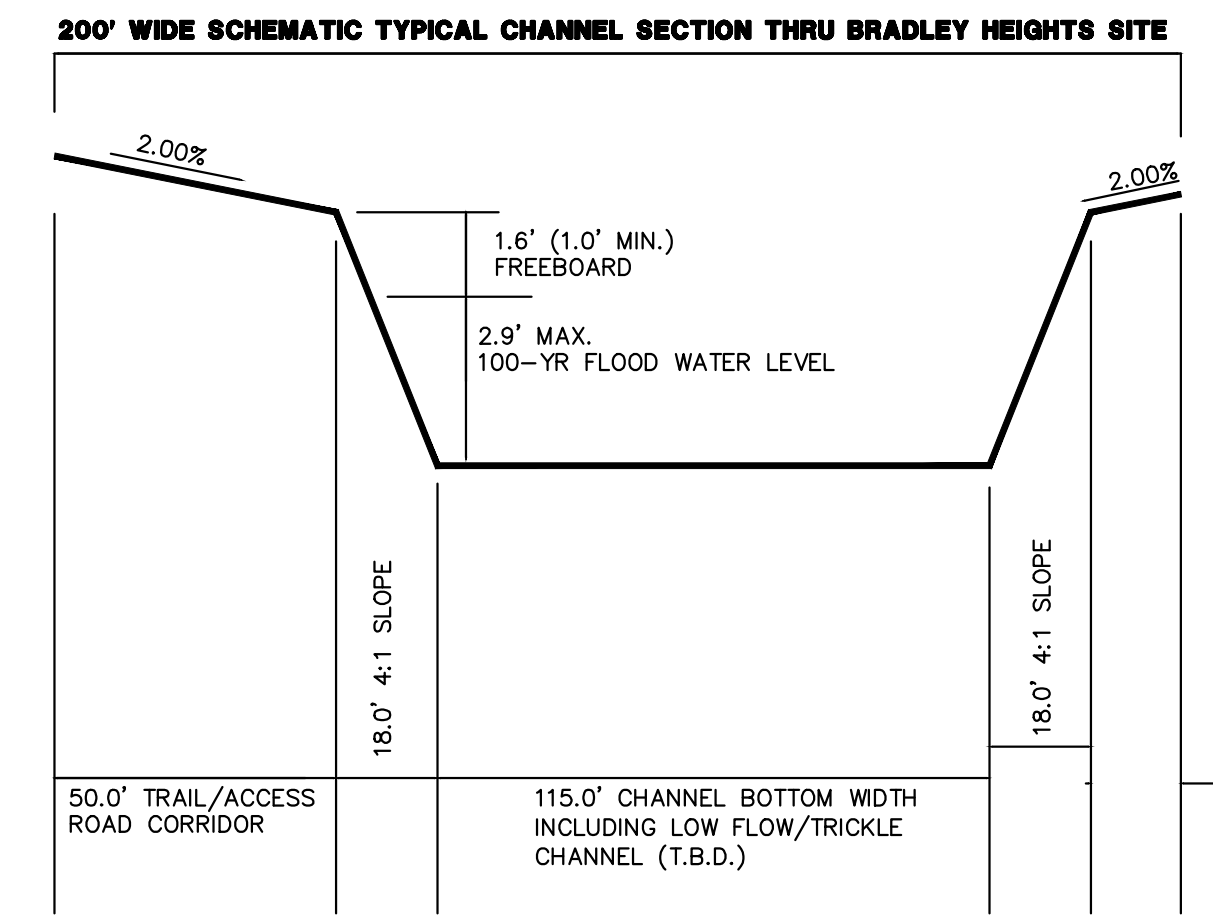


COMPOSITE C_n VALUES - DEVELOPED CONDITIONS

BASIN (label)	BASIN AREA (ac)	LAND USE	SUB-AREA LAND USE 1 AREA (ac)	ESTIMATED C _n	SUB-AREA LAND USE 2 AREA (ac)	ESTIMATED C _n	TOTAL BASIN AREA (sq ft)	TOTAL BASIN AREA (sq mi)	WEIGHTED C
1-N	13.16	RES	13.16	85	0	N/A	13.16	0.020263	85.0
1-S	23.51	RES	23.51	85	0	N/A	23.51	0.03673	85.0
2	10.75	COMM	10.75	94	0	N/A	10.75	0.01680	94.0
5A	21.54	COMM	21.54	94	0	N/A	21.54	0.03356	94.0
3468N	44.16	RES	44.16	85	0	N/A	44.16	0.06900	85.0
11-N	14.23	MULTIFAM	14.23	91	0	N/A	14.23	0.02223	91.0
11-S	20.03	MULTIFAM	20.03	91	0	N/A	20.03	0.03130	91.0
7	21.22	MULTIFAM	21.22	91	0	N/A	21.22	0.03316	91.0
ELEC	12.79	ELEC SUB	12.79	91	0	N/A	12.79	0.01958	91.0
3468S	39.16	RES	39.16	85	0	N/A	39.16	0.06119	85.0
12-N	8.67	CHANNEL	8.67	74	0	N/A	8.67	0.01355	74.0
12-S	4.40	CHANNEL	4.40	74	0	N/A	4.40	0.00688	74.0
13-W	24.87	RES	24.87	85	0	N/A	24.87	0.03886	85.0
