PRELIMINARY/FINAL DRAINAGE REPORT

FOR

JACKSON OFFICE WAREHOUSE STORAGE BUILDINGS DEVELOPMENT
ROCKY MOUNTAIN INDUSTRIAL PARK
FILING NO. 1A, LOT 2

Prepared For:
Jackson Development Solutions, LLC
55963 Maroon Mesa Drive
Colorado Springs, CO 80918

Prepared By:
Associated Design Professionals, Inc.
3520 Austin Bluffs Parkway Suite 102
Colorado Springs, CO 80918
719.266-5212

ADP Project No.170602
October 10, 2017

PCD File No. PPR-17-057

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ENGINEER'S STATEMENT:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City/County for drainage reports, and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

_____

Michael A. Bartusek, P.E. #23329

DEVELOPER'S STATEMENT:

I, the Developer, have read and will comply with all of the requirements specified in this drainage report and plan.

By: _____

Title: President

Address: Jackson Development Solutions, LLC
5963 Maroon Mesa Drive
Colorado Springs, CO 80918

Filed in accordance the El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and the Engineering Criteria Manual, as amended.

_____   _____

Jennifer Irvine, Acting County Engineer   Date

Conditions:

PRELIMINARY/FINAL DRAINAGE REPORT
JACKSON OFFICE WAREHOUSE STORAGE BUILDINGS DEVELOPMENT
ROCKY MOUNTAIN INDUSTRIAL PARK FILING NO. 1A, LOT 2

PROJECT DESCRIPTION

This drainage report is for the development of the Rocky Mountain Industrial Park Filing No. 1A, Lot 2. The currently vacant 2.09 acre site is located north of Constitution Avenue and east of Capital Drive on the north side of Sandy Court at the end of the cul-de-sac. It is further described as a portion of Section 33, Township 13 South, Range 65 West of the 6th Principal Meridian in El Paso County, Colorado.

All of this lot is located in Sand Creek drainage basin. An existing storm Sewer is located within Sandy Court which empties into an existing riprap lined channel located along the east edge of the property.

SOILS

The soil on the site can be described as having a rapid permeability, medium-surface runoff, and moderate to high hazard of erosion. The soils within the site are Blendon sandy loams. These soils are classified as Hydrologic Group 'B'.

FLOODPLAIN STATEMENT

A small portion of the developed site is located within a designated FEMA 100-year floodplain according to the information published in the Federal Emergency Management Agency Flood Plain Map N. 08041C0756F, dated March 17, 1997, LOMR 04-08-0062P dated November 18, 2004. This area falls within the existing riprap channel.

METHOD OF COMPUTATION

The methodology utilized for this report is in accordance with the *City Drainage Criteria Manual, Volumes 1*, dated May 2014. The Rational Method for computation of runoff was used for determining Sub-Basin flows.

$Q = cia$

Where
- $Q =$ maximum rate of runoff in cubic feet per second
- $c =$ runoff coefficient representing drainage area characteristics
- $i =$ average rainfall intensity, in inches per hour, for the duration required for the runoff to become established
- $a =$ drainage basin size in acres

EXISTING DRAINAGE CONDITIONS

The existing site has been overlot grades and is covered with rang̷ southeasterly direction with most flows directed onto S̷andy Cou̷ by an existing 10' sump window inlet. The inlet flow̷s into a 30" R̷CP storm sewer which empties into the east tributary of Sand Creek. The remainder of the site drains directly into the riprap-lined portion of the east fork of Sand Creek.

> Revise. Per the Kiowa FDR, the riprap lined channel is a collector channel which is private which is maintained by the property owner.

No flows enter the site from the east; however, a small portion of the lot from the north enters the site. The off-site sub-basin OS1 only drains the existing landscape area and produces flows of 0.2 cfs for the 5-year storm and 1.1 cfs for the 100-year storm. Sub-basin AEX drains to the western portion of the undeveloped site. It produces flows of 0.8 cfs and 5.7 cfs respectively.

These flows combine with the flows from OS1 at DP1 to produce flows to Sandy Court of 0.8 cfs for the 5-year storm and 6.3 cfs for the 100-year storm.

The estimated runoff amounts produced for the project under existing conditions are shown in Table 1 below.

TABLE 1 – EXISTING CONDITIONS		
Sub-Basin	Q_5 CFS	Q_{100} CFS
OS1	0.2	1.1
AEX	0.8	5.7
DP1 (OS1 + AEX)	0.8	6.3

DEVELOPED DRAINAGE CONDITIONS

The development of this site includes the addition of two (2) 5,067 sf office/warehouse buildings in the center of the site and a 3,000 sf vehicle storage building in the northwest corner of the site.

The lower portion of the lot will be paved with asphalt while the upper portion will be covered with gravel. The site will be regraded to direct the flows around the proposed office/warehouse buildings.

Flows from the northern area will be directed to curbs and cross pans in the southern area and directed into a sand filter water quality basin.

As stated in the previous section, a small amount of off-site flow enters the site from a grass-covered berm on the north side of the site. Sub-basin OS1 drains the western part of this berm and produces flows of 0.1 cfs for the 5-year storm and 0.7 cfs for the 100-year storm. These flows drain onto Sub-basin A1.

The western portion of the developed site is designated as Sub-basin A1. This sub-basin will produce flows of 2.5 cfs and 5.2 cfs respectively. These flows combine with the flows from OS1 at DP1 to produce flows of 2.6 cfs for the 5-year storm and 5.7 cfs for the 100-year storm. Flows from DP1 continue to the east and into Sub-basin A2.

