

Table 3-2**Comparative Flow Rates for Concrete Pipe lined with Snap-Tite®**Based on Manning's equation $n=0.00914$ for Snap-Tite®, $n=0.015$ for Concrete, $s=0.001$ ft/ft

Concrete			SnapTite				% of Flow Relined
Culvert Size ID (in)	Flow (gpm)	Flow (cfs)	Outside Dia. (in)	DR 32.5 Av. ID (in)	Flow (gpm)	Flow (cfs)	
12	438	1.0	10.75	10.05	448	1.0	102%
15	795	1.8	12.75	11.92	706	1.6	89%
18	1292	2.9	14	13.09	906	2.0	70%
18	1292	2.9	16	14.96	1294	2.9	100%
21	1949	4.3	16	14.96	1294	2.9	66%
21	1949	4.3	18	16.83	1771	3.9	91%
24	2783	6.2	18	16.83	1771	3.9	64%
24	2783	6.2	20	18.70	2346	5.2	84%
24	2783	6.2	22	20.56	3025	6.7	109%
27	3810	8.5	22	20.56	3025	6.7	79%
27	3810	8.5	24	22.43	3815	8.5	100%
30	5045	11.2	24	22.43	3815	8.5	76%
30	5045	11.2	26	24.31	4720	10.5	94%
30	5045	11.2	28	26.17	5755	12.8	114%
36	8204	18.3	28	26.17	5755	12.8	70%
36	8204	18.3	30	28.04	6917	15.4	84%
36	8204	18.3	32	29.91	8216	18.3	100%
42	12376	27.6	32	29.91	8216	18.3	66%
42	12376	27.6	36	33.65	11248	25.1	91%
48	17669	39.4	36	33.65	11248	25.1	64%
48	17669	39.4	42	39.26	16967	37.8	96%
54	24190	53.9	42	39.26	16967	37.8	70%
54	24190	53.9	48	44.87	24224	54.0	100%
60	32037	71.4	48	44.87	24224	54.0	76%
60	32037	71.4	54	50.48	33163	73.9	104%
66	41307	92.0	54	50.48	33163	73.9	80%
66	41307	92.0	63	58.89	50024	111.5	121%
72	52095	116.1	63	58.89	50024	111.5	96%
84	78582	175.1	63	58.89	50024	111.5	64%

*Many culverts operate under Inlet Control where full flow Manning's equation comparisons are not accurate since they fail to account for inlet and outlet losses, which may not be minor losses, especially when the barrel is short.