BOOK 2

DRAINAGE PLAN

Auburn Hills 16th Addition

TO

WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By

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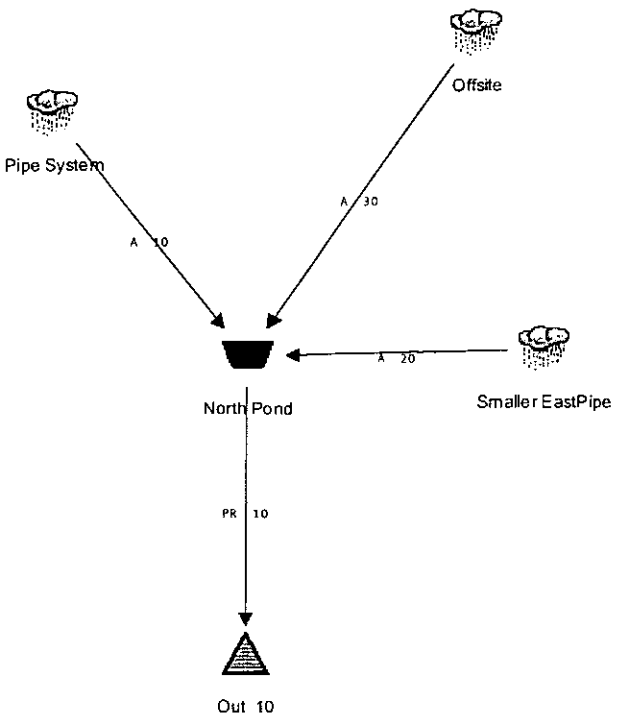
August 5, 2005

South Pond


Offsite
Pipe System
A 30
A 10
A 20
North Pond
Smaller EastPipe
PR 10
Out 10

Job File: F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\NORTHPOND.PPW
Rain Dir: C:\HAESTAD\PPKW\RAINFALL\

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JOB TITLE
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JOB TITLE NOT SPECIFIED
Click Project Summary on the File Menu to enter title

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MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNQ Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
100y24	7.9000	Synthetic Curve	SCSTYPES	TypeII 24hr

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
NORTH POND IN	POND	100	6.282		12.0500	91.06		
NORTH POND OUT	POND	100	6.281		12.4000	21.83	200.26	2.560
OFFSITE	AREA	100	1.575		12.0500	22.70		
*OUT 10	JCT	100	6.281		12.4000	21.83		
PIPE SYSTEM	AREA	100	3.539		12.0500	51.40		
SMALLER EASTPIPE	AREA	100	1.168		12.0500	16.96		

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
NORTH POND IN	POND	6.282		12.0500	91.06	
NORTH POND OUT	POND	6.281		12.4000	21.83	200.26
OFFSITE	AREA	1.575		12.0500	22.70	
Outfall OUT 10	JCT	6.281		12.4000	21.83	
PIPE SYSTEM	AREA	3.539		12.0500	51.40	
SMALLER EASTPIPE	AREA	1.168		12.0500	16.96	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points	
A 10	ADD	UN	3.539		12.0500	51.40	PIPE SYSTEM	
		DL	3.539		12.0500	51.40		
		DN	6.282		12.0500	91.06	NORTH POND	IN
A 20	ADD	UN	1.168		12.0500	16.96	SMALLER EASTPIPE	
		DL	1.168		12.0500	16.96		
		DN	6.282		12.0500	91.06	NORTH POND	IN
A 30	ADD	UN	1.575		12.0500	22.70	OFFSITE	
		DL	1.575		12.0500	22.70		
		DN	6.282		12.0500	91.06	NORTH POND	IN
PR 10	PONDrt	UN	6.282		12.0500	91.06	NORTH POND	IN
PR 10			6.281		12.4000	21.83	NORTH POND	OUT
		DL	6.281		12.4000	21.83		
		DN	6.281		12.4000	21.83	OUT 10	

NETWORK RUNOFF NODE SEQUENCE

Runoff Data		Apply to Node		Receiving Link	
SCS UH	Pipe System	Subarea	PIPE SYSTEM	Add Hyd	PIPE SYSTEM
SCS UH	Smaller EastPipe	Subarea	SMALLER EASTPIPE	Add Hyd	SMALLER EASTPIPE
SCS UH	Offsite	Subarea	OFFSITE	Add Hyd	OFFSITE

NETWORK ROUTING SEQUENCE

Link Operation	UPstream Node	DNstream Node
Add Hyd A 10	Subarea PIPE SYSTEM	Pond NORTH POND IN
Add Hyd A 30	Subarea OFFSITE	Pond NORTH POND IN
Add Hyd A 20	Subarea SMALLER EASTPIPE	Pond NORTH POND IN
POND ROUTE TOTAL OUTFLOW...		
Total Pond Outflow	Pond NORTH POND IN	Outflow NORTH POND OUT
SET POND ROUTING LINK TO TOTAL POND OUTFLOW...		
Outlet PR 10	Outflow NORTH POND OUT	Jct OUT 10

File.... C:\HAESTAD\PPKW\RAINFALL\SEDGWICK.RNQ
Title...

JOB TITLE NOT SPECIFIED
Click Project Summary on the File Menu to enter title

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name   = 100y24
Description: Sedgwick County 100-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency   = 100 yr
Total Rainfall Depth= 7.9000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Synthetic Curve
Name.... TypeII 24hr Tag: 100y24
File.... C:\HAESTAD\PPKW\RAINFALL\SCSTYPES.RNF
Title... Sedgwick County 100-yr 24 hour Duration

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.000	.001	.002	.003	.004
.5000	.005	.006	.007	.008	.009
1.0000	.011	.012	.013	.014	.015
1.5000	.016	.017	.018	.020	.021
2.0000	.022	.023	.024	.026	.027
2.5000	.028	.029	.031	.032	.033
3.0000	.035	.036	.037	.038	.040
3.5000	.041	.042	.044	.045	.047
4.0000	.048	.049	.051	.052	.054
4.5000	.055	.057	.058	.060	.061
5.0000	.063	.065	.066	.068	.070
5.5000	.071	.073	.075	.076	.078
6.0000	.080	.082	.084	.085	.087
6.5000	.089	.091	.093	.095	.097
7.0000	.099	.101	.103	.105	.107
7.5000	.109	.111	.113	.116	.118
8.0000	.120	.122	.125	.127	.130
8.5000	.132	.135	.138	.141	.144
9.0000	.147	.150	.153	.157	.160
9.5000	.163	.166	.170	.173	.177
10.0000	.181	.185	.189	.194	.199
10.5000	.204	.209	.215	.221	.228
11.0000	.235	.243	.251	.261	.271
11.5000	.283	.307	.354	.431	.568
12.0000	.663	.682	.699	.713	.725
12.5000	.735	.743	.751	.759	.766
13.0000	.772	.778	.784	.789	.794
13.5000	.799	.804	.808	.812	.816
14.0000	.820	.824	.827	.831	.834
14.5000	.838	.841	.844	.847	.850
15.0000	.854	.856	.859	.862	.865
15.5000	.868	.870	.873	.875	.878
16.0000	.880	.882	.885	.887	.889
16.5000	.891	.893	.895	.898	.900
17.0000	.902	.904	.906	.908	.910
17.5000	.912	.914	.915	.917	.919
18.0000	.921	.923	.925	.926	.928
18.5000	.930	.931	.933	.935	.936
19.0000	.938	.939	.941	.942	.944
19.5000	.945	.947	.948	.949	.951
20.0000	.952	.953	.955	.956	.957
20.5000	.958	.960	.961	.962	.964
21.0000	.965	.966	.967	.968	.970
21.5000	.971	.972	.973	.975	.976
22.0000	.977	.978	.979	.981	.982

Type.... Synthetic Curve
Name.... TypeII 24hr Tag: 100y24
File.... C:\HAESTAD\PPKW\RAINFALL\SCSTYPES.RNF
Title... Sedgwick County 100-yr 24 hour Duration

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
22.5000	.983	.984	.985	.986	.988
23.0000	.989	.990	.991	.992	.993
23.5000	.994	.996	.997	.998	.999
24.0000	1.000				

Type.... Synthetic Cumulative Depth
Name.... TypeII 24hr Tag: 100y24
File.... C:\HAESTAD\PPKW\RAINFALL\SCSTYPES.RNF
Title... Sedgwick County 100-yr 24 hour Duration
Storm... TypeII 24hr Tag: 100y24

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.0000	.0080	.0160	.0241	.0322
.5000	.0405	.0488	.0573	.0657	.0743
1.0000	.0830	.0917	.1005	.1094	.1183
1.5000	.1274	.1365	.1458	.1550	.1644
2.0000	.1738	.1834	.1929	.2026	.2124
2.5000	.2222	.2321	.2421	.2522	.2624
3.0000	.2726	.2829	.2932	.3038	.3143
3.5000	.3249	.3356	.3464	.3572	.3682
4.0000	.3792	.3903	.4016	.4131	.4247
4.5000	.4365	.4484	.4605	.4727	.4851
5.0000	.4977	.5104	.5233	.5363	.5495
5.5000	.5629	.5764	.5901	.6039	.6179
6.0000	.6320	.6463	.6608	.6754	.6901
6.5000	.7051	.7202	.7354	.7508	.7664
7.0000	.7821	.7980	.8140	.8302	.8466
7.5000	.8631	.8797	.8966	.9136	.9307
8.0000	.9480	.9658	.9843	1.0037	1.0238
8.5000	1.0448	1.0665	1.0890	1.1123	1.1364
9.0000	1.1613	1.1866	1.2119	1.2371	1.2624
9.5000	1.2877	1.3136	1.3408	1.3692	1.3989
10.0000	1.4299	1.4624	1.4969	1.5332	1.5715
10.5000	1.6116	1.6543	1.7001	1.7491	1.8012
11.0000	1.8565	1.9172	1.9854	2.0613	2.1447
11.5000	2.2357	2.4240	2.7994	3.4032	4.4861
12.0000	5.2377	5.3875	5.5193	5.6330	5.7288
12.5000	5.8065	5.8732	5.9357	5.9942	6.0486
13.0000	6.0988	6.1459	6.1908	6.2334	6.2739
13.5000	6.3121	6.3484	6.3832	6.4164	6.4480
14.0000	6.4780	6.5070	6.5354	6.5632	6.5905
14.5000	6.6173	6.6434	6.6691	6.6941	6.7187
15.0000	6.7427	6.7661	6.7889	6.8113	6.8330
15.5000	6.8543	6.8749	6.8950	6.9146	6.9336
16.0000	6.9520	6.9701	6.9879	7.0056	7.0231
16.5000	7.0404	7.0575	7.0744	7.0910	7.1076
17.0000	7.1238	7.1399	7.1558	7.1715	7.1870
17.5000	7.2024	7.2174	7.2324	7.2471	7.2616
18.0000	7.2759	7.2900	7.3039	7.3177	7.3312
18.5000	7.3446	7.3577	7.3706	7.3833	7.3959
19.0000	7.4082	7.4204	7.4323	7.4441	7.4556
19.5000	7.4670	7.4781	7.4891	7.4999	7.5105
20.0000	7.5208	7.5311	7.5413	7.5515	7.5616
20.5000	7.5717	7.5817	7.5917	7.6017	7.6117
21.0000	7.6215	7.6314	7.6412	7.6510	7.6607
21.5000	7.6704	7.6801	7.6897	7.6993	7.7088
22.0000	7.7183	7.7278	7.7372	7.7466	7.7559

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1000 hrs
Time on left represents time for first value in each row.

Time hrs					
22.5000	7.7652	7.7745	7.7837	7.7929	7.8020
23.0000	7.8111	7.8202	7.8292	7.8382	7.8471
23.5000	7.8561	7.8649	7.8738	7.8825	7.8913
24.0000	7.9000				

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

DEFINITION OF TERMS: ----------

At = Total area (acres): At = Ai+Ap
Ai = Impervious area (acres)
Ap = Pervious area (acres)
CNi = Runoff curve number for impervious area
CNp = Runoff curve number for pervious area
fLoss = f loss constant infiltration (depth/time)
dt = Computational increment (duration of unit excess rainfall)
Default dt is smallest value of 0.1333Tc, rtm, and th
(Smallest dt is then adjusted to match up with Tp)
UDdt = User specified override computational main time increment
(only used if UDdt is => .1333Tc)
D(t) = Point on distribution curve (fraction of P) for time step t

K = 2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks = Hydrograph shape factor
= Unit Conversions * K:
= ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K
Default Ks = 645.333 * 0.75 = 484

Lag = Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P = Total precipitation depth, inches
Pa(t) = Accumulated rainfall at time step t
Pi(t) = Incremental rainfall at time step t
qp = Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi.
= (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t) = Unit hydrograph ordinate (cfs) at time step t
Q(t) = Final hydrograph ordinate (cfs) at time step t
Rai(t)= Accumulated runoff (inches) at time step t for impervious area
Rap(t)= Accumulated runoff (inches) at time step t for pervious area
Rii(t)= Incremental runoff (inches) at time step t for impervious area
Rip(t)= Incremental runoff (inches) at time step t for pervious area
R(t) = Incremental weighted total runoff (inches)
Rtm = Time increment for rainfall table (.RNF file)
Si = S for impervious area: Si = (1000/CNi) - 10
Sp = S for pervious area: Sp = (1000/CNp) - 10
t = Time step (row) number
Tc = Time of concentration
Tb = Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp = Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr = Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

PRECIPITATION: ----------

Column (1): Time for time step t
Column (2): D(t) = Point on distribution curve for time step t
Column (3): Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4): Pa(t) = D(t) x P: Col.(2) x P

PERVIOUS AREA RUNOFF (using SCS Runoff CN Method) ----------

Column (5): Rap(t) = Accumulated pervious runoff for time step t
If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
If (Pa(t) is > 0.2Sp) then use:

$$Rap(t) = (Col.(4)-0.2Sp)^{**}2 / (Col.(4)+0.8Sp)$$

Column (6): Rip(t) = Incremental pervious runoff for time step t
Rip(t) = Rap(t) - Rap(t-1)
Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

IMPERVIOUS AREA RUNOFF ----------

Column (7 & 8)... Did not specify to use impervious areas.

INCREMENTAL WEIGHTED RUNOFF: ----------

Column (9): R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t)
R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS UNIT HYDROGRAPH METHOD: ----------

Column (10): Q(t) is computed with the SCS unit hydrograph method using R() and Qu().

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.9000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
HYG File - ID = - OFFSITE 100y24
Tc = .2500 hrs
Drainage Area = 5.800 acres Runoff CN= 60

==========
Computational Time Increment = .03333 hrs
Computed Peak Time = 12.0667 hrs
Computed Peak Flow = 22.73 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 22.70 cfs
==========

DRAINAGE AREA

ID:None Selected
CN = 60
Area = 5.800 acres
S = 6.6667 in
0.2S = 1.3333 in

Cumulative Runoff

3.2585 in
1.575 ac-ft

HYG Volume... 1.575 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .25000 hrs (ID: None Selected)
Computational Incr, Tm = .03333 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 26.29 cfs
Unit peak time Tp = .16667 hrs
Unit receding limb, Tr = .66667 hrs
Total unit time, Tb = .83333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.9000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
HYG File - ID = - OFFSITE 100y24
Tc = .2500 hrs
Drainage Area = 5.800 acres Runoff CN= 60
Calc.Increment= .03333 hrs Out.Incr.= .0500 hrs
HYG Volume = 1.575 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
9.7500	.00	.00	.00	.01	.01
10.0000	.02	.03	.04	.05	.05
10.2500	.07	.08	.09	.10	.11
10.5000	.13	.14	.16	.18	.19
10.7500	.22	.24	.26	.29	.31
11.0000	.34	.37	.41	.45	.49
11.2500	.54	.60	.66	.73	.81
11.5000	.89	1.02	1.27	1.77	2.58
11.7500	3.89	5.68	8.44	12.38	17.25
12.0000	21.28	22.70	21.25	17.28	13.16
12.2500	9.96	7.83	6.49	5.51	4.80
12.5000	4.24	3.78	3.39	3.08	2.84
12.7500	2.66	2.52	2.42	2.33	2.24
13.0000	2.16	2.09	2.01	1.95	1.89
13.2500	1.84	1.79	1.75	1.71	1.66
13.5000	1.62	1.58	1.54	1.50	1.47
13.7500	1.44	1.40	1.37	1.34	1.31
14.0000	1.28	1.25	1.23	1.20	1.18
14.2500	1.17	1.15	1.14	1.13	1.12
14.5000	1.11	1.10	1.09	1.08	1.07
14.7500	1.06	1.05	1.04	1.03	1.01
15.0000	1.00	.99	.98	.97	.96
15.2500	.95	.94	.93	.92	.91
15.5000	.90	.89	.88	.87	.86
15.7500	.85	.84	.83	.81	.80
16.0000	.79	.78	.77	.76	.76
16.2500	.75	.74	.74	.74	.73
16.5000	.73	.72	.72	.72	.71
16.7500	.71	.71	.70	.70	.69
17.0000	.69	.69	.68	.68	.68
17.2500	.67	.67	.66	.66	.66
17.5000	.65	.65	.65	.64	.64

