

$$d = \frac{1}{2} \sqrt{4R^2 - (O.D.)^2}$$

C = HOLE DIAMETER

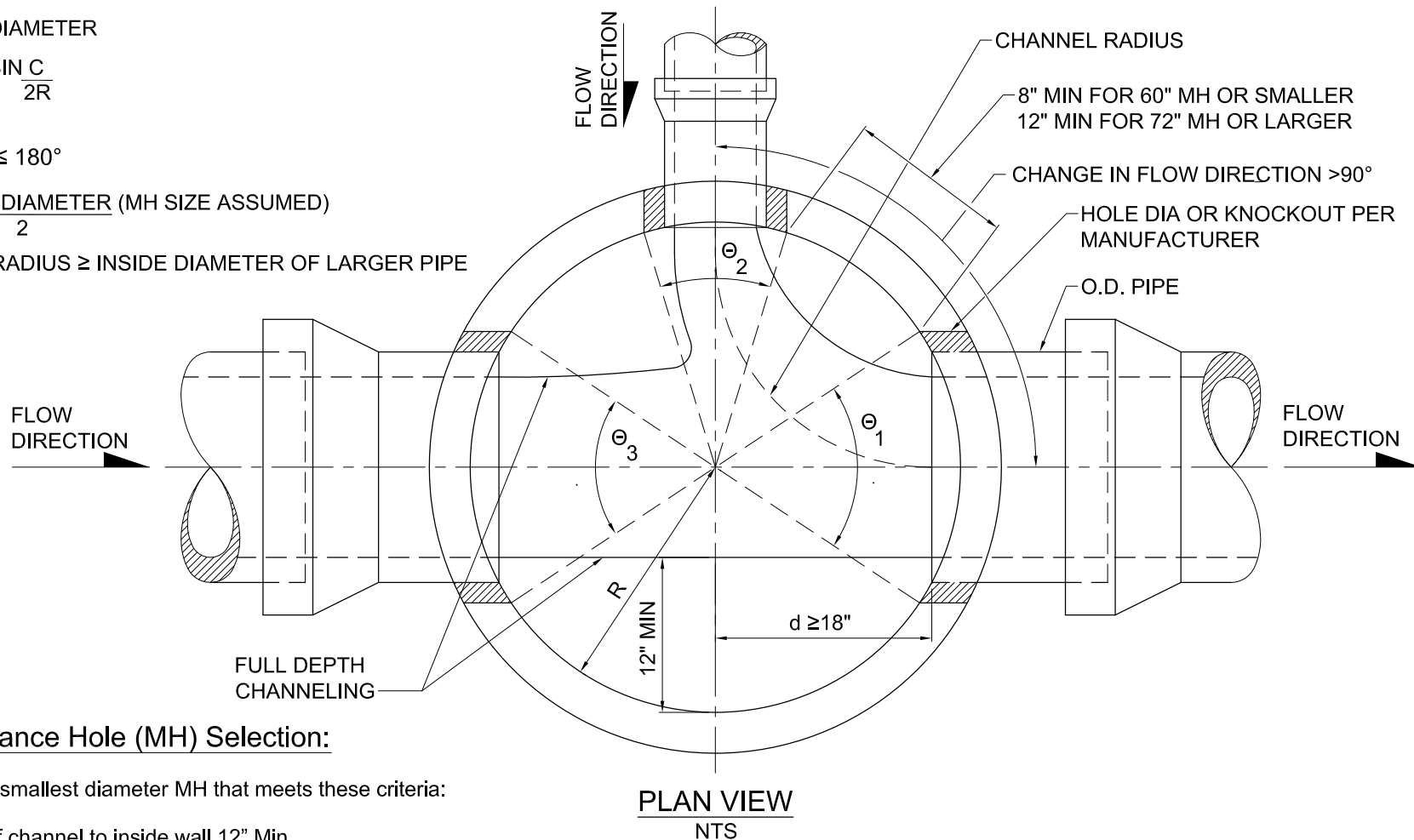
$$\Theta = 2 \text{ ARCSIN } \frac{C}{2R}$$

$$\sum \Theta \leq 180^\circ$$

$$\Theta_1 + \Theta_2 + \Theta_3 \leq 180^\circ$$

R = $\frac{\text{INSIDE DIAMETER (MH SIZE ASSUMED)}}{2}$

CHANNEL RADIUS \geq INSIDE DIAMETER OF LARGER PIPE



Maintenance Hole (MH) Selection:

Select the smallest diameter MH that meets these criteria:

1. $d \geq 18"$
2. Edge of channel to inside wall 12" Min
3. 8" Min between holes Type 205 and smaller
4. 12" Min between holes, Type 206 and larger
5. Max hole size \leq MH diameter-12"

Precasters may provide knockout, cored hole or formed hole. For more complex geometry, including pipe slopes $\geq 30\%$, or pipes not matching crowns, or saddle MHs, consider drawing in 3D, or contacting manufacturer.

Largest holes at 90°

- 2 each at 28" in 48" MH
- 2 each at 32" in 54" MH
- 2 each at 36" in 60" MH
- 2 each at 42" in 72" MH

Sizing Methodology

- Determine O.D. of allowable pipes
- Lay out all pipes, in same plane, all centerlines intersecting.
- Select MH size where $d \geq 18"$
- Add 3" to pipe O.D. and round up to even number for Min hole size.
- Check hole size \leq MH diameter-12"
- Check distance between holes.
- For more than 3 pipes, calculate angles, Θ , Check $\sum \Theta \leq 180^\circ$
- Check channel shelf is 1' Min
- Upsize MH and repeat until criteria 1- 5 are met.