



CONSULTING. ENGINEERING. CONSTRUCTION.

July 1, 2022

Town of Castle Rock
Attn: TJ Kucewesky
100 N. Wilcox Street
Castle Rock, CO 80104

**RE: FINAL DRAINAGE CONFORMANCE LETTER FOR ENCLAVE AT FOUNDERS
VILLAGE FIL. 21
TOWN OF CASTLE ROCK PROJECT #: FCO22-0031**

This document presents a drainage conformance letter for Amendment No. 3 of the Founders Village Filing No. 21 Site Development Plan located at the northeast corner of Enderud Boulevard and Wagonwheel Trail. The 16.58-acre site lies within the Villages at Castle Rock Development and is in Zone X per Flood Insurance Rate Maps 08035C0193G / 08035C0306G. The Phase III Drainage Report and Construction Documents for Founders Village Filing No. 21 were prepared by Civil Design Group, Inc.

The site is currently divided into 13 sub-basins that drain north and east to Mitchell Gulch:

- Under developed conditions, Basin A (3.00 ac) and Offsite Basin 01 (8.5 ac) drain via curb and gutter to two Type R inlets within Wagonwheel Trail (Design Point 10) and 24" storm sewer to two 24" culverts. Runoff is conveyed to an existing channel with two constructed wetlands for water quality treatment. Basin C (1.97 ac) drains via sheet flow to this channel. The channel drains to the West Tributary to Mitchell Gulch at Design Point 12.
- Basins B, G, J, K, L, and M (6.08 ac) contain half of the roofs for proposed buildings facing Mitchell Gulch and its West Tributary. Runoff from the roofs and adjacent landscaping are conveyed via sheet flow over native grasses to Mitchell Gulch and its West Tributary, providing water quality treatment.
- Runoff from Basins D, E, F, H, and I (6.65 ac) drains to Canyon View Drive and is conveyed via curb and gutter to two Type R inlets adjacent to Lot 37 on Canyon View Drive (Design Point 3). A storm sewer consisting of an 18" low-flow pipe and 24" high-flow pipe conveys the runoff underneath Canyon View Drive and ultimately drains to the West Tributary to Mitchell Gulch.

The proposed changes covered by this drainage conformance letter consist of adjustments to retaining wall heights to prevent runoff from overtopping onto adjacent properties or collecting at low points and pooling. These adjustments adhere to the drainage patterns in the approved Phase III Drainage Report.

The proposed retaining wall adjustments do not impact approved drainage patterns or change the runoff volumes from the Phase III Drainage Report and allow runoff to be conveyed along the intended drainage paths. Because Atwell is not proposing to change any of the drainage patterns or basin sizes, we have attached to this letter the drainage basin calculations and the Phase III Drainage Map prepared by Civil Design Group for reference.

Respectfully,
ATWELL, LLC

Daniel Madruga, PE
Team Leader



CALCULATED BY: TMC
DATE: 7/25/01
CHECKED BY: RN

STANDARD FORM SF-3
STORM DRAINAGE DESIGN
(RATIONAL METHOD PROCEDURE)

