

## HDPE PERFORATION GUIDE

### PERFORATIONS PER AASHTO M252/M294

#### PERFORATIONS – GENERAL

Lane’s perforated pipe offerings follow the AASHTO classification system and conform to AASHTO requirements for size, spacing and placement of the perforations. It is not the intent of this guide to cite AASHTO requirements but to describe Lane’s perforated pipe offerings with the added note that AASHTO specifications are met.

#### CLASS 1 PERFORATIONS (PARTIALLY PERFORATED PIPE)

Class 1 perforations are for pipe intended to be used for subsurface drainage or combination storm and underdrain. As such, the pipe maintains an unperforated segment above the invert to serve as a flow channel. Perforations are circular and arranged in rows parallel to the axis of the pipe with one perforation in each row for each corrugation. Rows of perforations are arranged in two equal groups placed symmetrically on each side of a lower unperforated segment corresponding to the flow line of the pipe.

#### CLASS 2 PERFORATIONS (STANDARD OR FULLY PERFORATED PIPE)

Class 2 perforations are for pipe intended to be used for subsurface drainage only. Perforations may be circular or slotted and are uniformly spaced along the length and circumference of the pipe. Perforated pipe shall conform to the requirements for Class 2 unless noted otherwise.

#### AASHTO M252 CLASS 2 SLOTTED PERFORATIONS FOR SINGLE-WALL (CP) AND DOUBLE-WALL (SP) PIPE

**Type CP Class 2 Slotted Perforations**

D	P	n	l	w	WIA
4	0.645	4	0.783	0.069	4.02
6	0.824	4	0.769	0.055	2.46
8	1.02	4	0.759	0.050	1.79

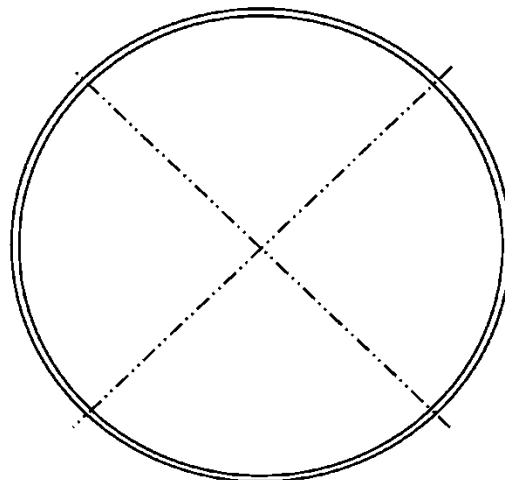
**Type SP Class 2 Slotted Perforations**

D	P	n	l	w	WIA
6	0.773	4	0.769	0.055	2.63
8	0.975	4	0.759	0.050	1.87
10	1.525	4	0.779	0.054	1.32

- D = Nominal pipe diameter (in)
- P = Period of Corrugations (in)
- n = number of slots per corrugation valley
- l = average length of slotted perforation (in)
- w = average width of slotted perforation (in)
- WIA = Water inlet area (in<sup>2</sup>/ft)

#### Summary description

Class 2 slotted perforations includes a total of four equally spaced slots in each corrugation valley as shown by the black centerlines at right.