Sub-basin OS2 drains the eastern part of this berm and produces flows of 0.1 cfs for the 5-year storm and 0.4 cfs for the 100-year storm. These flows drain onto Sub-basin A2.

The eastern portion of the developed site is designated as Sub-basin A2. This sub-basin will produce flows of 2.1 cfs and 4.2 cfs respectively. These flows combine with the flows from OS2 at DP2 to produce flows of 2.1 cfs for the 5-year storm and 4.6 cfs for the 100-year storm.

Flows from DP2 combine with the flows from DP1 at DP3 to produce total flows into the sand filter basin of 4.7 cfs for the 5-year storm and 10.2 cfs for the 100-year storm.

Sub-basin B drains the eastern swale and the landscape area south of the developed site. This area produces flows of 0.3 cfs and 1.1 cfs respectively. These flows combine with the flows from DP3 at DP4 to produce total site flows of 4.9 cfs for the 5-year storm and 11.2 cfs for the 100-year storm.

Table 2 shows the estimated runoff which will be produced for the project under developed conditions.

Sub-Basin	TABLE 2 – PHASE I DEVELOPED CONDITIONS	
	Q_5 CFS	Q_{100} CFS
OS1	0.1	0.7
Os2	0.1	0.4
A1	2.5	5.2
A2	2.1	4.2
B	0.3	1.1
DP1 (OS1 + A1)	2.6	5.7
DP2 (OS2 + A2)		6
DP3 (DP1 + DP2)		.2
DP3 (DP3 + B)		.2

[handwritten annotation: Explain why on-site flood control detention is not required.]

WATER QUALITY

Water quality for the site will be achieved through a 1,190 cf sand filter basin (SFB) with a four-inch slotted underdrain tied into a "Type C" inlet with an 18" HDPE pipe outlet.

[handwritten annotation: State the SFB is owned and maintained by the property owner.]

PRIVATE DR

Item	it	Quantity	Unit Cost	Total Cost
18" HDPE FES	EA	1	$400	$ 400
18" HDPE	LF	15	$40	$ 600
Outlet Structure	EA	1	$5,000	$5,000
Emergency Spillway	EA	1	$1,500	$1,500
			Sub-Total	$7,500
			15% Contingency & Engineering	$1,125
			TOTAL	$8,625

DRAINAGE BASIN FEES

The entire project was previously platted and lies within the Sand Creek Drainage Basin; therefore, no fees are due.

CONCLUSION

The proposed development and subsequent lot developments follow the "Four Step Process" as mandated by the EPA as follows:

Step 1: Runoff has been reduced by disconnecting impervious areas where possible, eliminating "unnecessary" impervious areas and encouraging infiltration into suitable soils.
Step 2: All drainageways, ditches and channels have been stabilized by the following methods:
   - Tributaries have been left in their relatively natural state where possible.
   - New drainageways and swales have been stabilized with either riprap or erosion control fabric depending on the erosion potential.
   - No new roadside ditches are proposed for the development.
Step 3: The proposed development will disturb approximately 2.0 acres.
Step 4: The development of this project will not affect sensitive waters.

The development of this site will have little impact on downstream properties once the water quality/detention basin is constructed.

REFERENCES

1. City of Colorado Springs and El Paso County (1994). *Drainage Criteria Manual Volume 1* (DCM).

2. City of Colorado Springs and El Paso County (1994). *Drainage Criteria Manual Volume II* (DCM).

3. Soil Survey of El Paso County Area, Colorado by USDA, NRCS.

4. *El Paso County (January 2006) Engineering Criteria Manual*.

5. Urban Drainage and Flood Control District (June 2011). *Urban Storm Drainage Criteria Manual, Volume 1-3*.

6. Rocky Mountain Industrial Park Filing No. 1 Final Drainage Plan by Kiowa Engineering Corporation, dated February 2002.