99-0008
THE ENCLAVE AT FOUNDERS VILLAGE

TABLE 2 - COMPOSITE RUNOFF COEFFICIENTS

BASIN		A	C ₅	C ₁₀₀	A*C ₅	A*C ₁₀₀	I	I * Area
A	IMP	2.40	0.88	0.93	2.11	2.23	100	240.0
	GRASS	0.60	0.15	0.50	0.09	0.30	2	1.2
	Total	3			2.20	2.53		241.2
					0.73	0.84		80.4%
B	IMP	0.57	0.88	0.93	0.50	0.53	100	57.0
	GRASS	1.15	0.15	0.50	0.17	0.58	2	2.3
	Total	1.72			0.67	1.11		59.3
					0.39	0.64		34.5%
C	IMP	0.61	0.88	0.93	0.54	0.57	100	61.0
	GRASS	1.36	0.15	0.50	0.20	0.68	2	2.7
	Total	1.97			0.74	1.25		63.7
					0.38	0.63		32.3%
D	IMP	1.84	0.88	0.93	1.62	1.71	100	184.0
	GRASS	0.16	0.15	0.50	0.02	0.08	2	0.3
	Total	2			1.64	1.79		184.3
					0.82	0.90		92.2%
E	IMP	0.79	0.88	0.93	0.70	0.73	100	79.0
	GRASS	0.76	0.15	0.50	0.11	0.38	2	1.5
	Total	1.55			0.81	1.11		80.5
					0.52	0.72		51.9%
F	IMP	0.59	0.88	0.93	0.52	0.55	100	59.0
	GRASS	0.57	0.15	0.50	0.09	0.29	2	1.1
	Total	1.16			0.60	0.83		60.1
					0.52	0.72		51.8%
G	IMP	0.11	0.88	0.93	0.10	0.10	100	11.0
	GRASS	0.62	0.15	0.50	0.09	0.31	2	1.2
	Total	0.73			0.19	0.41		12.2
					0.26	0.56		16.8%
H	IMP	0.72	0.88	0.93	0.63	0.67	100	72.0
	GRASS	0.16	0.15	0.50	0.02	0.08	2	0.3
	Total	0.88			0.66	0.75		72.3
					0.75	0.85		82.2%
I	IMP	0.53	0.88	0.93	0.47	0.49	100	53.0
	GRASS	0.52	0.15	0.50	0.08	0.26	2	1.0
	Total	1.05			0.54	0.75		54.0
					0.52	0.72		51.5%
J	IMP	0.41	0.88	0.93	0.36	0.38	100	41.0
	GRASS	1.42	0.15	0.50	0.21	0.71	2	2.8
	Total	1.83			0.57	1.09		43.8
					0.31	0.60		24.0%
K	IMP	0.55	0.88	0.93	0.48	0.51	100	55.0
	GRASS	1.21	0.15	0.50	0.18	0.61	2	2.4
	Total	1.76			0.67	1.12		57.4
					0.38	0.63		32.6%
L	IMP	0.04	0.88	0.93	0.04	0.04	100	4.0
	GRASS	0.26	0.15	0.50	0.04	0.13	2	0.5