**AASHTO M294 CLASS 2 SLOTTED PERFORATIONS FOR DOUBLE-WALL (SP) PIPE**

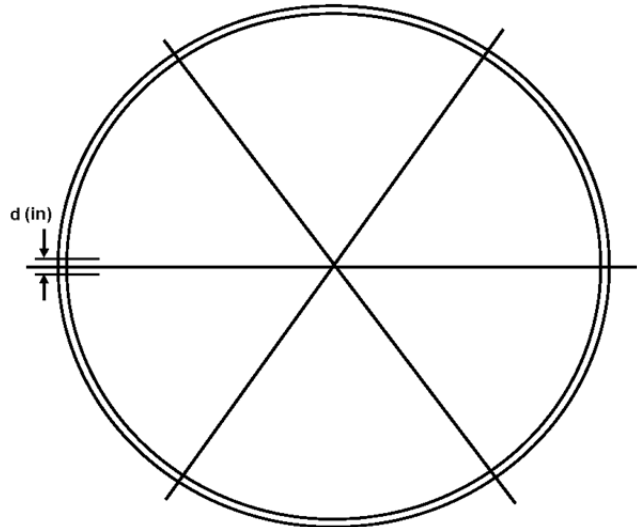
**Type SP Class 2 Perforations**

D	d	L	WIA
12	0.3125	1.94	2.85
15	0.3125	2.62	2.11
18	0.3125	2.96	1.87

D = Nominal pipe diameter (in)  
d = diameter of circular perforation (in)  
L = Longitudinal spacing between holes (in)  
WIA = Water inlet area (in<sup>2</sup>/ft)

**Summary description**

Class 2 perforations for 12", 15" and 18" HDPE pipes include a total of six equally spaced 5/16" diameter holes in each corrugation valley as shown at right.



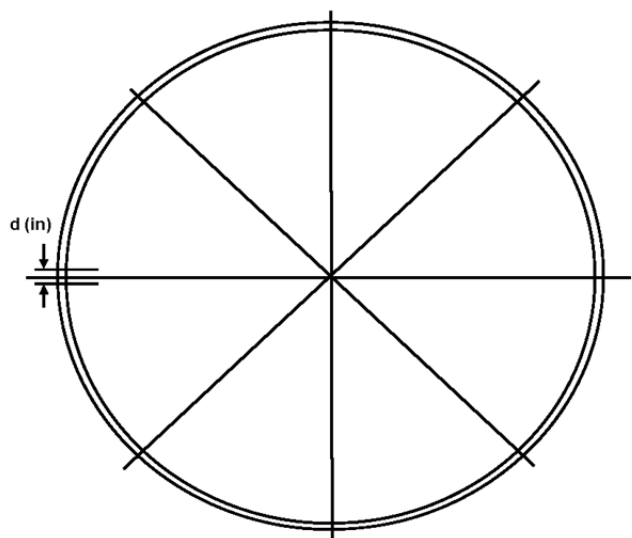
**Type SP Class 2 Perforations**

D	d	L	WIA
24	0.3750	3.95	2.68
30	0.3750	4.01	2.64
36	0.3750	4.06	2.61
42	0.3750	5.38	1.97
48	0.3750	5.37	1.97

D = Nominal pipe diameter (in)  
d = diameter of circular perforation (in)  
L = Longitudinal spacing between holes (in)  
WIA = Water inlet area (in<sup>2</sup>/ft)

**Summary description**

Class 2 perforations for 24", 30", 36", 42" and 48" HDPE pipes include a total of eight equally spaced 3/8" diameter holes in each corrugation valley as shown at right.



**AASHTO M252 CLASS 1 PERFORATIONS FOR DOUBLE-WALL (SP) PIPE**

**AASHTO M252 Type SP Class 1 Perforations (6" through 10")**

D	$\alpha_1$	$\alpha_2$	L	$L_{min}$	H	$H_{max}$	$s_{1/2}$	d	S	WIA
6	48	70	4.46	3.74	1.97	2.76	1.15	0.1875	0.75	1.77
8	48	70	5.95	5.12	2.63	3.70	1.54	0.1875	1.00	1.33
10	48	70	7.43	6.30	3.29	4.72	1.92	0.3125	1.75	2.10

