

STORM DRAINAGE SIZING

LJA LEONARD JACKSON ASSOCIATES

Consulting Engineers

26 FIREMENS MEMORIAL DRIVE POMONA, NEW YORK 10970 (845) 354-4382 FAX (845) 354-4401

PROJECT: Bald Hill Estates

RAINFALL CURVE: Orange County

JOB NO. 00046

LOCATION: Town of Monroe, NY

REMARKS: Minimum Time of Concentration of 5 min used for storm drainage system

DATE 11/15/2005

SHEET # 1 OF 5

STORM FREQUENCY: 25-Year

COMPUTED BY JS

CHECKED BY _____

LOCATION		ACRES		TIME CONC. - MIN.			"Q"			P I P E										CATCH BASIN ENERGY ELEVATION							
FROM	TO	Δ SUB	TOTAL	C	Δ A C	Δ A C	INLET	PIPE	TOTAL	"I"	DES.	CAP.	"II"	SIZE	VEL.	SLOPE	LGTH.	FALL	INV. UPPER	INV. LOWER	TOP ELEV. UPPER	NORMAL DEPTH	HGL	VELOCITY HEAD (V ² /2g)	VEL. LOSS @ CB	OUTLET CONTROL	INLET CONTROL
CI 104	CI 103	0.09	0.09	0.25	0.02	0.02	10	-	10	6.3	0	19	0.012	18	2.0	0.103	185	19.00	787.00	768.00	794.00	0.10	787.10	0.06	0.00	787.16	787.20
CI 103	CI 102	0.70	0.79	0.25	0.18	0.20	11	10	11	6.1	1	19	0.012	18	9.3	0.105	191	20.00	768.00	748.00	774.50	0.17	768.17	1.34	0.67	770.18	768.45
CI 102	CI 101	0.92	1.71	0.30	0.28	0.47	11	11	11	6.1	3	19	0.012	18	13.0	0.114	140	16.00	748.00	732.00	754.50	0.28	748.28	2.62	1.31	752.22	748.28
CI 101	CI 100	0.65	2.36	0.30	0.20	0.67	11	11	11	6.1	4	19	0.012	18	14.0	0.114	210	24.00	732.00	708.00	738.00	0.32	732.32	3.04	1.52	736.89	733.11
CI 100	CI 98	0.61	2.97	0.35	0.21	0.88	9	11	11	6.1	5	19	0.012	18	11.0	0.051	68	3.50	708.00	704.50	716.00	0.45	708.45	1.88	0.94	711.27	709.28
YD 99A	CI 99	0.40	0.40	0.25	0.10	0.10	9	-	9	6.5	1	19	0.012	18	9.5	0.123	65	8.00	715.00	707.00	719.00	0.16	715.16	1.40	0.00	716.56	715.45
CI 99	CI 98	0.18	0.58	0.50	0.09	0.19	6	9	9	6.5	1	18	0.012	18	5.0	0.019	53	1.00	707.00	706.00	712.30	0.26	707.26	0.39	0.19	707.84	707.45
CI 98	CI 97	0.06	3.61	0.85	0.05	1.12	5	11	11	6.1	7	19	0.012	18	14.0	0.065	23	1.50	706.00	704.50	712.30	0.50	706.50	3.04	1.52	711.07	707.65
CI 97	CI 96	0.51	4.12	0.75	0.38	1.51	5	11	11	6.1	9	17	0.012	18	9.2	0.018	28	0.50	704.50	704.00	709.50	0.81	705.31	1.31	0.00	706.62	706.56
CI 96	CI 92	0.27	4.39	0.85	0.23	1.74	5	11	11	6.1	11	19	0.012	18	14.0	0.066	144	9.50	702.00	692.50	709.50	0.61	702.61	3.04	1.52	707.18	704.60
CI 93	CI 92	0.11	0.11	0.60	0.07	0.07	5	-	5	7.6	1	16	0.012	18	4.8	0.017	29	0.50	691.50	691.00	696.00	0.27	691.77	0.36	0.00	692.13	691.95
