

ARAPAHO ROAD  
STORMWATER PIPE CALCULATIONS - SEPTEMBER 16, 1997

COLLECTION POINT UPSTREAM STATION	COLLECTION POINT DOWNSTREAM STATION	DISTANCE BETWEEN COLLECTION POINTS	AREA NO.	AREA (ACRES)	INCREMENTAL RUNOFF COEFF. C	DRAINAGE AREA INCREM. CA	ACCUM. CA	TIME @ UPSTREAM STATION (MIN.)	DESIGN STORM FREQUENCY (YEAR)	RAINFALL INTENSITY (IN./HR)	STORM WATER RUNOFF Q (CFS)	SLOPE OF HYDRAULIC GRADIENT S (FT/FT)	PIPE SIZE (INCHES)	VELOCITY IN STORM SEWER V (FPS)	HEAD LOSS COEFF. KJ	HEAD LOSS AT UPSTREAM WYE STATION (FT)	FLOW TIME IN PIPE (MIN)	TIME @ DOWNSTREAM STATION (MIN)	DESIGN Q (CFS)	VELOCITY HEAD (FT)	H.G. AT UPSTREAM STATION (FT)	H.G. AT DOWNSTREAM STATION (FT)	REMARKS
LINE "C - 3" EXISTING SYSTEM IN SPECTRUM DRIVE AT PROP. ARAPAHO ROAD, PROPOSED CHANGES - 25 YEAR DESIGN																							
2368.12	2263.12	105.00	PART C-1	1.34	0.90	1.21	1.21	10.00	100	7.29	8.79	0.0015	24	2.80	1.25	0.15	0.63	10.63	8.79	0.12	625.00	624.84	EX. 24"-1.00 AC TO C-3/C-5
2263.12	2198.12	65.00	C-2	0.73	0.90	0.66	1.86	10.63	100	7.10	13.23	0.0159	18	7.49	0.50	0.81	0.14	10.77	13.24	0.87	624.03	623.00	EX. 18" RCP
2198.12	1998.12	200.00	PART C-1	1.00	0.90	0.90	2.76	10.77	100	7.05	19.48	0.0074	24	6.20	0.60	0.07	0.54	11.31	19.48	0.60	622.93	621.44	EX. 24"-FUT. CONN. FROM C-1
1998.12	1856.12	142.00	PART C-3	1.00	0.90	0.90	3.66	11.31	100	6.95	25.46	0.0039	30	5.19	0.60	0.06	0.46	11.76	25.46	0.42	621.38	620.84	EX. 30"-1.66 AC TO C/5 LN "C-2"
1856.12	1751.12	105.00	C-4	2.88	0.90	2.59	6.26	11.76	100	6.85	42.85	0.0109	30	8.73	0.60	0.93	0.20	11.96	42.85	1.18	619.90	618.76	EX. 30" RCP
1751.12	1567.72	183.40	PART C-3 & 6	1.72	0.90	1.55	7.80	11.96	100	6.85	53.45	0.0064	36	7.56	0.60	0.18	0.40	12.37	53.45	0.89	618.58	617.40	EX. 36" RCP
1567.72	1330.36	237.36					7.80	12.37	100	6.85	53.45	0.0042	39	6.44	1.00	-0.24	0.61	12.98	53.45	0.64	617.65	616.65	PROP. 39" RCP
1330.36	1227.49	102.87	C-12	0.47	0.90	0.42	8.23	12.98	100	6.65	54.70	0.0044	39	6.59	0.60	0.29	0.26	13.24	54.70	0.68	616.36	615.91	PROP. 39" RCP-LAT C-12
1227.49	1200.00	27.49	C-16	0.47	0.90	0.42	8.65	13.24	100	6.60	57.08	0.0048	39	6.88	0.60	0.33	0.07	13.31	57.08	0.74	615.58	615.45	PROP. 39" RCP-LAT C-16
LINE "C - 4" EXISTING SYSTEM IN ARAPAHO ROAD DRAINING TO TOLLWAY - 100 YEAR DESIGN																							
1643.00	1538.00	105.00	C-17	1.51	0.90	1.36	1.36	10.00	100	8.74	11.88	0.0003	36	1.68			1.04	11.04	11.88	0.04	612.53	612.49	EX. 36" RCP-EX. LAT C-17
1538.00	1355.00	183.00	C-18	0.87	0.90	0.78	2.14	11.04	100	8.50	18.21	0.0007	36	2.58	0.60	0.08	1.18	12.23	18.21	0.10	612.42	612.28	EX. 36" RCP-LAT C-18