**D = Nominal diameter (in)**

**$\alpha_1 \geq 37.5^\circ$ ,  $\alpha_2 \leq 85^\circ$  (AASHTO maximum and minimum angles)**

**s = arc length between holes (in)**

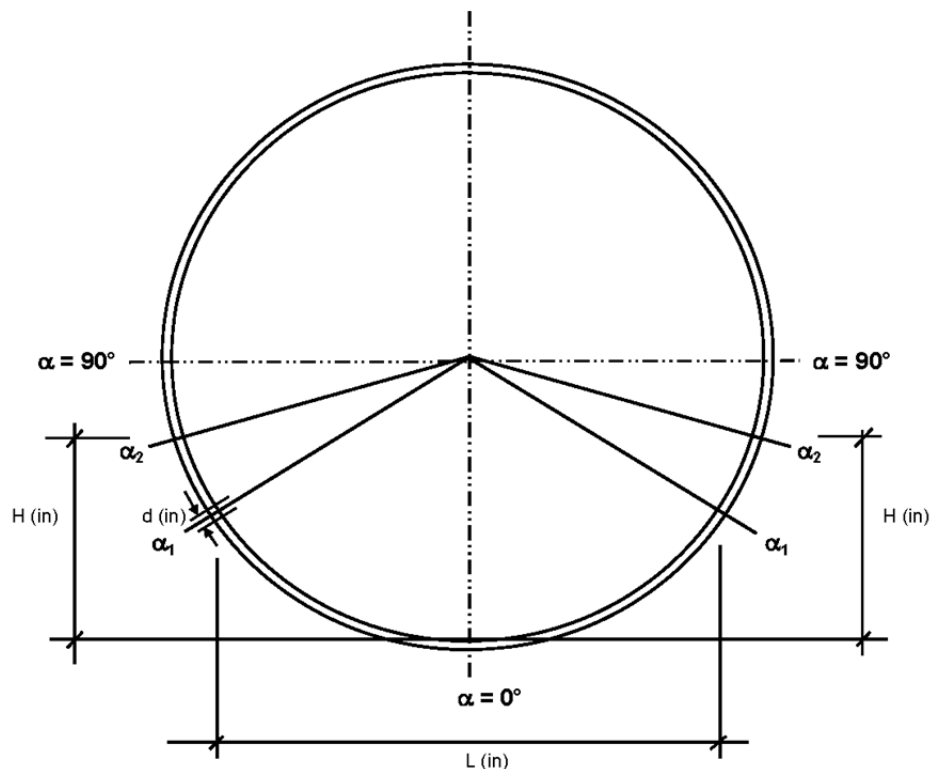
**d = diameter of circular perforation (in)**

**S = longitudinal spacing between perforations (in)**

**WIA = Water inlet area (in<sup>2</sup>/ft)**

**Summary description**

Class 1 perforations for 6", 8" and 10" HDPE pipes include a total of four holes in each corrugation valley as shown below. Perforations for the 6" and 8" pipes shall be 3/16" diameter, while the perforations for the 10" pipe shall be 5/16" diameter.



**AASHTO M294 CLASS 1 PERFORATIONS FOR DOUBLE-WALL (SP) PIPE**

**AASHTO M294 Type SP Class 1 Perforations (12" through 18")**

D	$\alpha_1$	$\alpha_2$	$\alpha_3$	L	$L_{min}$	H	$H_{max}$	$s_{1/2}$	$s_{2/3}$	d	S	WIA
12	47	62	78	8.78	7.56	4.75	5.43	1.57	1.68	0.38	1.94	4.10
15	47	62	78	10.97	9.45	5.94	6.77	1.96	2.09	0.38	2.62	3.04
18	47	62	78	13.16	11.34	7.13	8.15	2.36	2.51	0.38	2.96	2.69

