PRELIMINARY ENGINEERING PLANS

MYLO Residential – Eastman Street Apartments

116-120 W Eastman St., Arlington Heights, Cook County, IL

Stormwater Narrative:

The preliminary engineering plans for The Eastman Street Apartments include the development of a 1.00 acre site into a residential apartment building with a restaurant on the first floor.

It is located along a private section of Highland Avenue between St. James Street and W Eastman Street.

The proposed development is serviced by city water (which includes a watermain extension to Vail Street along St. James Street) and city sanitary sewer, located in St. James Street. The sanitary, storm sewer, and watermain connections are all made along St. James Street.

The entire 1.00 acre site has Volume Control Storage provided using MWRD criteria. To be conservative in the preliminary stage, the entire site was assumed to be impervious. The underground StormTech unit is designed for Volume Control (VC) storage only. Due to the high SHGWL, we are not able to fit both detention and VC storage from a depth standpoint. To meet the detention requirement for the village criteria, we will be doing fee in lieu of detention. Using the Village Detention Calculation Verification worksheet with bulletin 75 rainfall data, and the same conservative impervious assumptions, we will be at a maximum requirement of 18,686 cubic feet. All numbers to be recalculated at the time of Final Engineering.

3/20/2023

Development Name

Detention Calculation Verification: PC # ____

Site Requirements

Site Area =	1.000	Acres	Pervious=	0.000 Acres
Allowed Release Rate (Area x 0.18cfs/Ac) =	0.180	cfs	Impervious=	1.000 Acres
Weighted "C" Factor =	0.950		Water=	0.000 Acres
			Synth Turf=	0.000 Acres

A	B	C	D	E	F	G	H	J	K
Runoff Factor "C"	Storm Duration		**Updated** Rainfall Intensity "I"	Site Area "A"	Inflow Rate (CxIxA)	Release Rate	Storage Rate	Storage Required	
	(min)	(hrs)	(in/hr)	(acres)	(cfs)	(cfs)	(cfs)	(cu-ft)	(Ac-ft)
0.950	5	0.083	12.34	1.000	11.72	0.180	11.54	3449	0.079
0.950	10	0.167	10.80	1.000	10.26	0.180	10.08	6060	0.139
0.950	15	0.25	9.26	1.000	8.80	0.180	8.62	7755	0.178
0.950	20	0.33	7.97	1.000	7.57	0.180	7.39	8781	0.202
0.950	30	0.50	6.34	1.000	6.02	0.180	5.84	10517	0.241
0.950	40	0.67	5.27	1.000	5.01	0.180	4.83	11642	0.267
0.950	50	0.83	4.52	1.000	4.29	0.180	4.11	12293	0.282
0.950	60	1.00	4.03	1.000	3.83	0.180	3.65	13135	0.302
0.950	90	1.50	3.03	1.000	2.88	0.180	2.70	14572	0.335
0.950	120	2.00	2.49	1.000	2.37	0.180	2.19	15736	0.361
0.950	180	3.00	1.83	1.000	1.74	0.180	1.56	16832	0.386
0.950	240	4.00	1.48	1.000	1.41	0.180	1.23	17654	0.405
0.950	300	5.00	1.25	1.000	1.19	0.180	1.01	18135	0.416
0.950	360	6.00	1.07	1.000	1.02	0.180	0.84	18068	0.415
0.950	420	7.00	0.97	1.000	0.92	0.180	0.74	18686	0.429
0.950	480	8.00	0.87	1.000	0.83	0.180	0.65	18619	0.427
0.950	540	9.00	0.79	1.000	0.75	0.180	0.57	18484	0.424
0.950	600	10.00	0.72	1.000	0.68	0.180	0.50	18144	0.417
0.950	660	11.00	0.67	1.000	0.64	0.180	0.46	18077	0.415
0.950	720	12.00	0.62	1.000	0.59	0.180	0.41	17669	0.406
0.950	1080	18.00	0.45	1.000	0.43	0.180	0.25	16038	0.368
0.950	1440	24.00	0.36	1.000	0.34	0.180	0.16	13997	0.321
					A*D*E		F-G	C*H*3600	J/43560

Max Volume = 0.429 Acre-Ft
= 18,686 cu-ft

Orifice Computation

		Free Flow	Submerged Flow
1) Allowed Release Rate, Q(cfs)	0.180		
2) High Water Elevation			0.00
3) Outfall Water Elevation	-	-	0.00
4) Invert Elevation			0.00
5) Diameter of Restrictor (inch)			0
6) Cross Section Area (sq ft)	-	0.000	0.000
7) Head (ft) h =	0.00	0.00	0.00
8) Discharge Coefficient			0.00

Square Edge 0.79 - 0.82
Round Edge 0.93 - 0.98
Sharp Edge 0.58 - 0.64 <-- Most common=0.61
Projecting 0.50

Q = C*a*(sqrt 2*g*h)

Orifice area: $a = \frac{Q}{C*(\text{sqrt } 2*g*h)}$

Q (cfs) = 0.00 0.000

a(sq ft) = ###### dia(in) = #DIV/0!