CI 95	CI 94	0.03	0.03	0.90	0.03	0.03	5	-	5	7.6	0	12	0.012	18	2.0	0.010	52	0.50	688.50	688.00	692.50	0.10	688.60	0.06	0.00	688.66	688.70
CI 94	CI 92	0.08	0.11	0.55	0.04	0.07	5	5	5	7.6	1	12	0.012	18	4.0	0.010	20	0.20	688.00	687.80	693.30	0.30	688.30	0.25	0.12	688.67	688.45
CI 92	CI 90	0.55	5.16	0.70	0.39	2.26	9	11	11	6.1	14	19	0.012	18	17.0	0.072	222	16.00	686.50	670.50	696.00	0.72	687.22	4.49	2.24	693.95	690.10
YD 91A	CI 91	0.41	0.41	0.27	0.11	0.11	15	-	15	5.5	1	19	0.012	18	9.5	0.123	130	16.00	686.00	670.00	690.00	0.17	686.17	1.40	0.00	687.57	686.45
CI 91	CI 90	0.59	1.00	0.70	0.41	0.52	10	15	15	5.5	3	12	0.012	18	5.8	0.010	29	0.30	670.00	669.70	674.00	0.50	670.50	0.52	0.00	671.02	670.95
CI 90	DMH 89	0.22	6.38	0.70	0.15	2.78	5	-	15	5.5	15	19	0.012	18	18.0	0.089	140	12.50	668.00	655.50	674.00	0.70	668.70	5.03	0.00	673.73	671.90
DMH 89	CI 88	0.00	6.38	-	0.00	2.78	-	15	15	5.5	15	19	0.012	18	18.0	0.092	155	14.30	653.80	639.50	660.20	0.70	654.50	5.03	0.00	659.53	657.70
CI 88	CI 87	0.43	6.81	0.65	0.28	3.06	5	15	15	5.5	17	34	0.012	24	10.0	0.019	26	0.50	639.50	639.00	644.00	1.40	640.90	1.55	0.78	643.23	642.50
YD 87A	CI 87	0.81	0.81	0.23	0.19	0.19	16	-	16	5.3	1	19	0.012	18	11.0	0.163	190	31.00	664.00	633.00	668.00	0.15	664.15	1.88	0.00	666.03	664.45
CI 87	HW 86	0.69	8.31	0.65	0.45	3.70	10	16	16	5.3	20	34	0.012	24	11.0	0.016	61	1.00	633.00	632.00	644.00	1.17	634.17	1.88	0.94	636.99	635.94
OS 85	DMH 84	0.00	8.31	-	0.00	3.70	-	16	16	5.3	20	30	0.012	24	9.7	0.013	120	1.50	621.50	620.00	635.00	1.23	622.73	1.46	0.73	624.92	624.44
DMH 84	DMH 83	0.00	8.31	-	0.00	3.70	-	16	16	5.3	20	30	0.012	24	9.7	0.013	39	0.50	618.00	617.50	626.50	1.23	619.23	1.46	0.73	621.42	620.94
DMH 83	DMH 82	0.00	8.31	-	0.00	3.70	-	16	16	5.3	20	34	0.012	24	17.0	0.054	65	3.50	615.00	611.50	626.00	0.80	615.80	4.49	2.24	622.53	617.94
DMH 82	DMH 81	0.00	8.31	-	0.00	3.70	-	16	16	5.3	20	34	0.012	24	12.0	0.021	71	1.50	606.00	604.50	616.00	1.05	607.05	2.24	1.12	610.40	608.94
DMH 81	DMH 80	0.00	8.31	-	0.00	3.70	-	16	16	5.3	20	34	0.012	24	13.0	0.024	33	0.80	599.00	598.20	609.00	1.02	600.02	2.62	1.31	603.96	601.94
DMH 80	HW 79	0.00	8.31	-	0.00	3.70	-	16	16	5.3	20	34	0.012	24	11.0	0.018	11	0.20	598.20	598.00	602.00	1.15	599.35	1.88	0.00	601.23	601.14

