

November 17, 2017

Gabe Sevigny
Development Services Department
El Paso County
2880 International Circle, Suite 110
Colorado Springs, CO 80910

**Re: Drainage Conformance Letter for Lot 2B, Block 1 – Claremont Ranch West
Filing No. 9B**

Dear Mr. Sevigny,

This drainage conformance letter has been prepared for Lot 2B of Claremont Ranch West Filing No. 9B project site located in Section 4, Township 14 South, Range 65 West of the 6th Principal Meridian, County of El Paso, State of Colorado. The purpose of this letter is to show that the proposed drainage for the site conforms to the current City of Colorado Springs *Drainage Criteria Manual Volume 2* and the *Final Drainage Report for SEC of Marksheffel Rd. & Constitution Ave.* prepared by Galloway & Company, Inc. dated September 14, 2015. A composite runoff coefficient calculation was performed for the subject site and these calculations are attached herein.

The building is proposed to be located in Lot 2B of the subdivision, a 0.82-acre site. In the Final Drainage Report the subject lot was a portion of Lot 2. The project site is located in Basin D-2 of the *Final Drainage Report*. Runoff from this lot was designed to be captured by a future storm sewer system which is to connect to the existing storm system which outfalls to the existing southwest pond as identified in the *Final Drainage Report*. The existing 5- and 100-year runoff coefficients for the combined basins based on the Final Drainage Report are 0.81 and 0.88, respectively.

The proposed grading for the site is consistent with the intended grading and drainage pattern proposed in the Final Drainage Report.

The proposed drainage plan for the site consists of six drainage basins (totaling 36,877 SF). The combined runoff coefficient for basins D-2A, D-2B, D-2C, D-2D, OS-1, OS-2A, OS-3 is estimated to be 0.70 and 0.80 in the 5- and 100- year storms, respectively. Runoff from basins D-2A, D-2B, D-2C, D-2D will be collected into a new catch basin and curb inlet on-site which will connect to the existing storm sewer system and be routed to the southwest pond. Runoff from basins OS-1 and OS-3 will continue to be collected into existing curb inlets which will outfall directly into the southwest pond. Runoff from basin OS-2 will continue to outfall to Marksheffel Rd which per the MDDP was designed to accommodate undeveloped flows from the site. These runoff coefficients are below the planned values and thus the runoff will be less than originally planned. The overall imperviousness of the site after final stabilization has been calculated to be 78%. These findings indicate that this project will have no negative impacts on the existing drainage infrastructure.

I affirm that the proposed drainage design of Lot 2B, Claremont Ranch West Filing No. 9B is in substantial conformance with the approved *Final Drainage Report for SEC of Marksheffel Rd. & Constitution Ave.* prepared by Galloway & Company, Inc. dated September 14, 2015.



Add a section listing the 4-step process (ECM Appendix I Section I.7.2) and narrate how each step was considered/implemented).

Jennifer Romano, PE

Add the EPC Standard Signature Blocks:
Design 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 County for drainage reports and said report is in conformity with the applicable 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.

[Name, P.E. # _____]

Date

Owner/Developer's Statement:

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

[Name, Title]
[Business Name]
[Address]

Date

El Paso County:

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

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Date

Conditions:

Excerpt from Master Drainage Report

PROJECT: Marksheffel/Constitution Project Site
LOCATION: Marksheffel Rd. and Constitution Ave
 Colorado Springs, El Paso County

Project No.: ED16.01
Date: September 14, 2015
Engineer: Gary Iwata

PERCENT IMPERVIOUS VALUES	
LANDSCAPE	0
PAVING	100
ROOFING	90
COMMERCIAL	95

* RUNOFF COEFFICIENTS USED				
	2-YEAR	5-YEAR	10-YEAR	100-YEAR
LANDSCAPE	0.02	0.06	0.15	0.35
PAVING	0.89	0.90	0.92	0.96
ROOFING	0.71	0.73	0.75	0.81
COMMERCIAL	0.79	0.81	0.83	0.88