1355.00	1250.00	105.00	C-19 & 20	0.70	0.90	0.63	2.77	12.23	100	8.20	22.73	0.0012	36	3.22	0.60	0.10	0.54	12.77	22.73	0.16	612.18	612.06	EX. 36" RCP-LAT C-20
1250.00	1190.00	60.00	C-21	0.73	0.90	0.66	3.43	12.77	100	8.10	27.77	0.0008	42	2.89	0.60	0.03	0.35	13.12	27.77	0.13	612.03	611.98	EX. 42" RCP-LAT C-21
1190.00	1027.00	163.00	C-22	0.19	0.90	0.17	3.60	13.12	100	8.00	28.80	0.0008	42	2.99	0.60	0.06	0.91	14.02	28.80	0.14	611.92	611.78	EX. 42" RCP-LAT C-22
1027.00	1000.00	27.00	C-23	0.80	0.90	0.72	4.32	14.02	100	7.80	33.70	0.0011	42	3.50	0.60	0.11	0.13	14.15	33.70	0.19	611.68	611.65	EX. 42" RCP-LAT C-23
1000.00	840.00	160.00	C-24	3.84	0.90	3.46	7.78	14.15	100	7.80	60.65	0.0010	54	3.81	0.60	0.11	0.70	14.85	60.65	0.23	611.54	611.38	EX. 54" RCP-EX. LAT C-24
840.00	773.27	66.73	C-25	5.00	0.90	4.50	12.28	14.85	100	7.60	93.30	0.0023	54	5.87	0.60	0.40	0.19	15.04	93.30	0.53	610.98	610.83	EX. 54" RCP-EX. LAT C-25
773.27	713.53	59.74					12.28	15.04	100	7.60	93.30	0.0013	60	4.75	0.50	0.18	0.21	15.25	93.30	0.35	610.66	610.58	EX. 60" RCP
713.53	170.00	543.53	C-26	0.71	0.90	0.64	12.92	15.25	100	7.50	96.86	0.0014	60	4.93	0.50	0.17	1.84	17.09	96.86	0.38	609.86	609.66	EX. 60" RCP-LAT C-26
170.00	5.00	165.00					12.92	17.09	100	7.50	96.86	0.0014	60	4.93	0.50	0.19	0.56	17.64	96.86	0.38	609.47	609.25	EX. 60" RCP
5.00	0.00	5.00					12.92	17.64	100	7.50	96.86	0.0014	60	4.93	0.50	0.19	0.02	17.66	96.86	0.38	609.06	609.05	EX. 60" RCP
0.00	-110.00	110.00	C-1-16&27-29	32.46	0.90	29.21	42.13	17.66	100	7.15	301.22	0.0012	95	6.15	1.00	0.21	0.30	17.96	301.22	0.59	605.76	605.63	EX. 7'x7' BOX UNDER RR
LINE "C - 4" EXISTING SYSTEM IN ARAPAHO ROAD DRAINING TO TOLLWAY - 25 YEAR DESIGN																							
1643.00	1538.00	105.00	C-17	1.51	0.90	1.36	1.36	10.00	100	7.29	9.91	0.0002	36	1.40			1.25	11.25	9.91	0.03	611.34	611.32	EX. 36" RCP-EX. LAT C-17
1538.00	1355.00	183.00	C-18	0.87	0.90	0.78	2.14	11.25	100	7.00	14.99	0.0005	36	2.12	0.60	0.05	1.44	12.69	14.99	0.07	611.27	611.17	EX. 36" RCP-LAT C-18
1355.00	1250.00	105.00	C-19 & 20	0.70	0.90	0.63	2.77	12.69	100	6.70	18.57	0.0008	36	2.63	0.60	0.07	0.67	13.35	18.57	0.11	611.11	611.03	EX. 36" RCP-LAT C-20
1250.00	1190.00	60.00	C-21	0.73	0.90	0.66	3.43	13.35	100	6.55	22.46	0.0005	42	2.33	0.60	0.02	0.43	13.78	22.46	0.08	611.01	610.98	EX. 42" RCP-LAT C-21
1190.00	1027.00	163.00	C-22	0.19	0.90	0.17	3.60	13.78	100	6.50	23.40	0.0005	42	2.43	0.60	0.04	1.12	14.90	23.40	0.09	610.94	610.85	EX. 42" RCP-LAT C-22
1027.00	1000.00	27.00	C-23	0.80	0.90	0.72	4.32	14.90	100	6.30	27.22	0.0007	42	2.83	0.60	0.07	0.16	15.06	27.22	0.12	610.78	610.76	EX. 42" RCP-LAT C-23