Continued on Sheet 2

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Consulting Engineers

PROJECT: Bald Hill Estates

RAINFALL CURVE: Orange County

JOB NO. 00046

LOCATION: Town of Monroe, NY

REMARKS: Minimum Time of Concentration of 5 min used for storm drainage system

DATE 11/15/2005

SHEET # 2 OF 5

STORM FREQUENCY: 25-Year

COMPUTED BY JS

CHECKED BY _____

LOCATION		ACRES		TIME CONC. - MIN.			"Q"			P I P E										CATCH BASIN ENERGY ELEVATION							
FROM	TO	Δ SUB	TOTAL	C	Δ A C	Σ A C	INLET	PIPE	TOTAL	"i"	DES.	CAP.	"n"	SIZE	VEL.	SLOPE	LGTH.	FALL	INV. UPPER	INV. LOWER	TOP ELEV. UPPER	NORMAL DEPTH	HGL	VELOCITY HEAD (V ² /2g)	VEL. LOSS @ CB	OUTLET CONTROL	INLET CONTROL
CI 78	CI 77	0.13	0.13	0.90	0.12	0.12	5	-	5	7.6	1	16	0.012	18	4.8	0.017	29	0.50	623.50	623.00	628.00	0.27	623.77	0.36	0.00	624.13	623.95
CI 77	CI 75	0.57	0.70	0.35	0.20	0.32	13	5	13	5.7	2	18	0.012	18	6.8	0.020	126	2.50	623.00	620.50	628.00	0.40	623.40	0.72	0.36	624.48	623.75
CI 76	CI 75	0.50	0.50	0.40	0.20	0.20	5	13	13	5.7	1	17	0.012	18	5.6	0.019	27	0.50	621.00	620.50	625.00	0.27	621.27	0.49	0.00	621.76	621.45
CI 75	CI 74	0.06	1.26	0.85	0.05	0.57	12	13	13	5.7	3	19	0.012	18	8.7	0.026	38	1.00	620.50	619.50	625.50	0.47	620.97	1.18	0.59	622.73	621.48
CI 74	CI 73	0.15	1.41	0.75	0.11	0.68	5	13	13	5.7	4	17	0.012	18	7.5	0.019	26	0.50	619.50	619.00	626.50	0.50	620.00	0.87	0.44	621.31	620.61
CI 73	CI 71	0.15	1.56	0.75	0.11	0.79	5	13	13	5.7	5	19	0.012	18	8.0	0.021	336	7.00	619.00	612.00	626.50	0.57	619.57	0.99	0.50	621.06	620.28
CI 72	CI 71	0.75	0.75	0.60	0.45	0.45	5	-	5	7.6	3	16	0.012	18	6.7	0.017	29	0.50	612.50	612.00	616.36	0.45	612.95	0.70	0.00	613.65	613.48
CI 71	DMH 70	0.58	2.89	0.75	0.44	1.68	5	13	13	5.7	10	19	0.012	18	10.5	0.024	21	0.50	606.50	606.00	616.36	0.80	607.30	1.71	0.86	609.87	608.83
DMH 70	HW 69	0.00	2.89	-	0.00	1.68	-	13	13	5.7	10	19	0.012	18	9.5	0.021	24	0.50	601.00	600.50	610.00	0.83	601.83	1.40	0.70	603.93	603.33
OS 68	HW 67	0.00	2.89	-	0.00	1.68	-	13	13	5.7	10	19	0.012	18	10.5	0.026	38	1.00	600.00	599.00	604.00	0.80	600.80	1.71	0.00	602.51	602.33
CI 66	CI 65	0.04	0.04	0.85	0.03	0.03	5	-	5	7.6	0	12	0.012	18	2.0	0.010	53	0.53	710.67	710.14	713.20	0.10	710.77	0.06	0.00	710.83	710.87
YD 65A	CI 65	1.80	1.80	0.23	0.41	0.41	9	-	9	6.5	3	9.5	0.012	18	4.6	0.006	135	0.86	711.00	710.14	715.00	0.60	711.60	0.33	0.00	711.93	711.98
CI 65	CI 64	0.13	1.97	0.50	0.07	0.51	5	9	9	6.5	3	12	0.012	18	5.7	0.010	27	0.27	710.14	709.87	713.20	0.52	710.66	0.50	0.25	711.42	711.12
CI 64	CI 63	0.07	2.04	0.60	0.04	0.56	5	9	9	6.5	4	12	0.012	18	6.0	0.010	27	0.27	709.87	709.60	713.60	0.60	710.47	0.56	0.00	711.03	710.98
YD 63A	CI 63	0.26	0.26	0.23	0.06	0.06	7	-	7	7.0	0	19	0.012	18	2.0	0.098	65	6.40	716.00	709.60	720.00	0.10	716.10	0.06	0.00	716.16	716.20
CI 63	CI 62	0.30	2.60	0.75	0.23	0.78	5	9	9	6.5	5	19	0.012	18	13.0	0.077	293	22.70	707.20	684.50	713.50	0.41	707.61	2.62	1.31	711.55	708.48
CI 62	CI 61	0.71	3.31	0.65	0.46	1.24	9	9	9	6.5	8	17	0.012	18	9.0	0.019	27	0.50	684.50	684.00	689.50	0.77	685.27	1.26	0.63	687.16	686.35
YD 61A	CI 61	0.15	0.15	0.30	0.05	0.05	9	-	9	6.5	0	19	0.012	18	2.0	0.143	105	15.00	699.00	684.00	703.00	0.10	699.10	0.06	0.00	699.16	699.20
CI 61	CI 57	0.45	3.91	0.75	0.34	1.62	7	9	9	6.5	11	19	0.012	18	16.0	0.072	175	12.60	682.00	669.40	689.00	0.61	682.61	3.98	1.99	688.57	684.58
YD 60A	CI 60	0.13	0.13	0.30	0.04	0.04	8	-	8	6.7	0	19	0.012	18	2.0	0.098	145	14.20	684.00	669.80	688.00	0.10	684.10	0.06	0.00	684.16	684.20
CI 60	CI 57	0.20	0.33	0.80	0.16	0.20	5	9	9	6.5	1	14	0.012	18	4.7	0.014	29	0.40	669.80	669.40	673.60	0.28	670.08	0.34	0.17	670.59	670.25
YD 58B	YD 58A	0.13	0.13	0.30	0.04	0.04	8	-	8	6.7	0	19	0.012	18	2.0	0.124	105	13.00	706.00	693.00	710.00	0.10	706.10	0.06	0.00	706.16	706.20
YD 58A	CI 58	0.08	0.21	0.60	0.05	0.09	5	8	8	6.7	1	19	0.012	18	10.0	0.147	150	22.00	693.00	671.00	697.00	0.16	693.16	1.55	0.00	694.71	693.45
CI 59	CI 58	0.22	0.22	0.50	0.11	0.11	7	-	7	7	1	19	0.012	18	7.2	0.055	55	3.00	674.00	671.00	678.30	0.20	674.20	0.80	0.40	675.41	674.45