* Table 6-6 in CO Springs, Drainage Criteria Manual Revised May 2014

Composite Runoff Coefficients and Percent Imperviousness for Developed Drainage Basins

BASIN DESIG.	OVERALL AREA (sf)	LANDSCAPE AREA (sf)	PAVED AREA (sf)	ROOF AREA (sf)	COMMERCIAL AREA (sf)	2-YEAR COEFF.	5-YEAR COEFF.	10-YEAR COEFF.	100-YEAR COEFF.	PERCENT IMPERVIOUS
A-1	75,466	8,652	66,814	0	0	0.79	0.81	0.83	0.89	89%
A-2	103,978	13,055	87,265	3,658	0	0.77	0.79	0.82	0.88	87%
A-3	94,063	12,348	76,537	5,178	0	0.77	0.78	0.81	0.87	86%
TOTAL A	273,507	34,055	230,616	8,836	0					87%
B-1	4,733	0	4,733	0	0	0.89	0.90	0.92	0.96	100%
B-2	42,137	0	42,137	0	0	0.71	0.73	0.75	0.81	90%
B-3	38,183	0	38,183	0	0	0.71	0.73	0.75	0.81	90%
B-4	4,598	0	4,598	0	0	0.89	0.90	0.92	0.96	100%
TOTAL B	89,651	0	9,331	80,320	0					91%
C-1	89,136	0	0	0	89,136	0.79	0.81	0.83	0.88	95%
C-2	91,159	14,517	76,642	0	0	0.75	0.77	0.80	0.86	84%
C-3	70,175	0	70,175	0	0	0.89	0.90	0.92	0.96	100%
TOTAL C	250,470	14,517	146,817	0	89,136					92%
TOTAL TO SE POND	613,628	48,572	386,764	89,156	89,136	0.78	0.80	0.82	0.88	90%
D-1	45,062	0	0	0	45,062	0.79	0.81	0.83	0.88	95%
D-2	37,698	0	0	0	37,698	0.79	0.81	0.83	0.88	95%
D-3	21,420	6,628	14,792	0	0	0.62	0.65	0.77	0.89	69%
D-4	42,468	4,291	38,177	0	0	0.80	0.82	0.84	0.90	90%
D-5	37,423	0	37,423	0	0	0.79	0.81	0.83	0.88	95%
D-6	27,611	7,191	20,421	0	0	0.62	0.65	0.75	0.85	70%
D-7	23,746	0	23,746	0	0	0.79	0.81	0.83	0.88	95%
D-8	29,322	5,222	24,100	0	0	0.74	0.75	0.78	0.85	82%
D-9	38,829	0	38,829	0	0	0.71	0.73	0.75	0.81	90%
TOTAL D	303,579	23,332	97,489	38,829	143,930					89%
TOTAL TO SW POND	303,579	23,332	97,489	38,829	143,930					89%
OS	16,526	16,526	0	0	0	0.02	0.08	0.15	0.35	0%
OS-1	72,934	36,375	36,559	0	0	0.46	0.49	0.54	0.66	50%
OS-2	18,678	18,678	0	0	0	0.02	0.08	0.15	0.35	0%
OS-3	3,028	3,028	0	0	0	0.02	0.08	0.15	0.35	0%
OS-4	5,590	5,590	0	0	0	0.02	0.08	0.15	0.35	0%
OS-5	116,756	80,197	36,559	0	0	0.02	0.08	0.15	0.35	0%
TOTAL OS	1,026,035	144,173	520,813	127,985	233,065	1	0.74	0.77	0.84	84%
TOTAL SITE	58,806	964,857	0	0	0	0.02	0.08	0.15	0.35	0%
H-1	58,806	964,857	0	0	0	0.02	0.08	0.15	0.35	0%
H-2	964,857	0	0	0	0	0.02	0.08	0.15	0.35	0%
Total Historic	1,023,663	1,023,663	0	0	0	0.02	0.08	0.15	0.35	0%

PROJECT: Marksheffel/Constitution Project Site
LOCATION: Marksheffel Rd. and Constitution Ave
Colorado Springs, El Paso County