Include the drainage letter from Rocky Mountain Industrial Park Filing 1A
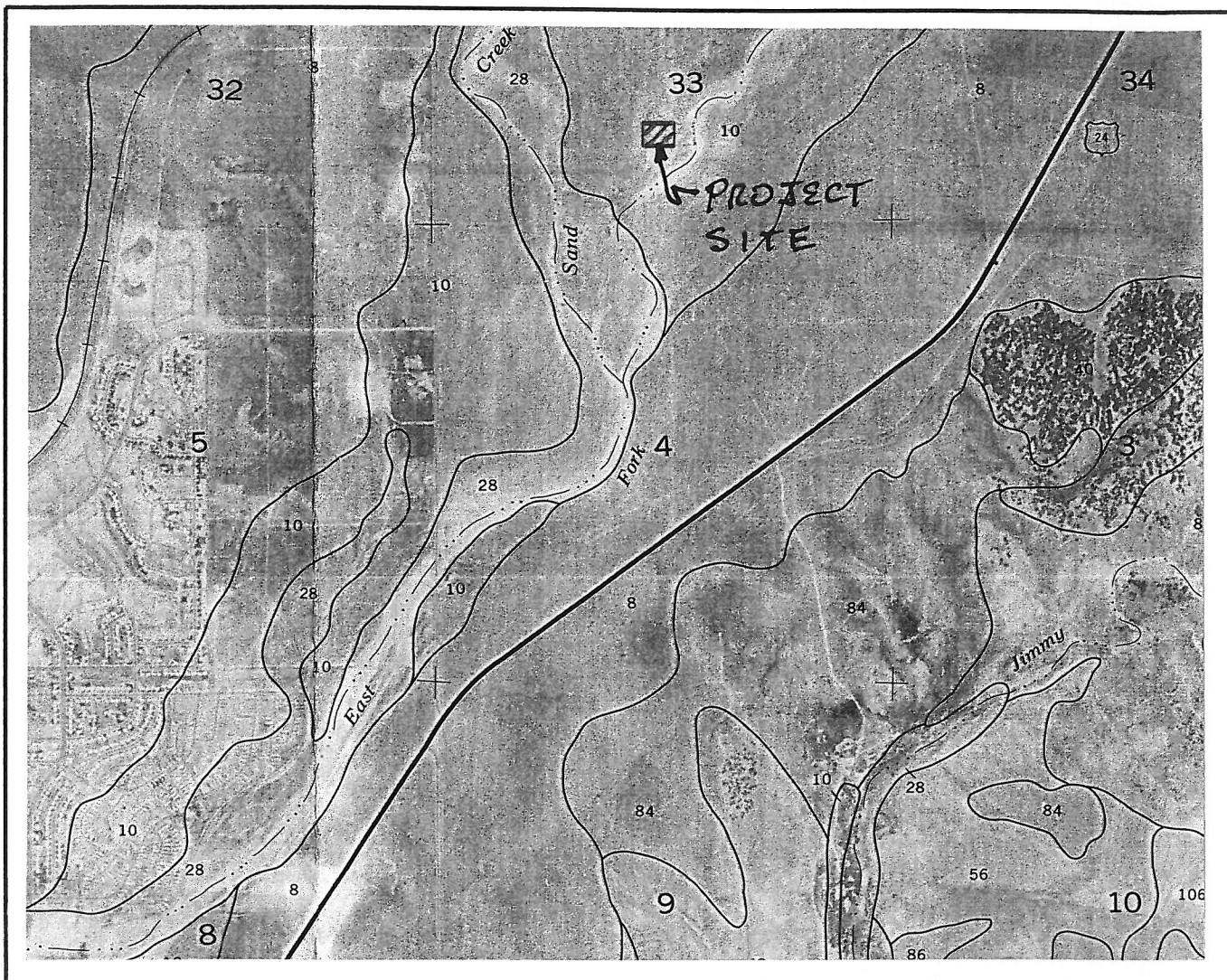
APPENDIX A

MAPS
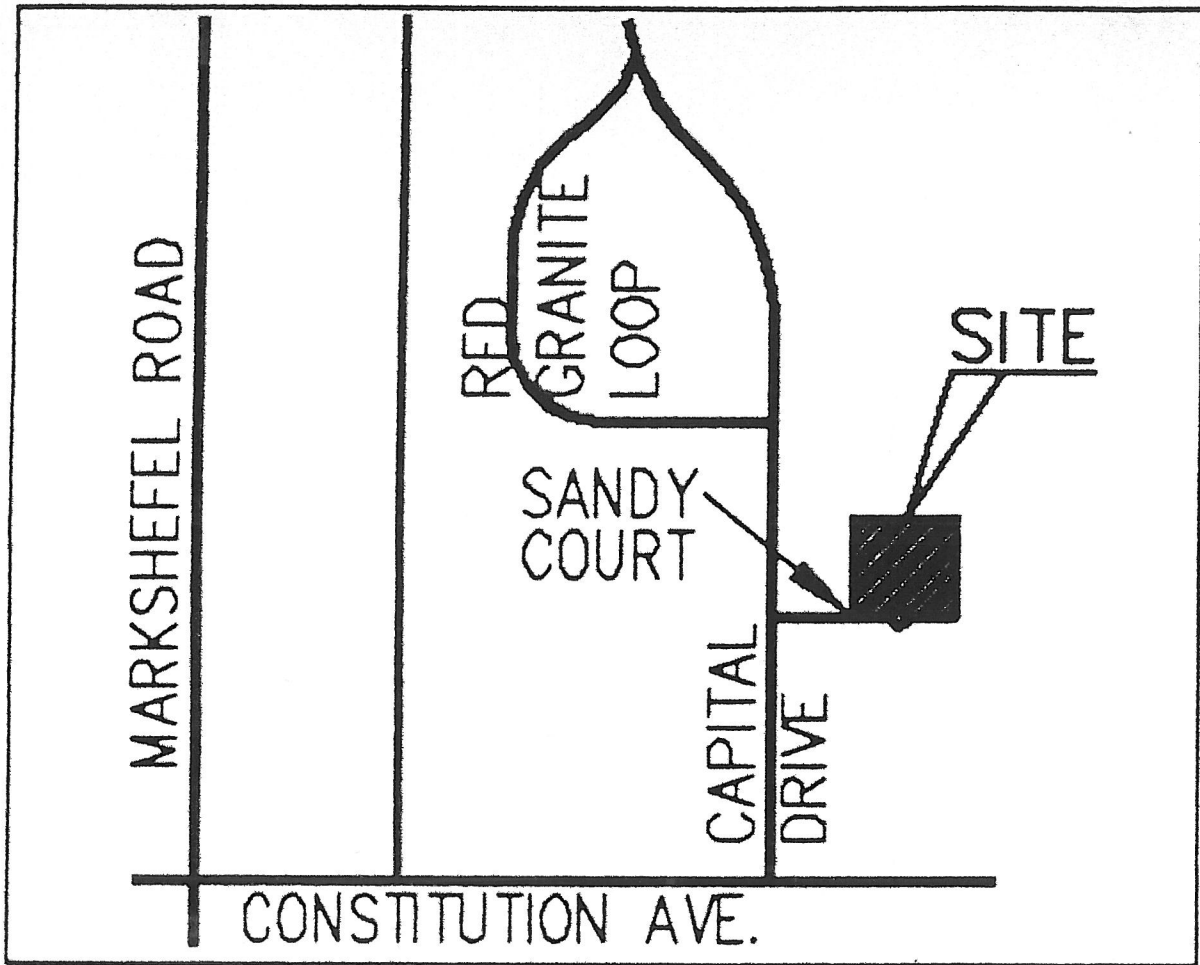
VICINITY MAP

N.T.S.