Continued on Sheet 3

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PROJECT: Bald Hill Estates

RAINFALL CURVE: Orange County

JOB NO. 00046

LOCATION: Town of Monroe, NY

REMARKS: Minimum Time of Concentration of 5 min
used for storm drainage system

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SHEET # 3 OF 5

STORM FREQUENCY: 25-Year

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LOCATION		ACRES					TIME CONC. - MIN.			"Q"			P I P E										CATCH BASIN ENERGY ELEVATION				
FROM	TO	Δ SUB	TOTAL	C	Δ A C	∅ A C	INLET	PIPE	TOTAL	"i"	DES.	CAP.	"n"	SIZE	VEL.	SLOPE	LGTH.	FALL	INV. UPPER	INV. LOWER	TOP ELEV. UPPER	NORMAL DEPTH	HGL	VELOCITY HEAD (V ² /2g)	VEL. LOSS @ CB	OUTLET CONTROL	INLET CONTROL
CI 58	CI 57	0.08	0.30	0.75	0.06	0.26	5	8	8	6.7	2	19	0.012	18	9.5	0.070	23	1.60	671.00	669.40	678.30	0.26	671.26	1.40	0.70	673.36	671.98
CI 57	CI 55	0.28	4.82	0.85	0.24	2.32	5	9	9	6.5	15	19	0.012	18	19.0	0.040	201	8.00	666.00	658.00	673.60	0.85	666.85	5.61	0.00	672.46	669.90
CI 56	CI 55	0.13	0.13	0.85	0.11	0.11	5	-	5	7.6	1	10	0.012	18	3.5	0.007	29	0.20	659.10	658.90	662.50	0.33	659.43	0.19	0.00	659.62	659.55
CI 55	CI 33	0.45	5.40	0.60	0.27	2.70	6	9	9	6.5	18	32	0.012	24	10.0	0.014	37	0.50	658.00	657.50	662.50	1.12	659.12	1.55	0.78	661.45	660.60
CI 54	CI 53	0.07	0.07	0.60	0.04	0.04	5	-	5	7.6	0	13	0.012	18	2.0	0.011	27	0.30	702.80	702.50	707.10	0.10	702.90	0.06	0.00	702.96	703.11
CI 53	CI 52	1.37	1.44	0.35	0.48	0.52	12	5	12	5.9	3	16	0.012	18	6.5	0.016	25	0.40	701.70	701.30	707.10	0.45	702.15	0.66	0.00	702.81	702.68
CI 52	CI 51	0.77	2.21	0.30	0.23	0.75	11	12	12	5.9	4	14	0.012	18	6.6	0.014	57	0.80	701.30	700.50	706.50	0.56	701.86	0.68	0.34	702.87	702.41
CI 51	CI 49	0.06	2.27	0.70	0.04	0.79	5	12	12	5.9	5	19	0.012	18	13.0	0.072	195	14.10	699.50	685.40	706.50	0.41	699.91	2.62	0.00	702.53	700.78
CI 50	CI 49	0.70	0.70	0.60	0.42	0.42	8	-	8	6.7	3	12	0.012	18	5.5	0.010	29	0.30	685.70	685.40	689.70	0.52	686.22	0.47	0.00	686.69	686.68
CI 49	CI 47	0.14	3.11	0.70	0.10	1.31	9	12	12	5.9	8	19	0.012	18	11.0	0.033	150	5.00	683.50	678.50	689.60	0.63	684.13	1.88	0.94	686.95	685.35
CI 48	CI 47	0.14	0.14	0.80	0.11	0.11	5	-	5	7.6	1	16	0.012	18	4.8	0.017	29	0.50	678.50	678.00	682.30	0.27	678.77	0.36	0.00	679.13	678.95
CI 47	CI 40	0.45	3.70	0.35	0.16	1.58	8	12	12	5.9	9	15	0.012	18	8.8	0.015	43	0.65	678.00	677.35	682.60	0.87	678.87	1.20	0.60	680.67	680.19
CI 46	CI 45	0.03	0.03	0.90	0.03	0.03	5	-	5	7.6	0	12	0.012	18	2.0	0.009	58	0.50	705.50	705.00	710.30	0.10	705.60	0.06	0.00	705.66	705.70
CI 45	FI 44	0.03	0.06	0.90	0.03	0.05	5	5	5	7.6	0	19	0.012	18	2.0	0.034	80	2.70	705.00	702.30	710.30	0.10	705.10	0.06	0.00	705.16	705.20
FI 44	CI 41	0.78	0.84	0.40	0.31	0.37	11	5	11	6.1	2	19	0.012	18	8.8	0.055	135	7.40	701.50	694.10	706.60	0.28	701.78	1.20	0.60	703.58	702.47
FI 43	CI 41	0.10	0.10	0.30	0.03	0.03	5	-	5	7.6	0	17	0.012	18	2.0	0.019	27	0.50	695.00	694.50	699.70	0.10	695.10	0.06	0.00	695.16	695.20
CI 42	CI 41	0.17	0.17	0.70	0.12	0.12	5	-	5	7.6	1	12	0.012	18	4.0	0.010	29	0.30	695.20	694.90	699.50	0.30	695.50	0.25	0.00	695.75	695.65
CI 41	CI 40	0.23	1.34	0.55	0.13	0.64	6	11	11	6.1	4	19	0.012	18	12.0	0.064	187	12.00	692.00	680.00	699.50	0.36	692.36	2.24	1.12	695.71	693.11
CI 40	CI 39	0.39	5.43	0.80	0.31	0.95	6	12	12	5.9	6	17	0.012	18	8.5	0.018	28	0.50	676.00	675.50	685.00	0.65	676.65	1.12	0.56	678.33	677.47
CI 39	CI 35	0.14	5.57	0.85	0.12	1.07	5	12	12	5.9	6	19	0.012	18	12.0	0.045	178	8.00	675.50	667.50	684.30	0.61	676.11	2.24	1.12	679.46	676.97
CI 38	CI 37	0.06	0.06	0.60	0.04	0.04	5	-	5	7.6	0	19	0.012	18	2.0	0.058	57	3.30	671.30	668.00	675.40	0.10	671.40	0.06	0.00	671.46	671.50
CI 37	CI 36	0.03	0.09	0.80	0.02	0.06	5	5	5	7.6	0	19	0.012	18	2.0	0.056	25	1.40	668.00	666.60	675.40	0.10	668.10	0.06	0.03	668.19	668.20
CI 36	CI 35	0.17	0.26	0.60	0.10	0.16	5	5	5	7.6	1	12	0.012	18	4.0	0.010	29	0.30	666.60	666.30	671.00	0.30	666.90	0.25	0.12	667.27	667.05

