

Technical Note

TN 1.01_C Dual Wall HDPE Perforation Patterns

Overview

Perforated pipe plays an integral role in many applications of HDPE pipe. Generally, perforated pipe is used to accelerate the removal of subsurface water in soils or to allow storm water to percolate into the soil. CSA B182.8 clause 5.2.4 indicates that perforations are to be as specified by manufacturer and therefore this technical note describes what perforations patterns are used on ADS pipe. Currently, two classifications of perforations are specified in the AASHTO material specifications for HDPE pipe: Class I, and Class II. The Class II perforation pattern comes standard when perforated pipe is ordered. Class I perforated pipe has limited availability. Additionally, the BNQ 3624-120 standard has perforations requirements specified in clauses 5.2.3 and 6.1.3 therefore when ordering BNQ certified pipe, those requirements are ensured to be met through the pattern used. Please check with a local representative to determine availability.

Standard Perforation Patterns

AASHTO Class II Perforation

The following terminology for perforations is derived from the applicable AASHTO specification. Differences between the specifications are covered in the table below. Class II perforations shall be located in the outside valleys of the corrugations, be circular and/or slotted and evenly spaced around the circumference and length of the pipe. The perforations shall be located in the outside valleys of the corrugations. The water inlet area shall be no less than 20 cm²/m (0.945 in²/ft) for pipe diameters 100 - 250 mm (4" - 10"), 30 cm²/m (1.42 in²/ft) for pipe diameters 300 - 450 mm (12" - 18") and 40 cm²/m (1.89 in²/ft) for pipe diameters larger than and equal to 600 mm (24").

BNQ 3624-120 Perforations

Similarly to AASHTO, BNQ Clause 5.2.3 specifies perforations are to be circular or slotted, located both on the inside and outside walls of the valley of the corrugation. Clause 6.1.3 details that the perforations should be no wider than 10mm and the length should be no longer than 55mm. Lastly, the total perforated area per pipe shall be no less than 32cm²/m (1.5in²/ft)

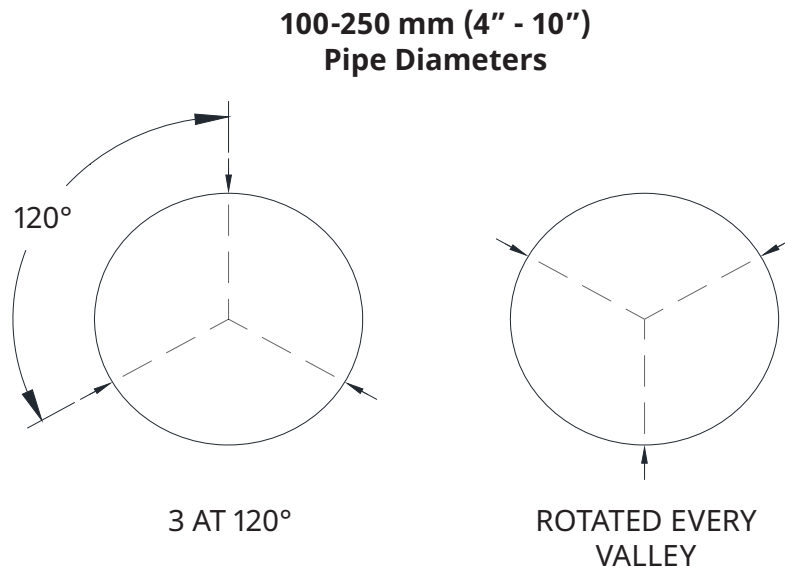
Table 1: ADS Standard Perforation Patterns

