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 El Paso 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.

Richard L. Schindler, P.E. #33997 Date
For and on Behalf of Core Engineering Group, LLC

OWNER'S STATEMENT

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

Lorson, LLC Date

By
Jeff Mark

Title
Manager

Address
212 N. Wahsatch Avenue, Suite 301, Colorado Springs, CO 80903

FLOODPLAIN STATEMENT

To the best of my knowledge and belief, this development is not located within a designated floodplain as shown on Flood Insurance Rate Map Panel No. and 08041C0976 G, dated December 7, 2018. (See Appendix A, FEMA FIRM Exhibit)

Richard L. Schindler, #33997 Date

EL PASO COUNTY

Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteri[illegible], and Engineering Criteria Manual, As Amended.

Remove

~~Jennifer Irvine~~ Date
County Engineer/ECM Administrator

Conditions: _____

Summary of Comments on Microsoft Word - 100.064-pdr

Page: 3

Author: CDurham Subject: Callout Date: 7/20/2022 6:23:18 PM
Remove

Author: RSchindler Subject: Sticky Note Date: 7/25/2022 2:58:06 PM
TEXT REMOVED

Author: CDurham Subject: Line Date: 7/20/2022 6:23:07 PM

Author: dsdrice Subject: Callout Date: 7/22/2022 4:29:53 PM
These don't appear to add up to 37.6

Author: RSchindler Subject: Sticky Note Date: 7/25/2022 3:46:10 PM
NUMBERS UPDATED

Design Point 53
Design Point 53 is located in the SE corner of Danis Drive and Walleye Drive and accepts flows from Basin C8.3a. Basin OS-C4a existing and future flows will be diverted north to Des. Pt. 63a.

(5-year storm)
Tributary Basins: C8.3a **Inlet/MH Number:** Inlet DP53
Upstream flowby: **Total Street Flow:** 10.6cfs

Flow Intercepted: 9.7cfs **Flow Bypassed:** 0.9cfs
Inlet Size: 15' type R, on-grade

Street Capacity: Street slope = 1.4%, capacity = 10.5cfs, okay

(100-year storm)
Tributary Basins: C8.3a **Inlet/MH Number:** Inlet DP53
Upstream flowby: **Total Street Flow:** 26.5cfs

Flow Intercepted: 16.2cfs **Flow Bypassed:** 10.3cfs
Inlet Size: 15' type R, on-grade

Street Capacity: Street slope = 1.4%, capacity = 44.1cfs (half street) is okay

Design Point 54
Design Point 54 is located in the NE corner of Donnas Drive and Walleye Drive and accepts flows from Basin C8.3b& C8.3c.

(5-year storm)
Tributary Basins: C8.3b & C8.3c **Inlet/MH Number:** Inlet DP54
Upstream flowby: 0.9cfs from Des.Pt.53 **Total Street Flow:** 11.8cfs

Flow Intercepted: 11.7cfs **Flow Bypassed:** 0.1cfs
Inlet Size: 20' type R, on-grade

Street Capacity: Street slope = 1.5%, capacity = 11.8cfs, okay

(100-year storm)
Tributary Basins: C8.3b & C8.3c **Inlet/MH Number:** Inlet DP54
Upstream flowby: 10.3cfs from Des.Pt.53 **Total Street Flow:** 37.6cfs

Flow Intercepted: 24.0cfs **Flow Bypassed:** 13.6cfs
Inlet Size: 20' type R, on-grade

Street Capacity: Street slope = 1.5%, capacity = 45.0cfs (half street) is okay

Design Point 55
Design Point 55 is the storm sewer pipe flow from Design Pt's 53 and 54. The total pipe flow is 21.4cfs/40.2cfs in the 5/100-year storm events in the storm sewer.

These don't appear to add up to 37.6

Author: dsdrice Subject: Callout Date: 7/22/2022 4:02:45 PM

Please add DPs where applicable

Author: RSchindler Subject: Sticky Note Date: 7/25/2022 3:47:05 PM

WE AGREED TO REMOVE ALL THE DP'S BECAUSE IT WAS CONFUSING IF NUMBERS DIDN'T ADD UP DUE TO UPSTREAM RUNBY NOT ACCOUNTED FOR IN THIS SPREADSHEET.