Project No.: EDI0040
Date: November 16, 2015
Engineer: Jenny Romano

*PERCENT IMPERVIOUS VALUES	
LANDSCAPE	0
PAVING	100
ROOFING	90
COMMERCIAL	95

* RUNOFF COEFFICIENTS USED				
	<u>2-Year</u>	<u>5-Year</u>	<u>10-year</u>	<u>100-Year</u>
LANDSCAPE	0.02	0.08	0.15	0.35
PAVING	0.89	0.90	0.92	0.96
ROOFING	0.71	0.73	0.75	0.81
COMMERCIAL	0.79	0.81	0.83	0.88

* Table 6-6 in CO Springs, Drainage Criteria Manual Revised May 2014

Composite Runoff Coefficients and Percent Imperviousness for Developed Drainage Basins

BASIN DESIG.	OVERALL AREA (sf)	LANDSCAPE AREA (sf)	PAVED AREA (sf)	ROOF AREA (sf)	COMMERCIAL AREA (sf)	2-YEAR COEFF.	5-YEAR COEFF.	10-YEAR COEFF.	100-YEAR COEFF.	PERCENT IMPERVIOUS
D-2A	19,537	0	0	0	19,537	0.79	0.81	0.83	0.88	95%
D-2B	13,785	1,372	12,413	0	0	0.80	0.82	0.84	0.90	90%
D-2C	2,303	0	0	2,303	0	0.71	0.73	0.75	0.81	90%
D-2D	8,949	2,242	6,707	0	0	0.67	0.69	0.73	0.81	75%
TOTAL D	44,574	3,614	19,120	2,303	19,537					89%
OS-1	696	377	319	0	0	0.42	0.46	0.50	0.63	46%
OS-2A	9,820	6,687	3,133	0	0	0.30	0.34	0.40	0.54	32%
OS-3	1,324	792	532	0	0	0.37	0.41	0.46	0.60	40%
TOTAL OS	11,840	7,856	3,984	0	0					34%
TOTAL LOT 2B	56,414	11,470	23,104	2,303	19,537					78%

PROJECT: Lot 2B, Claremont Ranch Filing No. 9B
 LOCATION: Marksheffel Rd. and Constitution Ave

Project No.: EDI0040
 Date: November 16, 2015
 Engineer: Jenny Romano

5-YR RUNOFF COMPUTATIONS (RATIONAL METHOD)

BASIN INFORMATION				DIRECT RUNOFF				TOTAL RUNOFF				REMARKS
DESIGN PT.	BASIN	AREA (acres)	RUNOFF COEFF.	Tc (min)	C x A (acres)	I (in/hr)	Q (cfs)	Tc (min)	$\Sigma C \times A$ (acres)	I (in/hr)	Q (cfs)	
1	D-2A	0.45	0.81	5.00	0.36	5.17	1.88	5.00	0.62	5.17	3.22	Basins D-2A, D-2B Basins D-2A, D-2B, D-2C, D-2D
2	D-2B	0.32	0.82	5.00	0.26	5.17	1.34					
3	D-2C	0.05	0.73	5.00	0.04	5.17	0.20					
4	D-2D	0.21	0.69	5.00	0.14	5.17	0.74					
5	OS-1	0.02	0.46	11.45	0.01	3.93	0.03					
6	OS-2A	0.23	0.34	9.49	0.08	4.21	0.32					
7	OS-3	0.03	0.41	5.00	0.01	5.17	0.06					

