

Powder Mountain Park & Ride Grading Plan

WEBER COUNTY, UTAH
OCTOBER, 2011

Storm Runoff Calculations Powder Mountain Park & Ride Area #1 10/26/2011

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Siden, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be retained in a holding pond and will percolate into the natural ground at 60.00 minutes per inch.

The calculations are as follows:

- Runoff from the undeveloped existing land.

Runoff Coefficient	C = 0.2
Rainfall Intensity	I = 1.6 IN./HR.
Runoff Quantity	Q = CIA
Acreage	A = 0.34 ACRES
- Runoff from developed land

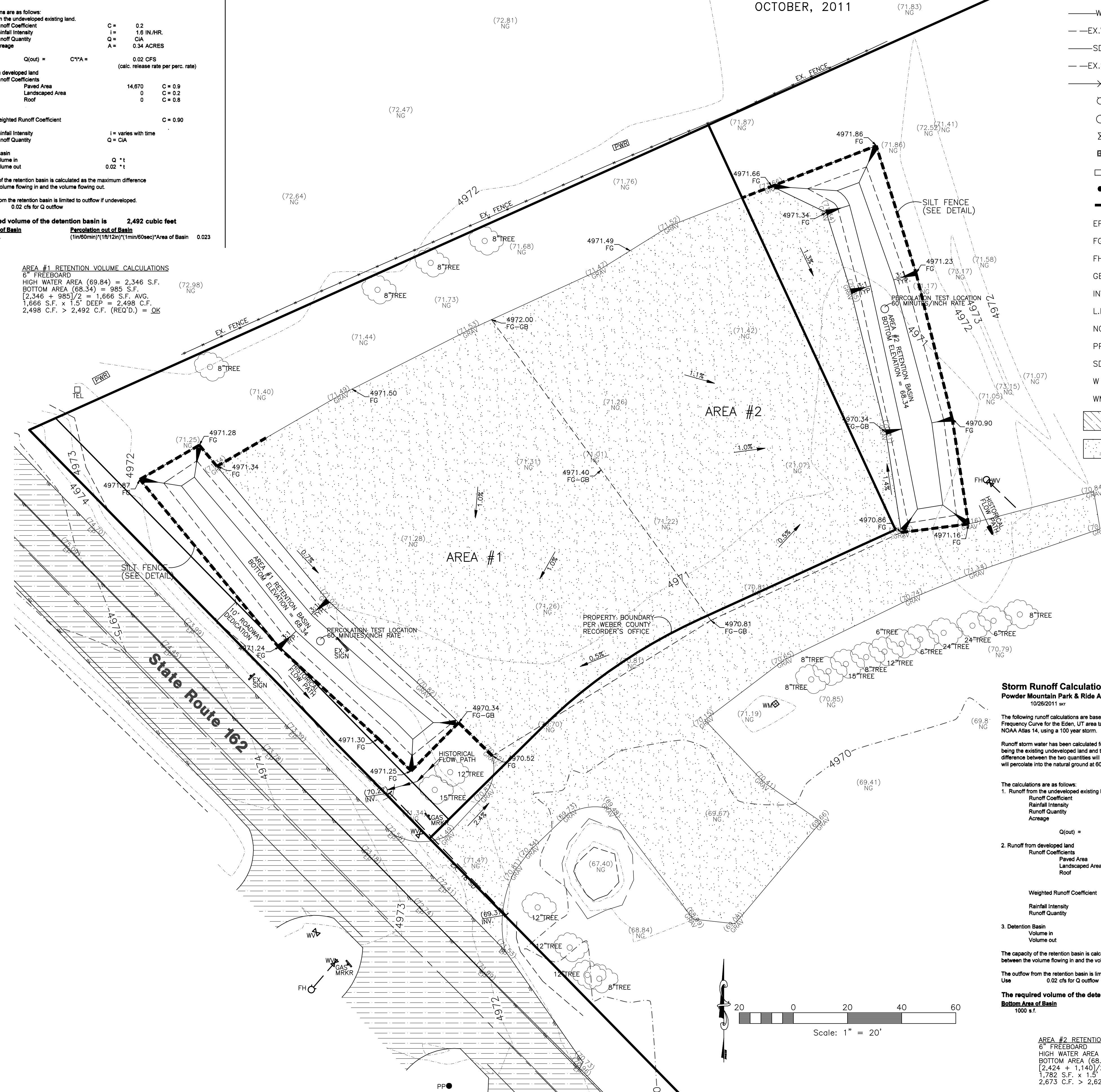
Runoff Coefficients	
Paved Area	14,670 C = 0.9
Landscaped Area	0 C = 0.2
Roof	0 C = 0.8

Weighted Runoff Coefficient C = 0.90
Rainfall Intensity I = varies with time
Runoff Quantity Q = CIA