	Total	0.3			0.07	0.17		4.5
					0.25	0.56		15.1%
M	IMP	0.06	0.88	0.93	0.05	0.06	100	6.0
	GRASS	0.34	0.15	0.50	0.05	0.17	2	0.7
	Total	0.4			0.10	0.23		6.7
					0.26	0.56		16.7%

Designed by: RN
 Checked by: RN

Design Date: 3/16/2004
 Date Checked: 3/16/2004

FOUNDERS VILLAGE FILING NO. 21

TABLE 3 - TIME OF CONCENTRATION CALCULATIONS

Design Point Data			Initial/Overland Time (Ti)			Travel Time (Tt)				Tc CHECK			Final	Remarks
Design Point (Basins)	A acre	C _s	Length feet	Slope %	Ti min	Length feet	Slope %	Vel. fps	Tt min	Comp Tc=Ti+Tt	Total Length ft	Tc=L/180+10 min	Tc > 5 min	
O1	8.50	0.45	170	2.0	12.1	1450	1.5	2.4	10.1	22.2	1620	19.0	19.0	use
O2	10.70	0.45	150	2.0	11.4	700	1.7	2.5	4.7	16.1	850	14.7	14.7	use
O3	8.30	0.45	100	2.0	9.3	1700	0.8	1.8	15.7	25.0	1800	20.0	20.0	use
O4	0.60	0.15	135	7.0	10.4	0	0.8	1.8	0.0	10.4	135	10.8	10.4	use
O5	1.10	0.15	100	1.0	17.1	170	0.5	1.5	1.9	19.0	270	11.5	11.5	use
A	3.00	0.73	110	1.8	5.8	800	2.4	3.0	4.4	10.2	910	15.1	10.2	use
B	1.72	0.39	110	12.0	5.9					5.9	110	10.6	5.9	use
C	1.97	0.38	210	10.5	8.6					8.6	210	11.2	8.6	use
D	2.00	0.82				630	2.0	2.8	3.8	3.8	630	13.5	5.0	use
E	1.55	0.52	100	5.0	6.1	850	1.5	2.4	5.9	12.0	950	15.3	12.0	use
F	1.17	0.52	100	6.0	5.8	1100	2.8	3.2	5.7	11.5	1200	16.7	11.5	use
G	0.73	0.26	150	11.3	8.3					8.3	150	10.8	8.3	use
H	0.88	0.75	100	2.0	5.0	850	2.8	3.2	4.4	9.4	950	15.3	9.4	use
I	1.05	0.52	36	2.0	5.0	850	2.8	3.2	4.4	9.4	886	14.9	9.4	use
J	1.83	0.31	200	10.0	9.4					9.4	200	11.1	9.4	use
K	1.76	0.38	100	3.5	8.6	300	3.5	2.8	1.8	10.4	400	12.2	10.4	use
L	0.30	0.26	95	16.0	5.9					5.9	95	10.5	5.9	use
M	0.40	0.26	95	16.0	5.9					5.9	95	10.5	5.9	use