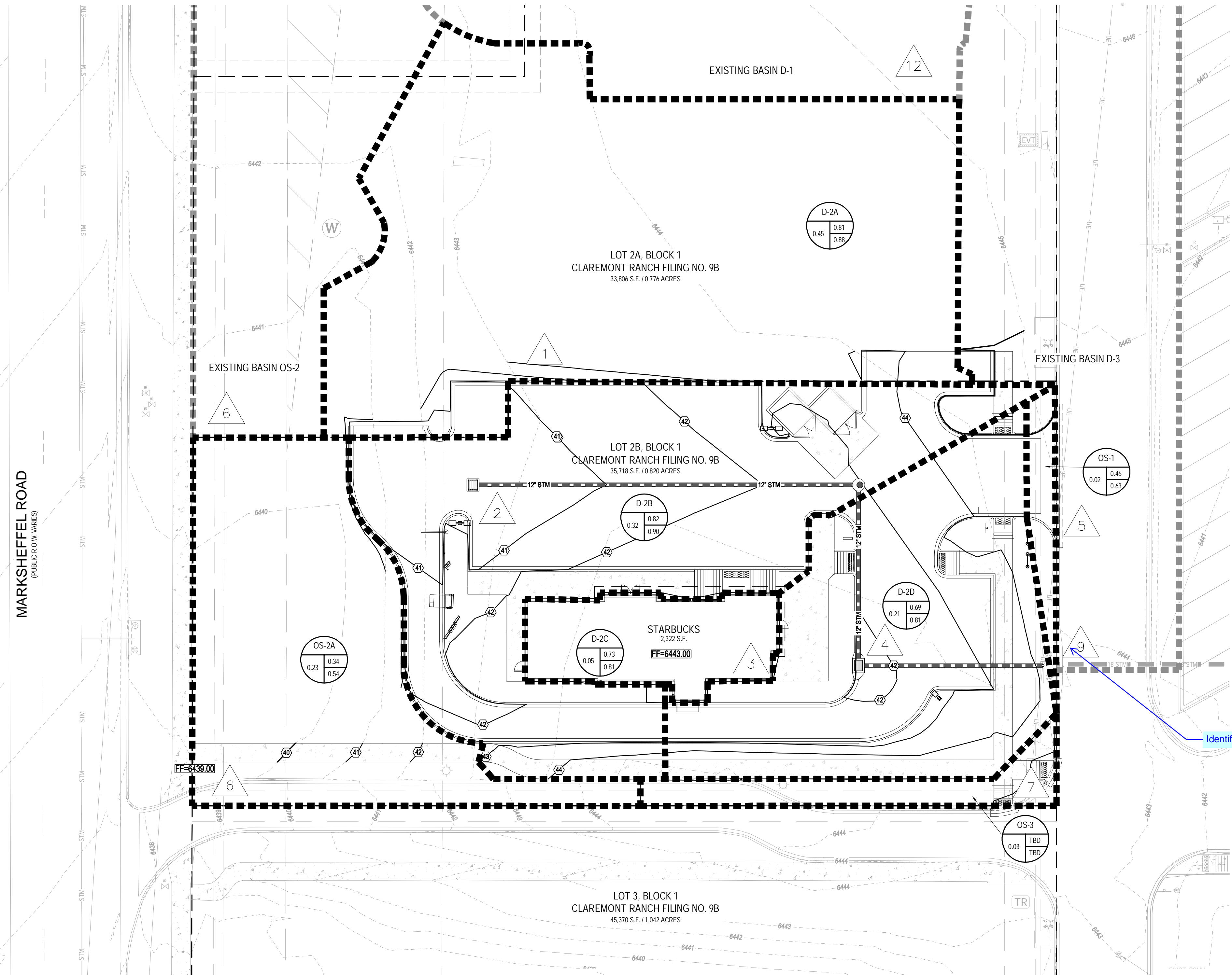
PROJECT: Lot 2B, Claremont Ranch Filing No. 9B
 LOCATION: Marksheffel Rd. and Constitution Ave

Project No.: EDI0040
 Date: November 16, 2015
 Engineer: Jenny Romano

100-YR RUNOFF COMPUTATIONS (RATIONAL METHOD)