13-E	14.22	RES	14.22	85	0	N/A	14.22	0.02222	85.0
5B	15.10	RES	15.10	85	0	N/A	15.10	0.02359	85.0
9A-B	37.12	SCHL & PARK	27.12	91	5.00	74	37.12	0.05600	76.5
9C-N	41.45	RES	41.45	85	0	N/A	41.45	0.06477	85.0
9C-S	29.90	RES	29.90	85	0	N/A	29.90	0.04672	85.0
17	20.98	MULTIFAM	20.98	91	0	N/A	20.98	0.03278	91.0
15-N	16.88	RES	16.88	85	0	N/A	16.88	0.02638	85.0
16-W	30.67	RES & PARK	25.67	85	5.00	74	30.67	0.04782	83.2
16-E	18.20	RES	18.20	85	0	N/A	18.20	0.02844	85.0
14	56.95	RES	56.95	85	0	N/A	56.95	0.08688	85.0
OS-1	33.57	UNDEV	33.57	74	0	N/A	33.57	0.05245	87.4
OS-2	32.75	UNDEV	32.75	74	0	N/A	32.75	0.05117	74.0
OS-3	15.85	UNDEV	15.85	74	0	N/A	15.85	0.02477	74.0
OS-4	20.09	UNDEV	20.09	74	0	N/A	20.09	0.03139	74.0
DET	24.91	POND	24.91	74	0	N/A	24.91	0.03892	72.6



SCHEMATIC CHANNEL DESIGN:
 0.50% TYPICAL SLOPE.
 4 SLOPING DROP STRUCTURES (3'-0" TO 4'-0" HEIGHT EACH).
 BOTTOM WIDTH NARROWS DOWN TO 80.0' THRU DROP STRUCTURES WITH MAX. SLOPE OF 10.0%.

