JOB #: 2003.1080

DRAINAGE CALCULATIONS

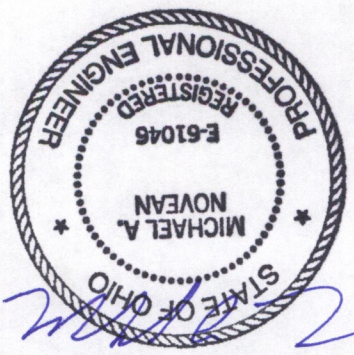
FOR

VOLVO of CINCINNATI, MUHLHAUSER RD.

WEST CHESTER, OHIO

DATE : September 11, 2003

NEXUS ENGINEERING
CIVIL ENGINEERS AND LAND SURVEYORS
8080 BECKETT CENTER DRIVE, SUITE 203
WEST CHESTER, OHIO 45069
PHONE: (513) 860-9130



2003-09-11

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DRAINAGE MAP

0 30 60
SCALE IN FEET

N

AREA=36404 S.F. c=0.763 0.84Ac.
AREA=13260 S.F. c=0.705
AREA=18873 S.F. c=0.708
AREA=10632 S.F. c=0.674
AREA=17385 S.F. c=0.744
AREA=37336 S.F. c=0.779
AREA=3886 S.F. c=0.726
AREA=2020 S.F. c=0.775
AREA=2712 S.F. c=0.761
AREA=17320 S.F. c=0.95
AREA=14732 S.F. c=0.742
AREA=22194 S.F. c=0.796
AREA=7030 S.F. c=0.662
AREA=13959 S.F. c=0.830
AREA=7386 S.F. c=0.723
AREA=6106 S.F. c=0.751
AREA=4467 S.F. c=0.900
AREA=5157 S.F. c=0.900

Electric Connection (By Others)
Transformer W/ Concrete Pad
Electric Service
Ex. Walk
Ex. Paved Gutter
Ex. R/W
60' R/W
Ex. 30" Storm
Ex. 48" CMP
Ex. 18" Storm
C.B.
Ex. 36" CMP
℄ MUHLHAUSER ROAD
℄ FLOER DRIVE

SCHUMACHER DUGAN CONSTRUCTION, INC
General Contractors and Land Development Company
6355 Centre Park Drive • West Chester, Ohio 45069
Phone: 513-777-9800 • Fax: 513-777-2642
www.schumacher-dugan.com
Email: schudu1234@aol.com

PLANS PREPARED BY:
NEXUS ENGINEERING
CIVIL ENGINEERS AND LAND SURVEYORS
8080 BECKETT CENTER DRIVE, SUITE 203
WEST CHESTER, OHIO 45069
PHONE: (513) 860-9130

