

Felix Engineering

Storm Runoff Calculations

Project: Taylor Landing Park

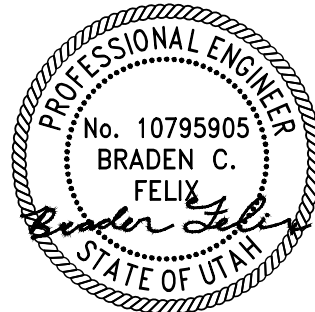
Note: The following is a recalculation modifying the previous stormwater calculations performed by Nate Reeves, PE in the plan set for the Taylor West Weber Park, stamped and dated 03/28/2024

Drainage Area:

Total Area=	2.29 acres or	99861 ft ²		
Runoff Coefficients				
Paved Area	38051	C=	0.9	
Roof	4224	C=	0.9	
Landscaped Area	57,586	C=	0.2	
Weighted Runoff Coefficient		C=	0.50	

LID Retention:

80th Percentile Rainfall Event (d)	0.49 in
Is the site Feasible for LID?	Yes
Site Imperviousness (i)	0.42
NRCS Soil Group	C/D
Rv Equation	$0.83i^{1.122}$
Rv (Soil Group)	0.31
Vgoal = RV x d x Total Site SF	1279 cf



6/24/24

Volume of Run-off for 1--year Storm Event:

C=	0.5						
i=	See Below in in/hr						
A=	99861 SF						
Q(out)=	0.23 CFS	(0.1 CFS per acre)					
time (min)	time (sec)	i (in./hr.)	Q (cfs)	Vol. in (cf)	Vol. out (cf)	Difference (cf)	
0	0	0	0.00	0	0	0	
5	300	6.52	7.47	2242	69	2173	
10	600	4.96	5.69	3411	138	3274	
15	900	4.1	4.70	4230	206	4023	
30	1800	2.76	3.16	5695	413	5282	
60	3600	1.71	1.96	7056	825	6231	
120	7200	0.93	1.07	7675	1651	6025	
180	10800	0.63	0.72	7799	2476	5323	
360	21600	0.35	0.40	8666	4952	3714	
720	43200	0.22	0.25	10894	9904	990	
1440	86400	0.12	0.14	11884	19807	-7923	

Orifice Sizing:

Given:	Q=	0.23 CFS
	2g=	64.4 ft/s ²
	H=	2.72 ft
	Cd=	0.62 (for circular openings)
	R=	$\text{SQRT}(Q/\pi/(0.7*(64.4*H)^{0.5}))$
	R=	0.08875 feet
		1.064995 inches
	D=	2.12999 inches
	A=	3.56324 sq. inches

Summary:

The required 100-yr storage volume is	6,231	cubic feet
The required LID Retention volume is	1,279	cubic feet
Orifice Size is	2.1	inches in diameter

Note: The stamped plan from Nate Reeves, PE dated 3/28/2024 provides 11,716 CF in the joined ponds.