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
17.7500	.63	.63	.63	.62	.62
18.0000	.61	.61	.61	.60	.60
18.2500	.60	.59	.59	.58	.58
18.5000	.58	.57	.57	.56	.56
18.7500	.56	.55	.55	.54	.54
19.0000	.54	.53	.53	.52	.52
19.2500	.52	.51	.51	.50	.50
19.5000	.50	.49	.49	.48	.48
19.7500	.48	.47	.47	.46	.46
20.0000	.46	.45	.45	.44	.44
20.2500	.44	.44	.44	.44	.44
20.5000	.43	.43	.43	.43	.43
20.7500	.43	.43	.43	.43	.43
21.0000	.43	.43	.43	.43	.42
21.2500	.42	.42	.42	.42	.42
21.5000	.42	.42	.42	.42	.42
21.7500	.42	.42	.41	.41	.41
22.0000	.41	.41	.41	.41	.41
22.2500	.41	.41	.41	.41	.41
22.5000	.41	.40	.40	.40	.40
22.7500	.40	.40	.40	.40	.40
23.0000	.40	.40	.40	.40	.39
23.2500	.39	.39	.39	.39	.39
23.5000	.39	.39	.39	.39	.39
23.7500	.39	.39	.38	.38	.38
24.0000	.38	.37	.32	.24	.16
24.2500	.10	.06	.04	.02	.01
24.5000	.01	.00	.00	.00	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.9000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
HYG File - ID = - PIPE SYSTEM 100y24
Tc = .2500 hrs
Drainage Area = 9.700 acres Runoff CN= 70

==========
Computational Time Increment = .03333 hrs
Computed Peak Time = 12.0333 hrs
Computed Peak Flow = 51.72 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 51.40 cfs
==========

DRAINAGE AREA

ID:None Selected
CN = 70
Area = 9.700 acres
S = 4.2857 in
0.2S = .8571 in

Cumulative Runoff

4.3785 in
3.539 ac-ft

HYG Volume... 3.539 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .25000 hrs (ID: None Selected)
Computational Incr, Tm = .03333 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 43.96 cfs
Unit peak time Tp = .16667 hrs
Unit receding limb, Tr = .66667 hrs
Total unit time, Tb = .83333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.9000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
HYG File - ID = - PIPE SYSTEM 100y24
Tc = .2500 hrs
Drainage Area = 9.700 acres Runoff CN= 70
Calc.Increment= .03333 hrs Out.Incr.= .0500 hrs
HYG Volume = 3.539 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
7.5500	.00	.00	.00	.01	.01
7.8000	.02	.02	.03	.04	.04
8.0500	.05	.06	.06	.07	.08
8.3000	.09	.10	.11	.12	.13
8.5500	.14	.15	.16	.17	.19
8.8000	.20	.21	.23	.24	.25
9.0500	.27	.28	.30	.31	.33
9.3000	.34	.35	.36	.37	.39
9.5500	.40	.41	.43	.44	.46
9.8000	.48	.50	.53	.55	.58
10.0500	.60	.63	.66	.70	.73
10.3000	.77	.81	.85	.89	.93
10.5500	.98	1.02	1.08	1.13	1.20
10.8000	1.26	1.34	1.41	1.49	1.57
11.0500	1.65	1.75	1.86	1.99	2.14
11.3000	2.30	2.48	2.66	2.86	3.07
11.5500	3.44	4.14	5.58	7.81	11.27
11.8000	15.74	22.22	31.07	41.43	49.45
12.0500	51.40	47.23	37.94	28.62	21.49
12.3000	16.75	13.75	11.58	10.03	8.81
12.5500	7.82	6.99	6.33	5.81	5.43
12.8000	5.14	4.92	4.73	4.56	4.39
13.0500	4.23	4.08	3.94	3.82	3.71
13.3000	3.62	3.52	3.44	3.35	3.26
13.5500	3.18	3.10	3.02	2.95	2.88
13.8000	2.81	2.75	2.69	2.63	2.57
14.0500	2.51	2.45	2.40	2.36	2.32
14.3000	2.30	2.27	2.25	2.22	2.20
14.5500	2.18	2.16	2.14	2.12	2.10
14.8000	2.08	2.05	2.03	2.01	1.99
15.0500	1.97	1.95	1.93	1.91	1.88
15.3000	1.86	1.84	1.82	1.80	1.78

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
15.5500	1.76	1.73	1.71	1.69	1.67
15.8000	1.65	1.63	1.60	1.58	1.56
16.0500	1.54	1.52	1.50	1.49	1.47
16.3000	1.46	1.45	1.45	1.44	1.43
16.5500	1.42	1.41	1.41	1.40	1.39
16.8000	1.38	1.38	1.37	1.36	1.35
17.0500	1.35	1.34	1.33	1.32	1.31
17.3000	1.31	1.30	1.29	1.28	1.28
17.5500	1.27	1.26	1.25	1.25	1.24
17.8000	1.23	1.22	1.21	1.21	1.20
18.0500	1.19	1.18	1.18	1.17	1.16
18.3000	1.15	1.14	1.14	1.13	1.12
18.5500	1.11	1.11	1.10	1.09	1.08
18.8000	1.07	1.07	1.06	1.05	1.04
19.0500	1.03	1.03	1.02	1.01	1.00
19.3000	.99	.99	.98	.97	.96
19.5500	.95	.95	.94	.93	.92
19.8000	.91	.91	.90	.89	.88
20.0500	.87	.87	.86	.86	.85
20.3000	.85	.85	.85	.84	.84
20.5500	.84	.84	.84	.84	.83
20.8000	.83	.83	.83	.83	.83
21.0500	.82	.82	.82	.82	.82
21.3000	.82	.82	.81	.81	.81
21.5500	.81	.81	.81	.81	.80
21.8000	.80	.80	.80	.80	.80
22.0500	.79	.79	.79	.79	.79
22.3000	.79	.79	.78	.78	.78
22.5500	.78	.78	.78	.77	.77
22.8000	.77	.77	.77	.77	.77
23.0500	.76	.76	.76	.76	.76
23.3000	.76	.75	.75	.75	.75
23.5500	.75	.75	.75	.74	.74
23.8000	.74	.74	.74	.74	.73
24.0500	.71	.61	.46	.30	.18
24.3000	.11	.07	.04	.03	.01
24.5500	.01	.01	.00	.00	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.9000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
HYG File - ID = - SMALLER EASTPIPE 100y24
Tc = .2500 hrs
Drainage Area = 3.200 acres Runoff CN= 70

==========
Computational Time Increment = .03333 hrs
Computed Peak Time = 12.0333 hrs
Computed Peak Flow = 17.06 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.0500 hrs
Peak Flow, Interpolated Output = 16.96 cfs
==========

DRAINAGE AREA

ID:None Selected
CN = 70
Area = 3.200 acres
S = 4.2857 in
0.2S = .8571 in

Cumulative Runoff

4.3785 in
1.168 ac-ft

HYG Volume... 1.168 ac-ft (area under HYG curve)

***** UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .25000 hrs (ID: None Selected)
Computational Incr, Tm = .03333 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 14.50 cfs
Unit peak time Tp = .16667 hrs
Unit receding limb, Tr = .66667 hrs
Total unit time, Tb = .83333 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.9000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
HYG File - ID = - SMALLER EASTPIPE 100y24
Tc = .2500 hrs
Drainage Area = 3.200 acres Runoff CN= 70
Calc.Increment= .03333 hrs Out.Incr.= .0500 hrs
HYG Volume = 1.168 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
7.6000	.00	.00	.00	.00	.01
7.8500	.01	.01	.01	.01	.02
8.1000	.02	.02	.02	.03	.03
8.3500	.03	.04	.04	.04	.05
8.6000	.05	.05	.06	.06	.07
8.8500	.07	.07	.08	.08	.09
9.1000	.09	.10	.10	.11	.11
9.3500	.12	.12	.12	.13	.13
9.6000	.14	.14	.15	.15	.16
9.8500	.17	.17	.18	.19	.20
10.1000	.21	.22	.23	.24	.25
10.3500	.27	.28	.29	.31	.32
10.6000	.34	.36	.37	.40	.42
10.8500	.44	.46	.49	.52	.55
11.1000	.58	.61	.66	.70	.76
11.3500	.82	.88	.95	1.01	1.13
11.6000	1.37	1.84	2.58	3.72	5.19
11.8500	7.33	10.25	13.67	16.31	16.96
12.1000	15.58	12.52	9.44	7.09	5.52
12.3500	4.54	3.82	3.31	2.90	2.58
12.6000	2.31	2.09	1.92	1.79	1.70
12.8500	1.62	1.56	1.50	1.45	1.40
13.1000	1.35	1.30	1.26	1.23	1.19
13.3500	1.16	1.13	1.10	1.08	1.05
13.6000	1.02	1.00	.97	.95	.93
13.8500	.91	.89	.87	.85	.83
14.1000	.81	.79	.78	.77	.76
14.3500	.75	.74	.73	.73	.72
14.6000	.71	.71	.70	.69	.68
14.8500	.68	.67	.66	.66	.65
15.1000	.64	.64	.63	.62	.61
15.3500	.61	.60	.59	.59	.58

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
15.6000	.57	.56	.56	.55	.54
15.8500	.54	.53	.52	.52	.51
16.1000	.50	.50	.49	.49	.48
16.3500	.48	.48	.47	.47	.47
16.6000	.47	.46	.46	.46	.46
16.8500	.45	.45	.45	.45	.44
17.1000	.44	.44	.44	.43	.43
17.3500	.43	.43	.42	.42	.42
17.6000	.42	.41	.41	.41	.41
17.8500	.40	.40	.40	.40	.39
18.1000	.39	.39	.39	.38	.38
18.3500	.38	.37	.37	.37	.37
18.6000	.36	.36	.36	.36	.35
18.8500	.35	.35	.35	.34	.34
19.1000	.34	.34	.33	.33	.33
19.3500	.33	.32	.32	.32	.31
19.6000	.31	.31	.31	.30	.30
19.8500	.30	.30	.29	.29	.29
20.1000	.29	.28	.28	.28	.28
20.3500	.28	.28	.28	.28	.28
20.6000	.28	.28	.28	.28	.27
20.8500	.27	.27	.27	.27	.27
21.1000	.27	.27	.27	.27	.27
21.3500	.27	.27	.27	.27	.27
21.6000	.27	.27	.27	.27	.26
21.8500	.26	.26	.26	.26	.26
22.1000	.26	.26	.26	.26	.26
22.3500	.26	.26	.26	.26	.26
22.6000	.26	.26	.26	.26	.25
22.8500	.25	.25	.25	.25	.25
23.1000	.25	.25	.25	.25	.25
23.3500	.25	.25	.25	.25	.25
23.6000	.25	.25	.25	.24	.24
23.8500	.24	.24	.24	.24	.23
24.1000	.20	.15	.10	.06	.04
24.3500	.02	.01	.01	.00	.00
24.6000	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 10

HYG Directory: F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
PR 10	NORTH POND	IN	PR 10	100y24

INFLOWS TO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	PR 10	100y24	6.281	12.4000	21.83

TOTAL FLOW INTO: OUT 10

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 10	100y24	6.281	12.4000	21.83

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 10
HYG Tag = 100y24

Peak Discharge =	21.83 cfs
Time to Peak =	12.4000 hrs
HYG Volume =	6.281 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
7.8500	.00	.00	.00	.00	.00
8.1000	.00	.00	.01	.01	.01
8.3500	.01	.01	.01	.01	.01
8.6000	.02	.02	.02	.02	.03
8.8500	.03	.03	.03	.04	.04
9.1000	.04	.05	.05	.05	.06
9.3500	.06	.07	.07	.08	.08
9.6000	.09	.09	.10	.10	.11
9.8500	.11	.12	.13	.13	.14
10.1000	.15	.15	.16	.17	.18
10.3500	.19	.20	.21	.22	.24
10.6000	.25	.26	.28	.29	.31
10.8500	.33	.35	.37	.39	.41
11.1000	.43	.46	.49	.52	.55
11.3500	.58	.62	.66	.70	.75
11.6000	.81	.88	1.12	1.53	2.12
11.8500	2.96	4.46	6.77	10.06	13.74
12.1000	17.06	19.28	20.66	21.30	21.65
12.3500	21.80	21.83	21.77	21.64	21.47
12.6000	21.26	21.01	20.75	20.47	20.11
12.8500	19.70	19.29	18.88	18.48	18.08
13.1000	17.68	17.29	16.91	16.53	16.10
13.3500	15.64	15.20	14.78	14.37	13.97
13.6000	13.58	13.20	12.83	12.48	12.13
13.8500	11.80	11.48	11.18	10.88	10.60
14.1000	10.32	10.05	9.79	9.54	9.29
14.3500	9.06	8.83	8.62	8.41	8.20
14.6000	8.01	7.82	7.64	7.47	7.30
14.8500	7.14	7.01	6.88	6.75	6.63
15.1000	6.51	6.39	6.28	6.17	6.06
15.3500	5.95	5.85	5.75	5.65	5.56
15.6000	5.47	5.37	5.29	5.20	5.11
15.8500	5.03	4.95	4.87	4.79	4.71

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
16.1000	4.64	4.57	4.49	4.42	4.36
16.3500	4.29	4.23	4.16	4.10	4.04
16.6000	3.99	3.93	3.88	3.83	3.78
16.8500	3.73	3.68	3.63	3.59	3.55
17.1000	3.50	3.46	3.42	3.40	3.37
17.3500	3.34	3.31	3.29	3.26	3.24
17.6000	3.21	3.19	3.16	3.14	3.11
17.8500	3.09	3.07	3.04	3.02	3.00
18.1000	2.97	2.95	2.93	2.91	2.89
18.3500	2.87	2.84	2.82	2.80	2.78
18.6000	2.76	2.74	2.72	2.70	2.68
18.8500	2.66	2.64	2.62	2.60	2.58
19.1000	2.56	2.55	2.53	2.51	2.49
19.3500	2.47	2.45	2.44	2.42	2.40
19.6000	2.38	2.36	2.35	2.33	2.31
19.8500	2.29	2.28	2.26	2.24	2.22
20.1000	2.21	2.19	2.17	2.16	2.14
20.3500	2.12	2.11	2.09	2.08	2.06
20.6000	2.05	2.04	2.02	2.01	2.00
20.8500	1.98	1.97	1.96	1.95	1.93
21.1000	1.92	1.91	1.90	1.89	1.88
21.3500	1.87	1.86	1.85	1.84	1.83
21.6000	1.82	1.81	1.80	1.79	1.79
21.8500	1.78	1.77	1.76	1.75	1.74
22.1000	1.74	1.73	1.72	1.71	1.71
22.3500	1.70	1.69	1.69	1.68	1.67
22.6000	1.67	1.66	1.65	1.65	1.64
22.8500	1.64	1.63	1.62	1.62	1.61
23.1000	1.61	1.60	1.60	1.59	1.59
23.3500	1.58	1.57	1.57	1.56	1.56
23.6000	1.55	1.55	1.55	1.54	1.54
23.8500	1.53	1.53	1.52	1.52	1.51
24.1000	1.50	1.49	1.47	1.44	1.41
24.3500	1.37	1.34	1.30	1.27	1.23
24.6000	1.20	1.17	1.13	1.10	1.07
24.8500	1.04	1.01	.98	.96	.93
25.1000	.91	.90	.89	.88	.87
25.3500	.86	.85	.84	.84	.83
25.6000	.82	.81	.80	.79	.78
25.8500	.78	.77	.76	.75	.74
26.1000	.74	.73	.72	.71	.71
26.3500	.70	.69	.68	.68	.67
26.6000	.66	.65	.65	.64	.63
26.8500	.63	.62	.61	.61	.60
27.1000	.60	.59	.58	.58	.57
27.3500	.56	.56	.55	.55	.54
27.6000	.54	.53	.52	.52	.51

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
27.8500	.51	.50	.50	.49	.49
28.1000	.48	.48	.47	.47	.46
28.3500	.46	.45	.45	.44	.44
28.6000	.43	.43	.42	.42	.42
28.8500	.41	.41	.40	.40	.39
29.1000	.39	.39	.38	.38	.37
29.3500	.37	.37	.36	.36	.35
29.6000	.35	.35	.34	.34	.34
29.8500	.33	.33	.33	.32	.32
30.1000	.32	.31	.31	.31	.30
30.3500	.30	.30	.29	.29	.29
30.6000	.28	.28	.28	.27	.27
30.8500	.27	.27	.26	.26	.26
31.1000	.26	.25	.25	.25	.24
31.3500	.24	.24	.24	.23	.23
31.6000	.23	.23	.22	.22	.22
31.8500	.22	.22	.21	.21	.21
32.1000	.21	.20	.20	.20	.20
32.3500	.20	.19	.19	.19	.19
32.6000	.19	.18	.18	.18	.18
32.8500	.18	.17	.17	.17	.17
33.1000	.17	.17	.16	.16	.16
33.3500	.16	.16	.16	.15	.15
33.6000	.15	.15	.15	.15	.14
33.8500	.14	.14	.14	.14	.14
34.1000	.14	.13	.13	.13	.13
34.3500	.13	.13	.13	.12	.12
34.6000	.12	.12	.12	.12	.12
34.8500	.12	.11	.11	.11	.11
35.1000	.11	.11	.11	.11	.10
35.3500	.10	.10	.10	.10	.10
35.6000	.10	.10	.10	.10	.09
35.8500	.09	.09	.09	.09	.09
36.1000	.09	.09	.09	.09	.08
36.3500	.08	.08	.08	.08	.08
36.6000	.08	.08	.08	.08	.08
36.8500	.08	.07	.07	.07	.07
37.1000	.07	.07	.07	.07	.07
37.3500	.07	.07	.07	.07	.07
37.6000	.06	.06	.06	.06	.06
37.8500	.06	.06	.06	.06	.06
38.1000	.06	.06	.06	.06	.06
38.3500	.06	.05	.05	.05	.05
38.6000	.05	.05	.05	.05	.05
38.8500	.05	.05	.05	.05	.05
39.1000	.05	.05	.05	.05	.04
39.3500	.04	.04	.04	.04	.04