TABLE 4 - 5 YEAR HYDROLOGIC CALCULATIONS

CALCULATED BY: REN
DATE: 3/26/2004
CHECKED BY: RN

JOB NO: 02-02666
PROJECT: Founders Village Filing No. 21
DESIGN STORM: 5 Year

STREET	DESIGN POINT	AREA DESIG.	DIRECT RUNOFF					TOTAL RUNOFF					CHANNEL		PIPE		TRAVEL TIME			REMARKS
			AREA (Acres)	RUNOFF COEFF	Tc (min)	C A (Acres)	I (in/hour)	Q (cfs)	Tc (min)	(C A) (Acres)	I (in/hour)	Q (cfs)	SLOPE (%)	DESIGN FLOW (cfs)	DESIGN FLOW (cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	
Exist. Inlet	8	O3	8.30	0.45	20.0	3.74	2.85	10.6					1.2				850	2.2	6.4	INLET CAPTURE 4 CFS STREET FLOW TO DP2
		O2	10.70	0.45	14.7	4.82	3.25	15.6												
Exist. Inlets	2	O2, O3 Ignore Inlet at D.P. 8	19.00						26.4	8.55	2.40	20.5								
		F	1.17	0.52	11.5	0.61	3.60	2.2												
		I	1.05	0.52	9.4	0.55	3.85	2.1					2.5				615	3.1	3.3	STREET FLOW TO DP3
		F, I	2.22						12.7	1.15	3.40	3.9								
		E	1.55	0.52	12.0	0.81	3.50	2.8												
5' Type R Inlet	3	E, F, I	3.77						12.7	1.96	3.40	6.7								
		H	0.88	0.75	9.4	0.66	3.85	2.5					2.5				615	3.1	3.3	STREET FLOW TO DP4
		D	2	0.82	5.0	1.64	4.90	8.0												
15' Type R Inlet	4	D, H	2.88						12.7	2.30	3.40	7.8								
	5-6	D, E, F, H, I	6.65						12.7	4.26	3.40	14.5								
Flows Diverted to Aqua-Swirl	5	65% of (D, E, F, H, I)	4.32						12.7	2.77	3.40	9.4								SEE TABLE 7
Flows Diverted to 30" Sewer	6	35% of (D, E, F, H, I)	2.33						12.7	1.49	3.40	5.1								SEE TABLE 7
30" Outfall	7	O2, O3, 35% of (D, E, F, H, I) Ignore Inlet at D.P. 8	21.33						26.4	10.04	2.40	24.1								
		G	0.73	0.26	8.3	0.19	3.95	0.7												
		O4	0.6	0.15	10.4	0.09	3.75	0.3												
Exist. Culvert	14	O2-O4, D-I Ignore Inlet at D.P. 8	26.98						26.4	13.09	2.40	31.4								
		L	0.3	0.26	5.9	0.08	4.75	0.4												
Exist. Culvert	16	L plus 4cfs intercepted by exist. 5' Type R on 3% grade @ D.P. 8							5.9			4.4								
15' Type R Inlet	1	A	3	0.73	10.2	2.19	3.75	8.2												
Exist. Inlet	10	O1	8.5	0.45	19.0	3.83	2.85	10.9												
		C	1.97	0.38	8.6	0.75	3.90	2.9												
		O5	1.1	0.15	11.5	0.17	3.60	0.6												
Exist. Culverts	12	A, O1, C, O5	14.57						19.0	6.93	2.85	19.7								
Sheet Flow	11	B	1.72	0.39	5.9	0.67	4.75	3.2												
Sheet Flow	13	J	1.83	0.31	9.4	0.57	3.85	2.2												
Sheet Flow	15	K	1.1	0.45	10.4	0.50	3.75	1.9												
Sheet Flow	17	M	0.4	0.26	5.9	0.10	4.75	0.5												
Inlet on a 3% grade intercepts 4 cfs																				