EXISTING MARKSHEFFEL TRIBUTARY DETENTION FACILITY
 Q2 IN = 459.86 cfs
 Q5 IN = 739.85 cfs
 Q100 IN = 2,029.97 cfs

DEVELOPED RELEASE
 Q2 = 24.16 cfs
 Q5 = 125.75 cfs
 Q100 = 1,153.73 cfs

EXISTING VOLUME TO TOP OF BERM (ELEV. 5761.50) = 193.66 AC-FT

Basin Summary - Developed Conditions

Basin (label)	Total Basin Area (ac)	Total Basin Area (sq mi)	Land Use	Weighted C _n	Total Time of Concentration (hours)	Q 5 Yr. (cfs)	Q 100 Yr. (cfs)
1-N	13.16	0.020263	RES	85.0	0.4167	18.07	42.28
1-S	23.51	0.03673	RES	85.0	0.1867	52.78	75.53
2	10.75	0.01680	COMM	94.0	0.2000	29.24	53.53
5A	21.54	0.03356	COMM	94.0	0.2000	58.59	107.25
3468N	44.16	0.06900	RES	85.0	0.4167	60.83	141.87
11-N	14.23	0.02223	MULTIFAM	91.0	0.1867	35.30	67.88
11-S	20.03	0.03130	MULTIFAM	91.0	0.1867	49.69	93.55
7	21.22	0.03316	MULTIFAM	91.0	0.2500	48.93	95.69
ELEC	12.79	0.01958	ELEC SUB	91.0	0.1867	31.70	60.97
3468S	39.16	0.06119	RES	85.0	0.4167	53.75	125.81
12-N	8.67	0.01355	CHANNEL	74.0	0.2500	7.27	22.37
12-S	4.40	0.00688	CHANNEL	74.0	0.1867	3.09	11.35
13-W	24.87	0.03886	RES	85.0	0.4167	34.15	79.90
13-E	14.22	0.02222	RES	85.0	0.4167	19.52	45.68
5B	15.10	0.02359	RES	85.0	0.3300	23.11	52.78
9A-B	37.12	0.05600	SCHL & PARK	76.5	0.2500	36.36	103.38
9C-N	41.45	0.06477	RES	85.0	0.4167	55.63	132.52
9C-S	29.90	0.04672	RES	85.0	0.4167	41.01	96.06
17	20.98	0.03278	MULTIFAM	91.0	0.2000	50.55	98.27
16-N	16.88	0.02638	RES	85.0	0.3300	25.83	58.00
16-W	30.67	0.04782	RES & PARK	83.2	0.5000	38.05	89.68
16-E	18.20	0.02844	RES	85.0	0.4167	24.99	58.47
14	56.95	0.08688	RES	85.0	0.5000	70.65	168.53
OS-1	33.57	0.05245	UNDEV	87.4	0.2629	63.02	134.50
OS-2	32.75	0.05117	UNDEV	74.0	0.4174	29.57	68.00
OS-3	15.85	0.02477	UNDEV	74.0	0.3297	11.54	36.20
OS-4	20.09	0.03139	UNDEV	74.0	0.2991	16.32	50.11
DET	24.91	0.03892	POND	72.6	0.2981	17.82	56.55
M4-EX	6.50	0.0102	UNDEV	75.1	0.1867	6.88	18.18
M4-DEV	141.72	0.2274	INDUS *	85.0	0.6867	152.99	358.32
M5-EX	84.84	0.1326	UNDEV	67.9	0.6667	20.43	90.95
M5-DEV	30.23	0.0472	INDUS *	84.0	0.3833	40.65	96.34
M6-EX	143.10	0.2236	UNDEV	58.8	0.6390	3.16	62.71
M7-EX	108.54	0.1688	UNDEV	68.0	0.5279	31.55	138.81
M8-EX	66.31	0.1036	UNDEV	75.7	0.5833	48.99	137.22
M8-DEV	92.22	0.1441	INDUS *	86.0	0.5000	121.84	279.74
M9-DEV	150.66	0.2354	RES (B DU/AC) *	81.0	1.4167	64.44	171.57
M10-EX	88.83	0.1388	UNDEV	67.7	1.2781	19.55	71.39
M11-EX	58.14	0.0924	UNDEV	70.0	0.7223	26.54	91.53
M12-EX	106.24	0.1660	UNDEV	63.5	0.7502	13.77	80.33
M13-EX	144.45	0.2257	UNDEV	61.7	0.9169	11.62	80.42
M14-EX	72.70	0.1136	UNDEV	70.3	0.8335	18.82	73.79
M15-EX	58.14	0.0924	UNDEV	67.0	0.4729	3.04	38.50
M16-EX	148.54	0.2321	UNDEV	68.8	0.9447	18.78	99.49
M17-EX	182.02	0.2844	UNDEV	75.7	0.8335	81.13	285.04
M18-EX	163.40	0.2553	UNDEV	71.4	0.9169	42.71	162.26
M19-EX	192.00	0.3000	UNDEV	69.2	0.9274	23.83	128.18
M20-EX	89.54	0.1359	UNDEV	63.7	1.0838	6.83	50.28
M21-EX	146.56	0.2290	UNDEV	63.7	0.6390	21.28	125.61
M22-EX	66.11	0.1033	UNDEV	50.3	0.6113	0.17	14.09
M23-EX	132.80	0.2075	UNDEV	53.7	1.2219	1.19	28.28
M24-EX	98.58	0.1568	UNDEV	66.0	0.6568	16.36	68.24
M25-EX	101.82	0.1591	UNDEV	67.7	0.6390	4.28	54.33
M26-EX	114.30	0.1786	UNDEV	54.1	1.6392	0.97	19.58
M27-EX	124.86	0.1951	UNDEV	49.8	1.0333	0.31	12.48

Flow of Concentrations for all developed parcels are estimated as grading and storm design are unknown at this time.
 * Developed basins north of Bradley Road were modeled as reduced industrial and residential (M9) land uses.
 Reduction equates to approx. 10% imperviousness.