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3520 Austin Bluffs Pkwy, Suite 102
Colorado Springs, CO 80918
(719) 266-5212
fax: (719) 266-5341

32   Creek 28   33   34

PROJECT
SITE

5   28   Fork 4

East   10   8   84   Jimmy   3

10   84   28   84

28   8   9   10   56   10
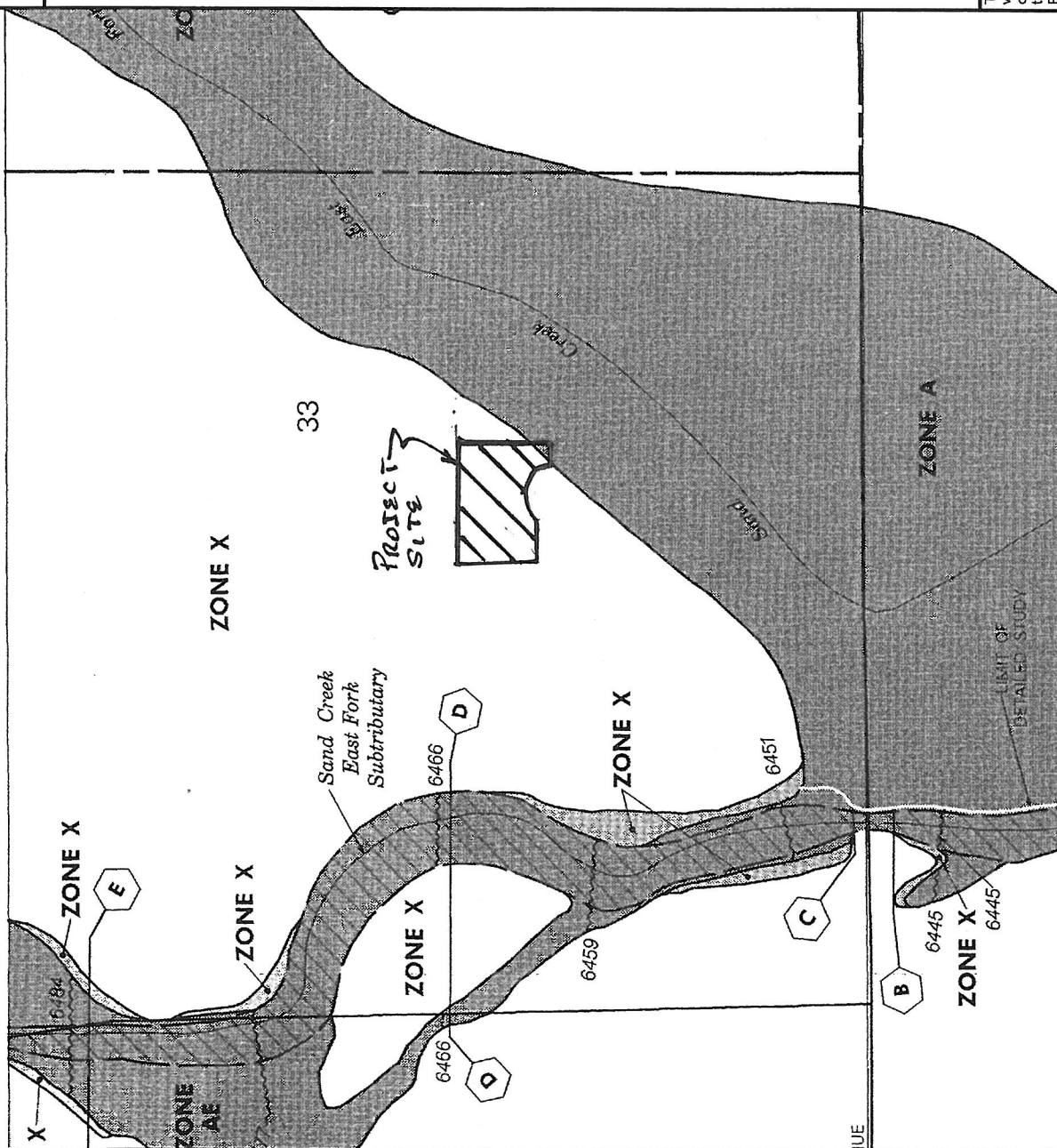
8   86

-N-

SOILS MAP
N.T.S.