STANDARD FORM SF-3
TABLE 5 - 100 YEAR HYDROLOGIC CALCULATIONS

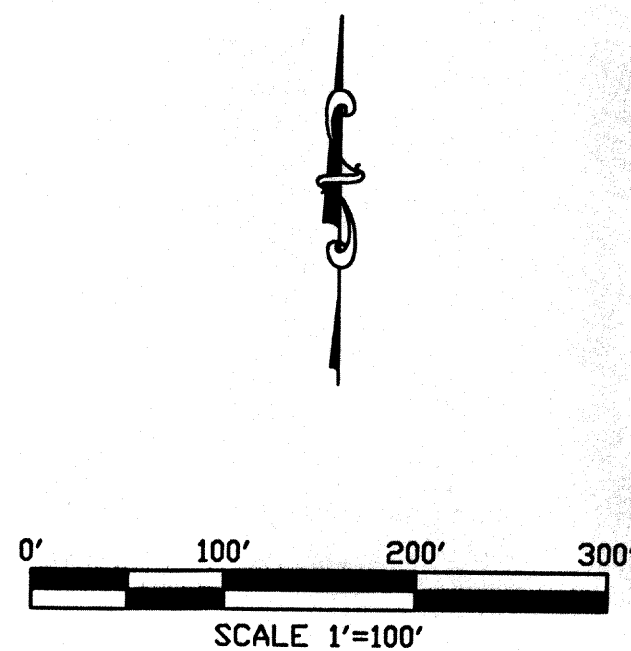
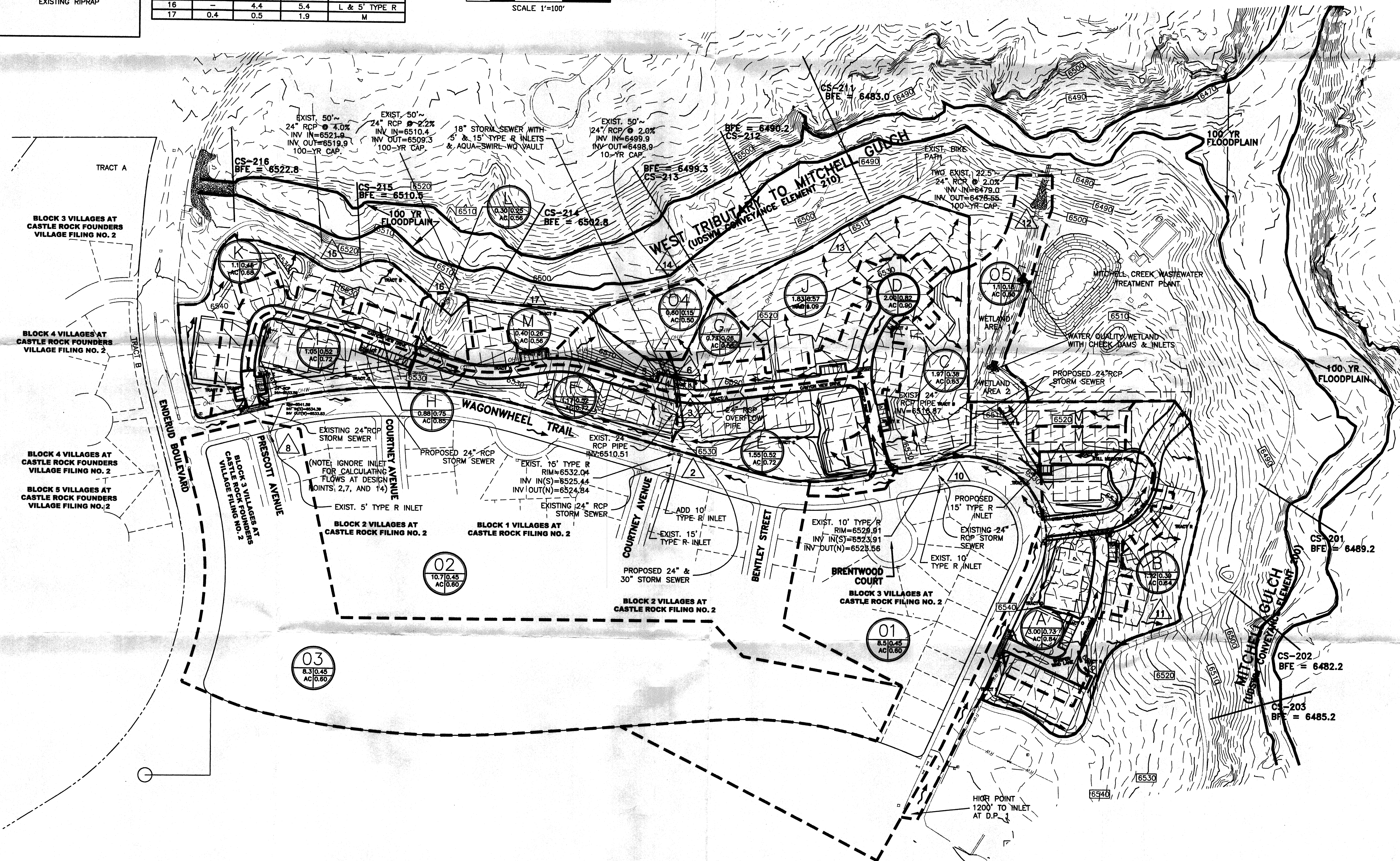
CALCULATED BY: REN
DATE: 3/26/2004
CHECKED BY: RN