DEVELOPED CONDITIONS - PRELIMINARY PIPE SIZING

Pipe Run	Contributing Basins	Flow		Pipe Size*
		Q(5)	Q(100)	
C1	PARCEL 1-N & PARCEL 2	45.2	92.1	48" RCP @ 0.50% minimum
C2	PARCEL 3468N	60.8	60.8	42" RCP @ 0.50% minimum
C3	PIPE C1 & C2	101.6	228.6	72" RCP @ 0.50% minimum
C4	PARCEL 5A + PIPE C3	158.5	331.7	78" RCP @ 0.50% minimum
C5	PARCEL 5B	23.1	52.8	42" RCP @ 0.50% minimum
C6	PARCEL 3468S (1/2)	26.9	62.9	42" RCP @ 0.50% minimum
C7	PARCEL 3467S (1/2)	26.9	62.9	42" RCP @ 0.50% minimum
C8	PIPE C6 & C7	53.8	125.8	54" RCP @ 0.50% minimum
C9	PARCEL 13-E	19.5	45.7	36" RCP @ 0.50% minimum
C10	PARCEL 9A-B + PIPES C8 & C9	108.8	269.0	72" RCP @ 0.53% minimum
C11	PARCEL 9C-N	56.6	132.5	54" RCP @ 0.50% minimum
C12	PARCEL 16-N	25.8	59.0	42" RCP @ 0.50% minimum
C13	PARCEL 9C-S + PIPE C11	97.7	228.6	66" RCP @ 0.50% minimum
C14	PIPE C12 & C13	123.5	234.2	66" RCP @ 0.50% minimum
C15	PARCEL 16-W	38.1	89.7	48" RCP @ 0.50% minimum
C16	PARCEL 14 + PIPE C15	108.7	256.2	72" RCP @ 0.50% minimum
C17	PARCEL 1-S	32.3	75.5	54" RCP @ 0.50% minimum
C18	PARCEL 7	48.9	95.7	48" RCP @ 0.50% minimum
C19	PIPE C17 & C18	79.0	167.8	60" RCP @ 0.50% minimum
C20	PARCEL ELEC	31.7	61.0	42" RCP @ 0.50% minimum
C21	PARCEL 13-W	34.2	79.9	48" RCP @ 0.50% minimum
C22	PARCEL 16-E	25.0	58.5	42" RCP @ 0.50% minimum
C23	PARCEL 17 + PIPE C22	73.0	151.5	60" RCP @ 0.50% minimum

DESIGN POINTS - DEVELOPED CONDITIONS

Design Point (label)	Q 2 Yr. (cfs)	Q 5 Yr. (cfs)	Q 10 Yr. (cfs)	Q 50 Yr. (cfs)	Q 100 Yr. (cfs)
E1	138.75	222.10	343.00	602.30	660.54
E2	305.65	444.46	509.65	1,187.02	1,325.18
E3	287.43	451.82	760.37	1,498.54	1,667.15
4	355.17	556.27	843.14	1,547.84	1,720.53
5	397.10	632.14	956.89	1,611.37	1,771.82
Pond-Marksheffel In	499.86	739.86	1,126.01	1,866.91	2,029.97
Pond-Marksheffel Out	57.35	125.45	380.70	1,009.18	1,156.30
7 - Marksheffel Trib. Out	24.16	125.75	379.52	1,006.65	1,153.73
8	6.22	11.54	19.01	33.18	36.20
Pond 1 In	99.25	140.82	193.07	283.40	301.75
9 (Historic Release)	67.07	142.54	142.54	142.54	142.54
Pond 2 In	84.09	129.25	180.00	299.45	322.22
10 (Historic Release)	45.99	83.97	138.22	244.61	267.42
Pond 3 In	52.38	73.01	98.67	142.61	151.49
11 (Historic Release)	12.05	22.63	37.64	66.45	72.63

DEVELOPED DRAINAGE MAP BRADLEY HEIGHTS
 JOB NO. 2266.00
 JANUARY 2015
 SHEET 1 OF 1

CLASSIC CONSULTING ENGINEERS & SURVEYORS

6385 Corporate Drive, Suite 101 Colorado Springs, Colorado 80919 (719)785-0790 (719)785-0799 (Fax)

PROPOSED DETENTION FACILITY NO. 1
 Q2 IN = 99.25 cfs
 Q5 IN = 140.82 cfs
 Q100 IN = 301.75 cfs

ALLOWABLE RELEASE
 Q2 = 16.9 cfs
 Q5 = 37.0 cfs
 Q100 = 142.3 cfs

REQUIRED SIZE = 11.94 AC-FT

PROPOSED DETENTION FACILITY NO. 2
 Q2 IN = 84.09 cfs
 Q5 IN = 129.25 cfs
 Q100 IN = 322.22 cfs

ALLOWABLE RELEASE
 Q2 = 46.0 cfs
 Q5 = 84.0 cfs
 Q100 = 267.4 cfs

REQUIRED SIZE = 6.59 AC-FT

PROPOSED DETENTION FACILITY NO. 3
 Q2 IN = 52.4 cfs
 Q5 IN = 73.0 cfs
 Q100 IN = 151.5 cfs

ALLOWABLE RELEASE
 Q2 = 12.0 cfs
 Q5 = 22.6 cfs
 Q100 = 72.6 cfs

REQUIRED SIZE = 4.89 AC-FT