**D = Nominal diameter (in)**

**$\alpha_1 \geq 40^\circ$ ,  $\alpha_3 \leq 85^\circ$  (AASHTO maximum and minimum angles)**

**s = arc length between holes (in), must be  $\geq 1$  inch**

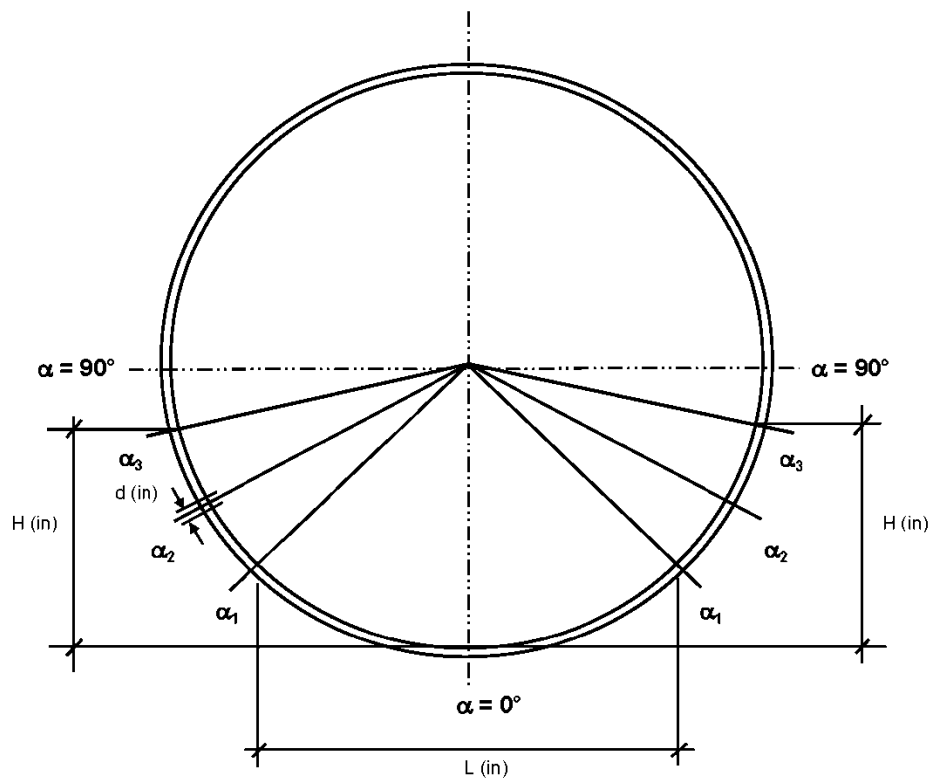
**d = diameter of circular perforation (in)**

**S = longitudinal spacing between perforations (in)**

**WIA = Water inlet area (in<sup>2</sup>/ft)**

**Summary description**

Class 1 perforations for 12 through 18-in HDPE pipes include a total of six  $\frac{3}{8}$ " diameter holes in each corrugation valley as shown below.



**AASHTO M294 CLASS 1 PERFORATIONS FOR DOUBLE-WALL (SP) PIPE**

**AASHTO M294 Type SP Class 1 Perforations (24" through 48")**

D	$\alpha_1$	$\alpha_2$	$\alpha_3$	$\alpha_4$	L	$L_{min}$	H	$H_{max}$	$S_{1/2}$	$S_{2/3}$	$S_{3/4}$	d	S	WIA
24	46	57	68	79	17.26	15.36	9.71	11.04	2.30	2.30	2.30	0.375	3.95	2.68
30	46	57	68	79	21.58	19.20	12.14	13.80	2.88	2.88	2.88	0.375	4.01	2.64
36	46	57	68	79	25.90	23.04	14.57	16.56	3.46	3.46	3.46	0.375	4.06	2.61
42	46	57	68	79	30.21	26.88	16.99	19.32	4.03	4.03	4.03	0.375	5.38	1.97
48	46	57	68	79	34.53	30.72	19.42	22.08	4.61	4.61	4.61	0.375	5.37	1.97

**Summary description**

Class 1 perforations for 24 through 48-in HDPE pipes include a total of eight  $\frac{3}{8}$ " diameter holes in each corrugation valley as shown below.

D = Nominal diameter (in)

$\alpha_1 \geq 40^\circ$ ,  $\alpha_4 \leq 85^\circ$  (AASHTO maximum and minimum angles)

s = arc length between holes (in), must be  $\geq 1$  inch

d = diameter of circular perforation (in)

S = longitudinal spacing between perforations (in)

WIA = Water inlet area (in<sup>2</sup>/ft)

