

ARAPAHO ROAD
STORMWATER PIPE CALCULATIONS - SEPTEMBER 16, 1997

COLLECTION POINT UPSTREAM STATION	COLLECTION POINT DOWNSTREAM STATION	DISTANCE BETWEEN COLLECTION POINTS	AREA NO.	INCREMENTAL RUNOFF COEFF. C	DRAINAGE AREA INCREM. CA	ACCUM. CA	TIME @ UPSTREAM STATION (MIN.)	DESIGN STORM FREQUENCY (YEAR)	RAINFALL INTENSITY I (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 AT UPSTREAM WYE STATION (FT)	HEAD LOSS AT UPSTREAM WYE STATION (FT)	FLOW TIME IN PIPE (MIN)	TIME @ DOWNSTREAM STATION (MIN)	DESIGN Q (CFS)	VELOCITY HEAD Hv (FT)	H.G. AT UPSTREAM STATION (FT)	H.G. AT DOWNSTREAM STATION (FT)	REMARKS
LINE "A" EXISTING ADDISON ROAD SOUTH OF ARAPAHO ROAD - 100 YEAR DESIGN																							
1200.00	1030.00	170.00	A-11	3.10	0.90	2.79	2.79	10.00	100	8.74	24.38	0.0062	27	6.13	1.25	0.58	0.46	10.46	24.38	0.58	637.98	636.93	FUTURE PIPE
1030.00	850.00	180.00				2.79	2.79	10.46	100	8.74	24.38	0.0062	27	6.13	0.50	0.29	0.49	10.95	24.38	0.58	636.64	635.52	FUTURE PIPE
850.00	540.00	310.00	A-12	2.60	0.90	2.34	5.13	10.95	100	8.50	43.61	0.0113	30	8.88	0.60	0.88	0.58	11.53	43.61	1.23	634.65	631.14	EX 30" RCP
540.00	440.00	100.00				5.13	5.13	11.53	100	8.50	43.61	0.0019	42	4.53	0.60	-0.42	0.37	11.90	43.61	0.32	631.96	631.37	EX 42" RCP
440.00	300.00	140.00	A-13	5.57	0.90	5.01	10.14	11.90	100	8.25	83.68	0.0069	42	8.70	0.60	0.98	0.27	12.17	83.68	1.17	630.39	629.42	EX 42" RCP
300.00	0.00	300.00	A-14	5.57	0.90	5.01	15.16	12.17	100	8.20	124.28	0.0075	48	9.89	0.60	0.81	0.51	12.67	124.28	1.52	628.61	626.36	EX 48" RCP AT JUNCT. BOX
LINE "A" EXISTING ADDISON ROAD SOUTH OF ARAPAHO ROAD - 25 YEAR DESIGN																							
1200.00	1030.00	170.00	A-11	3.10	0.90	2.79	2.79	10.00	25	7.29	20.34	0.0043	27	5.12	1.25	0.41	0.55	10.55	20.34	0.41	633.10	632.36	FUTURE PIPE
1030.00	850.00	180.00				2.79	2.79	10.55	25	7.29	20.34	0.0043	27	5.12	0.50	0.20	0.59	11.14	20.34	0.41	632.16	631.38	FUTURE PIPE
850.00	540.00	310.00	A-12	2.60	0.90	2.34	5.13	11.14	25	7.00	35.91	0.0077	30	7.32	0.60	0.59	0.71	11.85	35.91	0.83	630.80	628.42	EX 30" RCP
540.00	440.00	100.00				5.13	5.13	11.85	25	7.00	35.91	0.0013	42	3.73	0.60	-0.28	0.45	12.29	35.91	0.22	628.70	628.58	EX 42" RCP
440.00	300.00	140.00	A-13	5.57	0.90	5.01	10.14	12.29	25	6.75	68.47	0.0046	42	7.12	0.60	0.66	0.33	12.62	68.47	0.79	627.92	627.27	EX 42" RCP
300.00	0.00	300.00	A-14	5.57	0.90	5.01	15.16	12.62	25	6.70	101.55	0.0050	48	8.08	0.60	0.54	0.62	13.24	101.55	1.01	626.73	625.23	EX 48" RCP AT JUNCT. BOX
LINE "A" EXISTING OUTFALL WEST OF ADDISON ROAD - 100 YEAR DESIGN																							