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
39.6000	.04	.04	.04	.04	.04
39.8500	.04	.04	.04	.04	.04
40.1000	.04	.04	.04	.04	.04
40.3500	.04	.04	.04	.03	.03
40.6000	.03	.03	.03	.03	.03
40.8500	.03	.03	.03	.03	.03
41.1000	.03	.03	.03	.03	.03
41.3500	.03	.03	.03	.03	.03
41.6000	.03	.03	.03	.03	.03
41.8500	.03	.03	.03	.03	.03
42.1000	.02	.02	.02	.02	.02
42.3500	.02	.02	.02	.02	.02
42.6000	.02	.02	.02	.02	.02
42.8500	.02	.02	.02	.02	.02
43.1000	.02	.02	.02	.02	.02
43.3500	.02	.02	.02	.02	.02
43.6000	.02	.02	.02	.02	.02
43.8500	.02	.02	.02	.02	.02
44.1000	.02	.02	.02	.02	.02
44.3500	.02	.02	.02	.01	.01
44.6000	.01	.01	.01	.01	.01
44.8500	.01	.01	.01	.01	.01
45.1000	.01	.01	.01	.01	.01
45.3500	.01	.01	.01	.01	.01
45.6000	.01	.01	.01	.01	.01
45.8500	.01	.01	.01	.01	.01
46.1000	.01	.01	.01	.01	.01
46.3500	.01	.01	.01	.01	.01
46.6000	.01	.01	.01	.01	.01
46.8500	.01	.01	.01	.01	.01
47.1000	.01	.01	.01	.01	.01
47.3500	.01	.01	.01	.01	.01
47.6000	.01	.01	.01	.01	.01
47.8500	.01	.01	.01	.01	.01
48.1000	.01	.01	.01	.01	.01
48.3500	.01	.01	.01	.01	.01
48.6000	.01	.01	.01	.01	.01
48.8500	.01	.01	.01	.01	.01
49.1000	.01	.01	.01	.01	.01
49.3500	.01	.01	.01	.01	.01
49.6000	.01	.01	.00	.00	.00
49.8500	.00	.00	.00	.00	.00
50.1000	.00	.00	.00	.00	.00
50.3500	.00	.00	.00	.00	.00
50.6000	.00	.00	.00	.00	.00
50.8500	.00	.00	.00	.00	.00
51.1000	.00	.00	.00	.00	.00

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
51.3500	.00	.00	.00	.00	.00
51.6000	.00	.00	.00	.00	.00
51.8500	.00	.00	.00	.00	.00
52.1000	.00				

TIME vs. ELEVATION (ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
7.5500	197.00	197.00	197.00	197.00	197.00
7.8000	197.00	197.00	197.00	197.00	197.00
8.0500	197.00	197.00	197.00	197.00	197.00
8.3000	197.00	197.00	197.01	197.01	197.01
8.5500	197.01	197.01	197.01	197.01	197.01
8.8000	197.01	197.02	197.02	197.02	197.02
9.0500	197.02	197.02	197.03	197.03	197.03
9.3000	197.03	197.03	197.04	197.04	197.04
9.5500	197.04	197.05	197.05	197.05	197.06
9.8000	197.06	197.06	197.07	197.07	197.07
10.0500	197.08	197.08	197.08	197.09	197.09
10.3000	197.10	197.10	197.11	197.12	197.12
10.5500	197.13	197.14	197.14	197.15	197.16
10.8000	197.17	197.18	197.19	197.20	197.21
11.0500	197.22	197.24	197.25	197.27	197.28
11.3000	197.30	197.32	197.34	197.36	197.38
11.5500	197.41	197.44	197.48	197.54	197.62
11.8000	197.74	197.91	198.14	198.45	198.83
12.0500	199.22	199.58	199.86	200.05	200.17
12.3000	200.23	200.25	200.26	200.25	200.23
12.5500	200.19	200.16	200.11	200.07	200.02
12.8000	199.97	199.92	199.86	199.81	199.76
13.0500	199.71	199.66	199.61	199.56	199.52
13.3000	199.47	199.42	199.37	199.33	199.29
13.5500	199.24	199.20	199.16	199.13	199.09
13.8000	199.05	199.02	198.98	198.95	198.92
14.0500	198.89	198.85	198.82	198.80	198.77
14.3000	198.74	198.71	198.69	198.66	198.64
14.5500	198.62	198.60	198.58	198.56	198.54
14.8000	198.52	198.50	198.48	198.46	198.45
15.0500	198.43	198.41	198.40	198.38	198.37
15.3000	198.35	198.34	198.33	198.31	198.30
15.5500	198.29	198.27	198.26	198.25	198.24
15.8000	198.23	198.22	198.20	198.19	198.18
16.0500	198.17	198.16	198.15	198.14	198.13
16.3000	198.12	198.12	198.11	198.10	198.09
16.5500	198.08	198.08	198.07	198.06	198.05
16.8000	198.05	198.04	198.03	198.03	198.02
17.0500	198.02	198.01	198.00	198.00	197.99
17.3000	197.99	197.98	197.98	197.97	197.97
17.5500	197.96	197.96	197.95	197.95	197.94
17.8000	197.94	197.93	197.93	197.92	197.92
18.0500	197.91	197.91	197.91	197.90	197.90
18.3000	197.89	197.89	197.88	197.88	197.88
18.5500	197.87	197.87	197.86	197.86	197.86

TIME vs. ELEVATION (ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
18.8000	197.85	197.85	197.84	197.84	197.84
19.0500	197.83	197.83	197.82	197.82	197.82
19.3000	197.81	197.81	197.81	197.80	197.80
19.5500	197.80	197.79	197.79	197.78	197.78
19.8000	197.78	197.77	197.77	197.77	197.76
20.0500	197.76	197.76	197.75	197.75	197.75
20.3000	197.74	197.74	197.74	197.73	197.73
20.5500	197.73	197.73	197.72	197.72	197.72
20.8000	197.72	197.71	197.71	197.71	197.71
21.0500	197.70	197.70	197.70	197.70	197.69
21.3000	197.69	197.69	197.69	197.69	197.68
21.5500	197.68	197.68	197.68	197.68	197.68
21.8000	197.67	197.67	197.67	197.67	197.67
22.0500	197.67	197.66	197.66	197.66	197.66
22.3000	197.66	197.66	197.66	197.65	197.65
22.5500	197.65	197.65	197.65	197.65	197.65
22.8000	197.65	197.64	197.64	197.64	197.64
23.0500	197.64	197.64	197.64	197.64	197.63
23.3000	197.63	197.63	197.63	197.63	197.63
23.5500	197.63	197.63	197.63	197.63	197.62
23.8000	197.62	197.62	197.62	197.62	197.62
24.0500	197.62	197.62	197.61	197.61	197.60
24.3000	197.60	197.59	197.58	197.58	197.57
24.5500	197.56	197.56	197.55	197.54	197.54
24.8000	197.53	197.53	197.52	197.51	197.51
25.0500	197.50	197.50	197.49	197.49	197.48
25.3000	197.48	197.47	197.47	197.46	197.46
25.5500	197.45	197.45	197.44	197.44	197.43
25.8000	197.43	197.43	197.42	197.42	197.41
26.0500	197.41	197.40	197.40	197.39	197.39
26.3000	197.39	197.38	197.38	197.37	197.37
26.5500	197.37	197.36	197.36	197.36	197.35
26.8000	197.35	197.34	197.34	197.34	197.33
27.0500	197.33	197.33	197.32	197.32	197.32
27.3000	197.31	197.31	197.31	197.30	197.30
27.5500	197.30	197.29	197.29	197.29	197.28
27.8000	197.28	197.28	197.28	197.27	197.27
28.0500	197.27	197.26	197.26	197.26	197.26
28.3000	197.25	197.25	197.25	197.25	197.24
28.5500	197.24	197.24	197.24	197.23	197.23
28.8000	197.23	197.23	197.22	197.22	197.22
29.0500	197.22	197.21	197.21	197.21	197.21
29.3000	197.20	197.20	197.20	197.20	197.20
29.5500	197.19	197.19	197.19	197.19	197.19
29.8000	197.18	197.18	197.18	197.18	197.18
30.0500	197.17	197.17	197.17	197.17	197.17

TIME vs. ELEVATION (ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
30.3000	197.17	197.16	197.16	197.16	197.16
30.5500	197.16	197.16	197.15	197.15	197.15
30.8000	197.15	197.15	197.15	197.14	197.14
31.0500	197.14	197.14	197.14	197.14	197.14
31.3000	197.13	197.13	197.13	197.13	197.13
31.5500	197.13	197.13	197.12	197.12	197.12
31.8000	197.12	197.12	197.12	197.12	197.12
32.0500	197.11	197.11	197.11	197.11	197.11
32.3000	197.11	197.11	197.11	197.11	197.10
32.5500	197.10	197.10	197.10	197.10	197.10
32.8000	197.10	197.10	197.10	197.09	197.09
33.0500	197.09	197.09	197.09	197.09	197.09
33.3000	197.09	197.09	197.09	197.09	197.08
33.5500	197.08	197.08	197.08	197.08	197.08
33.8000	197.08	197.08	197.08	197.08	197.08
34.0500	197.07	197.07	197.07	197.07	197.07
34.3000	197.07	197.07	197.07	197.07	197.07
34.5500	197.07	197.07	197.07	197.07	197.06
34.8000	197.06	197.06	197.06	197.06	197.06
35.0500	197.06	197.06	197.06	197.06	197.06
35.3000	197.06	197.06	197.06	197.06	197.06
35.5500	197.05	197.05	197.05	197.05	197.05
35.8000	197.05	197.05	197.05	197.05	197.05
36.0500	197.05	197.05	197.05	197.05	197.05
36.3000	197.05	197.05	197.05	197.05	197.04
36.5500	197.04	197.04	197.04	197.04	197.04
36.8000	197.04	197.04	197.04	197.04	197.04
37.0500	197.04	197.04	197.04	197.04	197.04
37.3000	197.04	197.04	197.04	197.04	197.04
37.5500	197.04	197.04	197.04	197.03	197.03
37.8000	197.03	197.03	197.03	197.03	197.03
38.0500	197.03	197.03	197.03	197.03	197.03
38.3000	197.03	197.03	197.03	197.03	197.03
38.5500	197.03	197.03	197.03	197.03	197.03
38.8000	197.03	197.03	197.03	197.03	197.03
39.0500	197.03	197.03	197.03	197.03	197.02
39.3000	197.02	197.02	197.02	197.02	197.02
39.5500	197.02	197.02	197.02	197.02	197.02
39.8000	197.02	197.02	197.02	197.02	197.02
40.0500	197.02	197.02	197.02	197.02	197.02
40.3000	197.02	197.02	197.02	197.02	197.02
40.5500	197.02	197.02	197.02	197.02	197.02
40.8000	197.02	197.02	197.02	197.02	197.02
41.0500	197.02	197.02	197.02	197.02	197.02
41.3000	197.02	197.02	197.02	197.02	197.02
41.5500	197.02	197.02	197.02	197.01	197.01

TIME vs. ELEVATION (ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
41.8000	197.01	197.01	197.01	197.01	197.01
42.0500	197.01	197.01	197.01	197.01	197.01
42.3000	197.01	197.01	197.01	197.01	197.01
42.5500	197.01	197.01	197.01	197.01	197.01
42.8000	197.01	197.01	197.01	197.01	197.01
43.0500	197.01	197.01	197.01	197.01	197.01
43.3000	197.01	197.01	197.01	197.01	197.01
43.5500	197.01	197.01	197.01	197.01	197.01
43.8000	197.01	197.01	197.01	197.01	197.01
44.0500	197.01	197.01	197.01	197.01	197.01
44.3000	197.01	197.01	197.01	197.01	197.01
44.5500	197.01	197.01	197.01	197.01	197.01
44.8000	197.01	197.01	197.01	197.01	197.01
45.0500	197.01	197.01	197.01	197.01	197.01
45.3000	197.01	197.01	197.01	197.01	197.01
45.5500	197.01	197.01	197.01	197.01	197.01
45.8000	197.01	197.01	197.01	197.01	197.01
46.0500	197.01	197.01	197.01	197.01	197.01
46.3000	197.01	197.01	197.01	197.01	197.01
46.5500	197.01	197.01	197.01	197.01	197.01
46.8000	197.01	197.01	197.00	197.00	197.00
47.0500	197.00	197.00	197.00	197.00	197.00
47.3000	197.00	197.00	197.00	197.00	197.00
47.5500	197.00	197.00	197.00	197.00	197.00
47.8000	197.00	197.00	197.00	197.00	197.00
48.0500	197.00	197.00	197.00	197.00	197.00
48.3000	197.00	197.00	197.00	197.00	197.00
48.5500	197.00	197.00	197.00	197.00	197.00
48.8000	197.00	197.00	197.00	197.00	197.00
49.0500	197.00	197.00	197.00	197.00	197.00
49.3000	197.00	197.00	197.00	197.00	197.00
49.5500	197.00	197.00	197.00	197.00	197.00
49.8000	197.00	197.00	197.00	197.00	197.00
50.0500	197.00	197.00	197.00	197.00	197.00
50.3000	197.00	197.00	197.00	197.00	197.00
50.5500	197.00	197.00	197.00	197.00	197.00
50.8000	197.00	197.00	197.00	197.00	197.00
51.0500	197.00	197.00	197.00	197.00	197.00
51.3000	197.00	197.00	197.00	197.00	197.00
51.5500	197.00	197.00	197.00	197.00	197.00
51.8000	197.00	197.00	197.00	197.00	197.00
52.0500	197.00	197.00			

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
7.5500	.000	.000	.000	.000	.000
7.8000	.000	.000	.000	.001	.001
8.0500	.001	.001	.002	.002	.002
8.3000	.003	.003	.004	.004	.005
8.5500	.006	.006	.007	.008	.009
8.8000	.010	.011	.012	.013	.014
9.0500	.015	.017	.018	.020	.021
9.3000	.023	.024	.026	.028	.029
9.5500	.031	.033	.035	.037	.039
9.8000	.041	.043	.046	.048	.051
10.0500	.054	.056	.060	.063	.066
10.3000	.070	.074	.078	.082	.087
10.5500	.091	.097	.102	.108	.114
10.8000	.120	.127	.134	.142	.150
11.0500	.159	.168	.178	.188	.200
11.3000	.212	.225	.240	.256	.273
11.5500	.292	.315	.345	.386	.446
11.8000	.532	.655	.829	1.067	1.361
12.0500	1.679	1.978	2.216	2.381	2.479
12.3000	2.532	2.555	2.560	2.550	2.531
12.5500	2.504	2.472	2.434	2.394	2.351
12.8000	2.307	2.262	2.217	2.173	2.129
13.0500	2.086	2.044	2.002	1.961	1.921
13.3000	1.881	1.842	1.804	1.767	1.732
13.5500	1.698	1.665	1.633	1.602	1.572
13.8000	1.543	1.515	1.487	1.460	1.434
14.0500	1.409	1.384	1.360	1.337	1.315
14.3000	1.293	1.273	1.253	1.234	1.216
14.5500	1.198	1.181	1.165	1.149	1.134
14.8000	1.120	1.106	1.092	1.078	1.065
15.0500	1.052	1.040	1.028	1.016	1.004
15.3000	.993	.982	.972	.962	.952
15.5500	.942	.932	.923	.914	.905
15.8000	.896	.888	.879	.871	.863
16.0500	.855	.848	.840	.833	.826
16.3000	.819	.812	.806	.799	.793
16.5500	.787	.781	.776	.770	.765
16.8000	.760	.755	.750	.746	.741
17.0500	.737	.732	.728	.724	.720
17.3000	.716	.712	.708	.704	.700
17.5500	.697	.693	.689	.685	.682
17.8000	.678	.675	.671	.668	.664
18.0500	.661	.658	.654	.651	.648
18.3000	.645	.641	.638	.635	.632
18.5500	.629	.626	.623	.620	.617

TIME vs. VOLUME (ac-ft)