JOB NO: 02-02666
PROJECT: Founders Village Filing No. 21
DESIGN STORM: 100 Year

STREET	DESIGN POINT	AREA DESIG.	DIRECT RUNOFF					TOTAL RUNOFF					CHANNEL		PIPE		TRAVEL TIME			REMARKS			
			AREA (Acres)	RUNOFF COEFF	Tc (min)	C A (Acres)	I (in/hour)	Q (cfs)	Tc (min)	(C A) (Acres)	I (in/hour)	Q (cfs)	SLOPE (%)	DESIGN FLOW (cfs)	DESIGN FLOW (in)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (ft/s)		Tt (min)		
Exist. Inlet	8	O3	8.30	0.60	20.0	4.98	5.05	25.1					1.2				850	2.2	6.4	INLET CAPTURE 4 CFS STREET FLOW TO DP2			
		O2	10.70	0.60	14.7	6.42	5.90	37.9															
Exist. Inlets	2	O2, O3 Ignore Inlet at D.P. 8	19.00						26.4	11.40	4.35	49.6											
		I	1.05	0.72	9.4	0.76	7.15	5.4					2.5				615	3.1	3.3	STREET FLOW TO DP3			
		F	1.17	0.72	11.5	0.84	6.70	5.6															
		F, I	2.22						12.7	1.60	6.27	10.0											
		E	1.55	0.72	12.0	1.12	6.45	7.2															
5' Type R Inlet	3	E, F, I	3.77						12.7	2.71	6.27	17.0											
		H	0.88	0.85	9.4	0.75	7.15	5.3					2.5				615	3.1	3.3	STREET FLOW TO DP4			
		D	2	0.90	5.0	1.80	9.00	16.2															
15' Type R Inlet	4	D, H	2.88						12.7	2.55	6.27	16.0											
	5-6	D, E, F, H, I	6.65						12.7	5.26	6.27	33.0											
Flows Diverted to Aqua-Swirl	5	1/3 (D, E, F, H, I)	2.22						12.7	1.75	6.27	11.0								SEE TABLE 7			
Flows Diverted to 30" Sewer	6	2/3 (D, E, F, H, I)	4.43						12.7	3.51	6.27	22.0											
30" Outfall	7	O2, O3, 2/3*(D, E, F, H, I) Ignore Inlet at D.P. 8	23.43						26.4	14.91	4.35	64.9								SEE TABLE 7			
		G	0.73	0.56	8.3	0.41	7.60	3.1															
		O4	0.6	0.50	10.4	0.30	6.95	2.1															
Exist. Culvert	14	O2-O4, D-I Ignore Inlet at D.P. 8	26.98						26.4	17.37	4.35	75.6											
		L	0.3	0.56	5.9	0.17	8.50	1.4															
Exist. Culvert	16	L plus 4cfs intercepted by exist. 5' Type R on 3% grade @ D.P. 8							5.9			5.4											
15' Type R Inlet	1	A	3	0.84	10.2	2.52	7.10	17.9															
Exist. Inlet	10	O1	8.5	0.60	19.0	5.10	5.10	26.0															
		C	1.97	0.63	8.6	1.24	7.40	9.2															
		O5	1.1	0.50	11.5	0.55	6.70	3.7															
Exist. Culverts	12	A, O1, C,O5	14.57						19.0	9.41	5.10	48.0											
Sheet Flow	11	B	1.72	0.64	5.9	1.10	8.50	9.4															
Sheet Flow	13	J	1.83	0.60	9.4	1.10	7.15	7.9															
Sheet Flow	15	K	1.1	0.68	10.4	0.75	6.95	5.2															
Sheet Flow	17	M	0.4	0.56	5.9	0.22	8.50	1.9															

Figure 1 is a schematic diagram of a stormwater management system. It includes a circular basin designation with a cross inside, a table of values (1.00, 0.45, AC, 0.60), a scale bar for area in acres (5, 100), a vertical axis labeled C5 and C100, a dashed line for the proposed storm pipe and inlet, a triangle with '99' for the basin boundary, a wavy arrow for design point and drainage flow arrows, and a textured area for existing riprap.

DESIGN POINT	CONT AREA (ac)	Q (cfs)	Q ₁₀₀ (cfs)	BASINS
1	3.00	8.2	17.9	A
2	19.0	20.5	49.6	02,03
3	3.77	6.7	17.0	E,F,I
4	2.88	7.8	16.0	D,H
5		9.4	11.0	D,E,F,H,I
6		5.1	22.0	D,E,F,H,I
7		24.1	64.9	02,03,D,E,F,H,I
8	8.3	10.6	25.1	03
9	8.50	10.9	26.0	01
11	1.72	3.2	9.4	B
12	14.57	19.7	48.0	A,01,C,05
13	1.83	2.2	7.9	J
14	26.98	31.4	75.6	02-04,D-I
15	1.1	1.9	5.2	K
16	-	4.4	5.4	L & 5' TYPE R
17	0.4	0.5	1.9	M

[illegible]

**Civil
Design
Group, Inc.**
ENGINEERS + PLANNERS + SURVEYORS



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**FOUNDERS VILLAGE
FILING NO. 21**

PHASE III DRAINAGE PLAN

TOWN OF CASTLE ROCK, COLORADO

DATE: 2-7-03
SHEET NO.
DP1

JOB #: 99-000008

\\\\Downtown\\projects\\2002\\02-02666\\dwg\\CD\\Erosion Control\\666DP.dwg, 4/1/2004 4:17:37 PM, kbrown