

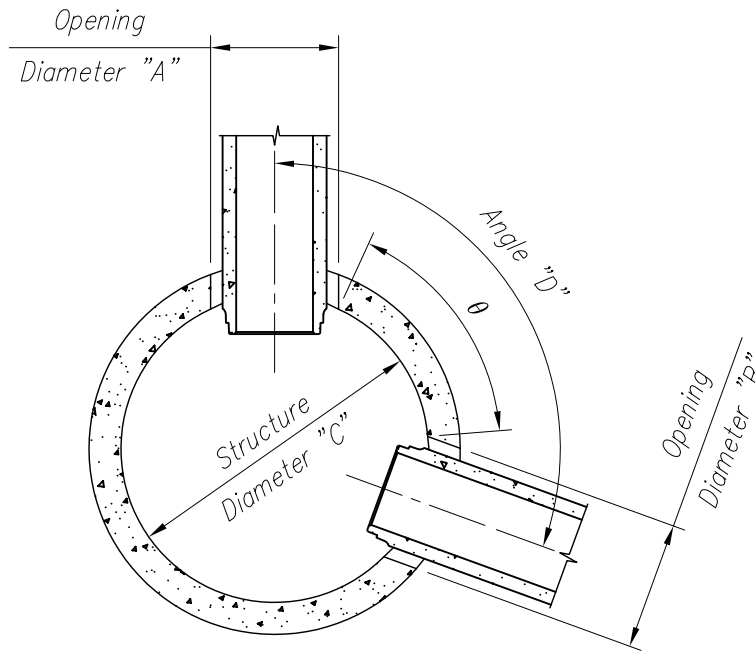
MANHOLE DIAMETER ANALYSIS

$$\theta = D - [(asin \frac{A}{C}) + (asin \frac{B}{C})]$$

θ = Angle Between Two Openings

General Notes:

1. Analysis Is Based On Two Openings That Are In The Same Horizontal Plane.
2. If $\theta \geq 12^\circ$; The Manhole Diameter Is Acceptable.
3. If $\theta < 12^\circ$; Problems May Occur With The Manhole.
4. Angle $D \leq 180^\circ$.
5. Manhole Steps & Lifting Points May Also Affect The Acceptability Of The Manhole Diameter.
6. Additional Openings "NOT" In The Same Horizontal Plane My Also Affect The Acceptability Of The Manhole Diameter.
7. All Manhole Structures Shall Be Evaluated On A Case By Case Basis.



Standard Structure Diameters (C):
 24" ϕ , 36" ϕ , 48" ϕ , 60" ϕ ,
 72" ϕ , 84" ϕ , 96" ϕ , 108" ϕ ,
 120" ϕ , And 144" ϕ .

NOTE:

Angle "D" Is Measured From Centerline Of Opening (A) To Centerline Of Opening (B).

MANHOLE - PLAN VIEW

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
RCP	12" ϕ	20" ϕ
RCP	15" ϕ	24" ϕ
RCP-B	18" ϕ	26" ϕ
RCP-C	18" ϕ	28" ϕ
RCP-B	21" ϕ	30" ϕ
RCP-C	21" ϕ	32" ϕ
RCP-B	24" ϕ	34" ϕ
RCP-C	24" ϕ	34" ϕ
RCP-B	27" ϕ	36" ϕ
RCP-C	27" ϕ	38" ϕ
RCP-B	30" ϕ	40" ϕ
RCP-C	30" ϕ	42" ϕ
RCP-B	36" ϕ	48" ϕ
RCP-C	36" ϕ	48" ϕ
RCP-B	42" ϕ	55" ϕ
RCP-C	42" ϕ	55" ϕ
RCP-C	48" ϕ	62" ϕ
RCP-C	54" ϕ	70" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
D. I.	3" ϕ	8" ϕ
D. I.	4" ϕ	8" ϕ
D. I.	6" ϕ	12" ϕ
D. I.	8" ϕ	12" ϕ
D. I.	10" ϕ	16" ϕ
D. I.	12" ϕ	16" ϕ
D. I.	14" ϕ	18" ϕ
D. I.	16" ϕ	20" ϕ
D. I.	18" ϕ	24" ϕ
D. I.	20" ϕ	24" ϕ
D. I.	24" ϕ	30" ϕ
D. I.	30" ϕ	36" ϕ
D. I.	36" ϕ	42" ϕ
D. I.	42" ϕ	48" ϕ
D. I.	48" ϕ	54" ϕ
D. I.	54" ϕ	62" ϕ
D. I.	60" ϕ	66" ϕ
D. I.	64" ϕ	70" ϕ