Time hrs	Output Time increment = .0500 hrs Time on left represents time for first value in each row.				
18.8000	.614	.611	.608	.606	.603
19.0500	.600	.597	.594	.591	.589
19.3000	.586	.583	.581	.578	.575
19.5500	.573	.570	.567	.565	.562
19.8000	.560	.557	.554	.552	.549
20.0500	.547	.544	.542	.539	.537
20.3000	.535	.532	.530	.528	.526
20.5500	.523	.521	.519	.517	.515
20.8000	.513	.512	.510	.508	.506
21.0500	.504	.503	.501	.500	.498
21.3000	.496	.495	.493	.492	.491
21.5500	.489	.488	.487	.485	.484
21.8000	.483	.481	.480	.479	.478
22.0500	.477	.476	.475	.473	.472
22.3000	.471	.470	.469	.468	.467
22.5500	.466	.465	.465	.464	.463
22.8000	.462	.461	.460	.459	.458
23.0500	.458	.457	.456	.455	.454
23.3000	.454	.453	.452	.451	.451
23.5500	.450	.449	.448	.448	.447
23.8000	.446	.446	.445	.444	.444
24.0500	.443	.442	.440	.437	.432
24.3000	.428	.423	.418	.412	.407
24.5500	.402	.397	.393	.388	.383
24.8000	.379	.375	.371	.367	.363
25.0500	.359	.355	.351	.347	.344
25.3000	.340	.336	.333	.329	.326
25.5500	.322	.319	.315	.312	.309
25.8000	.305	.302	.299	.296	.293
26.0500	.289	.286	.283	.280	.277
26.3000	.274	.271	.268	.266	.263
26.5500	.260	.257	.254	.252	.249
26.8000	.246	.244	.241	.239	.236
27.0500	.234	.231	.229	.226	.224
27.3000	.221	.219	.217	.214	.212
27.5500	.210	.208	.205	.203	.201
27.8000	.199	.197	.195	.193	.191
28.0500	.189	.187	.185	.183	.181
28.3000	.179	.177	.175	.173	.171
28.5500	.169	.168	.166	.164	.162
28.8000	.161	.159	.157	.156	.154
29.0500	.152	.151	.149	.148	.146
29.3000	.144	.143	.141	.140	.138
29.5500	.137	.135	.134	.133	.131
29.8000	.130	.128	.127	.126	.124
30.0500	.123	.122	.120	.119	.118

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
197.00	-----	.7000	.0000	.000	.000
198.00	-----	.7500	2.1746	.725	.725
199.00	-----	.8000	2.3246	.775	1.500
200.00	-----	.8700	2.5043	.835	2.334
201.00	-----	.9000	2.6549	.885	3.219

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

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REQUESTED POND WS ELEVATIONS:

Min. Elev.= 197.00 ft
Increment = .50 ft
Max. Elev.= 201.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Culvert-Circular		--->	TW	197.000	201.000
TW SETUP, DS Channel					

File.... F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\NORTHPOND.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID =
Structure Type = Culvert-Circular

No. Barrels	=	1
Barrel Diameter	=	2.0000 ft
Upstream Invert	=	197.00 ft
Dnstream Invert	=	195.00 ft
Horiz. Length	=	160.00 ft
Barrel Length	=	160.01 ft
Barrel Slope	=	.01250 ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130
Ke	=	.5000 (forward entrance loss)
Kb	=	.012411 (per ft of full flow)
Kr	=	.5000 (reverse entrance loss)
HW Convergence	=	.001 +/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0098
Inlet Control M	=	2.0000
Inlet Control c	=	.03980
Inlet Control Y	=	.6700
T1 ratio (HW/D)	=	1.154
T2 ratio (HW/D)	=	1.301
Slope Factor	=	-.500

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...
At T1 Elev = 199.31 ft ---> Flow = 15.55 cfs
At T2 Elev = 199.60 ft ---> Flow = 17.77 cfs

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...

Maximum Iterations	=	30
Min. TW tolerance	=	.01 ft
Max. TW tolerance	=	.01 ft
Min. HW tolerance	=	.01 ft
Max. HW tolerance	=	.01 ft
Min. Q tolerance	=	.10 cfs
Max. Q tolerance	=	.10 cfs

File.... F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\NORTHPOND.PPW

RATING TABLE FOR ONE OUTLET TYPE

Structure ID = (Culvert-Circular)

Mannings open channel maximum capacity: 27.21 cfs
Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev,Device Q	Tail Water	Notes

WS Elev. ft	Q cfs	TW Elev ft	Converge +/-ft	Computation Messages
197.00	.00	Free Outfall		
		Upstream HW & DNstream TW < Inv.El		
197.50	.91	Free Outfall		
		CRIT.DEPTH CONTROL Vh= .114ft Dcr= .329ft		CRIT.DEPTH
198.00	3.43	Free Outfall		
		CRIT.DEPTH CONTROL Vh= .235ft Dcr= .648ft		CRIT.DEPTH
198.50	7.15	Free Outfall		
		CRIT.DEPTH CONTROL Vh= .368ft Dcr= .949ft		CRIT.DEPTH
199.00	11.62	Free Outfall		
		CRIT.DEPTH CONTROL Vh= .517ft Dcr= 1.224ft		CRIT.DEPTH
199.50	16.41	Free Outfall		
		CRIT.DEPTH CONTROL Vh= .692ft Dcr= 1.461ft		CRIT.DEPTH
200.00	20.36	Free Outfall		
		INLET CONTROL... Submerged: HW =3.00		
200.50	23.21	Free Outfall		
		INLET CONTROL... Submerged: HW =3.50		
201.00	25.74	Free Outfall		
		INLET CONTROL... Submerged: HW =4.00		

File.... F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\NORTHPOND.PPW

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
197.00	.00	Free Outfall		None contributing
197.50	.91	Free Outfall		
198.00	3.43	Free Outfall		
198.50	7.15	Free Outfall		
199.00	11.62	Free Outfall		
199.50	16.41	Free Outfall		
200.00	20.36	Free Outfall		
200.50	23.21	Free Outfall		
201.00	25.74	Free Outfall		

LEVEL POOL ROUTING DATA

HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
Inflow HYG file = NONE STORED - NORTH POND IN 100y24
Outflow HYG file = NONE STORED - NORTH POND OUT 100y24

Pond Node Data = NORTH POND
Pond Volume Data = NORTH POND
Pond Outlet Data = PR 10

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	197.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + O cfs
197.00	.00	.000	.7000	.00	.00	.00
197.50	.91	.356	.7248	.00	.91	173.30
198.00	3.43	.725	.7500	.00	3.43	354.26
198.50	7.15	1.106	.7748	.00	7.15	542.47
199.00	11.62	1.500	.8000	.00	11.62	737.49
199.50	16.41	1.908	.8346	.00	16.41	940.05
200.00	20.36	2.334	.8700	.00	20.36	1150.25
200.50	23.21	2.773	.8849	.00	23.21	1365.44
201.00	25.74	3.219	.9000	.00	25.74	1583.95

SUMMARY FOR HYDROGRAPH ADDITION
at Node: NORTH POND IN

HYG Directory: F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
A 10	PIPE SYSTEM		PIPE SYSTEM	100y24
A 30	OFFSITE		OFFSITE	100y24
A 20	SMALLER EASTPIPE		SMALLER EASTPIPE	100y24

INFLOWS TO: NORTH POND IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	PIPE SYSTEM	100y24	3.539	12.0500	51.40
	OFFSITE	100y24	1.575	12.0500	22.70
	SMALLER EASTPIPE	100y24	1.168	12.0500	16.96

TOTAL FLOW INTO: NORTH POND IN

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	NORTH POND IN	100y24	6.282	12.0500	91.06

TOTAL NODE INFLOW...
HYG file =
HYG ID = NORTH POND IN
HYG Tag = 100y24

Peak Discharge =	91.06 cfs
Time to Peak =	12.0500 hrs
HYG Volume =	6.282 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
7.5500	.00	.00	.01	.01	.02
7.8000	.02	.03	.04	.05	.06
8.0500	.07	.08	.09	.10	.11
8.3000	.12	.13	.14	.16	.17
8.5500	.18	.20	.21	.23	.25
8.8000	.26	.28	.30	.32	.34
9.0500	.36	.38	.40	.42	.43
9.3000	.45	.47	.48	.50	.51
9.5500	.53	.55	.57	.59	.61
9.8000	.64	.67	.71	.75	.79
10.0500	.83	.88	.93	.98	1.04
10.3000	1.10	1.16	1.23	1.29	1.37
10.5500	1.44	1.52	1.61	1.70	1.81
10.8000	1.92	2.04	2.16	2.29	2.43
11.0500	2.57	2.73	2.92	3.13	3.38
11.3000	3.66	3.96	4.28	4.62	4.97
11.5500	5.59	6.78	9.19	12.97	18.88
11.8000	26.61	37.99	53.71	72.35	87.04
12.0500	91.06	84.06	67.73	51.21	38.53
12.3000	30.11	24.78	20.91	18.14	15.95
12.5500	14.18	12.70	11.50	10.56	9.88
12.8000	9.36	8.97	8.62	8.30	8.00
13.0500	7.71	7.44	7.19	6.97	6.78
13.3000	6.60	6.43	6.28	6.12	5.96
13.5500	5.81	5.66	5.52	5.39	5.27
13.8000	5.15	5.03	4.92	4.81	4.70
14.0500	4.59	4.49	4.40	4.32	4.26
14.3000	4.20	4.16	4.12	4.07	4.03
14.5500	4.00	3.96	3.92	3.88	3.84
14.8000	3.81	3.77	3.73	3.69	3.65
15.0500	3.61	3.57	3.54	3.50	3.46
15.3000	3.42	3.38	3.34	3.30	3.26
15.5500	3.22	3.19	3.15	3.11	3.07

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
15.8000	3.03	2.99	2.95	2.91	2.87
16.0500	2.83	2.79	2.76	2.73	2.71
16.3000	2.69	2.67	2.66	2.64	2.63
16.5500	2.62	2.60	2.59	2.57	2.56
16.8000	2.55	2.53	2.52	2.50	2.49
17.0500	2.48	2.46	2.45	2.43	2.42
17.3000	2.41	2.39	2.38	2.36	2.35
17.5500	2.34	2.32	2.31	2.29	2.28
17.8000	2.27	2.25	2.24	2.22	2.21
18.0500	2.19	2.18	2.17	2.15	2.14
18.3000	2.12	2.11	2.09	2.08	2.07
18.5500	2.05	2.04	2.02	2.01	1.99
18.8000	1.98	1.96	1.95	1.94	1.92
19.0500	1.91	1.89	1.88	1.86	1.85
19.3000	1.83	1.82	1.81	1.79	1.78
19.5500	1.76	1.75	1.73	1.72	1.70
19.8000	1.69	1.67	1.66	1.64	1.63
20.0500	1.61	1.60	1.59	1.58	1.57
20.3000	1.57	1.56	1.56	1.56	1.55
20.5500	1.55	1.55	1.55	1.54	1.54
20.8000	1.54	1.53	1.53	1.53	1.53
21.0500	1.52	1.52	1.52	1.52	1.51
21.3000	1.51	1.51	1.51	1.50	1.50
21.5500	1.50	1.49	1.49	1.49	1.49
21.8000	1.48	1.48	1.48	1.47	1.47
22.0500	1.47	1.47	1.46	1.46	1.46
22.3000	1.45	1.45	1.45	1.45	1.44
22.5500	1.44	1.44	1.44	1.43	1.43
22.8000	1.43	1.42	1.42	1.42	1.42
23.0500	1.41	1.41	1.41	1.40	1.40
23.3000	1.40	1.40	1.39	1.39	1.39
23.5500	1.38	1.38	1.38	1.38	1.37
23.8000	1.37	1.37	1.36	1.36	1.36
24.0500	1.30	1.14	.85	.56	.34
24.3000	.20	.13	.08	.05	.03
24.5500	.02	.01	.01	.00	.00

LEVEL POOL ROUTING SUMMARY

HYG Dir = F:\HYDRO\PROJECTS\AUBURN HILLS 16TH\PONDPACK\
Inflow HYG file = NONE STORED - NORTH POND IN 100y24
Outflow HYG file = NONE STORED - NORTH POND OUT 100y24

Pond Node Data = NORTH POND
Pond Volume Data = NORTH POND
Pond Outlet Data = PR 10

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	197.00 ft
Starting Volume	=	.000 ac-ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	.0500 hrs

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	91.06 cfs	at	12.0500 hrs
Peak Outflow	=	21.83 cfs	at	12.4000 hrs
Peak Elevation	=	200.26 ft		
Peak Storage	=	2.560 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	6.282
- Infiltration	=	.000
- HYG Vol OUT	=	6.281
- Retained Vol	=	.001
Unrouted Vol	=	-.000 ac-ft (.000% of Inflow Volume)

POND ROUTED TOTAL OUTFLOW HYG...
HYG file =
HYG ID = NORTH POND OUT
HYG Tag = 100y24

Peak Discharge =	21.83 cfs
Time to Peak =	12.4000 hrs
HYG Volume =	6.281 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
7.5500	.00	.00	.00	.00	.00
7.8000	.00	.00	.00	.00	.00
8.0500	.00	.00	.00	.01	.01
8.3000	.01	.01	.01	.01	.01
8.5500	.01	.02	.02	.02	.02
8.8000	.03	.03	.03	.03	.04
9.0500	.04	.04	.05	.05	.05
9.3000	.06	.06	.07	.07	.08
9.5500	.08	.09	.09	.10	.10
9.8000	.11	.11	.12	.13	.13
10.0500	.14	.15	.15	.16	.17
10.3000	.18	.19	.20	.21	.22
10.5500	.24	.25	.26	.28	.29
10.8000	.31	.33	.35	.37	.39
11.0500	.41	.43	.46	.49	.52
11.3000	.55	.58	.62	.66	.70
11.5500	.75	.81	.88	1.12	1.53
11.8000	2.12	2.96	4.46	6.77	10.06
12.0500	13.74	17.06	19.28	20.66	21.30
12.3000	21.65	21.80	21.83	21.77	21.64
12.5500	21.47	21.26	21.01	20.75	20.47
12.8000	20.11	19.70	19.29	18.88	18.48
13.0500	18.08	17.68	17.29	16.91	16.53
13.3000	16.10	15.64	15.20	14.78	14.37
13.5500	13.97	13.58	13.20	12.83	12.48
13.8000	12.13	11.80	11.48	11.18	10.88
14.0500	10.60	10.32	10.05	9.79	9.54
14.3000	9.29	9.06	8.83	8.62	8.41
14.5500	8.20	8.01	7.82	7.64	7.47
14.8000	7.30	7.14	7.01	6.88	6.75
15.0500	6.63	6.51	6.39	6.28	6.17
15.3000	6.06	5.95	5.85	5.75	5.65
15.5500	5.56	5.47	5.37	5.29	5.20

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
15.8000	5.11	5.03	4.95	4.87	4.79
16.0500	4.71	4.64	4.57	4.49	4.42
16.3000	4.36	4.29	4.23	4.16	4.10
16.5500	4.04	3.99	3.93	3.88	3.83
16.8000	3.78	3.73	3.68	3.63	3.59
17.0500	3.55	3.50	3.46	3.42	3.40
17.3000	3.37	3.34	3.31	3.29	3.26
17.5500	3.24	3.21	3.19	3.16	3.14
17.8000	3.11	3.09	3.07	3.04	3.02
18.0500	3.00	2.97	2.95	2.93	2.91
18.3000	2.89	2.87	2.84	2.82	2.80
18.5500	2.78	2.76	2.74	2.72	2.70
18.8000	2.68	2.66	2.64	2.62	2.60
19.0500	2.58	2.56	2.55	2.53	2.51
19.3000	2.49	2.47	2.45	2.44	2.42
19.5500	2.40	2.38	2.36	2.35	2.33
19.8000	2.31	2.29	2.28	2.26	2.24
20.0500	2.22	2.21	2.19	2.17	2.16
20.3000	2.14	2.12	2.11	2.09	2.08
20.5500	2.06	2.05	2.04	2.02	2.01
20.8000	2.00	1.98	1.97	1.96	1.95
21.0500	1.93	1.92	1.91	1.90	1.89
21.3000	1.88	1.87	1.86	1.85	1.84
21.5500	1.83	1.82	1.81	1.80	1.79
21.8000	1.79	1.78	1.77	1.76	1.75
22.0500	1.74	1.74	1.73	1.72	1.71
22.3000	1.71	1.70	1.69	1.69	1.68
22.5500	1.67	1.67	1.66	1.65	1.65
22.8000	1.64	1.64	1.63	1.62	1.62
23.0500	1.61	1.61	1.60	1.60	1.59
23.3000	1.59	1.58	1.57	1.57	1.56
23.5500	1.56	1.55	1.55	1.55	1.54
23.8000	1.54	1.53	1.53	1.52	1.52
24.0500	1.51	1.50	1.49	1.47	1.44
24.3000	1.41	1.37	1.34	1.30	1.27
24.5500	1.23	1.20	1.17	1.13	1.10
24.8000	1.07	1.04	1.01	.98	.96
25.0500	.93	.91	.90	.89	.88
25.3000	.87	.86	.85	.84	.84
25.5500	.83	.82	.81	.80	.79
25.8000	.78	.78	.77	.76	.75
26.0500	.74	.74	.73	.72	.71
26.3000	.71	.70	.69	.68	.68
26.5500	.67	.66	.65	.65	.64
26.8000	.63	.63	.62	.61	.61
27.0500	.60	.60	.59	.58	.58
27.3000	.57	.56	.56	.55	.55