1000.00	840.00	160.00	C-24	3.84	0.90	3.46	7.78	15.06	100	6.25	48.60	0.0006	54	3.06	0.60	0.07	0.87	15.93	48.60	0.14	610.69	610.59	EX. 54" RCP-EX. LAT C-24
840.00	773.27	66.73	C-25	5.00	0.90	4.50	12.28	15.93	100	6.15	75.50	0.0015	54	4.75	0.60	0.26	0.23	16.16	75.50	0.35	610.33	610.23	EX. 54" RCP-EX. LAT C-25
773.27	713.53	59.74					12.28	16.16	100	6.15	75.50	0.0008	60	3.85	0.50	0.11	0.26	16.42	75.50	0.23	610.12	610.06	EX. 60" RCP
713.53	170.00	543.53	C-26	0.71	0.90	0.64	12.92	16.42	100	6.10	78.78	0.0009	60	4.01	0.60	0.11	2.26	18.68	78.78	0.25	609.95	609.46	EX. 60" RCP-LAT C-26
170.00	5.00	165.00					12.92	18.68	100	6.10	78.78	0.0009	60	4.01	0.50	0.12	0.69	19.37	78.78	0.25	609.33	609.18	EX. 60" RCP
5.00	0.00	5.00					12.92	19.37	100	6.10	78.78	0.0009	60	4.01	0.50	0.12	0.02	19.39	78.78	0.25	609.05	609.05	EX. 60" RCP
0.00	-110.00	110.00	C-1-16&27-29	32.46	0.90	29.21	42.13	19.39	100	5.70	240.14	0.0007	95	4.90	1.00	0.12	0.37	19.76	240.14	0.37	605.71	605.63	EX. 7'x7' BOX UNDER RR
LAT "C-8"																							
9.78	0.00	9.78	C-7 & 8	0.62	0.90	0.56	0.56	10.00	100	8.74	4.88	0.0022	18	2.76	1.25	0.15	0.06	10.06	4.88	0.12	621.39	621.37	
LAT "C-9"																							
9.81	0.00	9.81	C-9	0.43	0.90	0.39	0.39	10.00	100	8.74	3.38	0.0010	18	1.91	1.25	0.07	0.09	10.09	3.38	0.06	620.31	620.30	
LAT "C-10"																							
225.34	0.00	225.34	C-10 & 11	1.14	0.90	1.03	1.03	10.00	100	8.74	8.97	0.0193	15	7.31	0.00	0.00	0.51	10.51	8.97	0.83	622.40	618.06	EX 15" RCP
LAT "C-12"																							
46.01	0.00	46.01	C-12	0.47	0.90	0.42	0.42	10.00	100	8.74	3.70	0.0012	18	2.09	1.25	0.09	0.37	10.37	3.70	0.07	617.86	617.80	
LAT "C-14"																							
9.82	0.00	9.82	C-14	0.64	0.90	0.58	0.58	10.00	100	8.74	5.03	0.0023	18	2.85	1.25	0.16	0.06	10.06	5.03	0.13	618.06	618.04	
LAT "C-15"																							
79.10	0.00	79.10	C-15	0.54	0.90	0.49	0.49	10.00	100	8.74	4.25	0.0016	18	2.41	1.25	0.11	0.55	10.55	4.25	0.09	618.01	617.88	
LAT "C-16"																							
112.26	0.00	112.26	C-16	0.47	0.90	0.42	0.42	10.00	100	8.74	3.70	0.0014	18	2.22	1.25	0.10	0.84	10.84	3.93	0.08	616.87	616.71	
LAT "C-18"																							
9.72	0.00	9.72	C-18	0.87	0.90	0.78	0.78	10.00	100	8.74	6.84	0.0035	18	3.51	1.25	0.24	0.05	10.05	6.20	0.19	616.21	616.18	
LAT "C-20"																							
36.67	0.00	36.67	C-19 & 20	0.70	0.90	0.63	0.63	10.00	100	8.74	5.51	0.0034	18	3.48	1.25	0.24	0.18	10.18	6.15	0.19	614.85	614.72	
LAT "C-21"																							
54.21	0.00	54.21</																					