

- calcs not signed + sealed

Storm Runoff Calculations

Nordic Valley Condo/Parking - EDEN UT

10/22/2014 SKT

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Ogden UT area taken from data compiled by the 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 detained in a holding pond. All water that runs off and over the property at present will be diverted into the holding pond and released at a reduced rate into the existing drainage system.

The calculations are as follows:

1. Runoff from the undeveloped existing land.

Runoff Quantity $Q = 0.2$ cfs/acre
Acreage $A = 6.65$ ACRES

$Q(\text{out}) = 1.33$ CFS

where did this come from?

2. Runoff from developed land

Runoff Coefficients

show drainage basin delineation
show on site plan

Paved Area	166937	$C = 0.9$
Landscaped Area	82517	$C = 0.2$
Roof	40164	$C = 0.8$

Weighted Runoff Coefficient $C = 0.69$

Rainfall Intensity $i = \text{varies with time}$
Runoff Quantity $Q = CiA$

3. Detention Basin

Volume in $Q * t$
Volume out $1.33 * t$

The capacity of the detention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the detention basin is limited to outflow if undeveloped.
Use 1.33 cfs for Q outflow

The required volume of the detentio **31,188 cubic feet**

USE A 5.3 INCH DIAMETER ORIFICE AT OUTLET

what intensity was used?
we require checking several durations and using most restrictive result (see website)

show calcs.