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
27.5500	.54	.54	.53	.52	.52
27.8000	.51	.51	.50	.50	.49
28.0500	.49	.48	.48	.47	.47
28.3000	.46	.46	.45	.45	.44
28.5500	.44	.43	.43	.42	.42
28.8000	.42	.41	.41	.40	.40
29.0500	.39	.39	.39	.38	.38
29.3000	.37	.37	.37	.36	.36
29.5500	.35	.35	.35	.34	.34
29.8000	.34	.33	.33	.33	.32
30.0500	.32	.32	.31	.31	.31
30.3000	.30	.30	.30	.29	.29
30.5500	.29	.28	.28	.28	.27
30.8000	.27	.27	.27	.26	.26
31.0500	.26	.26	.25	.25	.25
31.3000	.24	.24	.24	.24	.23
31.5500	.23	.23	.23	.22	.22
31.8000	.22	.22	.22	.21	.21
32.0500	.21	.21	.20	.20	.20
32.3000	.20	.20	.19	.19	.19
32.5500	.19	.19	.18	.18	.18
32.8000	.18	.18	.17	.17	.17
33.0500	.17	.17	.17	.16	.16
33.3000	.16	.16	.16	.16	.15
33.5500	.15	.15	.15	.15	.15
33.8000	.14	.14	.14	.14	.14
34.0500	.14	.14	.13	.13	.13
34.3000	.13	.13	.13	.13	.12
34.5500	.12	.12	.12	.12	.12
34.8000	.12	.12	.11	.11	.11
35.0500	.11	.11	.11	.11	.11
35.3000	.10	.10	.10	.10	.10
35.5500	.10	.10	.10	.10	.10
35.8000	.09	.09	.09	.09	.09
36.0500	.09	.09	.09	.09	.09
36.3000	.08	.08	.08	.08	.08
36.5500	.08	.08	.08	.08	.08
36.8000	.08	.08	.07	.07	.07
37.0500	.07	.07	.07	.07	.07
37.3000	.07	.07	.07	.07	.07
37.5500	.07	.06	.06	.06	.06
37.8000	.06	.06	.06	.06	.06
38.0500	.06	.06	.06	.06	.06
38.3000	.06	.06	.05	.05	.05
38.5500	.05	.05	.05	.05	.05
38.8000	.05	.05	.05	.05	.05
39.0500	.05	.05	.05	.05	.05

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
39.3000	.04	.04	.04	.04	.04
39.5500	.04	.04	.04	.04	.04
39.8000	.04	.04	.04	.04	.04
40.0500	.04	.04	.04	.04	.04
40.3000	.04	.04	.04	.04	.03
40.5500	.03	.03	.03	.03	.03
40.8000	.03	.03	.03	.03	.03
41.0500	.03	.03	.03	.03	.03
41.3000	.03	.03	.03	.03	.03
41.5500	.03	.03	.03	.03	.03
41.8000	.03	.03	.03	.03	.03
42.0500	.03	.02	.02	.02	.02
42.3000	.02	.02	.02	.02	.02
42.5500	.02	.02	.02	.02	.02
42.8000	.02	.02	.02	.02	.02
43.0500	.02	.02	.02	.02	.02
43.3000	.02	.02	.02	.02	.02
43.5500	.02	.02	.02	.02	.02
43.8000	.02	.02	.02	.02	.02
44.0500	.02	.02	.02	.02	.02
44.3000	.02	.02	.02	.02	.01
44.5500	.01	.01	.01	.01	.01
44.8000	.01	.01	.01	.01	.01
45.0500	.01	.01	.01	.01	.01
45.3000	.01	.01	.01	.01	.01
45.5500	.01	.01	.01	.01	.01
45.8000	.01	.01	.01	.01	.01
46.0500	.01	.01	.01	.01	.01
46.3000	.01	.01	.01	.01	.01
46.5500	.01	.01	.01	.01	.01
46.8000	.01	.01	.01	.01	.01
47.0500	.01	.01	.01	.01	.01
47.3000	.01	.01	.01	.01	.01
47.5500	.01	.01	.01	.01	.01
47.8000	.01	.01	.01	.01	.01
48.0500	.01	.01	.01	.01	.01
48.3000	.01	.01	.01	.01	.01
48.5500	.01	.01	.01	.01	.01
48.8000	.01	.01	.01	.01	.01
49.0500	.01	.01	.01	.01	.01
49.3000	.01	.01	.01	.01	.01
49.5500	.01	.01	.01	.00	.00
49.8000	.00	.00	.00	.00	.00
50.0500	.00	.00	.00	.00	.00
50.3000	.00	.00	.00	.00	.00
50.5500	.00	.00	.00	.00	.00
50.8000	.00	.00	.00	.00	.00

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
51.0500	.00	.00	.00	.00	.00
51.3000	.00	.00	.00	.00	.00
51.5500	.00	.00	.00	.00	.00
51.8000	.00	.00	.00	.00	.00
52.0500	.00	.00			

DIVERTED HYDROGRAPH...
HYG file =
HYG ID = PR 10
HYG Tag = 100y24

Peak Discharge =	21.83 cfs
Time to Peak =	12.4000 hrs
HYG Volume =	6.281 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
7.8500	.00	.00	.00	.00	.00
8.1000	.00	.00	.01	.01	.01
8.3500	.01	.01	.01	.01	.01
8.6000	.02	.02	.02	.02	.03
8.8500	.03	.03	.03	.04	.04
9.1000	.04	.05	.05	.05	.06
9.3500	.06	.07	.07	.08	.08
9.6000	.09	.09	.10	.10	.11
9.8500	.11	.12	.13	.13	.14
10.1000	.15	.15	.16	.17	.18
10.3500	.19	.20	.21	.22	.24
10.6000	.25	.26	.28	.29	.31
10.8500	.33	.35	.37	.39	.41
11.1000	.43	.46	.49	.52	.55
11.3500	.58	.62	.66	.70	.75
11.6000	.81	.88	1.12	1.53	2.12
11.8500	2.96	4.46	6.77	10.06	13.74
12.1000	17.06	19.28	20.66	21.30	21.65
12.3500	21.80	21.83	21.77	21.64	21.47
12.6000	21.26	21.01	20.75	20.47	20.11
12.8500	19.70	19.29	18.88	18.48	18.08
13.1000	17.68	17.29	16.91	16.53	16.10
13.3500	15.64	15.20	14.78	14.37	13.97
13.6000	13.58	13.20	12.83	12.48	12.13
13.8500	11.80	11.48	11.18	10.88	10.60
14.1000	10.32	10.05	9.79	9.54	9.29
14.3500	9.06	8.83	8.62	8.41	8.20
14.6000	8.01	7.82	7.64	7.47	7.30
14.8500	7.14	7.01	6.88	6.75	6.63
15.1000	6.51	6.39	6.28	6.17	6.06
15.3500	5.95	5.85	5.75	5.65	5.56
15.6000	5.47	5.37	5.29	5.20	5.11
15.8500	5.03	4.95	4.87	4.79	4.71

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
16.1000	4.64	4.57	4.49	4.42	4.36
16.3500	4.29	4.23	4.16	4.10	4.04
16.6000	3.99	3.93	3.88	3.83	3.78
16.8500	3.73	3.68	3.63	3.59	3.55
17.1000	3.50	3.46	3.42	3.40	3.37
17.3500	3.34	3.31	3.29	3.26	3.24
17.6000	3.21	3.19	3.16	3.14	3.11
17.8500	3.09	3.07	3.04	3.02	3.00
18.1000	2.97	2.95	2.93	2.91	2.89
18.3500	2.87	2.84	2.82	2.80	2.78
18.6000	2.76	2.74	2.72	2.70	2.68
18.8500	2.66	2.64	2.62	2.60	2.58
19.1000	2.56	2.55	2.53	2.51	2.49
19.3500	2.47	2.45	2.44	2.42	2.40
19.6000	2.38	2.36	2.35	2.33	2.31
19.8500	2.29	2.28	2.26	2.24	2.22
20.1000	2.21	2.19	2.17	2.16	2.14
20.3500	2.12	2.11	2.09	2.08	2.06
20.6000	2.05	2.04	2.02	2.01	2.00
20.8500	1.98	1.97	1.96	1.95	1.93
21.1000	1.92	1.91	1.90	1.89	1.88
21.3500	1.87	1.86	1.85	1.84	1.83
21.6000	1.82	1.81	1.80	1.79	1.79
21.8500	1.78	1.77	1.76	1.75	1.74
22.1000	1.74	1.73	1.72	1.71	1.71
22.3500	1.70	1.69	1.69	1.68	1.67
22.6000	1.67	1.66	1.65	1.65	1.64
22.8500	1.64	1.63	1.62	1.62	1.61
23.1000	1.61	1.60	1.60	1.59	1.59
23.3500	1.58	1.57	1.57	1.56	1.56
23.6000	1.55	1.55	1.55	1.54	1.54
23.8500	1.53	1.53	1.52	1.52	1.51
24.1000	1.50	1.49	1.47	1.44	1.41
24.3500	1.37	1.34	1.30	1.27	1.23
24.6000	1.20	1.17	1.13	1.10	1.07
24.8500	1.04	1.01	.98	.96	.93
25.1000	.91	.90	.89	.88	.87
25.3500	.86	.85	.84	.84	.83
25.6000	.82	.81	.80	.79	.78
25.8500	.78	.77	.76	.75	.74
26.1000	.74	.73	.72	.71	.71
26.3500	.70	.69	.68	.68	.67
26.6000	.66	.65	.65	.64	.63
26.8500	.63	.62	.61	.61	.60
27.1000	.60	.59	.58	.58	.57
27.3500	.56	.56	.55	.55	.54
27.6000	.54	.53	.52	.52	.51

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
27.8500	.51	.50	.50	.49	.49
28.1000	.48	.48	.47	.47	.46
28.3500	.46	.45	.45	.44	.44
28.6000	.43	.43	.42	.42	.42
28.8500	.41	.41	.40	.40	.39
29.1000	.39	.39	.38	.38	.37
29.3500	.37	.37	.36	.36	.35
29.6000	.35	.35	.34	.34	.34
29.8500	.33	.33	.33	.32	.32
30.1000	.32	.31	.31	.31	.30
30.3500	.30	.30	.29	.29	.29
30.6000	.28	.28	.28	.27	.27
30.8500	.27	.27	.26	.26	.26
31.1000	.26	.25	.25	.25	.24
31.3500	.24	.24	.24	.23	.23
31.6000	.23	.23	.22	.22	.22
31.8500	.22	.22	.21	.21	.21
32.1000	.21	.20	.20	.20	.20
32.3500	.20	.19	.19	.19	.19
32.6000	.19	.18	.18	.18	.18
32.8500	.18	.17	.17	.17	.17
33.1000	.17	.17	.16	.16	.16
33.3500	.16	.16	.16	.15	.15
33.6000	.15	.15	.15	.15	.14
33.8500	.14	.14	.14	.14	.14
34.1000	.14	.13	.13	.13	.13
34.3500	.13	.13	.13	.12	.12
34.6000	.12	.12	.12	.12	.12
34.8500	.12	.11	.11	.11	.11
35.1000	.11	.11	.11	.11	.10
35.3500	.10	.10	.10	.10	.10
35.6000	.10	.10	.10	.10	.09
35.8500	.09	.09	.09	.09	.09
36.1000	.09	.09	.09	.09	.08
36.3500	.08	.08	.08	.08	.08
36.6000	.08	.08	.08	.08	.08
36.8500	.08	.07	.07	.07	.07
37.1000	.07	.07	.07	.07	.07
37.3500	.07	.07	.07	.07	.07
37.6000	.06	.06	.06	.06	.06
37.8500	.06	.06	.06	.06	.06
38.1000	.06	.06	.06	.06	.06
38.3500	.06	.05	.05	.05	.05
38.6000	.05	.05	.05	.05	.05
38.8500	.05	.05	.05	.05	.05
39.1000	.05	.05	.05	.05	.04
39.3500	.04	.04	.04	.04	.04

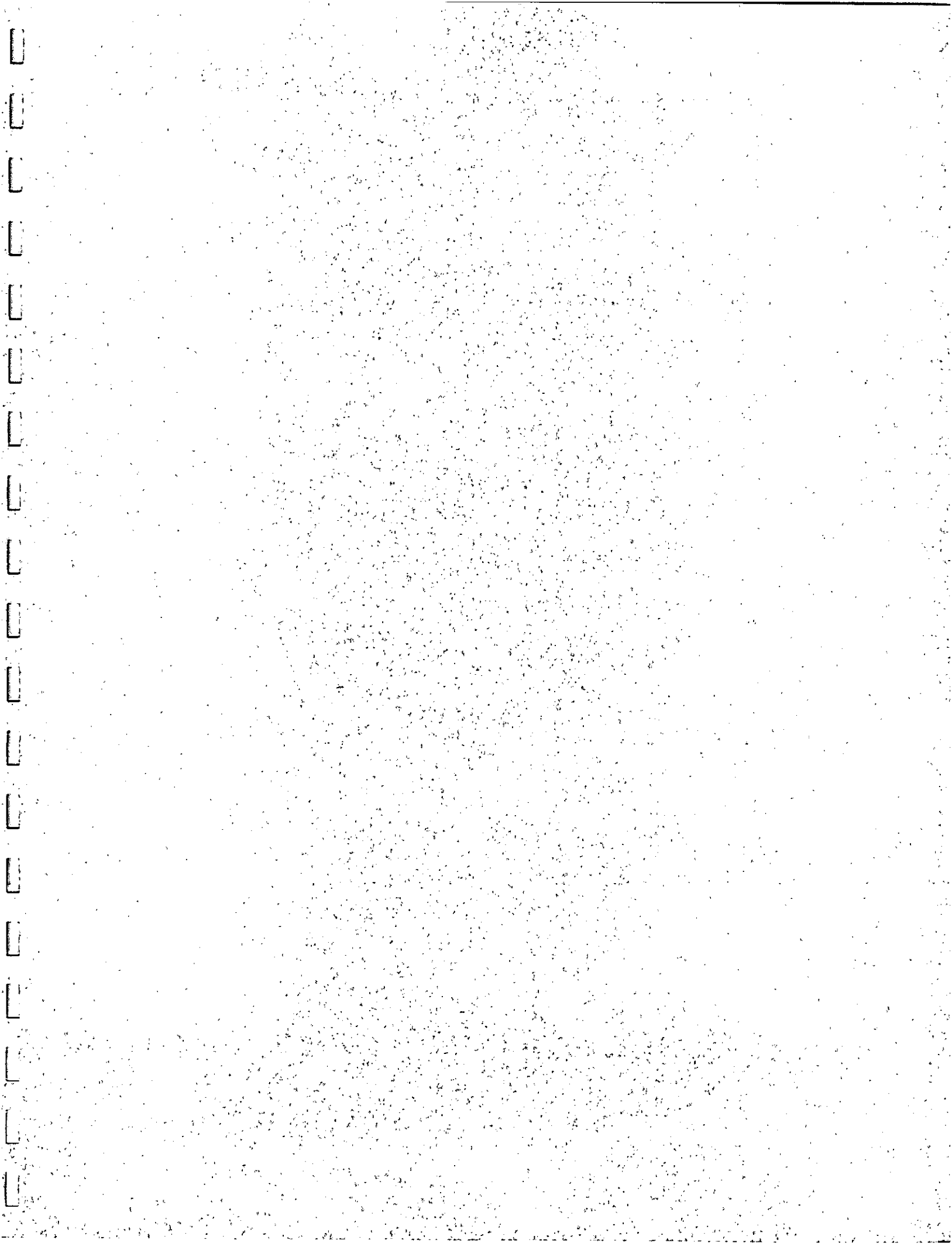
HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
39.6000	.04	.04	.04	.04	.04
39.8500	.04	.04	.04	.04	.04
40.1000	.04	.04	.04	.04	.04
40.3500	.04	.04	.04	.03	.03
40.6000	.03	.03	.03	.03	.03
40.8500	.03	.03	.03	.03	.03
41.1000	.03	.03	.03	.03	.03
41.3500	.03	.03	.03	.03	.03
41.6000	.03	.03	.03	.03	.03
41.8500	.03	.03	.03	.03	.03
42.1000	.02	.02	.02	.02	.02
42.3500	.02	.02	.02	.02	.02
42.6000	.02	.02	.02	.02	.02
42.8500	.02	.02	.02	.02	.02
43.1000	.02	.02	.02	.02	.02
43.3500	.02	.02	.02	.02	.02
43.6000	.02	.02	.02	.02	.02
43.8500	.02	.02	.02	.02	.02
44.1000	.02	.02	.02	.02	.02
44.3500	.02	.02	.02	.01	.01
44.6000	.01	.01	.01	.01	.01
44.8500	.01	.01	.01	.01	.01
45.1000	.01	.01	.01	.01	.01
45.3500	.01	.01	.01	.01	.01
45.6000	.01	.01	.01	.01	.01
45.8500	.01	.01	.01	.01	.01
46.1000	.01	.01	.01	.01	.01
46.3500	.01	.01	.01	.01	.01
46.6000	.01	.01	.01	.01	.01
46.8500	.01	.01	.01	.01	.01
47.1000	.01	.01	.01	.01	.01
47.3500	.01	.01	.01	.01	.01
47.6000	.01	.01	.01	.01	.01
47.8500	.01	.01	.01	.01	.01
48.1000	.01	.01	.01	.01	.01
48.3500	.01	.01	.01	.01	.01
48.6000	.01	.01	.01	.01	.01
48.8500	.01	.01	.01	.01	.01
49.1000	.01	.01	.01	.01	.01
49.3500	.01	.01	.01	.01	.01
49.6000	.01	.01	.00	.00	.00
49.8500	.00	.00	.00	.00	.00
50.1000	.00	.00	.00	.00	.00
50.3500	.00	.00	.00	.00	.00
50.6000	.00	.00	.00	.00	.00
50.8500	.00	.00	.00	.00	.00
51.1000	.00	.00	.00	.00	.00

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .0500 hrs
Time on left represents time for first value in each row.

