



Stormwater Management System Report

Project: Elite Tire
Location: Ponderay, ID

Prepared by: Brody Cone, PE

Project Overview

This project intends to build an automotive service building at Lot 1 and 2 Lew's Industrial Park, Ponderay, ID. The project area is 1.03 ac(+/-). The current site is covered by native grassy vegetation with no stormwater retention facilities. The site will be developed with a commercial tire shop.

Stormwater Management System

The stormwater management system has been designed to treat and attenuate the 25-year design storm for the Post Falls area using the Bowstring method and treating the first 1/2-inch of runoff from the proposed impervious area. The site will sheet flow to a grassy swale with a drywell with no proposed discharge.

Soils

The soils on-site have been evaluated using the NRCS soil survey. The on-site soil is Odenson (34) which are moderate draining soils (Ksat 0.06 to 0.57 in/hr). Odenson is described as silt loam. The slopes on-site do not exceed 7%.

Project Name Elite Tire
 Date 2/21/2024
 Prepared By BMC
 Basin 1

Pre-Developed Conditions

Description	Area (sf)	Area (ac)	CN	Runoff Coefficient
Grass	44677	1.03	50	0.15
Gravel	0	0.00	76	0.5
Pavement	0	0.00	98	0.98
Building	0	0.00	98	0.98
Total	44677	1.03	50.00	0.15

Post-Developed Conditions

Description	Area (sf)	Area (ac)	CN	Runoff Coefficient
Grass	14217	0.33	50	0.15
Gravel	0	0.00	76	0.5
Pavement	25000	0.57	98	0.98
Building	5460	0.13	98	0.98
Total	44677	1.03	82.73	0.72

Rainfall Intensity (in/hr) 2.8
 Pre-Developed Flow (cfs) **0.43**
 Post-Developed Flow (cfs) **2.06**

Treatment Calculations

Required Treatment Area (Impervious Area/12)	Required Treatment Volume (Impervious Area x .5/12)
2538 SF	1269 CF

Time of Concentration

$T_c = C_t(Ln/S^{1/2}) * 0.6$

*Ct = 0.4 for Natural Drainage, 0.15 for Overland Flow

Ct	0.15
L (ft)	54
n	0.023
S (ft/ft)	0.01

Tc(min)= 1.12
 Tc*(min)= **5**

*5 minutes minimum

Storage Calculations

Required Treatment Volume	1269 cf
Attenuation Volume Required (See Bowstring)	1094 cf
Total Required Storage Volume	2363 cf

Project Name		Elite Tire
Date		1/18/2024
Prepared By		BMC
Basin #		1
Time Increment		5
Time of Concentration (Tc)		5
Design Outflow (cfs)		0.30
Design Year		25
Impervious Area		30460
Total Area (sf)		44677
Total Area (ac)		1.03
Developed C		0.72
Area x C		0.73

Time Inc (min)	Time Inc (sec)	Intensity (in/hr Zone C)	Qdev (cfs)	Vin (cf)	Vout (cf)	Storage (cf)
5	300	2.8	2.06	826	90	736
10	600	2.1	1.54	927.7594	180	748
15	900	1.7	1.25	1125.504	270	856
20	1200	1.6	1.17	1411.732	360	1052
25	1500	1.4	1.03	1543.645	450	1094
30	1800	1.2	0.88	1587.449	540	1047
35	2100	1.1	0.81	1697.46	630	1067
40	2400	0.95	0.70	1675.245	720	955
45	2700	0.9	0.66	1785.319	810	975
50	3000	0.87	0.64	1917.444	900	1017
55	3300	0.85	0.62	2060.595	990	1071
60	3600	0.78	0.57	2062.71	1080	983
65	3900	0.75	0.55	2148.578	1170	979
70	4200	0.7	0.51	2159.53	1260	900
75	4500	0.69	0.51	2280.666	1350	931
80	4800	0.67	0.49	2362.141	1440	922
85	5100	0.65	0.48	2434.806	1530	905
90	5400	0.63	0.46	2498.66	1620	879
95	5700	0.6	0.44	2511.838	1710	802
100	6000	0.59	0.43	2599.934	1800	800
105	6300	0.58	0.43	2683.625	1890	794
110	6600	0.55	0.40	2665.966	1980	686
115	6900	0.52	0.38	2635.09	2070	565
120	7200	0.5	0.37	2643.876	2160	484

Attenuation Required=

1094 cf