

Howard Industrial 9175 West Storm Drainage Calculations

6/7/2023

Road Parcel breakdown

	Acres	Area (sqft)	Coefficient	100 yr C*A (sqft)	area
Asphalt surfaces	0.84	36600	0.82	30012	62.8%
Gravel Surfaces	0.50	21650	0.5	10825	37.2%
	1.34	58250	0.70	40837	

100 Year Storm Analysis

Interval (min)	Rate (in/hr)	Cumulative Precip (in)	C*A (sqft)	Peak Total Storm Flow (cfs)	Total Storm Volume (cuft)	0.2 Release (0.268cfs)	Detention requirement
5	6.36	0.530	40837	5.96	1804	80.4	1723
10	4.84	0.807	40837	4.54	2746	160.8	2585
15	4.00	1.00	40837	3.75	3403	241.2	3162
30	2.70	1.35	40837	2.53	4594	482.4	4112
60	1.67	1.67	40837	1.57	5683	964.8	4718
120	0.91	1.81	40837	0.85	6160	1929.6	4230
180	0.62	1.85	40837	0.58	6296	2894.4	3401
360	0.34	2.03	40837	0.32	6908	5788.8	1119
720	0.20	2.42	40837	0.19	8235	11577.6	-3342
1440	0.11	2.71	40837	0.11	9222	23155.2	-13933

Storm Detention / Retention / Release Volumes

80th Percentile storm - Retention Storage Demand = 0.5" storm 1660 cuft

Max Release Rate from road parcel

0.2 cfs/acre

0.2*1.34 =

0.268 cfs

Detention Storage Calculation

Pond Volume 2500 sqft x 3 ft deep

7500 cuft

Pass through flow rate. Adjacent parcels detain on site and release at 0.2cfs/acre to road storm system

Janisan	6.5 acre	1.3 cfs
Lot 1 - East half	2.5 acre	0.5 cfs
Lot 2 - East half	2.5 acre	0.5 cfs
Lot 3 - East Quarter	1.3 acre	0.3 cfs
Lot 4 - north stem	0.5 acre	0.1 cfs
Lot 5 - all	5.26 acre	1.1 cfs
	18.5 acre	3.71 cfs
Total Release rate	0.268+3.71 cfs	3.98 cfs

Pond Discharge - Orifice Flow Capacities

	100 year orifice Solve for Flow Rate Q	100 year orifice Solve for Flow Rate Q
Outlet control orifice	Q= 3.99 cfs	0.26 cfs
Area = $\frac{Q}{C*(2*g*h)^{0.5}}$	C= 0.6	0.6
	h= 2.5 ft	2.5 ft
	g= 32.2 ft/s ²	32.2 ft/s ²
	area= 75.4 in ²	4.9 in ²
	d= 9.8 in	2.5 in