Time hrs					
51.3500	.00	.00	.00	.00	.00
51.6000	.00	.00	.00	.00	.00
51.8500	.00	.00	.00	.00	.00
52.1000	.00				

Index of Starting Page Numbers for ID Names



StormCad

Existing	2yr	5yr	100yr	*Developed*	2yr	5yr	100yr
Intensity	3.83	4.56	7.37	Intensity	3.83	4.56	7.37
Rational C	0.4	0.45	0.57	Rational C	0.52	0.54	0.67

Basin ID	Area	Existing Flowrates			Developed Flowrates		
	acres	2-yr cfs	5-yr cfs	100-yr cfs	2-yr cfs	5-yr cfs	100-yr cfs
1	2.2	3.4	4.5	9.2	4.4	5.4	11
2	2.0	3.1	4	8	4	5	10
3	3.5	5.4	7.2	15	7.0	8.6	17
4	1.5	2.3	3.1	6.3	3.0	3.7	7.4
5	0.5	0.8	1.0	2.1	1.0	1.2	2.5
6	1.7	2.6	3.5	7.1	3.4	4.2	8.4
7	1.0	1.5	1.9	4.0	1.9	2.3	4.7
8	1	1.7	2.3	4.6	2.2	2.7	5.4
9	3.8	5.8	8	16	7.6	9	19
10	1.9	2.9	3.9	8.0	3.8	4.7	9.4
11	0.4	0.7	0.9	1.8	0.9	1.1	2.2
12	11	16	22	45	21	26	52
13	1.4	2.1	2.9	5.9	2.8	3.4	6.9
14	2.0	3.1	4.1	8.4	4.0	4.9	9.9
15	3.5	5.4	7.2	15	7.0	8.6	17
16	0.9	1.4	1.8	3.8	1.8	2.2	4.4
17	4.5	6.9	9.2	19	9.0	11	22
18	2.7	4.1	5.5	11	5.4	6.6	13
19	1.1	1.7	2.3	4.6	2.2	2.7	5.4
20	1.7	2.6	3.5	7.1	3.4	4.2	8.4
21	1.0	1.5	2.1	4.2	2.0	2.5	4.9
22	3.3	5.1	6.8	14	6.6	8.1	16
23	3.8	5.8	7.8	16	7.6	9.4	19
24	1.9	2.9	3.9	8.0	3.8	4.7	9.4
25	0.5	0.8	1.0	2.1	1.0	1.2	2.5
26	2.4	3.7	4.9	10	4.8	5.9	12
27	4.3	6.6	8.8	18	8.6	11	21
28	5.6	8.6	11	24	11	14	28
29	4.9	7.5	10	21	9.8	12	24
30	1.7	2.6	3.5	7.1	3.4	4.2	8.4
31	2.2	3.4	4.5	9.2	4.4	5.4	11
32	3.9	6.0	8.0	16	7.8	9.6	19
33	0.8	1.3	1.7	3.5	1.7	2.0	4.1
34	0.9	1.3	1.7	3.6	1.7	2.1	4.2
35	1.2	1.8	2.5	5.0	2.4	3.0	5.9
36	1.9	2.9	3.9	8.0	3.8	4.7	9.4
37	1.4	2.1	2.9	5.9	2.8	3.4	6.9
38	1.2	1.8	2.5	5.0	2.4	3.0	5.9
39	0.3	0.5	0.6	1.3	0.6	0.7	1.5
40	5.4	8	11	23	11	13	27
41	1.4	2.1	2.9	5.9	2.8	3.4	6.9
42	2.5	3.8	5.1	11	5.0	6.2	12
43	0.9	1.4	1.8	4	1.8	2.2	4
4.4	1.1	1.7	2.3	4.6	2.2	2.7	5.4

System #1, Inlet 7

Drainage area, acres	1
Li = Inlet Length	10
So = street grade, ft/ft	0.055
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.5	0.62	0.67
Flowrate, cfs	1.9	2.8	4.9
Additional Flow, cfs	0.0	0.0	0.0
Total Flowrate, cfs	1.9	2.8	4.9
depth of flow, ft	0.18	0.21	0.25
Flow width, ft	5.70	6.59	8.12
Froude Number	2.09472	2.14635	2.22248
Length 1, ft	10.50	12.46	15.90
Length 2, ft	6.90	8.18	10.44
Length 3, ft	19.69	23.34	29.79
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 1.8 0.1	NO GOOD 2.3 0.6	VALID 3.1 1.8
case 2, Li > L2 intercepted flow bypassed flow	VALID 1.5 0.5	VALID 2.0 0.8	NO GOOD 3.2 1.7

System #1, Inlet 7

Drainage area, acres	1.2
Li = Inlet Length	10
So = street grade, ft/ft	0.055
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.5	0.62	0.67
Flowrate, cfs	2.3	3.4	5.9
Additional Flow, cfs	0.0	0.0	0.0
Total Flowrate, cfs	2.3	3.4	5.9
depth of flow, ft	0.19	0.22	0.27
Flow width, ft	6.10	7.06	8.70
Froude Number	2.11873	2.17095	2.24795
Length 1, ft	11.38	13.49	17.22
Length 2, ft	7.47	8.86	11.30
Length 3, ft	21.32	25.28	32.27
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 2.0 0.3	NO GOOD 2.5 0.9	VALID 3.4 2.5
case 2, Li > L2 intercepted flow bypassed flow	VALID 1.7 0.6	VALID 2.3 1.1	NO GOOD 3.7 2.2

System #1, Inlet 7

Drainage area, acres	1
Li = Inlet Length	10
So = street grade, ft/ft	0.01
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.5	0.62	0.67
Flowrate, cfs	1.9	2.8	4.9
Additional Flow, cfs	0.0	0.0	0.0
Total Flowrate, cfs	1.9	2.8	4.9
depth of flow, ft	0.25	0.28	0.35
Flow width, ft	7.84	9.07	11.18
Froude Number	0.94207	0.96529	0.99952
Length 1, ft	6.50	7.71	9.84
Length 2, ft	4.27	5.06	6.46
Length 3, ft	12.19	14.45	18.45
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 2.9 0.0	NO GOOD 3.7 0.0	NO GOOD 5.0 0.0
case 2, Li > L2 intercepted flow bypassed flow	VALID 1.8 0.1	VALID 2.4 0.4	VALID 3.9 1.1

System #1, Inlet 7

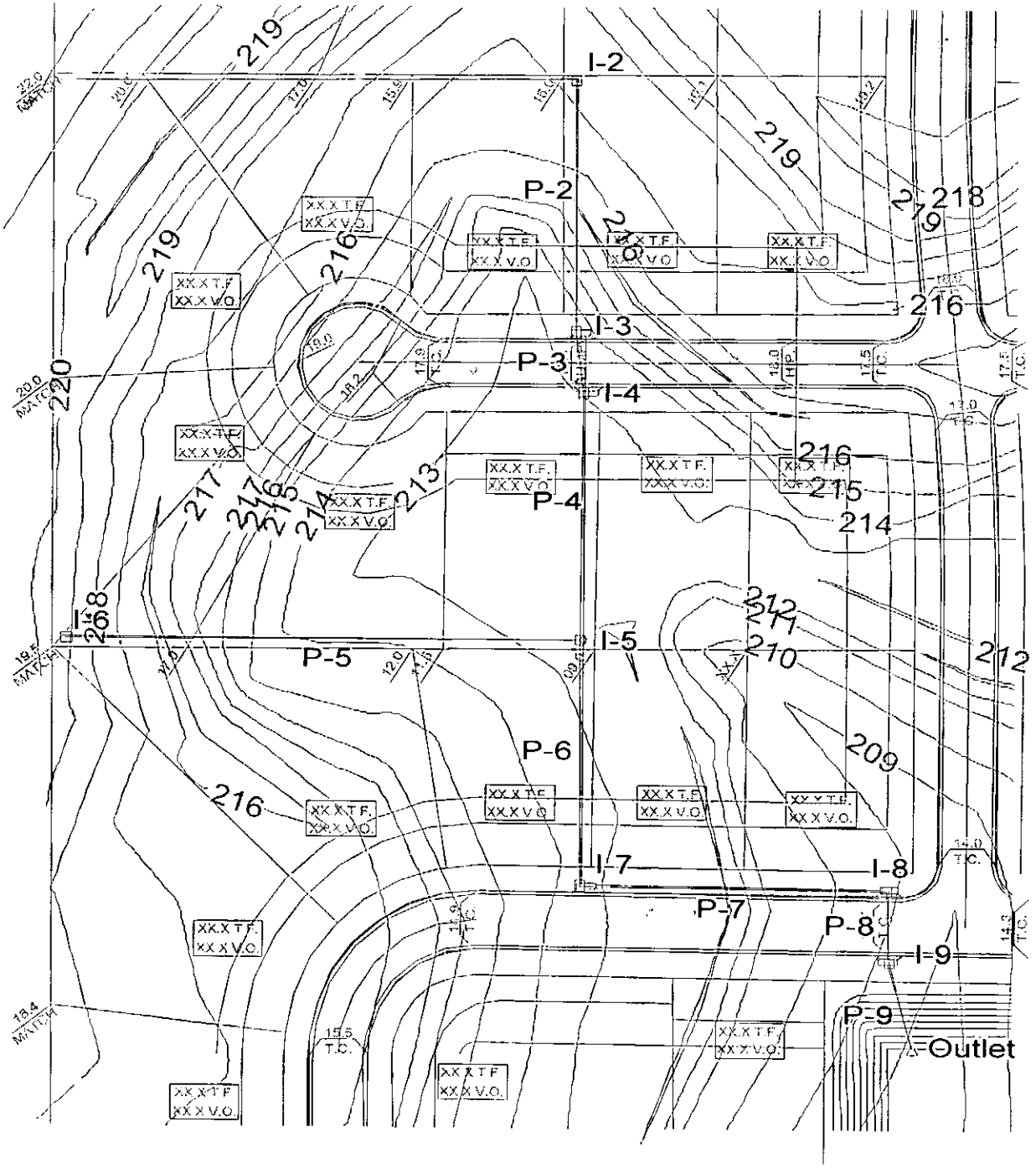
Drainage area, acres	1.9
Li = Inlet Length	10
So = street grade, ft/ft	0.007
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.5	0.62	0.67
Flowrate, cfs	3.6	5.4	9.4
Additional Flow, cfs	0.0	0.0	0.0
Total Flowrate, cfs	3.6	5.4	9.4
depth of flow, ft	0.33	0.39	0.48
Flow width, ft	10.66	12.34	15.21
Froude Number	0.82965	0.85010	0.88025
Length 1, ft	7.79	9.24	11.79
Length 2, ft	5.11	6.07	7.74
Length 3, ft	14.60	17.31	22.10
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 4.7 0.0	NO GOOD 5.8 0.0	NO GOOD 8.0 1.4
case 2, Li > L2 intercepted flow bypassed flow	VALID 3.1 0.5	VALID 4.3 1.1	VALID 6.8 2.5

System #1, Inlet 7

Drainage area, acres	2.2
Li = Inlet Length	10
So = street grade, ft/ft	0.016
Sx = 'cross slope, ft/ft	0.03125
Manning's n	0.022
Z in Izzard's Eq. = 1/Sx	32

	2-yr	5-yr	100-yr
Rainfall Intensity, in/hr	3.83	4.56	7.37
Rational "C"	0.5	0.62	0.67
Flowrate, cfs	4.2	6.2	10.9
Additional Flow, cfs	0.0	0.0	0.0
Total Flowrate, cfs	4.2	6.2	10.9
depth of flow, ft	0.30	0.35	0.43
Flow width, ft	9.65	11.17	13.76
Froude Number	1.23357	1.26398	1.30881
Length 1, ft	10.48	12.43	15.86
Length 2, ft	6.88	8.16	10.41
Length 3, ft	19.64	23.29	29.73
case 1, Li < L2 intercepted flow bypassed flow	NO GOOD 4.0 0.2	NO GOOD 5.0 1.2	VALID 6.8 4.0
case 2, Li > L2 intercepted flow bypassed flow	VALID 3.2 1.0	VALID 4.4 1.8	NO GOOD 7.0 3.8