New Facility AT

Volvo of Cincinnati

Volvo Cars of North America

MUHLHAUSER ROAD
WEST CHESTER, OHIO
45069

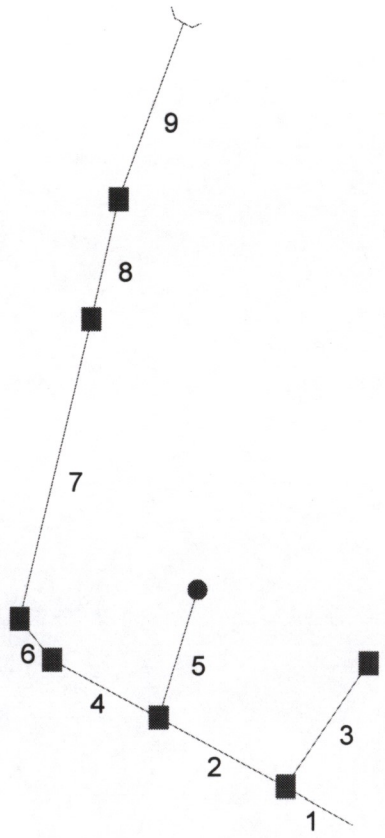
revisions
9-8-03 SHEET CREATED

drawn by CFG
approved by MAN
date 9-2003

file no. 03-127

sheet C-1
of

Hydraflow Plan View



Project file: 1080 storm1.stm	IDF file: butler.IDF	No. Lines: 9	09-11-2003

Hydraflow Storm Sewer Tabulation

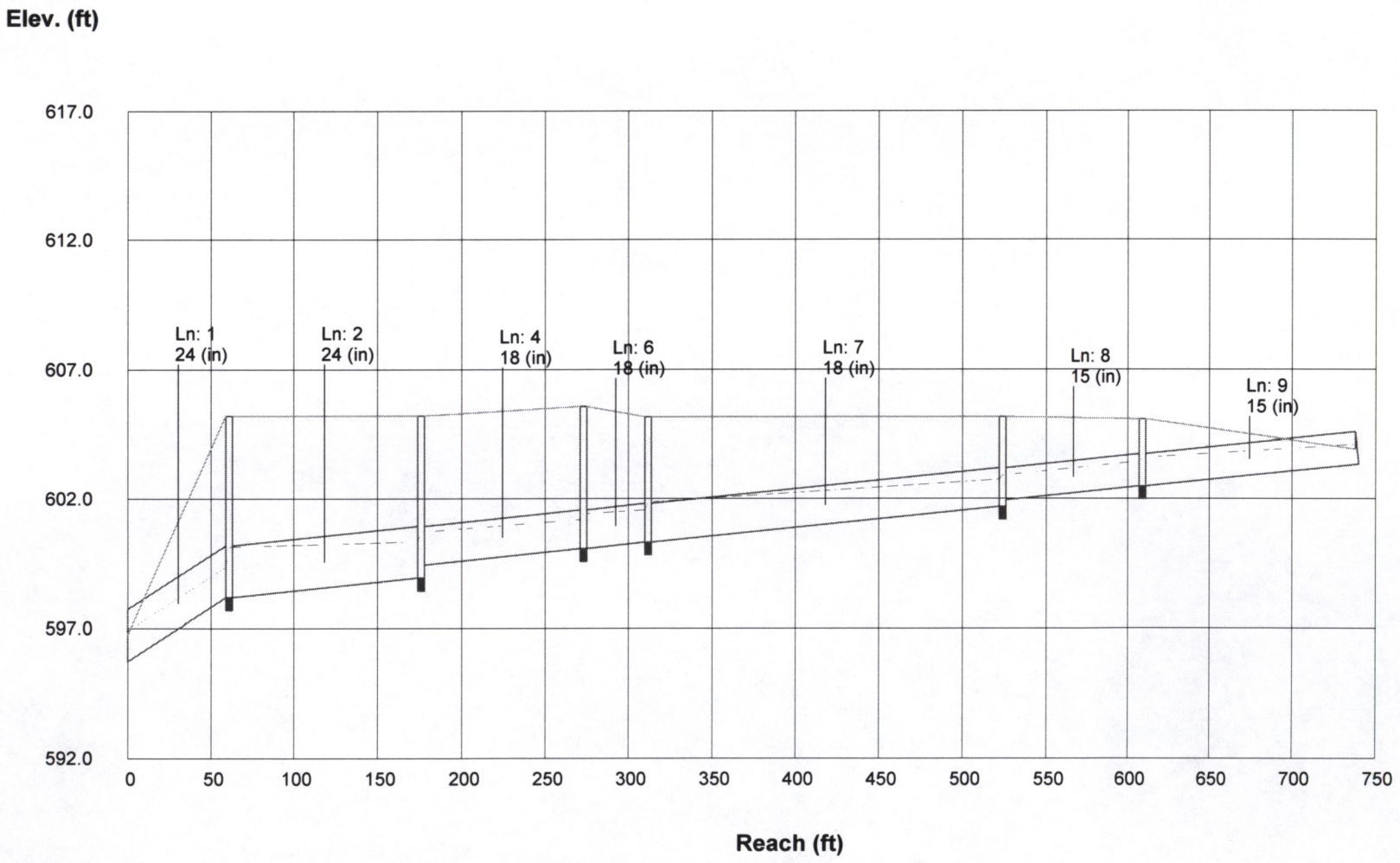
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
9	8	131.0	0.84	0.84	0.76	0.64	0.64	10.0	10.0	5.2	3.29	4.51	3.48	15	0.65	603.33	602.48	604.11	603.59	603.91	605.07	INLET to CB7
8	7	85.0	0.30	1.14	0.71	0.21	0.85	10.0	10.8	5.0	4.28	4.50	4.17	15	0.65	602.48	601.93	603.45	602.90	605.07	605.15	CB7 to CB6
7	6	212.0	0.43	1.57	0.71	0.31	1.16	10.0	11.2	5.0	5.75	7.34	3.76	18	0.65	601.68	600.30	602.75	601.87	605.15	605.15	CB6 to CB5
6	4	39.0	0.24	1.81	0.67	0.16	1.32	10.0	12.3	4.8	6.34	7.29	3.89	18	0.64	600.30	600.05	601.56	601.41	605.15	605.56	CB5 to CB4
5	2	93.0	0.40	0.40	0.95	0.38	0.38	10.0	10.0	5.2	1.96	5.35	3.49	12	3.00	602.71	599.92	603.30	600.71	607.43	605.20	BLDG to CB3
4	2	97.0	0.09	1.90	0.73	0.07	1.38	10.0	12.5	4.8	6.62	7.33	4.37	18	0.65	600.05	599.42	601.18	600.71	605.56	605.20	CB4 to CB3
3	1	108.0	0.32	0.32	0.83	0.27	0.27	10.0	10.0	5.2	1.37	3.09	3.66	12	1.00	603.73	602.65	604.23	603.12	606.00	605.20	CB1A to CB1
2	1	115.0	0.34	2.64	0.74	0.25	2.01	10.0	12.9	4.7	9.53	15.83	3.55	24	0.65	598.92	598.17	600.33	600.12	605.20	605.20	CB3 to CB1
1	End	61.0	0.16	3.12	0.66	0.11	2.39	10.0	13.6	4.6	11.09	39.20	5.75	24	4.00	598.17	595.73	599.35	596.91	605.20	596.73	HW to CB1