1981.00	1757.00	224.00	A-10	0.20	0.90	0.18	3.77	12.07	100	8.20	30.92	0.0057	30	6.30	0.50	0.31	0.59	12.66	30.92	0.62	627.91	626.64	EX 30" RCP AT JUNCT. BOX
1757.00	1347.00	410.00	A-11-14	16.84	0.90	15.16	18.93	12.67	100	8.10	153.31	0.0035	60	7.81	0.50	0.47	0.88	13.55	153.31	0.95	626.17	624.75	EX 60" OUTFALL AT JUNCT BOX
1347.00	1037.00	310.00				18.93	18.93	13.55	100	8.10	153.31	0.0035	60	7.81	0.25	0.24	0.66	14.21	153.31	0.95	624.51	623.44	EX 60" OUTFALL WEST
1037.00	1007.00	30.00				18.93	18.93	14.21	100	8.10	153.31	0.0035	60	7.81	0.35	0.33	0.06	14.27	153.31	0.95	623.10	623.00	EX 60" OUTFALL WEST
LINE "A" EXISTING OUTFALL WEST OF ADDISON ROAD - 25 YEAR DESIGN																							
1981.00	1757.00	224.00	A-10	0.20	0.90	0.18	3.77	12.50	25	6.75	25.45	0.0038	30	5.18	0.50	0.21	0.72	13.22	25.45	0.42	626.28	625.42	EX 30" RCP AT JUNCT. BOX
1757.00	1347.00	410.00	A-11-14	16.84	0.90	15.16	18.93	13.24	25	6.60	124.92	0.0023	60	6.36	0.50	0.31	1.07	14.31	124.92	0.63	625.10	624.16	EX 60" OUTFALL AT JUNCT BOX
1347.00	1037.00	310.00				18.93	18.93	14.31	25	6.60	124.92	0.0023	60	6.36	0.25	0.16	0.81	15.13	124.92	0.63	624.00	623.29	EX 60" OUTFALL WEST
1037.00	1007.00	30.00				18.93	18.93	15.13	25	6.60	124.92	0.0023	60	6.36	0.35	0.22	0.08	15.20	124.92	0.63	623.07	623.00	EX 60" OUTFALL WEST
LINE "A-1" NORTH - ARAPAHO ROAD AT ADDISON ROAD - 100 YEAR DESIGN																							
2389.32	2322.32	67.00	A-0	0.79	0.90	0.71	0.71	10.00	100	8.74	6.21	0.0035	18	3.51	1.25	0.24	0.32	10.32	6.21	0.19	629.73	629.50	FUTURE BY DART
2322.32	2202.26	120.06	A-1	0.46	0.90	0.41	1.13	10.32	100	8.65	9.73	0.0018	24	3.10	0.50	0.15	0.65	10.96	9.73	0.15	629.35	629.13	
2202.26	2093.66	108.60				1.13	1.13	10.96	100	8.65	9.73	0.0015	24	2.76	1.00	-0.03	0.66	11.62	8.68	0.12	629.16	629.00	PIPE EQUALIZER
2093.66	2071.00	22.66	A-2-4	1.11	0.90	1.00	2.12	11.62	100	8.35	17.74	0.0044	24	4.77	0.60	0.28	0.08	11.70	15.00	0.35	628.72	628.62	LAT A-3
2071.00	1981.00	90.00				2.12	2.12	11.70	100	8.35	17.74	0.0044	24	4.77	1.00	0.00	0.31	12.01	15.00	0.35	628.62	628.22	PIPE EQUALIZER
LINE "A-1" NORTH - ARAPAHO ROAD AT ADDISON ROAD - 25 YEAR DESIGN																							
2389.32	2322.32	67.00	A-0	0.79	0.90	0.71	0.71	10.00	25	7.29	5.18	0.0024	18	2.93	1.25	0.17	0.38	10.38	5.18	0.13	627.60	627.44	FUTURE BY DART
2322.32	2202.26	120.06	A-1	0.46	0.90	0.41	1.13	10.38	25	7.15	8.04	0.0013	24	2.56	0.50	0.10	0.78	11.16	8.04	0.10	627.33	627.18	
2202.26	2093.66	108.60				1.13	1.13	11.16	25	7.15	8.04	0.0010	24	2.28	1.00	-0.02	0.79	11.96	7.16	0.08	627.09	627.09	PIPE EQUALIZER