CORE ENGINEERING GROUP

Standard Form SF-2. Storm Drainage System Design (Rational Method Procedure)

Calculated By: Leonard Beasley
Date: Feb. 19, 2021
Checked By: Leonard Beasley

Job No: 100.064
Project: The Ridge at Lorson Ranch
Design Storm: **100 - Year Event (Proposed)**

Street or Basin	Design Point	Direct Runoff							Total Runoff				Street		Pipe			Travel Time			Remarks
		Area Design	Area (A)	Runoff Coeff. (C)	t_c	CA	i	Q	t_c	$\sum$ (CA)	i	Q	Slope	Street Flow	Design Flow	Slope	Pipe Size	Length	Velocity	t_t	
			ac.		min.		in/hr	cfs	min		in/hr	cfs	%	cfs	cfs	%	in	ft	ft/sec	min	
C1.1			3.18	0.59	11.8	1.88	6.52	12.2													
C1.2			1.52	0.59	11.5	0.90	6.58	5.9													
C1.1-C1.2		4.70							11.8	2.77	6.52	18.1									
C1.3			6.71	0.59	21.8	3.96	4.97	19.7													
C1.1-C1.3		11.41							26.1	6.73	4.52	30.4									
C1.4			2.51	0.59	13.2	1.48	6.24	9.2													
C1.5			1.61	0.59	9.9	0.95	6.96	6.6													
C1.6			9.35	0.59	20.5	5.52	5.12	28.3													
C1.5-C1.6		10.96							20.5	6.47	5.12	33.1									
C3.1			6.20	0.59	14.7	3.66	5.96	21.8													
C3.2			5.01	0.59	15.3	2.96	5.86	17.3													
C3.1-C3.2		11.21							16.1	6.61	5.73	37.9									
C3.3			4.75	0.59	11.2	2.80	6.65	18.6													
C3.1-C3.3		15.96							18.1	9.42	5.44	51.3									
C3.4			3.77	0.59	9.4	2.22	7.10	15.8													
C3.1-C3.4		19.73							18.9	11.64	5.32	62.0									
C3.5			6.32	0.59	14.1	3.73	6.07	22.6													
C3.1-C3.5		26.05							19.9	15.37	5.20	80.0									
C3.6a			3.15	0.59	11.2	1.86	6.64	12.3													
C3.1-C3.6a		29.20							20.0	17.23	5.19	89.3									
C3.6b			4.80	0.59	16.8	2.83	5.63	15.9													
C3.7			4.58	0.59	9.4	2.70	7.08	19.1													
C3.1-C3.7		38.58							21.0	22.76	5.06	115.2									
C3.8			6.51	0.59	16.1	3.84	5.73	22.0													
C3.9			4.55	0.59	11.1	2.68	6.66	17.9													
C3.1-C3.9		49.64							22.3	29.29	4.92	144.0									
C3.10			6.01	0.59	16.4	3.55	5.69	20.2													
C3.1-C3.10		55.65							24.4	32.83	4.69	153.9									
C4.1			4.61	0.59	20.3	2.72	5.15	14.0													
C4.2			3.08	0.59	15.7	1.82	5.79	10.5													
C4.1-C4.2		7.69							20.6	4.54	5.11	23.2									
C4.3			3.07	0.60	10.7	1.84	6.76	12.4													
C4.4			3.29	0.60	10.4	1.97	6.84	13.5													
C4.1-C4.4		14.05							22.6	8.35	4.88	40.8									

Please add DPs where applicable

Author: dsdrice Subject: Text Box Date: 7/22/2022 2:55:05 PM
Duplicate - delete

Author: RSchindler Subject: Sticky Note Date: 7/25/2022 3:49:25 PM
PAGE REMOVED

Duplicate - delete

CORE ENGINEERING GROUP

Standard Form SF-2. Storm Drainage System Design (Rational Method Procedure)