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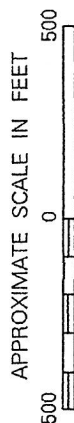
APPROXIMATE SCALE IN FEET

500   0   500

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 756 OF 1300

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0756	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0756	F

MAP NUMBER
08041C0756 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

JOINS PANEL 0543

ZONE X

ZONE X

ZONE X

ZONE X

ZONE X

ZONE X

ZONE A

ZONE AE

ZONE AE

Sand Creek East Fork Subtributary

Sand Creek

LIMIT OF DETAILED STUDY

Project Site

33

6466

6466

6459

6451

6445

6445

6484

E

D

D

C

B

APPENDIX B

DESIGN CALCULATIONS

8140 SANDY CT

PROJ. #170703
DRAINAGE CALCULATION SHEET
file:sandy ct dr
09/28/17

Annotations:
- Value is small.
- OS1 overland travel length should only be around 50'
- Areas do not match the drainage map
- Update to include OS2 and DP3

AREA DESIG.	AREA (acre)	C5 (5 yr)	C100 (100 yr)	C5 X A	C100 X A	Initial To L (ft)	Initial To Slope (%)	ti (min)	Travel Time L (ft)	Travel Time Slope (%)	V (fps)	Tt (min)	TC (min)	I5 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q100 (cfs)	length L (feet)	vel. V (fps)	^t (min)	AREA DESIG.
EXISTING CONDITIONS																					
OS1	0.25	0.35	0.58	0.09	0.15	130	2.50	11.82	0	2.50	1.70	0.00	11.82	3.77	6.58	0.33	0.95				OS1
A	0.12	0.49	0.65	0.06	0.08	100	2.50	8.43	30	2.50	1.70	0.29	8.72	4.28	7.48	0.25	0.58				A
DP1	0.37			0.15	0.22								8.72	4.28	7.48	0.63	1.67				DP1
DEVELOPED CONDITIONS																					
OS1	0.25	0.35	0.58	0.09	0.15	130	2.50	11.82	0	2.50	1.70	0.00	11.82	3.77	6.58	0.33	0.95				OS1
A	0.13	0.49	0.65	0.06	0.08	100	2.50	8.43	30	2.50	1.70	0.29	8.72	4.28	7.48	0.27	0.63	25	1.50	0.28	A
DP1	0.38			0.15	0.23								8.72	4.28	7.48	0.65	1.72				DP1
B	0.12	0.49	0.65	0.06	0.08	100	2.50	8.43	30	2.50	1.70	0.29	8.72	4.28	7.48	0.25	0.58				B
DP2	0.50			0.21	0.31								9.00	4.23	7.38	0.89	2.27				DP2

Design Procedure Form: Sand Filter (SF)

Designer:	**Michael A Bartusek**
Company:	**Associated Design Professionals**
Date:	**October 4, 2017**
Project:	**Jackson Office/Warehouse Storage Buildings Development**
Location:	**Rocky Mountain Industrial Park Fil 1A Lot 2**

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a
(100% if all paved and roofed areas upstream of sand filter)

$I_a = $ ___50.3___ %

B) Tributary Area's Imperviousness Ratio ($i = I_a/100$)

$i = $ ___0.503___

C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time
$WQCV = 0.8 * (0.91* i^3 - 1.19 * i^2 + 0.78 * i)$

$WQCV = $ ___0.17___ watershed inches

D) Contributing Watershed Area (including sand filter area)

$Area = $ ___91,475___ sq ft

E) Water Quality Capture Volume (WQCV) Design Volume
$V_{WQCV} = WQCV / 12 * Area$

$V_{WQCV} = $ ___1,263___ cu ft

F) For Watersheds Outside of the Denver Region, Depth of
Average Runoff Producing Storm

$d_6 = $ ___0.40___ in

G) For Watersheds Outside of the Denver Region,
Water Quality Capture Volume (WQCV) Design Volume

$V_{WQCV\ OTHER} = $ ___1,175___ cu ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume
(Only if a different WQCV Design Volume is desired)

$V_{WQCV\ USER} = $ ___1,190___ cu ft

2. Basin Geometry

A) WQCV Depth

$D_{WQCV} = $ ___1.7___ ft

B) Sand Filter Side Slopes (Horizontal distance per unit vertical,
4:1 or flatter preferred). Use "0" if sand filter has vertical walls.

$Z = $ ___4.00___ ft / ft

C) Minimum Filter Area (Flat Surface Area)

$A_{Min} = $ ___575___ sq ft

D) Actual Filter Area

$A_{Actual} = $ ___700___ sq ft

E) Volume Provided

$V_T = $ ___1190___ cu ft

3. Filter Material

┌ Choose One ──────────
  ● 18" CDOT Class B or C Filter Material
  ○ Other (Explain):
  _____
  _____

4. Underdrain System

A) Are underdrains provided?

┌ Choose One ──────
  ● YES
  ○ NO

B) Underdrain system orifice diameter for 12 hour drain time

  i) Distance From Lowest Elevation of the Storage
  Volume to the Center of the Orifice

$y = $ ___1.8___ ft

  ii) Volume to Drain in 12 Hours

$Vol_{12} = $ ___1,190___ cu ft

  iii) Orifice Diameter, 3/8" Minimum

$D_O = $ ___13 / 16___ in

Design Procedure Form: Sand Filter (SF)

Designer: **Michael A Bartusek**
Company: **Associated Design Professionals**
Date: **October 4, 2017**
Project: **Jackson Office/Warehouse Storage Buildings Development**
Location: **Rocky Mountain Industrial Park Fil 1A Lot 2**

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5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

   A) Is an impermeable liner provided due to proximity
      of structures or groundwater contamination?

Choose One
  ○ YES   ● NO

6-7. Inlet / Outlet Works

   A) Describe the type of energy dissipation at inlet points and means of
      conveying flows in excess of the WQCV through the outlet

Riprap rundowns into basin with riprap emergency spillway.
Type C inlet w/18" HDPE pie outlet structure.