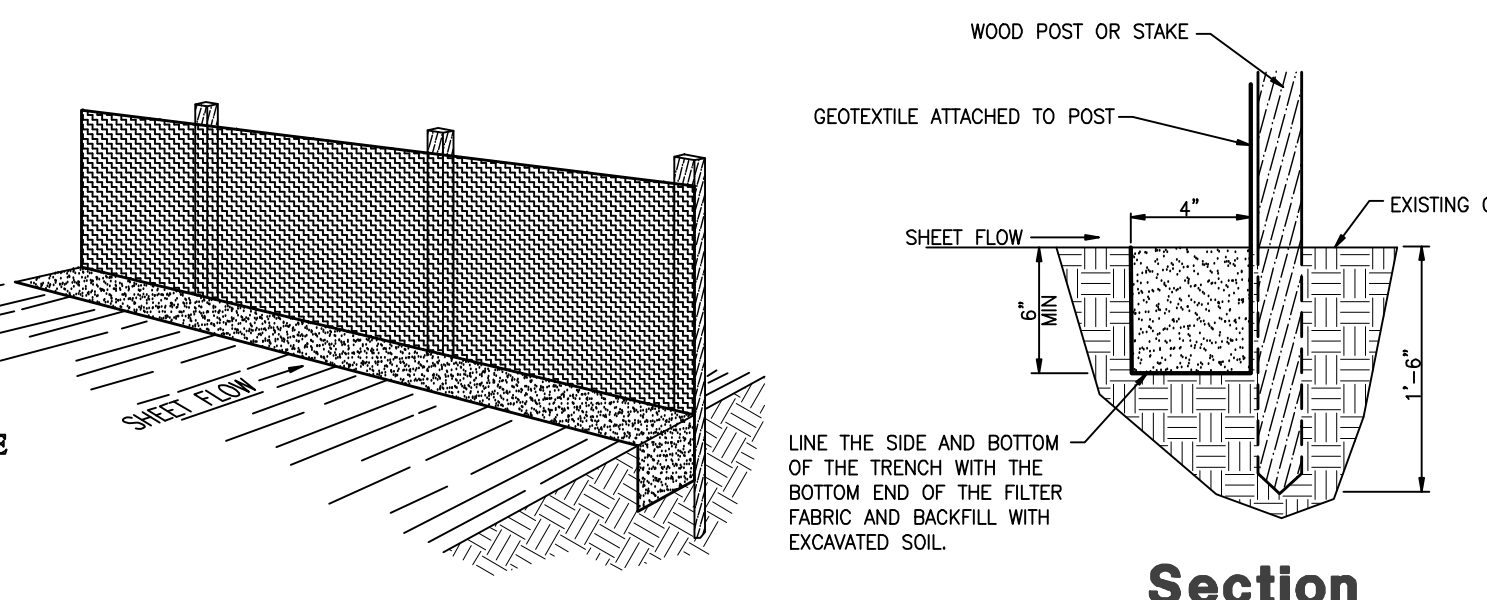
3. Detention Basin
Volume in Volume out
The capacity of the retention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.
Use 0.02 cfs for Q outflow

The required volume of the detention basin is **2,492 cubic feet**
Bottom Area of Basin Percolation out of Basin
1000 s.f. (1in/60min)(1ft/12in)(1min/60sec)/Area of Basin 0.023

AREA #1 RETENTION VOLUME CALCULATIONS
6" FREEBOARD
HIGH WATER AREA (69.84) = 2,346 S.F.
BOTTOM AREA (68.34) = 985 S.F.
(2,346 + 985)/2 = 1,666 S.F. AVG.
1,666 S.F. x 1.5' DEEP = 2,499 C.F.
2,499 C.F. > 2,492 C.F. (REQ'D.) = OK



- #### Legend
- W — = PROPOSED CULINARY WATER LINE
 - EX.W --- = EXISTING CULINARY WATER LINE
 - SD — = PROPOSED STORM DRAIN LINE
 - EX.SD --- = EXISTING STORM DRAIN LINE
 - X — X — = FENCE LINE
 - = EXISTING FIRE HYDRANT
 - = EXISTING MANHOLE
 - ⊗ = EXISTING GATE VALVE
 - ⊞ = EXISTING WATER METER
 - = EXISTING CATCH BASIN
 - = STREET LIGHT
 - = SIGN
 - EP = EDGE OF PAVEMENT
 - FG = FINISHED GRADE
 - FH = FIRE HYDRANT
 - GB = GRADE BREAK
 - INV = INVERT
 - L.F. = LINEAR FEET
 - NG = NATURAL GRADE
 - PP = POWER/UTILITY POLE
 - SD = STORM DRAIN
 - W = CULINARY WATER
 - WM = WATER METER
 - ▨ = EXISTING PAVEMENT
 - ▨ = EXISTING GRAVEL



Perspective View

INSTALLATION
The silt fence should be installed prior to major soil disturbances in the drainage area. The fence should be placed across the slope along a line of uniform elevation wherever flow of sediment is anticipated. Table 1 shows generally recommended maximum slope lengths (slope spacing between fences) at various site grades for most silt fence applications.