Calculated By: Leonard Beasley
Date: Feb. 19, 2021
Checked By: Leonard Beasley

Job No: 100.064
Project: The Ridge at Lorson Ranch
Design Storm: **100 - Year Event (Proposed)**

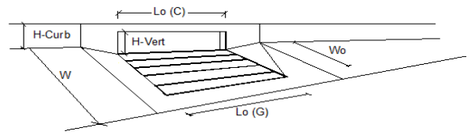
Street or Basin	Design Point	Direct Runoff							Total Runoff				Street		Pipe			Travel Time			Remarks
		Area Design	Area (A)	Runoff Coeff. (C)	t_c	CA	i	Q	t_c	$\sum$ (CA)	i	Q	Slope	Street Flow	Design Flow	Slope	Pipe Size	Length	Velocity	t_t	
			ac.		min.		in/hr	cfs	min		in/hr	cfs	%	cfs	cfs	%	in	ft	ft/sec	min	
C1.1			3.18	0.59	11.8	1.88	6.52	12.2													
C1.2			1.52	0.59	11.5	0.90	6.58	5.9													
C1.1-C1.2		4.70							11.8	2.77	6.52	18.1									
C1.3			6.71	0.59	21.8	3.96	4.97	19.7													
C1.1-C1.3		11.41							26.1	6.73	4.52	30.4									
C1.4			2.51	0.59	13.2	1.48	6.24	9.2													
C1.5			1.61	0.59	9.9	0.95	6.96	6.6													
C1.6			9.35	0.59	20.5	5.52	5.12	28.3													
C1.5-C1.6		10.96							20.5	6.47	5.12	33.1									
C3.1			6.20	0.59	14.7	3.66	5.96	21.8													
C3.2			5.01	0.59	15.3	2.96	5.86	17.3													
C3.1-C3.2		11.21							16.1	6.61	5.73	37.9									
C3.3			4.75	0.59	11.2	2.80	6.65	18.6													
C3.1-C3.3		15.96							18.1	9.42	5.44	51.3									
C3.4			3.77	0.59	9.4	2.22	7.10	15.8													
C3.1-C3.4		19.73							18.9	11.64	5.32	62.0									
C3.5			6.32	0.59	14.1	3.73	6.07	22.6													
C3.1-C3.5		26.05							19.9	15.37	5.20	80.0									
C3.6a			3.15	0.59	11.2	1.86	6.64	12.3													
C3.1-C3.6a		29.20							20.0	17.23	5.19	89.3									
C3.6b			4.80	0.59	16.8	2.83	5.63	15.9													
C3.7			4.58	0.59	9.4	2.70	7.08	19.1													
C3.1-C3.7		38.58							21.0	22.76	5.06	115.2									
C3.8			6.51	0.59	16.1	3.84	5.73	22.0													
C3.9			4.55	0.59	11.1	2.68	6.66	17.9													
C3.1-C3.9		49.64							22.3	29.29	4.92	144.0									
C3.10			6.01	0.59	16.4	3.55	5.69	20.2													
C3.1-C3.10		55.65							24.4	32.83	4.69	153.9									
C4.1			4.61	0.59	20.3	2.72	5.15	14.0													
C4.2			3.08	0.59	15.7	1.82	5.79	10.5													
C4.1-C4.2		7.69							20.6	4.54	5.11	23.2									
C4.3			3.07	0.60	10.7	1.84	6.76	12.4													
C4.4			3.29	0.60	10.4	1.97	6.84	13.5													
C4.1-C4.4		14.05							22.6	8.35	4.88	40.8									

Author: dsdrice Subject: Text Box Date: 7/22/2022 4:28:08 PM
See comment in narrative section

Author: RSchindler Subject: Sticky Note Date: 7/25/2022 3:49:47 PM
INLET SPREADSHEET UPDATED

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	20.00	20.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**11.7**	**24.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**13.6**	**cfs**
Capture Percentage = Q_a/Q_o =	**$C_{\%}$ =**	**99**	**64**	**%**

