

**DRAINAGE CALCULATIONS
FOR
West Weber 1, 2**

Submitted to:

Weber County

By:

**McNeil Engineering, Inc.
6895 South 900 East
Midvale, Utah 84047**

DRAINAGE CALCULATIONS

Drainage Criteria:

Maximum Discharge		0.10 cfs/ac.
Design Storm		100 year
Using NOAA rainfall data for	41.2483 N	112.092 W

Storm water within the new parking area will sheet flow to a catch basin inlet that will be conveyed to the existing storm drain system on the west side of the property. The required capacity of the new parking area is 1,864 c.f.. A new 0.88" orifice plate will control the release rate to .1 cfs/acre or 0.04 cfs.

Proposed Design:

Solution using Rational Formula:

Detention Calculations:

Q = CIA	where	
C _{roof} =		
C _{paved} =		0.90
C _{landscaped} =		0.15

I = Rainfall Intensity

A = Tributary Area

Roof Area =	
Paved Area =	15,118
Landscape Area =	2,518
Total Tributary Area =	17,636

Page 2 Weighted Coefficient (C) = 0.79

 C * A = 13,984

100 yr Storage Requirements:

Time (min)	Rate (in/hr)	Rainfall (Inches)	Accum. Flow (cu.ft.)	Discharge (cu.ft)	Req'd Storage (cu.ft.)
15	4.08	1.02	1,189	36	1,152
30	2.76	1.38	1,608	73	1,535
60	1.70	1.70	1,981	146	1,835
120	0.93	1.85	2,156	292	1,864
180	0.63	1.90	2,214	437	1,777
360	0.35	2.11	2,459	875	1,584
720	0.22	2.58	3,007	1,749	1,258
1,440	0.12	2.84	3,310	3,498	0

Storage Required: 1,864

Surface Storage 228

New Storage Available: 1,661

Total storage 1,889 **okay**

Restrictor Orifice Size:

Allowable Discharge (Q) = 0.04 cfs

Average Head (H) = 3.75 ft

Orifice Coefficient = 0.62

Orifice Diameter = 0.88 inches