

108-inch Diameter Maintenance Hole Section

Base Section Type	Depth (ft) (Invert to street grade)	Tw = 9.0"			Tw = 10.0"			Tw = 10.75"		
		outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)
TYPE 1	0 - 15	0.28	0.19	0.38	0.25	0.17	0.34	0.23	0.15	0.31
	15 - 30	0.47	0.30	0.89	0.41	0.33	0.77	0.37	0.32	0.70
TYPE 2	0 - 15	0.30	0.19	0.43	0.28	0.17	0.38	0.26	0.15	0.35
	15 - 30	0.52	0.30	1.00	0.45	0.33	0.86	0.42	0.32	0.78

"C" Bars - 2 No 6 hoops 2" clear of top of Maintenance Hole barrel section. } Required for less than 2'-0" clearance between
2 No 4 hoops 2" clear over pipe blockouts } blockout and top of full thickness wall.

120-inch Diameter Maintenance Hole Section

Base Section Type	Depth (ft) (Invert to street grade)	Tw = 10.0"			Tw = 11.0"			Tw = 11.75"		
		outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)
TYPE 1	0 - 15	0.31	0.21	0.42	0.28	0.18	0.38	0.26	0.17	0.35
	15 - 30	0.53	0.33	1.02	0.47	0.37	0.90	0.43	0.36	0.82
TYPE 2	0 - 15	0.33	0.21	0.50	0.33	0.18	0.45	0.30	0.17	0.42
	15 - 30	0.57	0.33	1.12	0.50	0.37	1.00	0.47	0.36	0.90

"C" Bars - 2 No 7 hoops 2" clear of top of Maintenance Hole barrel section. } Required for less than 2'-0" clearance between
2 No 4 hoops 2" clear over pipe blockouts } blockout and top of full thickness wall.

132-inch Diameter Maintenance Hole Section

Base Section Type	Depth (ft) (Invert to street grade)	Tw = 11.0"			Tw = 12.0"			Tw = 12.75"		
		outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)
TYPE 1	0 - 15	0.34	0.22	0.46	0.31	0.20	0.42	0.28	0.19	0.39
	15 - 30	0.58	0.37	1.15	0.52	0.40	1.02	0.48	0.40	0.94
TYPE 2	0 - 15	0.37	0.22	0.55	0.36	0.20	0.50	0.33	0.19	0.46
	15 - 30	0.62	0.37	1.24	0.57	0.40	1.09	0.51	0.40	1.01

"C" Bars - 2 No 7 hoops 2" clear of top of Maintenance Hole barrel section. } Required for less than 2'-0" clearance between
2 No 4 hoops 2" clear over pipe blockouts } blockout and top of full thickness wall.

144-inch Diameter Maintenance Hole Section

Base Section Type	Depth (ft) (Invert to street grade)	Tw = 12.0"			Tw = 13.0"			Tw = 13.75"		
		outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)	outside (in ² /ft)	inside (in ² /ft)	centered (in ² /ft)
TYPE 1	0 - 15	0.36	0.23	0.50	0.33	0.21	0.45	0.31	0.20	0.43
	15 - 30	0.63	0.40	1.27	0.57	0.44	1.13	0.54	0.43	1.05
TYPE 2	0 - 15	0.40	0.23	0.60	0.39	0.21	0.55	0.37	0.20	0.52
	15 - 30	0.68	0.40	1.39	0.62	0.44	1.24	0.58	0.43	1.15

"C" Bars - 2 No 8 hoops 2" clear of top of Maintenance Hole barrel section. } Required for less than 2'-0" clearance between
2 No 4 hoops 2" clear over pipe blockouts } blockout and top of full thickness wall.

NOTES:

- Areas are in in²/ft of circumference and may be welded wire fabric, bars or a combination of both.
- Provide minimum longitudinal reinforcement, as shown, 1 inch clear of inside and outside faces, or at center of wall.
- Maximum longitudinal bar spacing is 12 inches center-to-center.
- Each "C" bar may be substituted with a 1/2" low-relaxation 7-wire prestressing strand, 15" minimum lap length, staggered.

The selection and use of this Standard Drawing, while designed in accordance with generally accepted engineering principles and practices, is the sole responsibility of the user.

Manufacturing Standards for Precast Concrete Products

Appendix A

Large Precast Conc. Maintenance Hole - Longitudinal Section Reinforcement



Bureau of Environmental Services
CITY OF PORTLAND, OREGON
William Ryan
Digitally signed by William Ryan
Date: 2020.08.31 13:44:10
-0700
Chief Engineer

Calc. Book No.
001
Effective Date
01-01-09

Standard Drawing No.
P-147