Project File: 1080 storm1.stm | IDF File: butler.IDF | Total number of lines: 9 | Run Date: 09-08-2003

NOTES: Intensity = 170.00 / (Inlet time + 23.00) ^ 1.00; Return period = 10 Yrs. ; Initial tailwater elevation = 596.91 (ft) n = 0.015

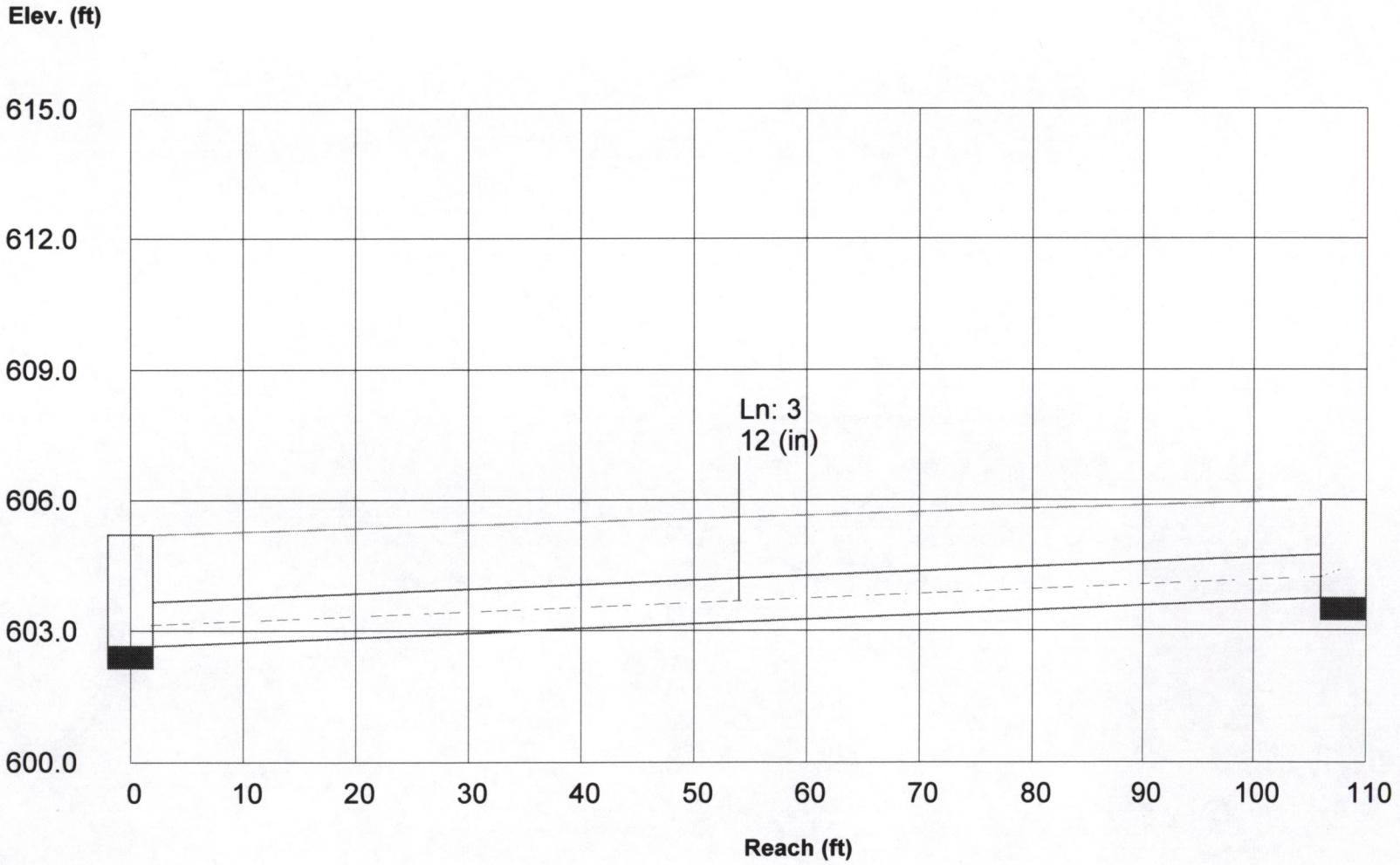
Storm Sewer Profile

Proj. file: 1080 storm1.stm

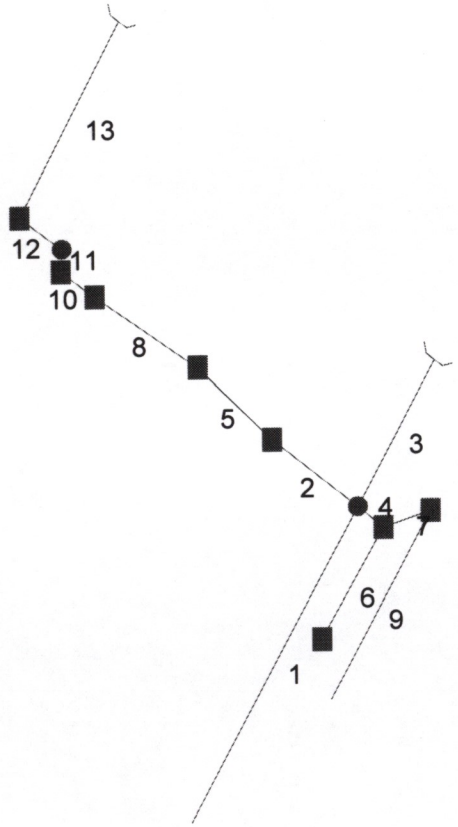


Storm Sewer Profile

Proj. file: 1080 storm1.stm



Hydraflow Plan View



Project file: 1080 storm2.stm	IDF file: butler.IDF	No. Lines: 13	09-11-2003

Hydraflow Storm Sewer Tabulation

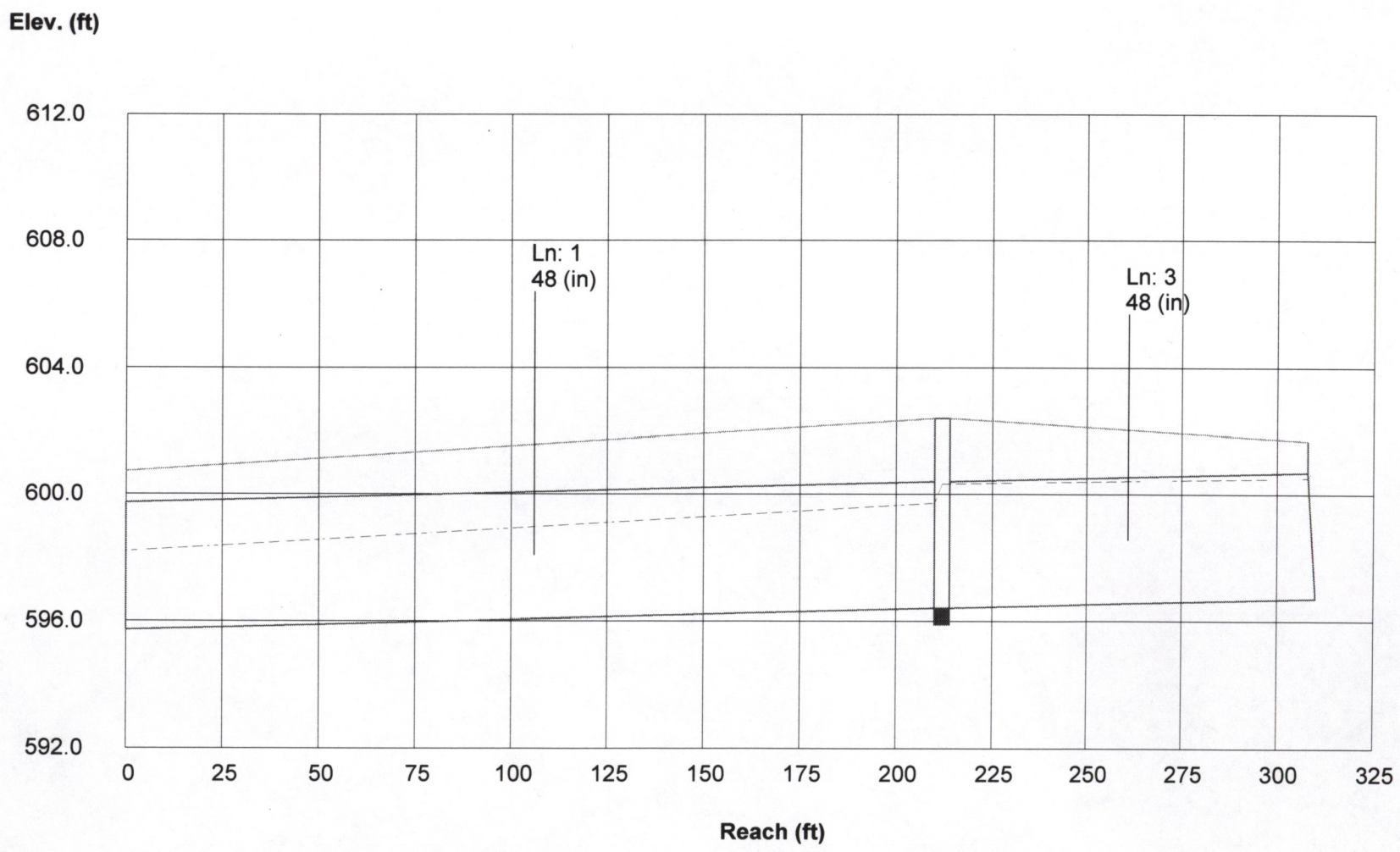
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	212.0	0.00	2.41	0.00	0.00	1.88	0.0	14.0	4.6	69.36	69.99	7.38	48	0.32	596.39	595.72	599.71	598.18	602.39	600.72	HW to CB10