Nominal I.D.	Perforation Type	Maximum Slot Length or Diameter	Maximum Slot Width	Minimum Inlet Area
100 mm (4")	Slot	22 mm (0.875")	0.125" (3 mm)	21 cm ² /m (1.0 in ² /ft)*
150 mm (6")	Slot	22 mm (0.875")	0.125" (3 mm)	21 cm ² /m (1.0 in ² /ft)*
200 mm (8")	Slot	30 mm (1.18")	0.125" (3 mm)	21 cm ² /m (1.0 in ² /ft)*
250 mm (10")	Slot	30 mm (1.18")	0.125" (3 mm)	21 cm ² /m (1.0 in ² /ft)*
300 mm (12")	Circular	8 mm (0.313")	-	32 cm ² /m (1.5 in ² /ft)
375 mm (15")	Circular	8 mm (0.313")	-	32 cm ² /m (1.5 in ² /ft)
450 mm (18")	Circular	8 mm (0.313")	-	32 cm ² /m (1.5 in ² /ft)
600 mm (24")	Circular	8 mm (0.313")	-	42 cm ² /m (20 in ² /ft)
750 mm (30")	Circular	9.5 mm (0.375")	-	42 cm ² /m (20 in ² /ft)
900 mm (36")	Circular	9.5 mm (0.375")	-	42 cm ² /m (20 in ² /ft)
1050 mm (42")	Circular	9.5 mm (0.375")	-	42 cm ² /m (20 in ² /ft)
1200 mm (48")	Circular	9.5 mm (0.375")	-	42 cm ² /m (20 in ² /ft)
1350 mm (54")	Circular	9.5 mm (0.375")	-	42 cm ² /m (20 in ² /ft)
1500 mm (60")	Circular	9.5 mm (0.375")	-	42 cm ² /m (20 in ² /ft)

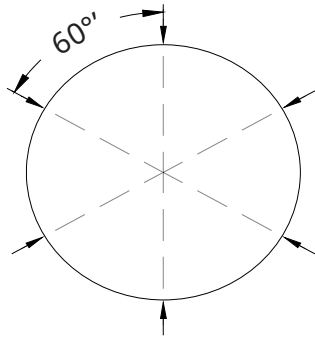
*The minimum inlet area is of 32 cm²/m (1.5 in²/ft) when ordering BNQ certified pipe

Figure 1: AASHTO Class II Perforation Patterns

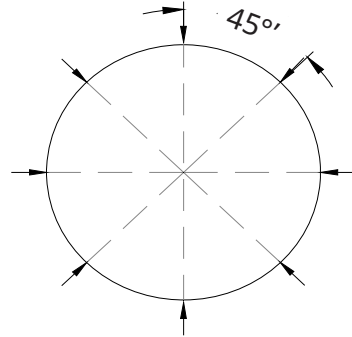
Note: Actual pattern may vary by region, however all patterns meet the AASHTO and ASTM minimum requirements for the open inlet area.



**250-450 mm (12" - 18")
Pipe Diameters**

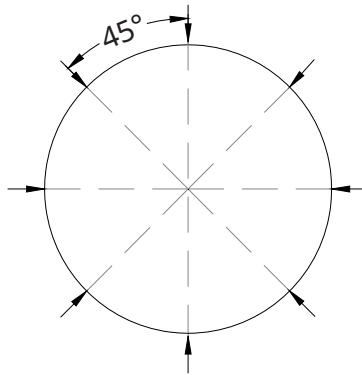


**** NUMBER OF HOLES AROUND
CIRCUMFERENCE VARIES BASED ON
DIAMETER AND REGION ****

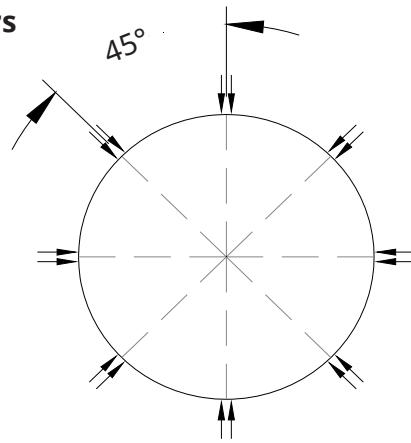
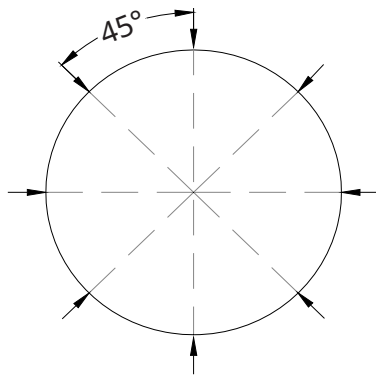