Notes:

APPENDIX C

DESIGN CHARTS

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

Figure 6-25. Estimate of Average Concentrated Shallow Flow
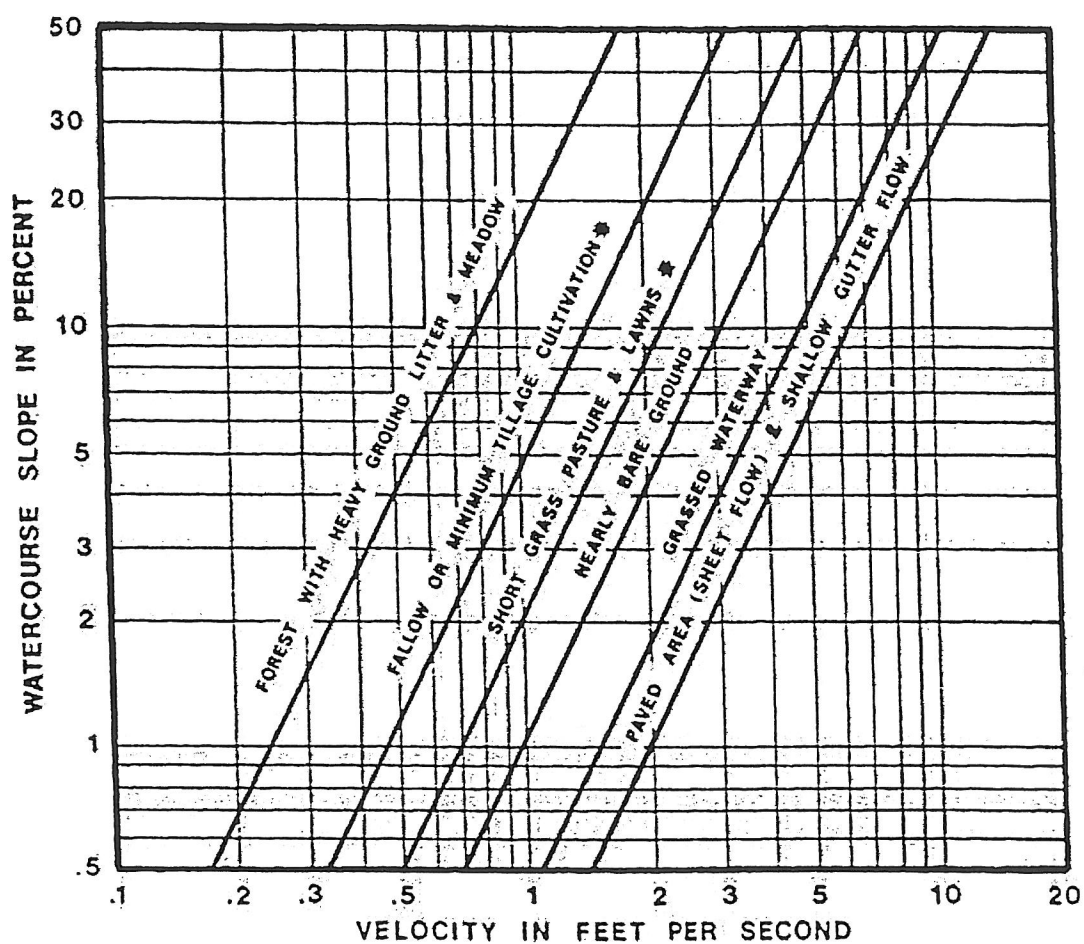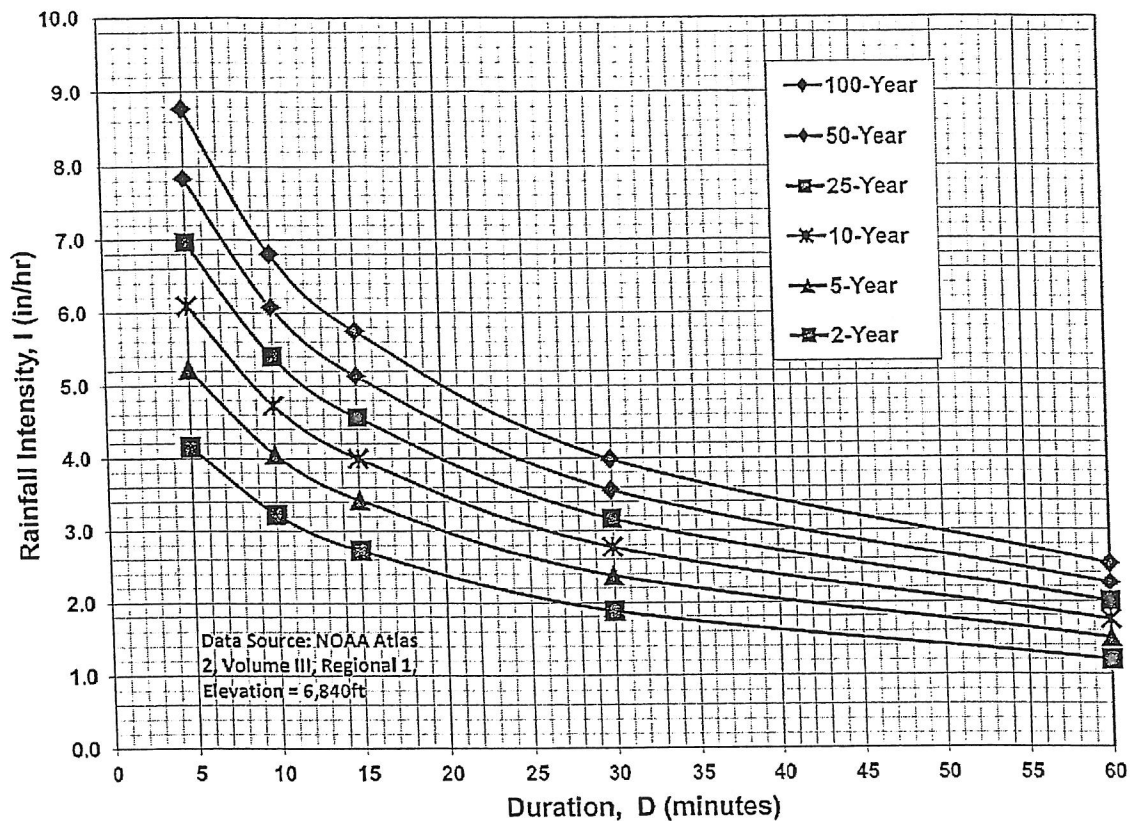
Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency

IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$
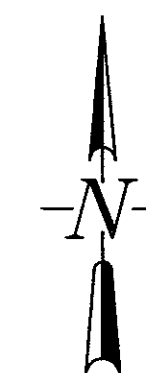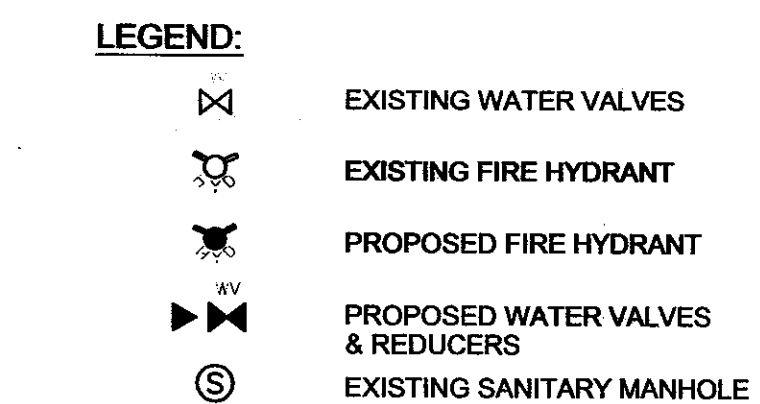
$$I_{50} = -2.25 \ln(D) + 11.375$$

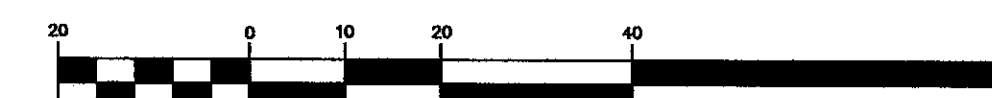$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

$$I_5 = -1.50 \ln(D) + 7.583$$

$$I_2 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

CONCRETE RETAINING WALL

INLET TOP=60.0'

PROPOSED VEHICLE STORAGE 3,000 SF

30.00
20.00

10.00

30.00

DOUBLE CLEANOUT

RIP-RAP

BARBED WIRE FENCE

RIP-RAP CHANNEL

20.00

30.00

RIP-RAP

4" PVC SAN SERV @2.08%

1" WATER SERV

INLET TOP=57.5' INV=53.1' 16" RCP OUT

WATER VALVE

ELECTRIC VAULT

GAS LOCATE

CONCRETE CURB & GUTTER

15.00

10.00

25.00

30"STORM

F.E.S. FL=49.4'

IRRIGATION VALVE

EXIST 8" SAN SEW SERVICE STUB

EXIST SAN SEW MH

INLET TOP=53.6' FL=53.0' INV=50.3'

CHAIN-LINK FENCE

BARBED WIRE FENCE

EXIST WATER SERVICE STUB

SEWER MANHOLE RIM=54.3

S

S

SEWER MANHOLE RIM=56.3

EXIST 8" WATER MAIN

WATER VALVE

FIRE HYDRANT

EXIST WATER VALVE

EXIST FIRE HYDRANT

RIP-RAP

N

GRAPHIC SCALE

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

20 10 20 40 80

LEGEND:

⋈ EXISTING WATER VALVES

⋈ EXISTING FIRE HYDRANT

⋈ PROPOSED FIRE HYDRANT

►►⋈ PROPOSED WATER VALVES & REDUCERS

Ⓢ EXISTING SANITARY MANHOLE

JACKSON OFFICE WAREHOUSE & STORAGE BLDGS
8140 SANDY COURT
EL PASO COUNTY, COLORADO

PRELIMINARY UTILITY SERVICE PLAN

BY
REVISION
NO. DATE

SHEET
2 of 2

EXISTING CONDITIONS

PROPOSED CONDITIONS

Notes/callouts (existing):
- Length of overland flow. Revise the drainage calculation
- 50 ft
- 272 ft
- OS1 | 0.35 | 0.2 | 1.1
- Aex | 2.09 | 0.8 | 5.7
- SANDY COURT 80' PUBLIC R.O.W.

