

Storm Sewer Sizing Spreadsheet

Project: Langlois PUD
No: 19-057
Date: 3/16/2021
Engineer: KJV
Method: Rational Method
Location: Vergennes Township, Kent County, MI



Location		Drainage Area / Intensity / Discharge											Pipe						Structure Elevations				10 Year Hydraulic Grade Line			
Structure Label		Pervious Area	Impervious Area	Incremental Area	Weighted C	Incr. C*A	Cum. C*A	Time Overland	Time in Pipe	Total Time	Intensity 10-Year	Discharge 10-Year	Pipe Length	Pipe Diameter	Pipe Slope	Mannings n	Velocity in Pipe	Pipe Capacity	Upstream Invert	Downstream Invert	Upstream Rim	Upstream Cover	Friction Slope	Headloss in Pipe	Upstream HGL Elev.	Rim - HGL
Upstream	Downstream	sq ft	sq ft	acres				min	min	min	in/hr	cfs	ft	in	%		ft/sec	cfs	ft	ft	ft	ft	ft/ft	ft	ft	ft
		0.25	0.90	A	C	C*A	C*A	T _i	T _p	T _i +T _p = T _t	i ₁₀	Q ₁₀	L	D	s	n	v	Q _{full}					S _f	H	HGL	
CB-6	CB-5	0	4957	0.11	0.90	0.10	0.10	15.00	0.05	15.05	3.80	0.39	22	12	3.00	0.013	7.88	6.19	821.78	821.12	826.09	3.31	0.0001	0.003	822.78	3.31
CB-5	CB-3	13945	6043	0.46	0.45	0.20	0.31	0.00	0.70	15.74	3.80	1.17	286	12	2.25	0.013	6.82	5.36	821.02	814.60	826.09	4.07	0.0011	0.305	822.02	4.07
CB-3	CB-2	27075	5500	0.75	0.36	0.27	0.65	0.00	0.93	16.67	3.80	2.47	318	12	1.58	0.013	5.72	4.49	814.50	809.48	818.71	3.21	0.0048	1.515	815.50	3.21
CB-2	CB-1	0	6264	0.14	0.90	0.13	0.78	0.00	0.10	16.77	3.80	2.96	22	15	0.50	0.013	3.73	4.58	809.38	809.27	813.52	2.89	0.0021	0.046	810.63	2.89
CB-1	Basin	34243	6127	0.93	0.35	0.32	1.10	0.00	0.15	16.92	3.80	4.19	34	15	0.50	0.013	3.73	4.58	809.17	809.00	813.52	3.10	0.0042	0.142	810.42	3.10
CB-4	CB-3	0	3508	0.08	0.90	0.07	0.07	15.00	0.12	15.12	3.80	0.28	23	12	0.50	0.013	3.22	2.53	815.41	815.29	819.07	2.67	0.0001	0.001	816.41	2.67
Basin	Outlet	18025	3733	0.50	0.36	0.18	1.28	15.00	0.13	15.00	6.64	8.51	106	15	6.21	0.013	13.15	16.14	808.58	802.00	812.85	3.02	0.0173	1.831	809.83	3.02

*3.8 is the 10-yr intensity
*6.64 is the 100-yr intensity