Continued on Sheet 4

LJA LEONARD JACKSON ASSOCIATES

Consulting Engineers

26 FIREMENS MEMORIAL DRIVE POMONA, NEW YORK 10970 (845) 354-4382 FAX (845) 354-4401

PROJECT: Bald Hill Estates

RAINFALL CURVE: Orange County

JOB NO. 00046

LOCATION: Town of Monroe, NY

REMARKS: Minimum Time of Concentration of 5 min
used for storm drainage system

DATE 11/15/2005

SHEET # 4 OF 5

STORM FREQUENCY: 25-Year

COMPUTED BY JS

CHECKED BY _____

LOCATION		ACRES		TIME CONC. - MIN.			"Q"			P I P E										CATCH BASIN ENERGY ELEVATION							
FROM	TO	Δ SUB	TOTAL	C	Δ A C	Σ A C	INLET	PIPE	TOTAL	"i"	DES.	CAP.	"n"	SIZE	VEL.	SLOPE	LGTH.	FALL	INV. UPPER	INV. LOWER	TOP ELEV. UPPER	NORMAL DEPTH	HGL	VELOCITY HEAD (V ² /2g)	VEL. LOSS @ CB	OUTLET CONTROL	INLET CONTROL
CI 35	DMH 34	0.18	6.01	0.65	0.12	1.35	5	12	12	5.9	8	19	0.012	18	11.0	0.032	120	3.80	663.00	659.20	671.00	0.63	663.63	1.88	0.94	666.45	664.85
YD 34A	DMH 34	0.48	0.48	0.30	0.14	0.14	14	-	14	5.6	1	19	0.012	18	8.8	0.089	65	5.80	665.00	659.20	669.00	0.18	665.18	1.20	0.60	666.98	665.45
DMH 34	CI 33	0.00	6.49	-	0.00	1.50	-	14	14	5.6	8	19	0.012	18	9.6	0.021	73	1.50	655.50	654.00	664.40	0.75	656.25	1.43	0.72	658.40	657.35
CI 33	CI 32	0.55	12.44	0.75	0.41	4.61	8	14	14	5.6	26	63	0.012	30	12.0	0.017	29	0.50	653.50	653.00	661.70	1.18	654.68	2.24	1.12	658.03	656.30
CI 32	CI 30	0.41	12.85	0.75	0.31	4.91	6	14	14	5.6	28	63	0.012	30	14.0	0.027	165	4.50	653.00	648.50	661.80	1.10	654.10	3.04	1.52	658.67	65.98
CI 31	CI 30	0.21	0.21	0.70	0.15	0.15	5	14	14	5.6	1	10	0.012	18	3.5	0.007	29	0.20	648.70	648.50	653.50	0.33	649.03	0.19	0.00	649.22	649.15
CI 30	CI 29	0.10	13.16	0.85	0.09	5.15	5	14	14	5.6	29	63	0.012	30	19.0	0.058	112	6.50	644.50	638.00	653.50	0.90	645.40	5.61	0.00	651.01	647.58
CI 29	CI 28	0.07	13.23	0.85	0.06	5.21	5	14	14	5.6	29	63	0.012	30	16.0	0.040	28	1.12	634.00	632.88	642.70	1.00	635.00	3.98	1.99	640.96	637.08
CI 28	HW 27	0.29	13.52	0.50	0.15	5.35	13	14	14	5.6	30	63	0.012	30	20.0	0.075	120	9.00	629.00	620.00	642.50	0.85	629.85	6.21	3.11	639.17	632.18
OS 26	DMH 25	0.00	13.52	-	0.00	5.35	-	-	-	5.6	30	63	0.012	30	12.5	0.020	120	2.40	610.50	608.10	623.50	1.20	611.70	2.43	1.21	615.34	613.68
DMH 25	DMH 22	0.00	13.52	-	0.00	5.35	-	-	-	5.6	30	63	0.012	30	12.0	0.018	119	2.10	608.10	606.00	624.80	1.22	609.32	2.24	0.00	611.56	611.28
CI 24	CI 23	0.37	0.37	0.85	0.31	0.31	6	-	6	7.3	2	11	0.012	18	4.7	0.008	36	0.30	619.60	619.30	623.30	0.45	620.05	0.34	0.00	620.39	620.35
CI 23	DMH 22	0.05	0.42	0.90	0.05	0.36	5	6	6	7.3	3	19	0.012	18	10.0	0.345	11	3.80	619.30	615.50	623.30	0.20	619.50	1.55	0.78	621.83	620.28
DMH 22	DMH 21	0.00	13.94	-	0.00	5.71	-	14	14	5.6	32	63	0.012	30	13.0	0.020	70	1.40	606.00	604.60	620.00	1.22	607.22	2.62	1.31	611.16	609.30
DMH 21	DMH 20	0.00	13.94	-	0.00	5.71	-	14	14	5.6	32	63	0.012	30	15.5	0.033	30	1.00	598.50	597.50	620.00	1.10	599.60	3.73	1.87	605.20	601.80
DMH 20	DMH 19	0.00	13.94	-	0.00	5.71	-	14	14	5.6	32	50	0.012	30	10.5	0.012	112	1.40	588.50	587.10	602.00	1.55	590.05	1.71	0.86	592.62	590.80
DMH 19	HW 18	0.00	13.94	-	0.00	5.71	-	14	14	5.6	32	52	0.012	30	9.0	0.013	8	0.10	587.10	587.00	590.00	1.48	588.58	1.26	0.00	589.84	589.89
HW 17	DMH 16A	3.28	3.28	0.23	0.75	0.75	11	-	11	6.1	5	19	0.012	18	9.7	0.030	67	2.00	623.60	621.60	632.00	0.51	624.11	1.46	0.00	625.57	624.88
DMH 16A	DMH 16	0.00	3.28	-	0.00	0.75	-	11	11	6.1	5	15	0.012	18	6.3	0.015	20	0.30	611.50	611.20	632.50	0.70	612.20	0.62	0.31	613.12	612.48
DMH 16	HW 15	0.00	3.28	-	0.00	0.75	-	11	11	6.1	5	12	0.012	18	7.3	0.010	16	0.16	611.16	611.00	615.50	0.62	611.78	0.83	0.41	613.02	612.44