2	1	70.0	0.17	2.05	0.72	0.12	1.58	10.0	12.3	4.8	7.62	12.54	5.55	18	1.90	600.52	599.19	601.57	600.31	603.48	602.39	CB10 to CB11
3	1	98.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	60.70	68.88	4.88	48	0.31	596.69	596.39	600.51	600.31	601.69	602.39	CB10 to HW
4	1	21.0	0.10	0.36	0.90	0.09	0.30	10.0	13.8	4.6	1.40	11.70	2.70	12	14.38	602.41	599.39	602.91	600.31	605.66	602.39	CB10 to CB9
5	2	65.0	0.51	1.88	0.80	0.41	1.46	10.0	12.0	4.9	7.09	7.40	4.47	18	0.66	600.95	600.52	602.17	601.83	603.48	603.48	CB11 to CB12
6	4	76.0	0.14	0.14	0.75	0.11	0.11	10.0	10.0	5.2	0.54	3.09	1.70	12	1.00	603.17	602.41	603.48	603.21	605.66	605.66	CB9 to CB8
7	4	34.0	0.00	0.12	0.00	0.00	0.11	0.0	13.0	4.7	0.51	6.17	1.65	12	4.00	603.77	602.41	604.07	603.21	606.79	605.66	CB9 to CB9A