Notes/callouts (proposed):
- 50.00'
- OS1 | 0.22 | 0.1 | 0.7
- OS2 | 0.13 | 0.1 | 0.4
- PROPOSED VEHICLE STORAGE 3,000 SF, FF = 6458.50
- A1 | 0.97 | 2.5 | 5.2
- A2 | 0.78
- PROPOSED OFFICE/WAREHOUSE 5,067 SF, FF = 6457.00
- PROPOSED OFFICE/WAREHOUSE 5,067 SF, FF = 6457.00
- 2.1 | 4.3
- 0.3 | 1.1
- 1 | 2.6 | 5.7
- 238 ft
- 295.6f
- 3 | 4.7 | 10.3
- 2.1 | 4.2 | 2
- 2.1 | 4.2 | 4.8 | 11.2 | 4
- INV = 49.79
- 1500 CF SAND FILTER WATER QUALITY BASIN
- EMERGENCY SPILLWAY
- 15 LF-18" HDPE @1%
- 4'x5' RIPRAP PAD, 6" ROCK, 12" THICK W/ 4" BEDDING & FILTER FABRIC
- INV = 49.52
- TYPE 'C' INLET TOP ELEV = 6453.25, 18" INV ELEV = 6449.67, 4" INV ELEV = 6449.67 W/ 4" CAP & 1/2" OPENING
- INV = 49.40
- EXIST 10' TYPE R INLET
- B | 0.34
- 24 LF - 4" SLOTTED UNDERDRAIN @0.5%
- EXIST 30" RCP STM SWR
- SAND FILTER BASIN: VOL = 1190 CF, DEPTH = 1.75 FT, BOTTOM = 6450.50, BERM = 6454.00
- SANDY COURT 80' PUBLIC R.O.W.
- Add symbols in legend
- Does not meet the minimum required filter area from the UD-BMP worksheet.
- Include the filter area (flat surface area)

LEGEND:
- ———— PROPOSED MAJOR CONTOUR
- ———— PROPOSED MINOR CONTOUR
- – · – · EXISTING MAJOR CONTOUR
- – – – EXISTING MINOR CONTOUR
- ⋈ EXISTING WATER VALVES
- ⋇ EXISTING FIRE HYDRANT
- Ⓢ EXISTING SANITARY MANHOLE

BENCHMARK:
- CP#
- N ____
- E ____
- ELEV ____

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

NO. | DATE | REVISION | BY

JACKSON OFFICE WAREHOUSE & STORAGE BLDGS
8140 SANDY COURT
EL PASO COUNTY, COLORADO

PRELIMINARY DRAINAGE PLAN

SHEET 1 of 1

Markup Summary

1 (1)

Subject: Text Box
Page Label: 1
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:53:59 AM
Color: ■
Layer:
Space:

PCD File No. PPR-17-057

2 (2)

Subject: Callout
Page Label: 2
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:03 AM
Color: ■
Layer:
Space:

County Engineer/ECM Administrator

- -

Subject: Callout
Page Label: 2
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:02 AM
Color: ■
Layer:
Space:

Remove City.

3 (1)

Subject: Callout
Page Label: 3
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:05 AM
Color: ■
Layer:
Space:

Revise. Per the Kiowa FDR, the riprap lined channel is a collector channel which is private which is maintained by the property owner.

Subject: Callout
Page Label: 6
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:13 AM
Color: ■
Layer:
Space:

Explain why on-site flood control detention is not required.

- -

Subject: Callout
Page Label: 6
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:15 AM
Color: ■
Layer:
Space:

State the SFB is owned and maintained by the property owner.

Subject: Callout
Page Label: 7
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:16 AM
Color: ■
Layer:
Space:

Include the drainage letter from Rocky Mountain Industrial Park Filing 1A

Subject: Callout
Page Label: 13
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:21 AM
Color: ■
Layer:
Space:

Areas do not match the drainage map

- -

Subject: Callout
Page Label: 13
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:17 AM
Color: ■
Layer:
Space:

Update to include OS2 and DP3

Subject: Callout
Page Label: 13
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:18 AM
Color: ■
Layer:
Space:

Value is small.

Subject: Callout
Page Label: 13
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:18 AM
Color: ■
Layer:
Space:

OS1 overland travel length should only be around 50'

---

21 (8)
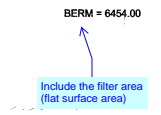
Subject: Callout
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:29 AM
Color: ■
Layer:
Space:

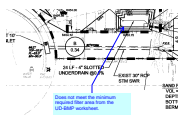Include the filter area (flat surface area)
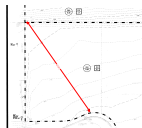
Subject: Length Measurement
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:24 AM
Color: ■
Layer:
Space:

272 ft

Subject: Callout
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:26 AM
Color: ■
Layer:
Space:

Add symbols in legend

Subject: Callout
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:28 AM
Color: ■
Layer:
Space:

Does not meet the minimum required filter area from the UD-BMP worksheet.
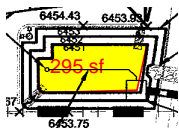
Subject: Area Measurement
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:27 AM
Color: ■
Layer:
Space:

295 sf

Subject: Perimeter Measurement
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:25 AM
Color: ■
Layer:
Space:

338 ft

Subject: Length Measurement
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:22 AM
Color: ■
Layer:
Space:

50 ft
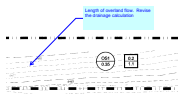
Subject: Callout
Page Label: 21
Lock: Locked
Status:
Checkmark: Unchecked
Author: dsdlaforce
Date: 12/29/2017 8:54:26 AM
Color: ■
Layer:
Space:

Length of overland flow. Revise the drainage calculation