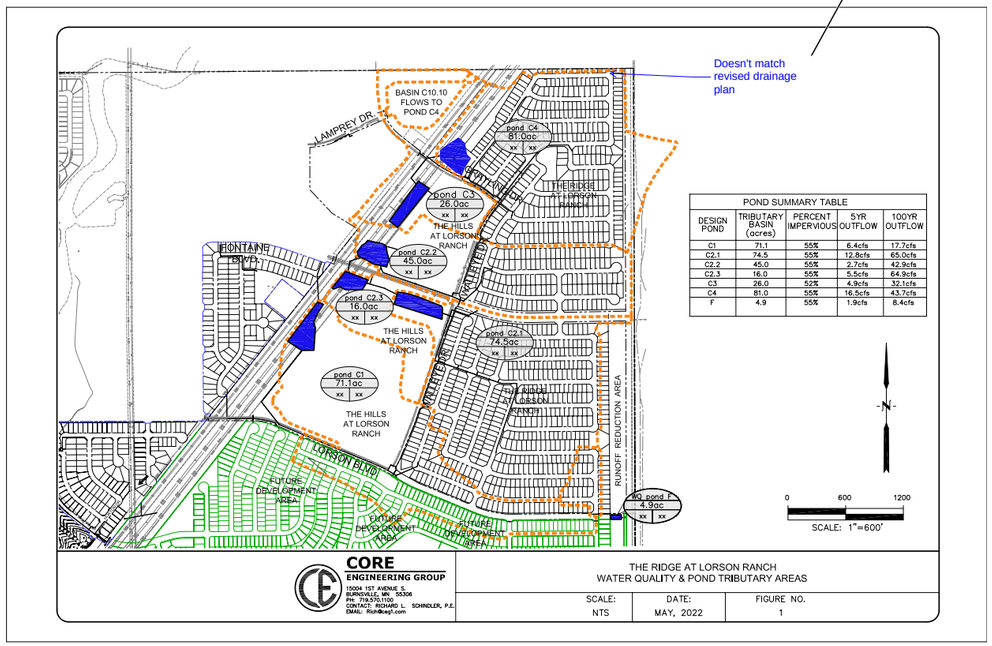
See comment in narrative section

Author: dsdrice Subject: Callout Date: 7/22/2022 5:00:08 PM

Doesn't match revised drainage plan

Author: RSchindler Subject: Sticky Note Date: 7/25/2022 3:50:09 PM

PLAN UPDATED



Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1	(2)	36.30	36 c	342.0	5792.17	5796.96	1.401	5794.98	5798.88	n/a	5798.88 j	End
2		21.40	30 c	273.0	5797.46	5800.74	1.202	5799.48	5802.29	n/a	5802.29 j	1
3		9.70	18 c	247.6	5801.24	5812.51	4.552	5802.52	5813.70	n/a	5813.70 j	2
4		9.70	18 c	94.8	5813.07	5816.39	3.501	5813.88	5817.58	0.65	5817.58	3
5		9.70	18 c	61.5	5817.85	5818.86	1.480	5818.93	5820.05	0.65	5820.05	4
6		11.70	24 c	8.0	5801.50	5801.74	3.003	5802.77	5802.95	n/a	5802.95	2
7		9.00	24 c	11.0	5797.96	5798.29	3.001	5799.65	5799.54	0.30	5799.83	1
8		5.90	18 c	23.0	5798.46	5798.81	1.522	5799.60	5799.74	0.41	5799.74	1

Highlighted items do not match CD's

C8.3 basins 5yr storm | Number of lines: 8 | Run Date: 05-24-2022

NOTES: c = cir; e = ellip; b = box; Return period = 5 Yrs. ; j - Line contains hyd. jump.