8	5	81.0	0.06	1.37	0.76	0.05	1.05	10.0	11.6	4.9	5.17	9.10	3.96	18	1.00	601.76	600.95	602.63	602.34	605.49	603.48	CB12 to CB13
9	7	127.0	0.12	0.12	0.90	0.11	0.11	10.0	10.0	5.2	0.56	3.09	2.11	12	1.00	605.04	603.77	605.36	604.22	606.30	606.79	CB9A Slotted
10	8	27.0	0.05	1.31	0.78	0.04	1.01	10.0	11.4	4.9	4.97	7.83	4.09	18	0.74	601.96	601.76	602.87	602.81	605.49	605.49	CB13 to CB14
11	10	13.0	0.00	1.26	0.00	0.00	0.97	0.0	11.3	5.0	4.79	7.14	3.02	18	0.62	602.04	601.96	603.28	603.25	605.49	605.49	CB14 to CB15
12	11	34.0	0.40	1.26	0.74	0.30	0.97	10.0	11.1	5.0	4.82	7.32	3.02	18	0.65	602.26	602.04	603.46	603.40	604.75	605.49	CB15 to CB14
13	12	130.0	0.86	0.86	0.78	0.67	0.67	10.0	10.0	5.2	3.46	7.36	2.74	18	0.65	603.11	602.26	603.93	603.70	603.88	604.75	CB16 to HW