Pipe Opening Information		
AASHTO Pipe Type	Pipe ϕ	Opening ϕ
M252/M294	4" ϕ	7" ϕ
M252/M294	6" ϕ	8"/12" ϕ
M252/M294	8" ϕ	12" ϕ
M252/M294	10" ϕ	14"/16" ϕ
M252/M294	12" ϕ	18" ϕ
M252/M294	15" ϕ	20" ϕ
M252/M294	18" ϕ	24"/26" ϕ
M252/M294	24" ϕ	32" ϕ
M252/M294	30" ϕ	40" ϕ
M252/M294	36" ϕ	48" ϕ
M252/M294	42" ϕ	54"/55" ϕ
M252/M294	48" ϕ	55"/62" ϕ
M252/M294	60" ϕ	70" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
ASTM F949	4" ϕ	8" ϕ
ASTM F949	6" ϕ	12" ϕ
ASTM F949	8" ϕ	12" ϕ
ASTM F949	10" ϕ	14" ϕ
ASTM F949	12" ϕ	16" ϕ
ASTM F949	15" ϕ	20" ϕ
ASTM F949	18" ϕ	24" ϕ
ASTM F949	21" ϕ	26" ϕ
ASTM F949	24" ϕ	28" ϕ
ASTM F949	30" ϕ	36" ϕ
ASTM F949	36" ϕ	42" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
SDR-35	4" ϕ	8" ϕ
SDR-35	6" ϕ	8" ϕ
SDR-35	8" ϕ	12" ϕ
SDR-35	10" ϕ	14" ϕ
SDR-35	12" ϕ	16" ϕ
SDR-35	15" ϕ	18" ϕ
SDR-35	18" ϕ	24" ϕ
SDR-35	21" ϕ	26" ϕ
SDR-35	24" ϕ	28" ϕ
SDR-35	27" ϕ	32" ϕ
SDR-35	30" ϕ	36" ϕ
SDR-35	36" ϕ	42" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
SCH-40	3" ϕ	8" ϕ
SCH-40	4" ϕ	8" ϕ
SCH-40	5" ϕ	8" ϕ
SCH-40	6" ϕ	12" ϕ
SCH-40	8" ϕ	12" ϕ
SCH-40	10" ϕ	14" ϕ
SCH-40	12" ϕ	16" ϕ
SCH-40	14" ϕ	18" ϕ
SCH-40	16" ϕ	20" ϕ
SCH-40	18" ϕ	20" ϕ
SCH-40	20" ϕ	24" ϕ
SCH-40	24" ϕ	28" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
CMP	10" ϕ	16" ϕ
CMP	12" ϕ	16" ϕ
CMP	15" ϕ	20" ϕ
CMP	18" ϕ	24" ϕ
CMP	21" ϕ	28" ϕ
CMP	24" ϕ	32" ϕ
CMP	30" ϕ	36" ϕ
CMP	36" ϕ	42" ϕ
CMP	42" ϕ	48" ϕ
CMP	48" ϕ	54" ϕ
CMP	54" ϕ	62" ϕ
CMP	60" ϕ	70" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
CLAY	4" ϕ	8" ϕ
CLAY	6" ϕ	12" ϕ
CLAY	8" ϕ	14" ϕ
CLAY	10" ϕ	16" ϕ
CLAY	12" ϕ	18" ϕ
CLAY	15" ϕ	24" ϕ
CLAY	18" ϕ	26" ϕ
CLAY	21" ϕ	30" ϕ
CLAY	24" ϕ	32" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
ASTM F1803	21" ϕ	26" ϕ
ASTM F1803	24" ϕ	28" ϕ
ASTM F1803	27" ϕ	32" ϕ
ASTM F1803	30" ϕ	34" ϕ
ASTM F1803	36" ϕ	42" ϕ
ASTM F1803	42" ϕ	48" ϕ
ASTM F1803	48" ϕ	54" ϕ
ASTM F1803	54" ϕ	62" ϕ

Pipe Opening Information		
Pipe Type	Pipe ϕ	Opening ϕ
SDR 23.5	4" ϕ	8" ϕ
SDR 23.5	6" ϕ	8" ϕ
TRUSS	8" ϕ	12" ϕ
TRUSS	10" ϕ	16" ϕ
TRUSS	12" ϕ	18" ϕ
TRUSS	15" ϕ	20" ϕ

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MANHOLE DIAMETER ANALYSIS

Sheet Title:

MANHOLE DIAMETER ANALYSIS

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Revisions:

No.	Date
1	
2	
3	
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