Continued on Sheet 5

LJA LEONARD JACKSON ASSOCIATES

Consulting Engineers

26 FIREMENS MEMORIAL DRIVE POMONA, NEW YORK 10970 (845) 354-4382 FAX (845) 354-4401

PROJECT: Bald Hill Estates

RAINFALL CURVE: Orange County

JOB NO. 00046

LOCATION: Town of Monroe, NY

REMARKS: Minimum Time of Concentration of 5 min
used for storm drainage system

DATE 11/15/2005

SHEET # 5 OF 5

STORM FREQUENCY: 25-Year

COMPUTED BY JS

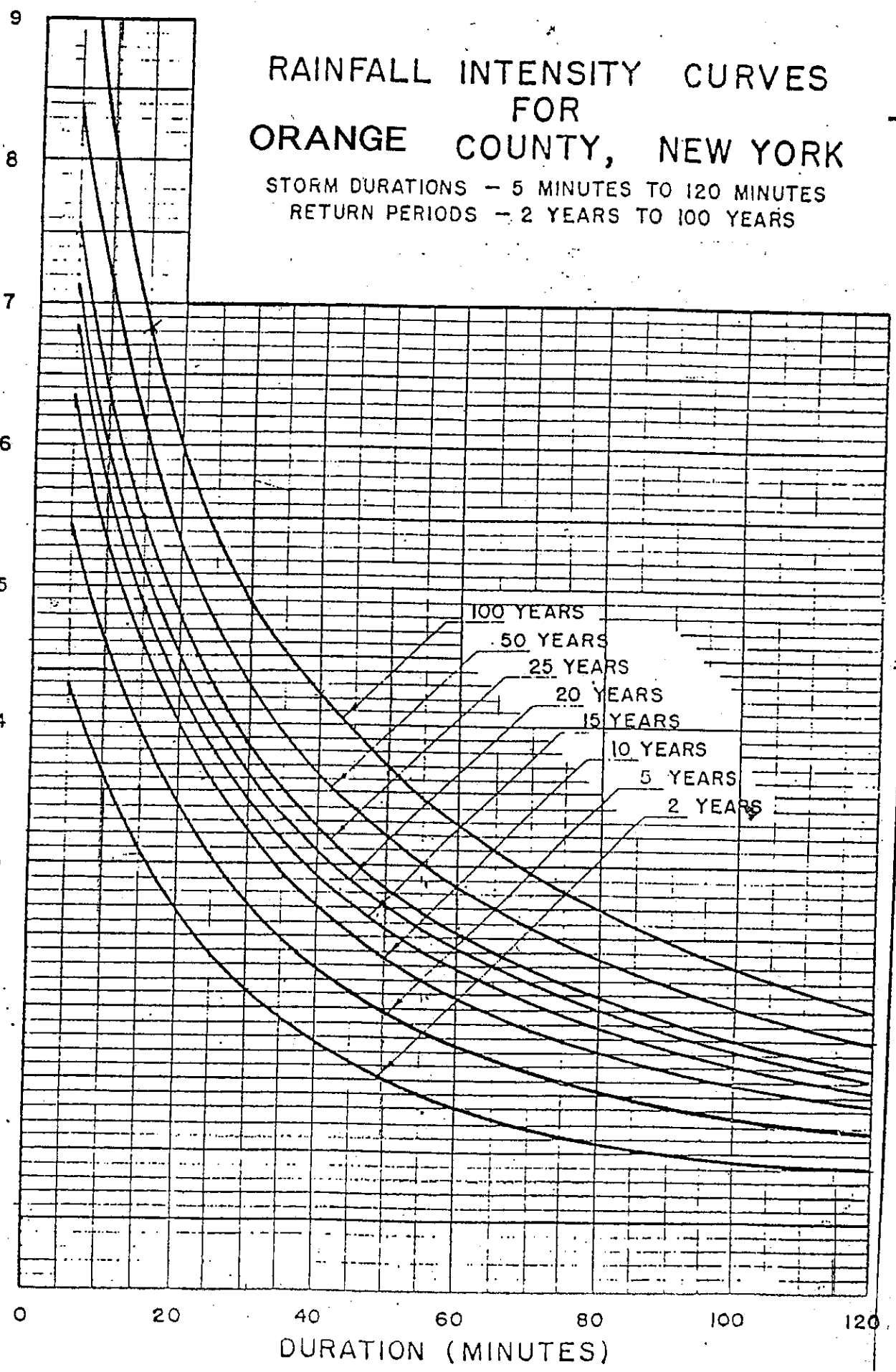
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LOCATION		ACRES					TIME CONC. - MIN.			"Q"			P I P E										CATCH BASIN ENERGY ELEVATION				
FROM	TO	Δ SUB	TOTAL	C	Δ A C	∅ A C	INLET	PIPE	TOTAL	"i"	DES.	CAP.	"D"	SIZE	VEL.	SLOPE	LGTH.	FALL	INV. UPPER	INV. LOWER	TOP ELEV. UPPER	NORMAL DEPTH	HGL	VELOCITY HEAD (V ² /2g)	VEL. LOSS @ CB	OUTLET CONTROL	INLET CONTROL
CI 14	CI 12	0.05	0.05	0.90	0.05	0.05	5	-	5	7.6	0	19	0.012	18	2.0	0.045	85	3.80	631.60	627.80	635.60	0.10	631.70	0.06	0.00	631.76	631.80
CI 13	CI 12	0.07	0.07	0.90	0.06	0.06	5	-	5	7.6	0	10	0.012	18	2.0	0.007	29	0.20	628.00	627.80	631.90	0.10	628.10	0.06	0.00	628.16	628.20
CI 12	CI 10	0.01	0.13	0.90	0.01	0.12	5	5	5	7.6	1	18	0.012	18	8.0	0.061	33	2.00	627.80	625.80	631.90	0.18	627.98	0.99	0.50	629.47	628.25