Project File: 1080 storm2.stm | IDF File: butler.IDF | Total number of lines: 13 | Run Date: 09-11-2003

NOTES: Intensity = 170.00 / (Inlet time + 23.00) ^ 1.00; Return period = 10 Yrs. ; Initial tailwater elevation = 598.18 (ft) n = 0.015

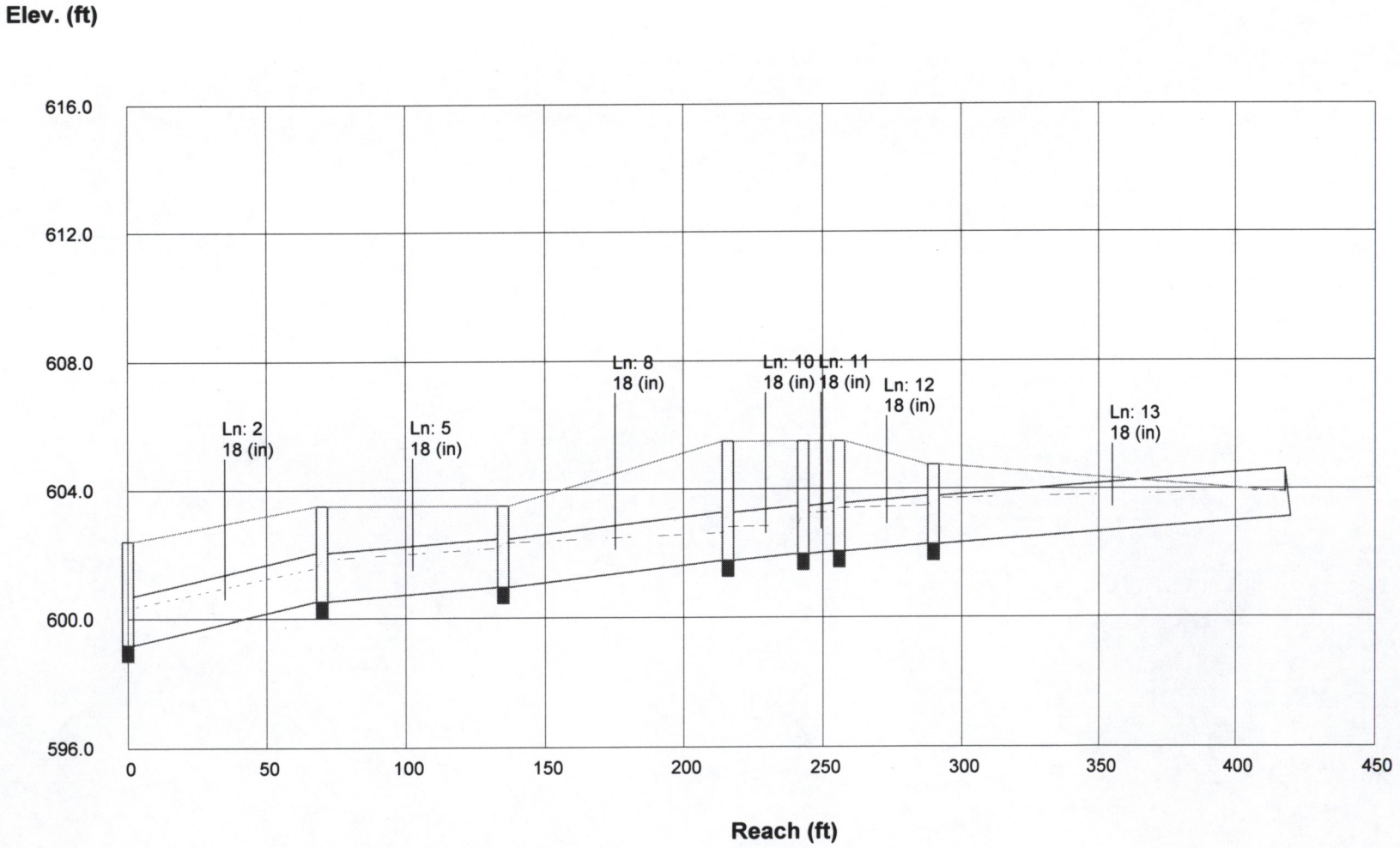
Storm Sewer Profile

Proj. file: 1080 storm2.stm



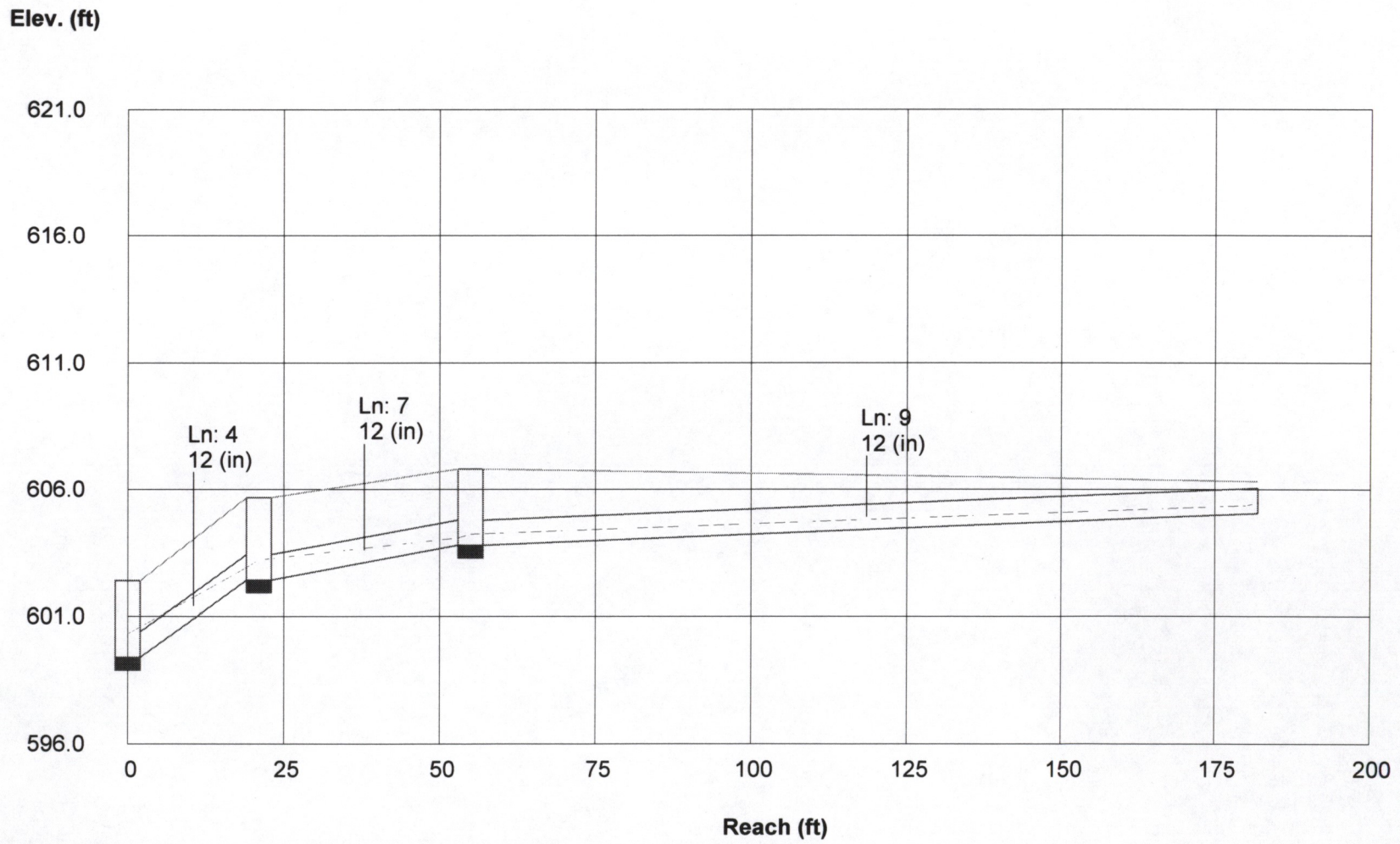
Storm Sewer Profile

Proj. file: 1080 storm2.stm



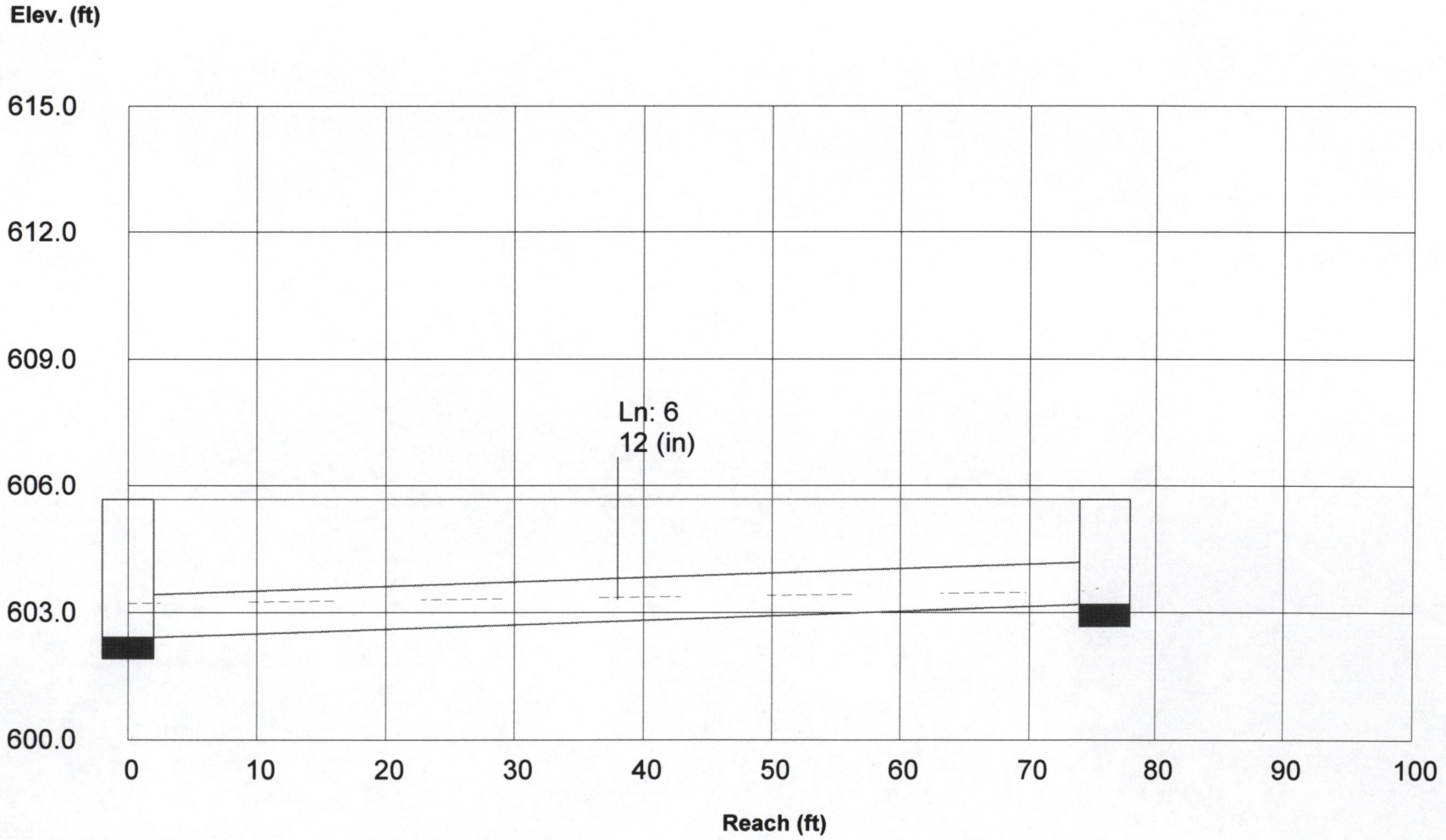
Storm Sewer Profile