Hydraflow Storm Sewers 2005

Author: CDurham Subject: Highlight Date: 7/20/2022 6:39:41 PM
5801.24

Author: CDurham Subject: Highlight Date: 7/20/2022 6:39:34 PM
5812.51

Author: CDurham Subject: Highlight Date: 7/20/2022 6:38:47 PM
61.5

Author: CDurham Subject: Highlight Date: 7/20/2022 6:39:13 PM
5817.95

Author: CDurham Subject: Highlight Date: 7/20/2022 6:38:59 PM
1.480

Author: CDurham Subject: Highlight Date: 7/20/2022 6:40:00 PM
8.0

Author: CDurham Subject: Highlight Date: 7/20/2022 6:40:08 PM
5801.74

Author: CDurham Subject: Highlight Date: 7/20/2022 6:39:58 PM
3.003

Author: CDurham Subject: Text Box Date: 7/20/2022 6:40:20 PM
Highlighted items do not match CD's

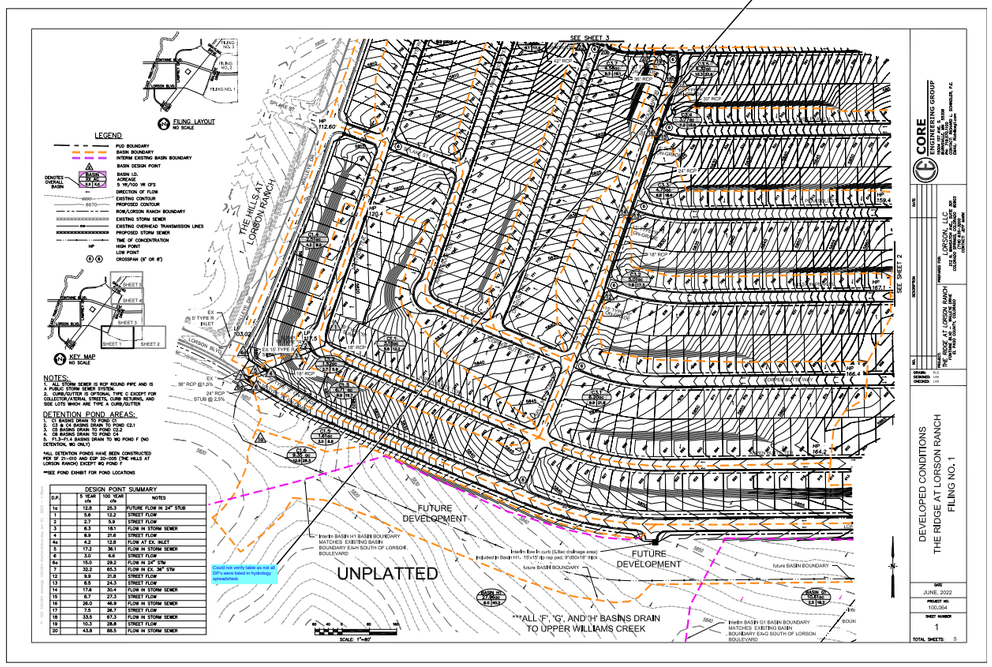
Author: RSchindler Subject: Sticky Note Date: 7/25/2022 4:18:16 PM
UPDATED MODEL.

Author: dsdrice Subject: Text Box Date: 7/22/2022 4:47:53 PM

Could not verify table as not all DP's were listed in hydrology spreadsheet.

Author: RSchindler Subject: Sticky Note Date: 7/26/2022 11:31:07 AM

WE AGREED TO REMOVE ALL THE DP'S BECAUSE IT WAS CONFUSING IF NUMBERS DIDN'T ADD UP DUE TO UPSTREAM RUNBY NOT ACCOUNTED FOR IN THIS SPREADSHEET.



Author: dsdrice Subject: Callout Date: 7/22/2022 5:01:51 PM

This acreage is too large to discharge offsite untreated and needs additional facilities. It would be logical to install the curb and gutter as previously shown and then remove it once the offsite downstream improvements have been constructed.

Author: RSchindler Subject: Sticky Note Date: 7/27/2022 9:57:47 AM

TEMP CURB ADDED TO REDIRECT TO REAGAN RIDGE DR.

Author: dsdrice Subject: Callout Date: 7/22/2022 5:05:11 PM

Should these be lower if C9 flows have been separated?

Author: RSchindler Subject: Sticky Note Date: 7/27/2022 9:58:01 AM

C9 FLOWS ARE ADDED TO THIS POND.