Project Title: Auburn Hills 16th
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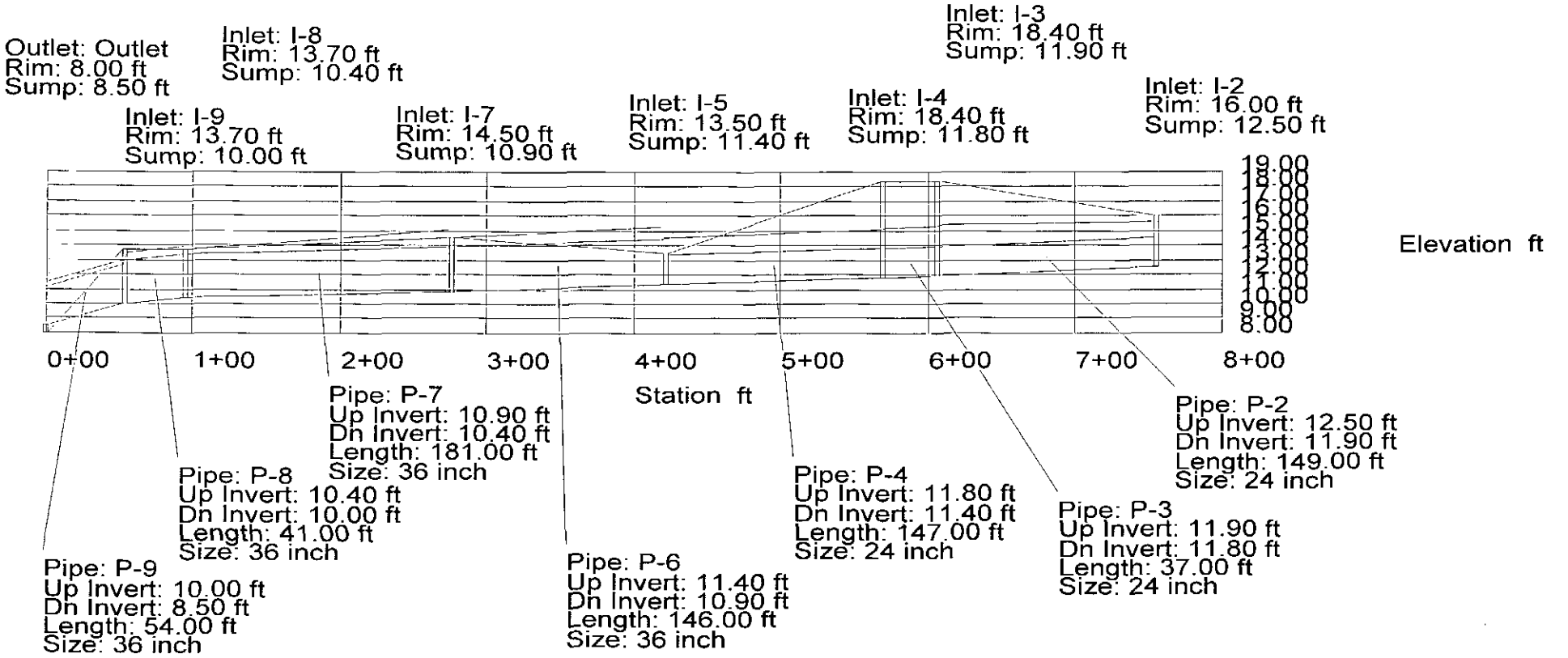
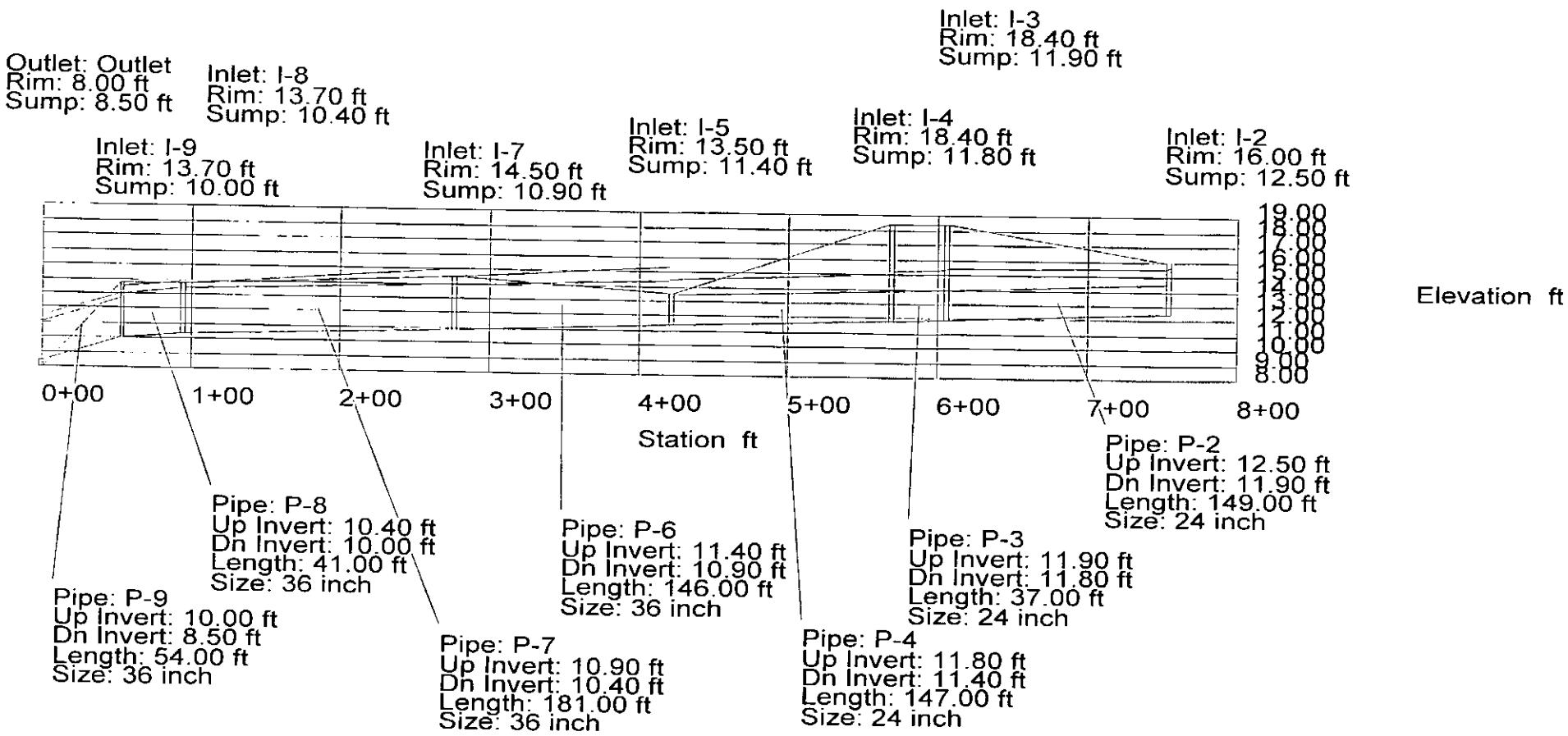
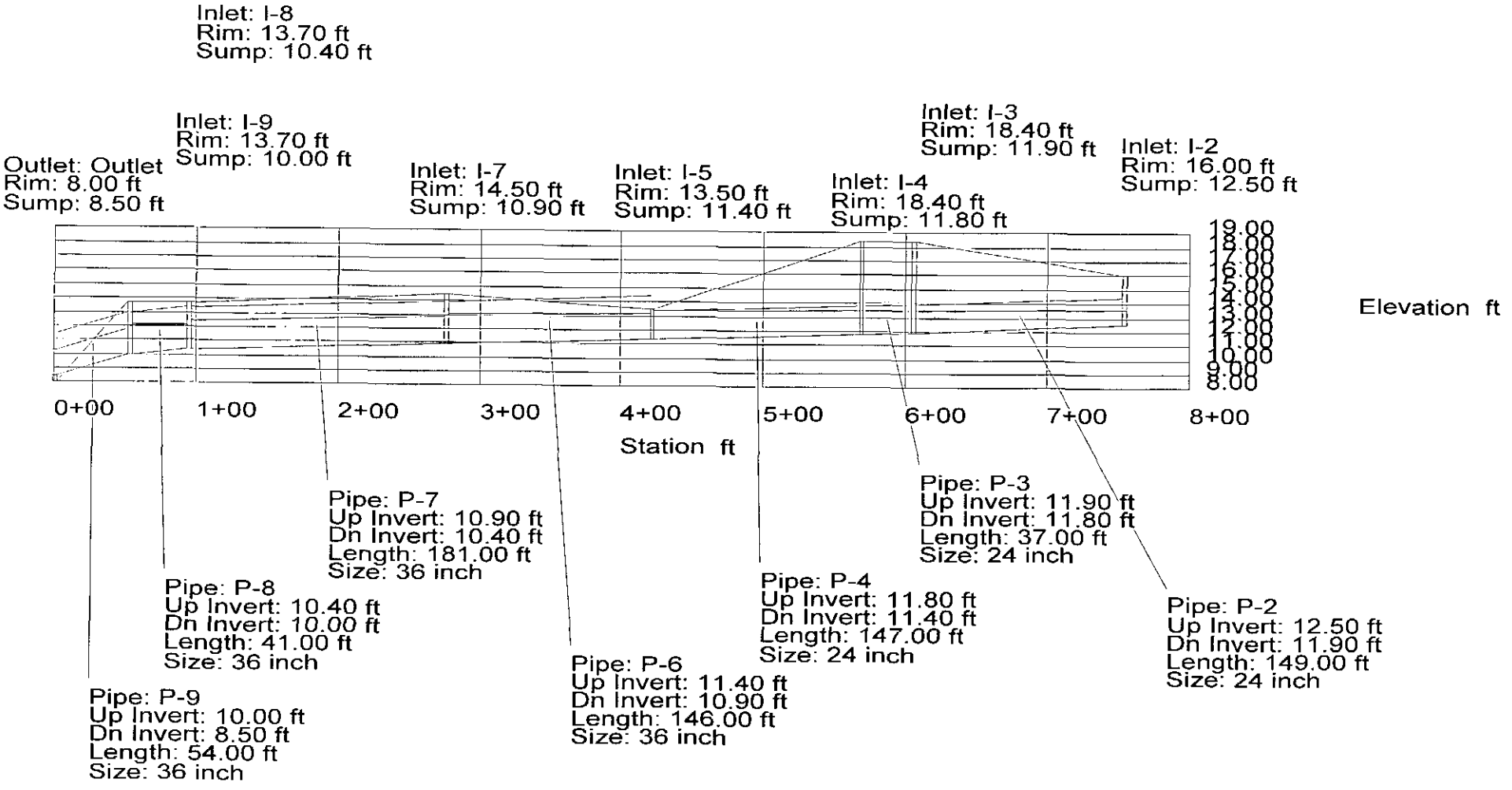
Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0





Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666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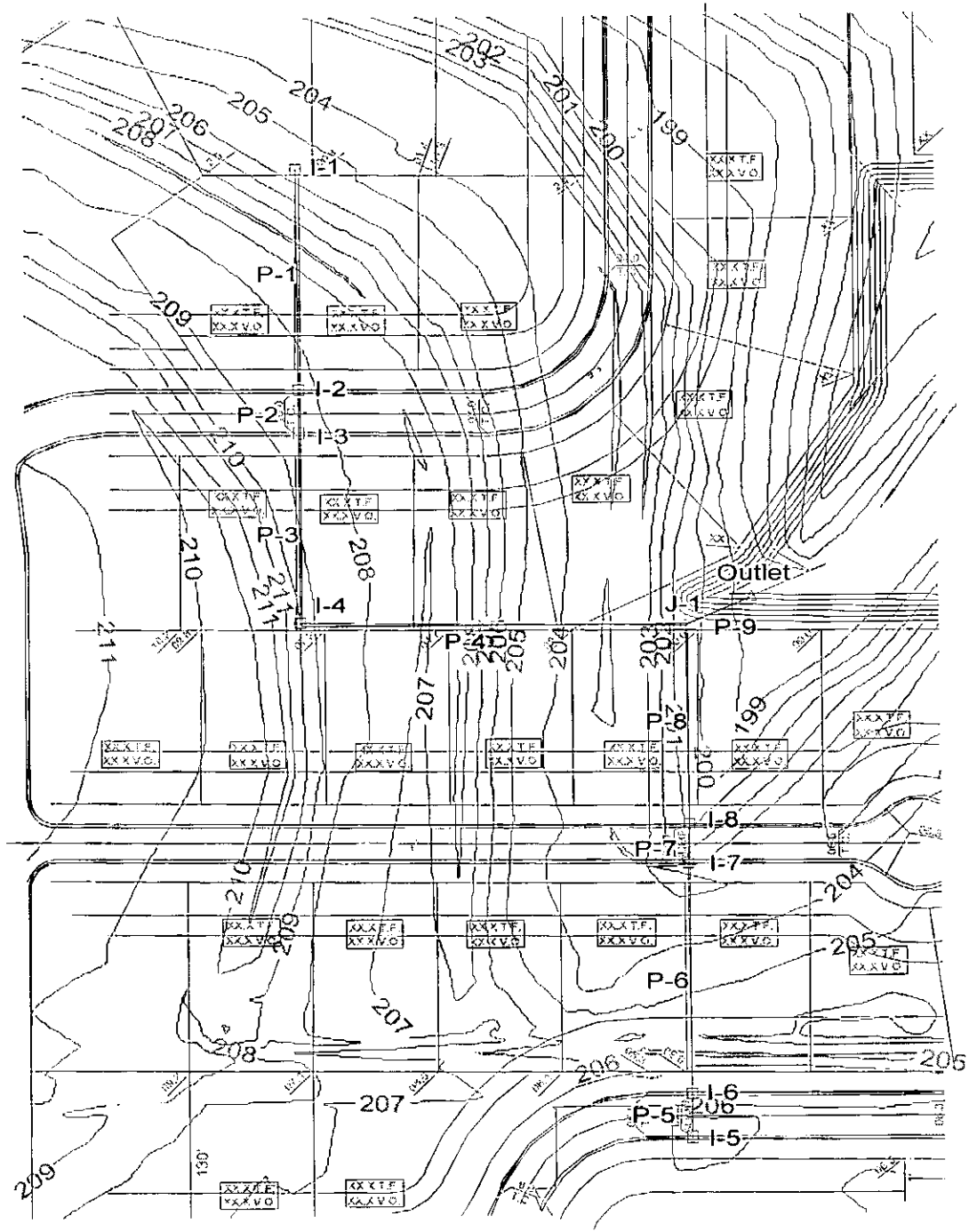
Rim: 13.70 ft
Sump: 10.40 ft
Inlet: I-9
Rim: 13.70 ft
Sump: 10.00 ft
Outlet: Outlet
Rim: 8.00 ft
Sump: 8.50 ft
Inlet: I-7
Rim: 14.50 ft
Sump: 10.90 ft
Inlet: I-5
Rim: 13.50 ft
Sump: 11.40 ft
Inlet: I-4
Rim: 18.40 ft
Sump: 11.80 ft
Inlet: I-3
Rim: 18.40 ft
Sump: 11.90 ft
Inlet: I-2
Rim: 16.00 ft
Sump: 12.50 ft
19.00
18.00
17.00
16.00
15.00
14.00
13.00
12.00
11.00
10.00
9.00
8.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
Station ft
Pipe: P-7
Up Invert: 10.90 ft
Dn Invert: 10.40 ft
Length: 181.00 ft
Size: 36 inch
Pipe: P-8
Up Invert: 10.40 ft
Dn Invert: 10.00 ft
Length: 41.00 ft
Size: 36 inch
Pipe: P-9
Up Invert: 10.00 ft
Dn Invert: 8.50 ft
Length: 54.00 ft
Size: 36 inch
Pipe: P-6
Up Invert: 11.40 ft
Dn Invert: 10.90 ft
Length: 146.00 ft
Size: 36 inch
Pipe: P-4
Up Invert: 11.80 ft
Dn Invert: 11.40 ft
Length: 147.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 11.90 ft
Dn Invert: 11.80 ft
Length: 37.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 12.50 ft
Dn Invert: 11.90 ft
Length: 149.00 ft
Size: 24 inch



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Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0

Junction: J-1
Rim: 194.50 ft
Sump: 192.00 ft

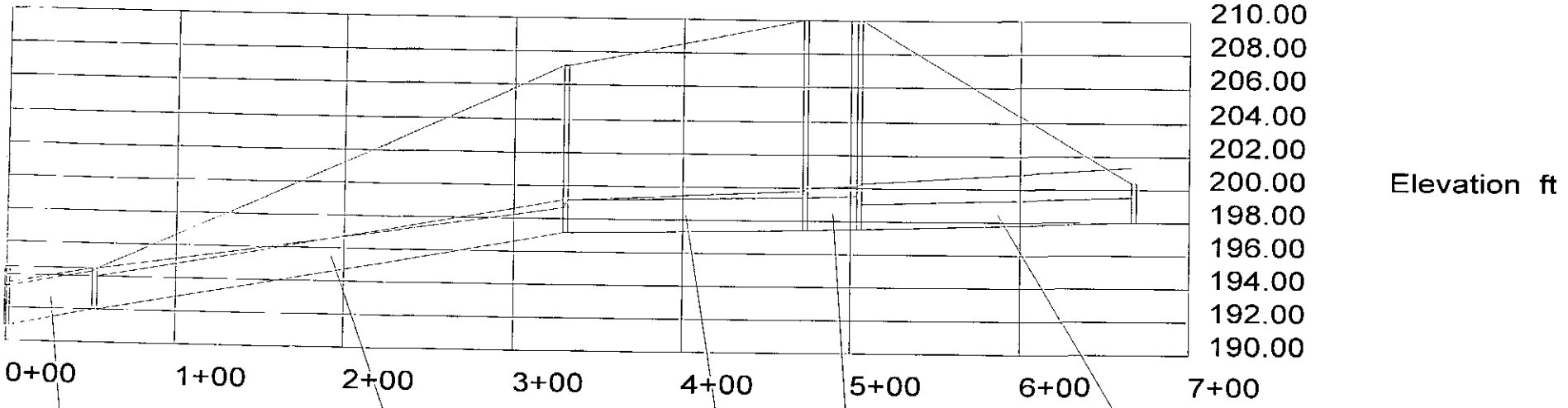
Inlet: I-2
Rim: 210.00 ft
Sump: 197.50 ft

Outlet: Outlet
Rim: 194.50 ft
Sump: 191.00 ft

Inlet: I-4
Rim: 207.20 ft
Sump: 197.10 ft

Inlet: I-3
Rim: 210.00 ft
Sump: 197.40 ft

Inlet: I-1
Rim: 200.40 ft
Sump: 198.00 ft



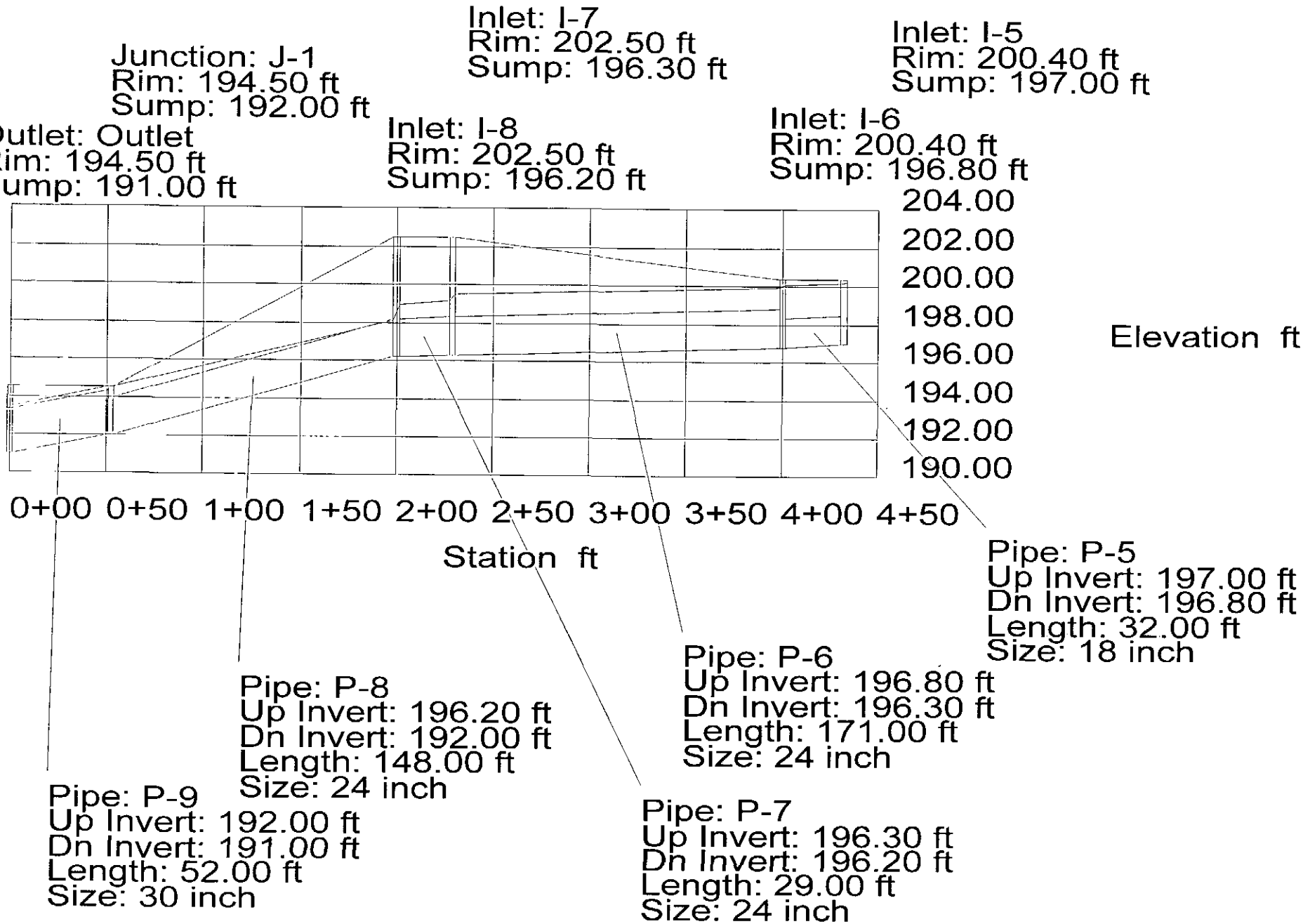
Pipe: P-9
Up Invert: 192.00 ft
Dn Invert: 191.00 ft
Length: 52.00 ft
Size: 30 inch