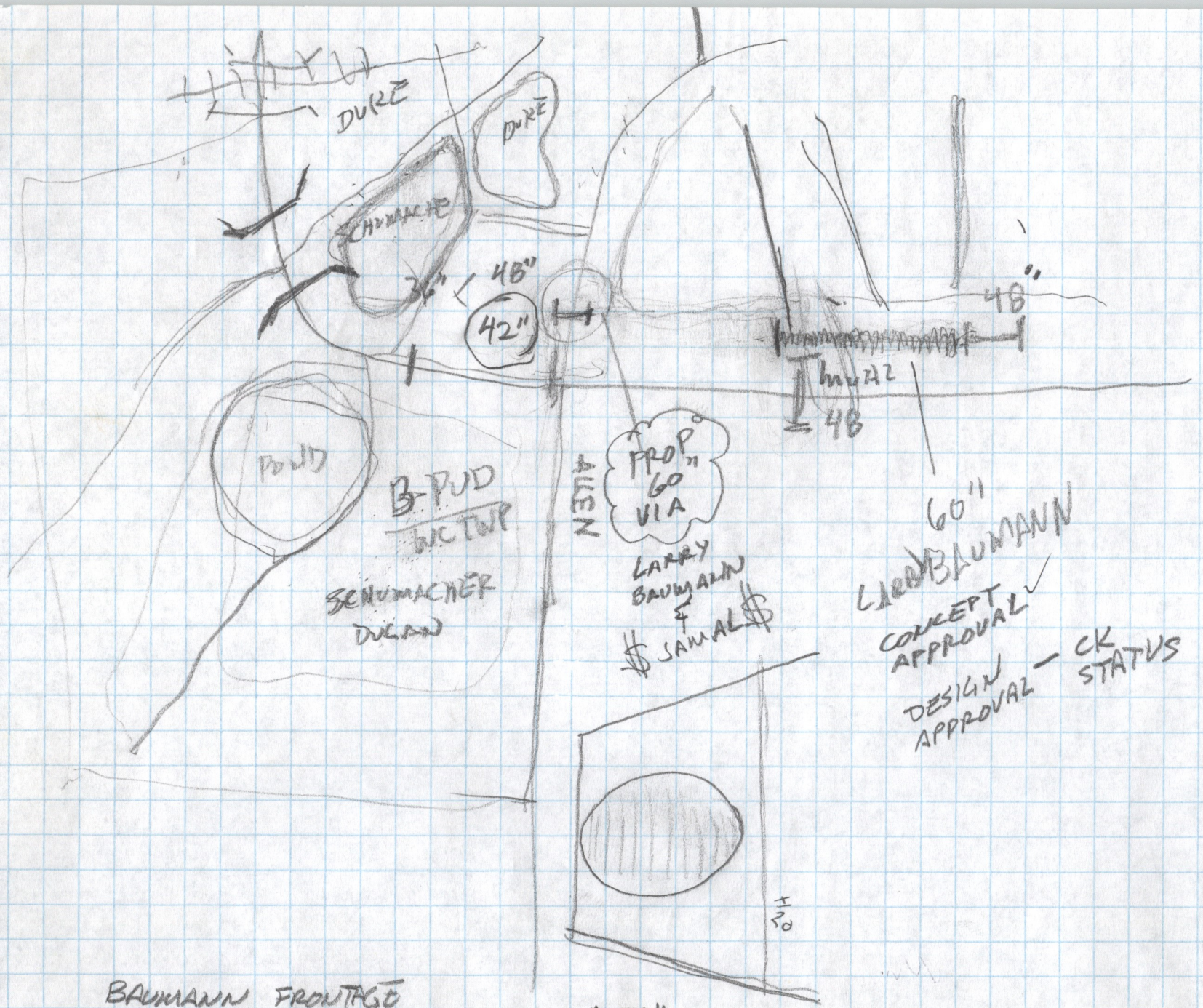
Proj. file: 1080 storm2.stm



Storm Sewer Profile

Proj. file: 1080 storm2.stm





BAUMANN FRONTAGE
PIPE FRONTAGE
DESIGN SUBMITTED
↳ ABOUT 1 1/2 WKS AGO
↳ POSSIBLY TO TERESA

DITCH
VS
PIPE
CAPASITY

WC
3313

11/22/2005