**** NUMBER OF HOLES AROUND
CIRCUMFERENCE VARIES BASED ON
DIAMETER AND REGION ****

**600 mm (24")
Pipe Diameters**



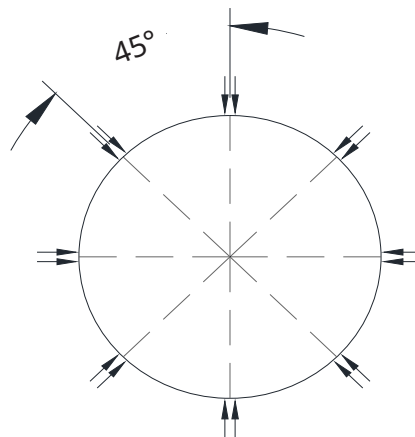
**750 mm (30")
Pipe Diameters**



2 AT EVERY 45°

**** NUMBER OF HOLES AROUND CIRCUMFERENCE
VARIES BASED ON DIAMETER AND REGION ****

**900-1500 mm (36" - 60")
Pipe Diameters**



2 AT EVERY 45°

AASHTO Class I Perforation

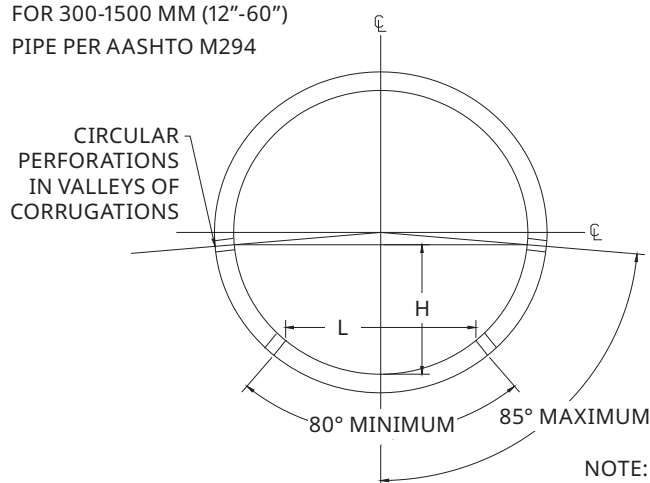
Please contact your local ADS representative before specifying or ordering pipe with a Class I perforation pattern to verify its availability. The following terminology is derived from the applicable AASHTO specification. The perforations shall be approximately circular and arranged in rows parallel to the axis of the pipe. The locations of the perforations shall be in the valley of the outside of every corrugation. The perforations shall be arranged in two equal groups placed symmetrically on either side of the lower half of the pipe. Diameters 4"-10" (100 mm - 250 mm) are not available in Class I patterns, however your local ADS representative may be contacted to verify whether your custom pattern can be provided.

Nominal I.D.	Min. No. of Rows of Perforations	Maximum Perforation Hole Diameter	Minimum Perforation Hole Diameter	"H" Maximum	"L" Minimum	Inlet Area*
300 mm (12")	6	10 mm (0.40")	10 mm (0.20")	138 mm (5.5")	192 mm (7.6")	24.3 cm ² /m (1.2 in ² /ft)
375 mm (15")	6	10 mm (0.40")	10 mm (0.20")	172 mm (6.8")	240 mm (9.5")	18.4 cm ² /m (0.9 in ² /ft)
450 mm (18")	6	10 mm (0.40")	10 mm (0.20")	207 mm (8.2")	288 mm (11.4")	16.0 cm ² /m (0.8 in ² /ft)
600 mm (24")	8	10 mm (0.40")	10 mm (0.20")	276 mm (10.9")	384 mm (15.2")	18.4 cm ² /m (0.9 in ² /ft)
750 mm (30")	8	10 mm (0.40")	10 mm (0.20")	345 mm (13.6")	480 mm (18.9")	13.8 cm ² /m (0.7 in ² /ft)
900 mm (36")	8	10 mm (0.40")	10 mm (0.20")	414 mm (16.3")	576 mm (22.7")	11.7 cm ² /m (0.6 in ² /ft)
1050 mm (42")	8	10 mm (0.40")	10 mm (0.20")	483 mm (19.0")	672 mm (26.5")	11.7 cm ² /m (0.6 in ² /ft)
1200 mm (48")	8	10 mm (0.40")	10 mm (0.20")	552 mm (21.8")	768 mm (30.3")	11.7 cm ² /m (0.6 in ² /ft)
1500 mm (60")	8	10 mm (0.40")	10 mm (0.20")	690 mm (27.2")	960 mm (37.8")	10.1 cm ² /m (0.5 in ² /ft)

*No minimum Inlet Area requirements from AASHTO M294. Value based on required minimum perforation hole diameter and the minimum number of perforation rows per AASHTO M294.

Figure 2: AASHTO Class I Perforation Patterns

FOR 300-1500 MM (12"-60")
PIPE PER AASHTO M294



NOTE: DIAGRAM ILLUSTRATES MEASUREMENTS FOR VALUES OF "H" AND "L" - MINIMUM NUMBER OF ROWS OF PERFORATIONS IS LISTED IN TABLE ABOVE.



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