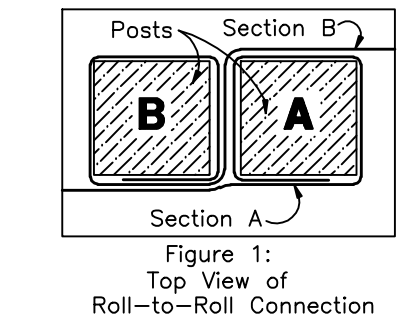
Slope Steepness (%)	Max. Slope Length m (ft)
<2%	30.5m (100ft)
2-5%	22.9m (75ft)
5-10%	15.2m (50ft)
10-20%	7.6m (25ft)
>20%	4.5m (15ft)

PREFABRICATED SILT FENCE ROLLS
*Excavate a minimum 15.2cm x 15.2cm (6"x6") trench at the desired location.
*Unroll the silt fence, positioning the post against the downstream wall of the trench. Adjacent rolls of silt fence should be joined by nesting the end post of one fence into the other. Before nesting the end posts, rotate each post until the geotextile is wrapped completely around the post, then about the end posts to create a tight seal as shown in Figure 1.
*Drive posts into the ground until the required fence height and/or anchorage depth is obtained.
*Bury the loose geotextile at the bottom of the trench in the upstream trench and backfill with natural soil, tamping the backfill to provide good compaction and anchorage. Figure 2 illustrates a typical silt fence installation and anchor trench placement.

should generally be less than three (3) times the height of the fence.
*If a steel or plastic mesh is required to reinforce the geotextile, it shall have a minimum mesh opening of 15.2cm (6").
*Fasten the mesh to the upslope side of the posts using heavy duty wire staples, tie wires or hog stricks. Extend the mesh into the bottom of the trench.
*The geotextile shall then be stapled or wired to the posts. An extra 20-30cm (8-20") of geotextile shall extend into the trench.

INSPECTION
*Inspect the silt fence daily during periods of rainfall, immediately after significant rainfall event and weekly during periods of no rainfall. Make any repairs immediately.
*When sediment deposits behind the silt fence are one-third of the fence height, remove and properly dispose of the silt accumulations. Avoid damage to the fabric during cleanout.

REMOVAL
*Silt fence should not be removed until construction ceases and the upslope area has been properly stabilized and/or revegetated.



FIELD ASSEMBLY:
*Excavate a minimum 15.2cm x 15.2cm (6"x6") trench at the desired location.
*Drive wooden posts, or steel posts with fasteners projecting against the downstream wall of the trench. Maximum post spacing should be 2.4-3.0m (8-10ft). Post spacing

Silt Fence Detail

SCALE: NONE

Storm Runoff Calculations Powder Mountain Park & Ride Area #2 10/26/2011

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Siden, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be retained in a holding pond and will percolate into the natural ground at 60.00 minutes per inch.

The calculations are as follows:

- Runoff from the undeveloped existing land.

Runoff Coefficient	C = 0.2
Rainfall Intensity	I = 1.6 IN./HR.
Runoff Quantity	Q = CIA
Acreage	A = 0.36 ACRES
- Runoff from developed land

Runoff Coefficients	
Paved Area	15,245 C = 0.9
Landscaped Area	0 C = 0.2
Roof	0 C = 0.8

Weighted Runoff Coefficient C = 0.90
Rainfall Intensity I = varies with time
Runoff Quantity Q = CIA

3. Detention Basin
Volume in Volume out
The capacity of the retention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.
Use 0.02 cfs for Q outflow

The required volume of the detention basin is **2,626 cubic feet**
Bottom Area of Basin Percolation out of Basin
1000 s.f. (1in/60min)(1ft/12in)(1min/60sec)/Area of Basin 0.023

AREA #2 RETENTION VOLUME CALCULATIONS
6" FREEBOARD
HIGH WATER AREA (69.84) = 2,424 S.F.
BOTTOM AREA (68.34) = 1,140 S.F.
(2,424 + 1,140)/2 = 1,782 S.F. AVG.
1,782 S.F. x 1.5' DEEP = 2,673 C.F.
2,673 C.F. > 2,626 C.F. (REQ'D.) = OK

Engineer's Notice To Contractors

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED FROM AVAILABLE INFORMATION PROVIDED BY OTHERS. THE LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO CONTACT THE UTILITY COMPANIES AND TAKE DUE PRECAUTIONARY MEASURE TO PROTECT ANY UTILITY LINES SHOWN, AND ANY OTHER LINES OBTAINED BY THE CONTRACTOR'S RESEARCH, AND OTHERS NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

Contact:
Gregg Greer
P.O. Box 1119
Eden, Utah 84310-1119
PH: (801) 745-3772 Ext. 170

Blue Stakes Location Center
Call: Toll Free
1-800-662-4111
Two Working Days Before You Dig

Reeve & Associates, Inc.
4155 S. HARRISON BLVD., SUITE 310, OGDEN, UTAH 84403
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REVISIONS	DESCRIPTION

Powder Mountain Park & Ride
WEBER COUNTY, UTAH

**Street Cross-Sections/
Master Legend/Notes**

REGISTERED PROFESSIONAL ENGINEER
375328
J. NATE REEVE
STATE OF UTAH

Project Info.

Engineer:	J. NATE REEVE, P.E.
Drafter:	R. HANSEN
Begin Date:	OCTOBER 26, 2011
Name:	POWDER MOUNTAIN PARK & RIDE
Number:	5837-03

Sheet	1
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