loads are based on encasing product in concrete. Product must be installed using NDS instructions.