CI 11	CI 10	0.08	0.08	0.90	0.07	0.07	5	-	5	7.6	1	10	0.012	18	3.5	0.007	29	0.20	626.00	625.80	629.70	0.33	626.33	0.19	0.00	626.52	626.45
CI 10	CI 8	0.07	0.28	0.90	0.06	0.25	5	5	5	7.6	2	18	0.012	18	9.0	0.054	135	7.30	625.80	618.50	629.80	0.28	626.08	1.26	0.63	627.97	626.55
CI 9	CI 8	0.07	0.07	0.90	0.06	0.06	5	-	5	7.6	0	10	0.012	18	2.0	0.007	27	0.20	618.70	618.50	622.60	0.10	618.80	0.06	0.00	618.86	618.90
CI 8	CI 6	0.28	0.63	0.50	0.14	0.46	5	5	5	7.6	3	18	0.012	18	12.0	0.092	176	16.20	618.50	602.30	622.60	0.30	618.80	2.24	1.12	622.15	619.47
CI 7	CI 6	0.39	0.39	0.45	0.18	0.18	10	-	5	7.6	1	10	0.012	18	3.5	0.007	29	0.20	602.50	602.30	607.00	0.33	602.83	0.19	0.00	603.02	602.95
CI 6	DMH 5	0.08	1.10	0.90	0.07	0.70	5	10	10	6.3	4	18	0.012	18	12.5	0.078	202	15.80	602.30	586.50	607.00	0.35	602.65	2.43	1.21	606.29	603.41
DMH 5	CI 3	0.00	1.10	-	0.00	0.70	-	10	10	6.3	4	18	0.012	18	13.0	0.100	5	0.50	586.50	586.00	591.20	0.33	586.83	2.62	0.00	589.45	587.60
CI 4	CI 3	0.55	0.55	0.60	0.33	0.33	14	10	14	5.9	2	18	0.012	18	6.0	0.019	27	0.50	586.50	586.00	590.70	0.36	586.86	0.56	0.00	587.42	587.25
CI 3	DMH 2	0.31	1.96	0.85	0.26	1.30	5	14	14	5.9	8	19	0.012	18	14.0	0.070	77	5.40	583.50	578.10	590.70	0.52	584.02	3.04	1.52	588.59	585.35
DMH 2	HW 1	0.00	1.96	-	0.00	1.30	-	14	14	5.9	8	19	0.012	18	9.0	0.020	5	0.10	578.10	578.00	580.50	0.66	578.76	1.26	0.00	580.02	579.95