BASIN INFORMATION				DIRECT RUNOFF				TOTAL RUNOFF				REMARKS
DESIGN PT.	BASIN	AREA (acres)	RUNOFF COEFF.	Tc (min)	C x A (acres)	I (in/hr)	Q (cfs)	Tc (min)	$\Sigma C \times A$ (acres)	I (in/hr)	Q (cfs)	
1	D-2A	0.45	0.88	5.00	0.39	8.68	3.43					Basins D-2A, D-2B Basins D-2A, D-2B, D-2C, D-2D
2	D-2B	0.32	0.90	5.00	0.28	8.68	2.47	5.00	0.68	8.68	5.90	
3	D-2C	0.05	0.81	5.00	0.04	8.68	0.37					
4	D-2D	0.21	0.81	5.00	0.17	8.68	1.44	5.00	0.89	8.68	7.71	
5	OS-1	0.02	0.63	11.45	0.01	6.59	0.07					
6	OS-2A	0.23	0.54	9.49	0.12	7.06	0.87					
7	OS-3	0.03	0.60	5.00	0.02	8.68	0.16					

Use minimum Time of Concentration = 5 minutes
 Use composite coefficients



MARKSHEFFEL ROAD
(PUBLIC R.O.W. VARIES)

DRAINAGE LEGEND

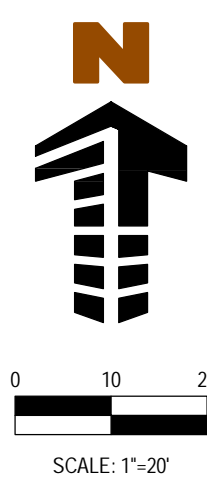
- - - - PROPERTY BOUNDARY LINE
- - - - ADJACENT PROPERTY BOUNDARY LINE
- - - - EASEMENT BOUNDARY LINE
- - - - PROPOSED MAJOR CONTOUR
- - - - PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- ⊗ EXISTING MANHOLE
- ⊙ PROPOSED MANHOLE
- ▣ PROPOSED INLETS
- ▣ EXISTING BASIN BOUNDARY
- ▣ PROPOSED BASIN BOUNDARY

- A-1
- BASIN DESIGNATION
- 5-YEAR RUNOFF COEFFICIENT
- 100-YEAR RUNOFF COEFFICIENT
- BASIN AREA IN ACRES

FLOW SUMMARY

DESIGN POINT	BASIN	DIRECT RUNOFF		TOTAL RUNOFF		INCLUDED BASINS
		5-YEAR	100-YEAR	5-YEAR	100-YEAR	
1	D-2A	1.88	3.43			
2	D-2B	1.34	2.47	3.22	5.90	D-2A, D-2B
3	D-2C	0.20	0.37			
4	D-2D	0.74	1.44	4.15	7.71	D-2A, D-2B, D-2C, D-2D
5	OS-1	0.03	0.07			
6	OS-2A	0.32	0.87			
7	OS-3	0.06	0.16			

Identify the Q at DP 9.



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CLAREMONT RANCH
 FILING NO. 9B
 LOT 2B, BLOCK 1
 CONSTITUTION AND MARKSHEFFEL
 EL PASO COUNTY, COLORADO

#	Date	Issue / Description	Init.

Project No: EDI000040
 Drawn By: RDG
 Checked By: BMR
 Date: 11/17/17

DRAINAGE PLAN

C:\Program Development\CS\Colorado\Browns\ElDorado\Constitution\MarkSheffel\6443\2B.dwg, P:\on\clawing_jerry\Drawings\11/17/17

Markup Summary

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Subject: Text Box
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Author: dsdlaforce
Date: 12/12/2017 5:25:17 PM
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Add the EPC Standard Signature Blocks:
Design 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 County for drainage reports and said report is in conformity with the applicable 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.

[Name, P.E. # _____]
Date

Owner/Developer's Statement:

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

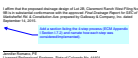
[Name, Title]
Date
[Business Name]
[Address]

El Paso County:

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

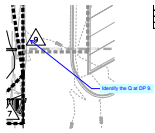
Jennifer Irvine, P.E.
Date
County Engineer / ECM Administrator

Conditions:



Subject: Callout
Page Label: 2
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Date: 12/12/2017 5:25:19 PM
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Add a section listing the 4-step process (ECM Appendix I Section 1.7.2) and narrate how each step was considered/implemented).



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Identify the Q at DP 9.