2093.66	2071.00	22.66	A-2-4	1.11	0.90	1.00	2.12	11.96	25	6.80	14.44	0.0029	24	3.89	0.60	0.19	0.10	12.05	12.21	0.23	626.91	626.84	LAT A-3
2071.00	1981.00	90.00				2.12	2.12	12.05	25	6.80	14.44	0.0029	24	3.89	1.00	0.00	0.39	12.44	12.21	0.23	626.84	626.58	PIPE EQUALIZER
LINE "A-2" SOUTH - ARAPAHO ROAD AT ADDISON ROAD - 100 YEAR DESIGN																							
2288.63	2241.29	47.34	A-5	0.42	0.90	0.38	0.38	10.00	100	8.74	3.30	0.0002	24	1.05	1.25	0.02	0.75	10.75	3.30	0.02	629.43	629.42	LAT A-6
2241.29	2204.06	37.23	A-6	0.57	0.90	0.51	0.89	10.75	100	8.55	7.62	0.0011	24	2.43	0.60	0.05	0.26	11.01	7.62	0.09	629.37	629.32	PIPE EQUALIZER
2204.06	2092.00	112.06				0.89	0.89	11.01	100	8.55	7.62	0.0015	24	2.76	1.00	0.03	0.68	11.68	8.67	0.12	629.30	629.13	PIPE EQUALIZER
2092.00	2074.00	18.00	A-8 & 9	0.37	0.90	0.33	1.22	11.68	100	8.35	10.22	0.0044	24	4.77	0.60	0.28	0.06	11.75	14.99	0.35	628.85	628.77	LAT A-8
2074.00	2071.00	3.00	A-7	0.27	0.90	0.24	1.47	11.68	100	8.35	12.25	0.0044	24	4.77	0.60	0.14	0.01	11.76	14.99	0.35	628.63	628.62	PIPE EQUALIZER
2071.00	1981.00	90.00				1.47	1.47	11.76	100	8.35	12.25	0.0044	24	4.77	1.00	0.00	0.31	12.07	14.99	0.35	628.62	628.22	PIPE EQUALIZER
LINE "A-2" SOUTH - ARAPAHO ROAD AT ADDISON ROAD - 25 YEAR DESIGN																							
2288.63	2241.29	47.34	A-5	0.42	0.90	0.38	0.38	10.00	25	7.29	2.76	0.0001	24	0.88	1.25	0.01	0.90	10.90	2.76	0.01	627.39	627.38	
2241.29	2204.06	37.23	A-6	0.57	0.90	0.51	0.89	10.90	25	7.05	6.28	0.0008	24	2.00	0.60	0.04	0.31	11.21	6.28	0.06	627.34	627.31	LAT A-6
2204.06	2092.00	112.06				0.89	0.89	11.21	25	7.05	6.28	0.0010	24	2.28	1.00	0.02	0.82	12.03	7.16	0.08	627.30	627.18	PIPE EQUALIZER
2092.00	2074.00	18.00	A-8 & 9	0.37	0.90	0.33	1.22	12.03	25	6.80	8.32	0.0029	24	3.89	0.60	0.19	0.08	12.11	12.21	0.23	627.00	626.94	LAT A-8
2074.00	2071.00	3.00	A-7	0.27	0.90	0.24	1.47	12.11	25	6.80	9.98	0.0029	24	3.89	0.60	0.09	0.01	12.12	12.21	0.23	626.85	626.84	PIPE EQUALIZER
2071.00	1981.00	90.00				1.47	1.47	12.12	25	6.80	9.98	0.0029	24	3.89	1.00	0.00	0.39	12.50	12.21	0.23	626.84	626.58	PIPE EQUALIZER
LAT "A-2"																							
23.82	0.00	23.82	A-2	0.28	0.90	0.25	0.25	10.00	100	8.74	2.20	0.0004	18	1.24	1.25	0.03	0.32	10.32	2.20	0.02	629.22	629.21	
LAT "A-3"																							
42.36	24.24	18.12	A-3 & 4	0.83	0.90	0.75	0.75	10.00	100	8.74	6.53	0.0017	21	2.71	1.25	0.14	0.11	10.11	6.53	0.11	629.19	629.16	LAT A-2
24.24	0.00	24.24	A-2	0.28	0.90	0.25	1.00	10.11	100	8.70	8.69	0.0030	21	3.61	0.60	0.13	0.11	10.22	8.69	0.20	629.02	628.95	
LAT "A-6"																							
60.48	0.00	60.48	A-6	0.59	0.90																		