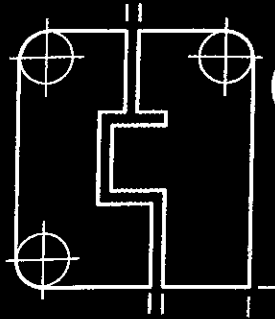
RAINFALL INTENSITY CURVES FOR ORANGE COUNTY, NEW YORK

STORM DURATIONS - 5 MINUTES TO 120 MINUTES
RETURN PERIODS - 2 YEARS TO 100 YEARS

INTENSITY (INCHES PER HOUR)

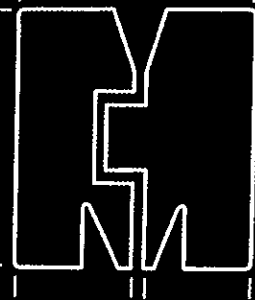


DURATION (MINUTES)



CAMPBELL FOUNDRY

Established 1921



**Campbell
Materials
Division**

Inside Front Cover



73

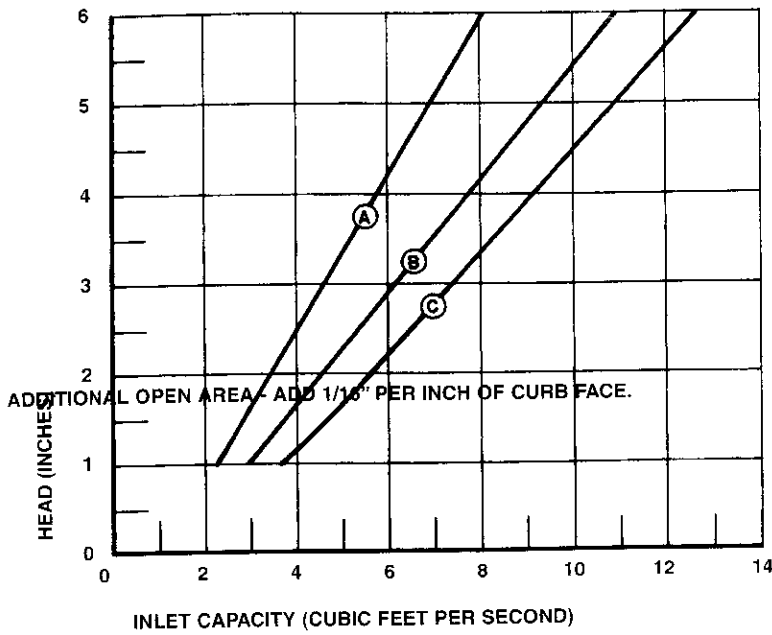
TWENTY

**NJPDES
Phase II
Compliant
Stormwater
Control Products**

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RATE OF FLOW CHARTS

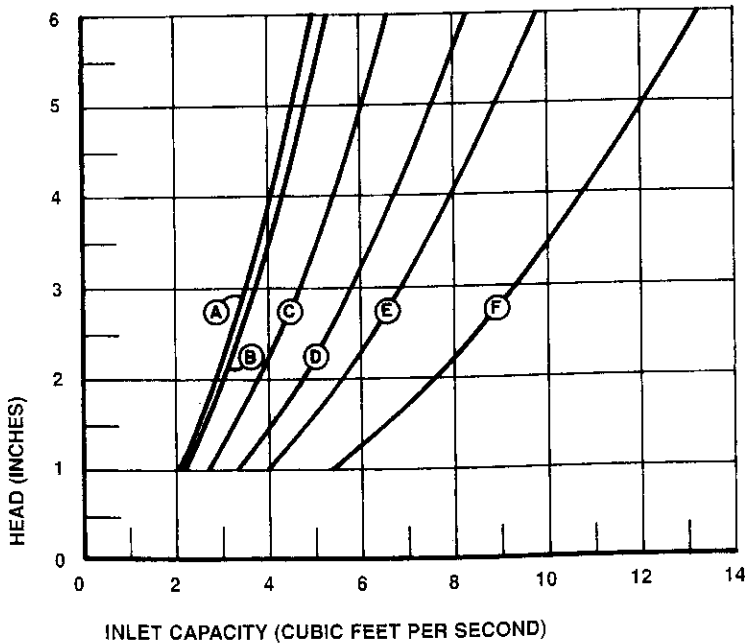
FIGURE 5. RATE OF FLOW FOR CURB TYPE CATCH BASINS WITH BICYCLE GRATES



PATTERN NUMBER	GRAPH LETTER	OPEN AREA* SQUARE INCHES
2617	B	417
2618	B	417
2632	A	313
2633	A	313
2639	C	521
2694	B	417
2696	B	417

* Additional open area provided by curb opening. Standard curb opening is width minus 6" and height minus 2 1/4".

FIGURE 6. RATE OF FLOW FOR FLAT DROP INLETS WITH BICYCLE GRATES



PATTERN NUMBER	GRAPH LETTER	OPEN AREA SQUARE INCHES
3404	B	334
3405	C	417
3406	A	313
3407	C	417
3408	D	521
3424	E	616
3425	F	834
3426	F	834

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