

DETENTION POND - PHASE II

POND B -

RUNOFF SOURCE

SITE	AREA	RUNOFF FACTOR	EFFECTIVE AREA
TRACT A.1.A			66023
Roof	10625	0.90	9563
Paving	6150	0.95	5843
Earth	81980	0.40	32792
Pond 115x155	17825	1.00	17825
TRACT B.1.A			
Earth	168625	0.40	67450
TRACT B.1.B			
Earth	93911	0.40	37564
	379116		171037

INFLOW HYDROGRAPH use mass curve values in DPM 22.2 Table D-3

TIME, min	FLOW, cfs	VOLUME, cf	TIME, min	FLOW, cfs	VOLUME, cf
0	0	0	200	0.26	29625
10	18.2	3991	220	0.23	29936
20	12.8	14812	240	0.19	30248
30	10.4	18648	270	0.15	30560
40	9.0	21454	300	0.012	30872
50	8.0	23949	360	0.09	31184
60	7.3	26444			
80	0.45	26984			
100	0.41	27525			
120	0.37	28065			
140	0.34	28841			
160	0.31	29077			
180	0.28	29313			

PEAK VOLUME

provided volume = 26738 cf.
 CONCRETE INLET TO POND
 $Q = CLh^{3/2}$
 $18.2 = (3.0)(L)(0.5)^{3/2}$
 $L = 17.1$ Use 17'

OUTFLOW HYDROGRAPH

0.1 cfs/acre (per previously approved Master Drainage)

Q = 0.67 cfs previous sheet

OUTLET PIPE

$$Q = C_a(\sqrt{2g})(\sqrt{h_1} + \sqrt{h_2} + \sqrt{h_3}) \quad C=0.6, a=\text{area}, h_1=1.5, h_2=1', h_3=0.5', Q=0.67$$

$$a = 0.0475 \text{ ft}^2 \quad \text{use } 5 - 1\frac{1}{4}" \text{ O.H./level}$$

$$\text{Use } 18" \text{ Pipe Outlet}$$

POND EVACUATION

orifice w/ falling head

$$t = \frac{2A}{C_a\sqrt{2g}}(\sqrt{h_1} - \sqrt{h_2}) \quad h_1=0.5, h_2=0, A=17825$$

$$t = 7.4 + 1 = 8.4 \text{ hours} < 20.3 \quad \text{use } 20.3 \text{ hours}$$