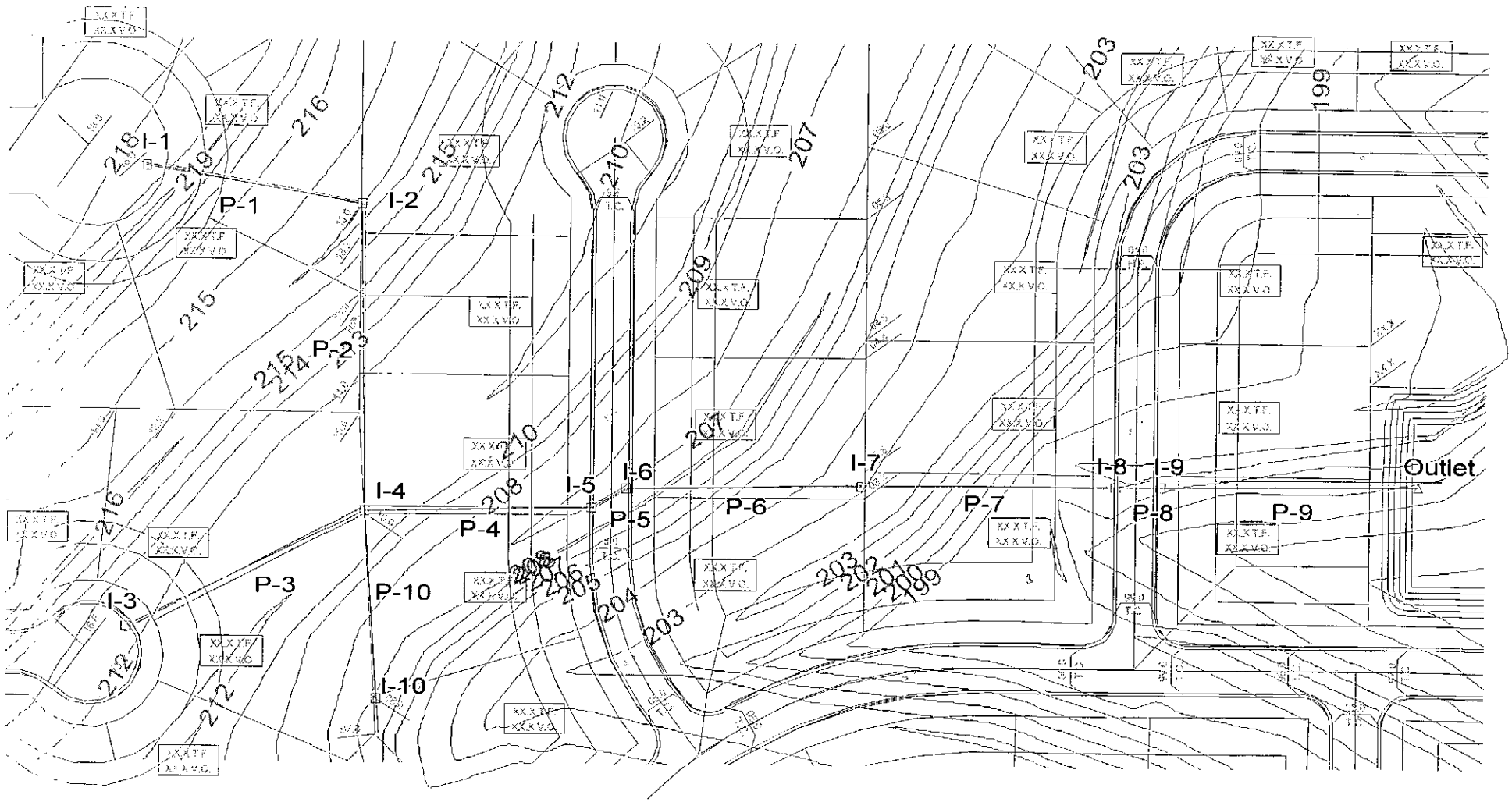
Pipe: P-4
Up Invert: 197.10 ft
Dn Invert: 192.00 ft
Length: 279.00 ft
Size: 24 inch

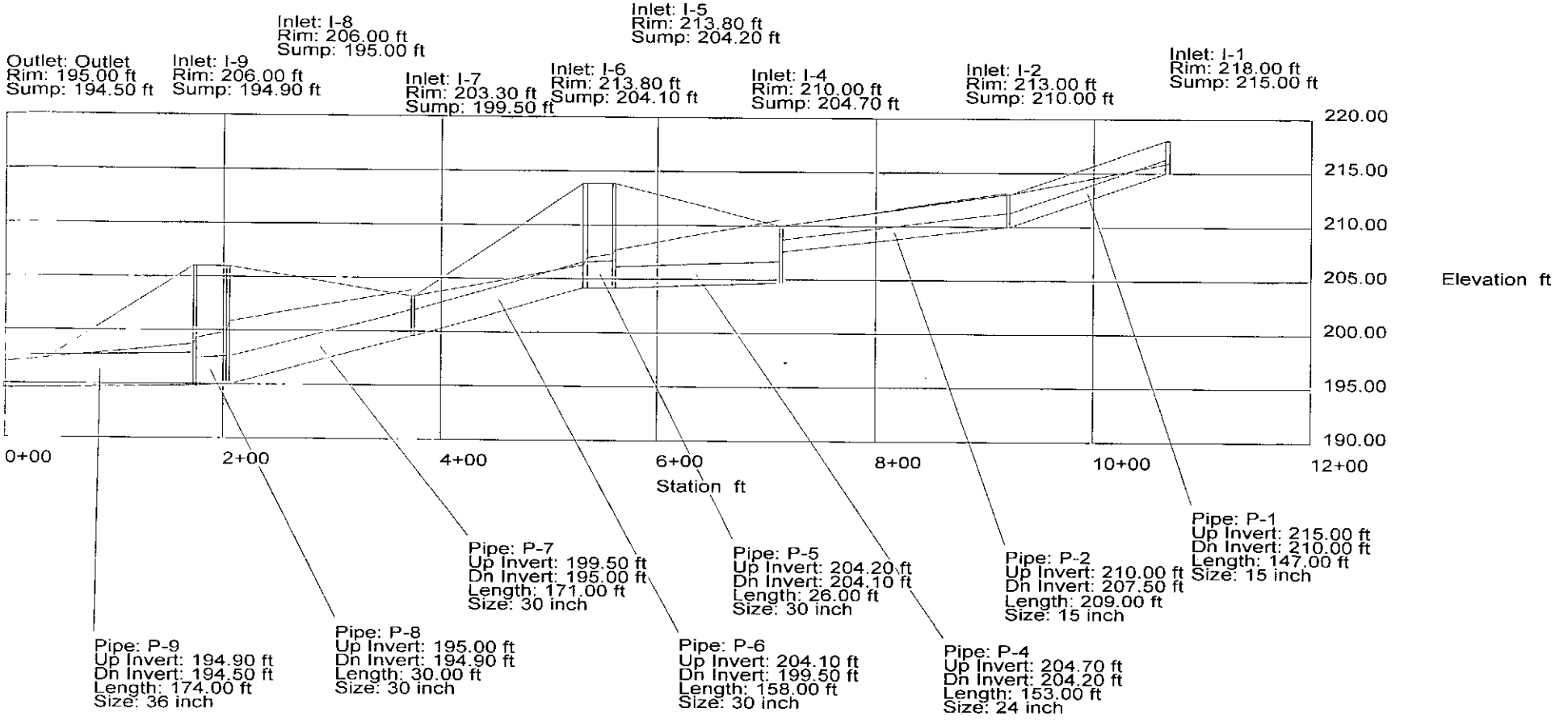
Pipe: P-3
Up Invert: 197.40 ft
Dn Invert: 197.10 ft
Length: 142.00 ft
Size: 24 inch

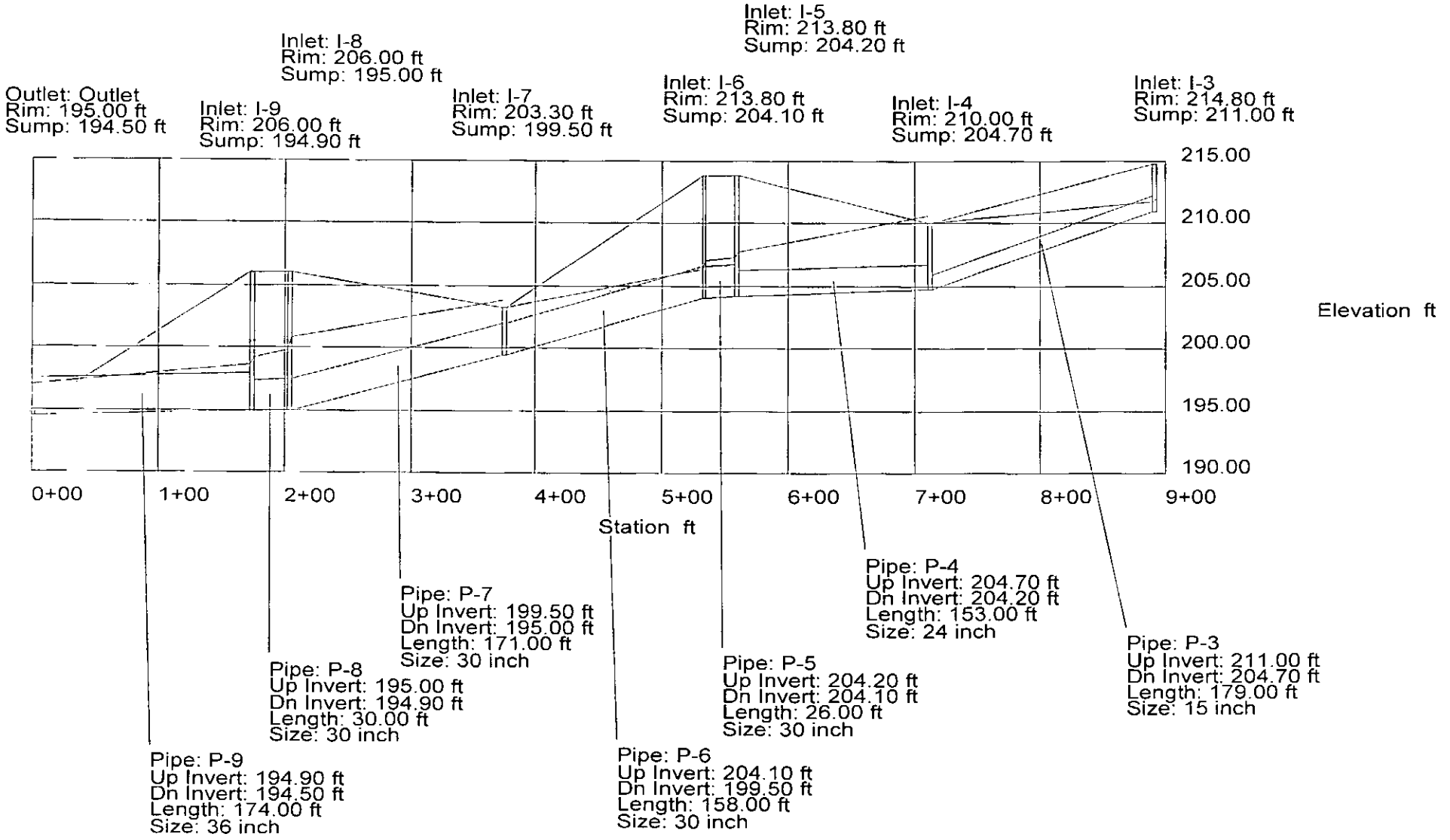
Pipe: P-2
Up Invert: 197.50 ft
Dn Invert: 197.40 ft
Length: 32.00 ft
Size: 24 inch

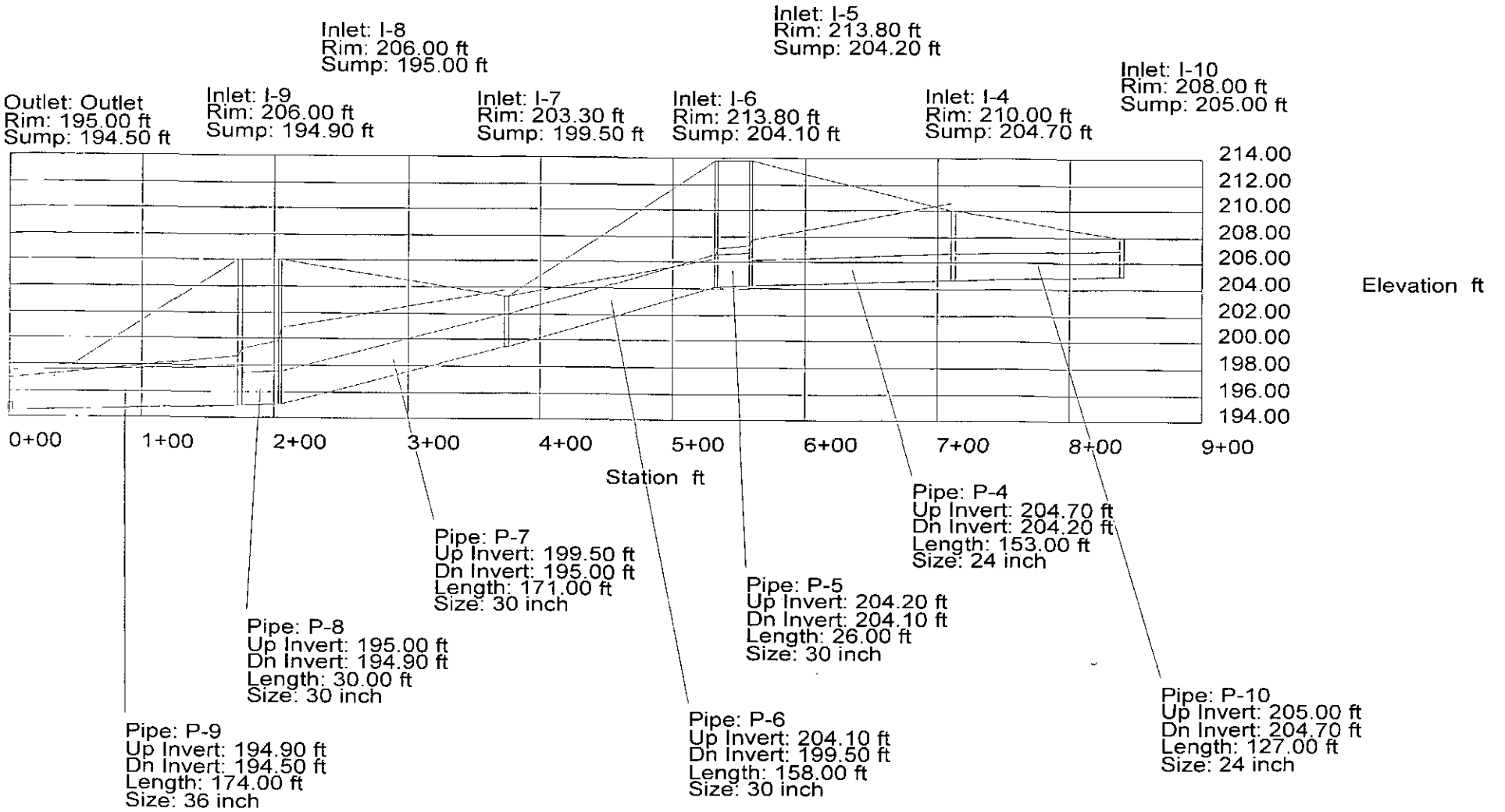
Pipe: P-1
Up Invert: 198.00 ft
Dn Invert: 197.50 ft
Length: 163.00 ft
Size: 18 inch

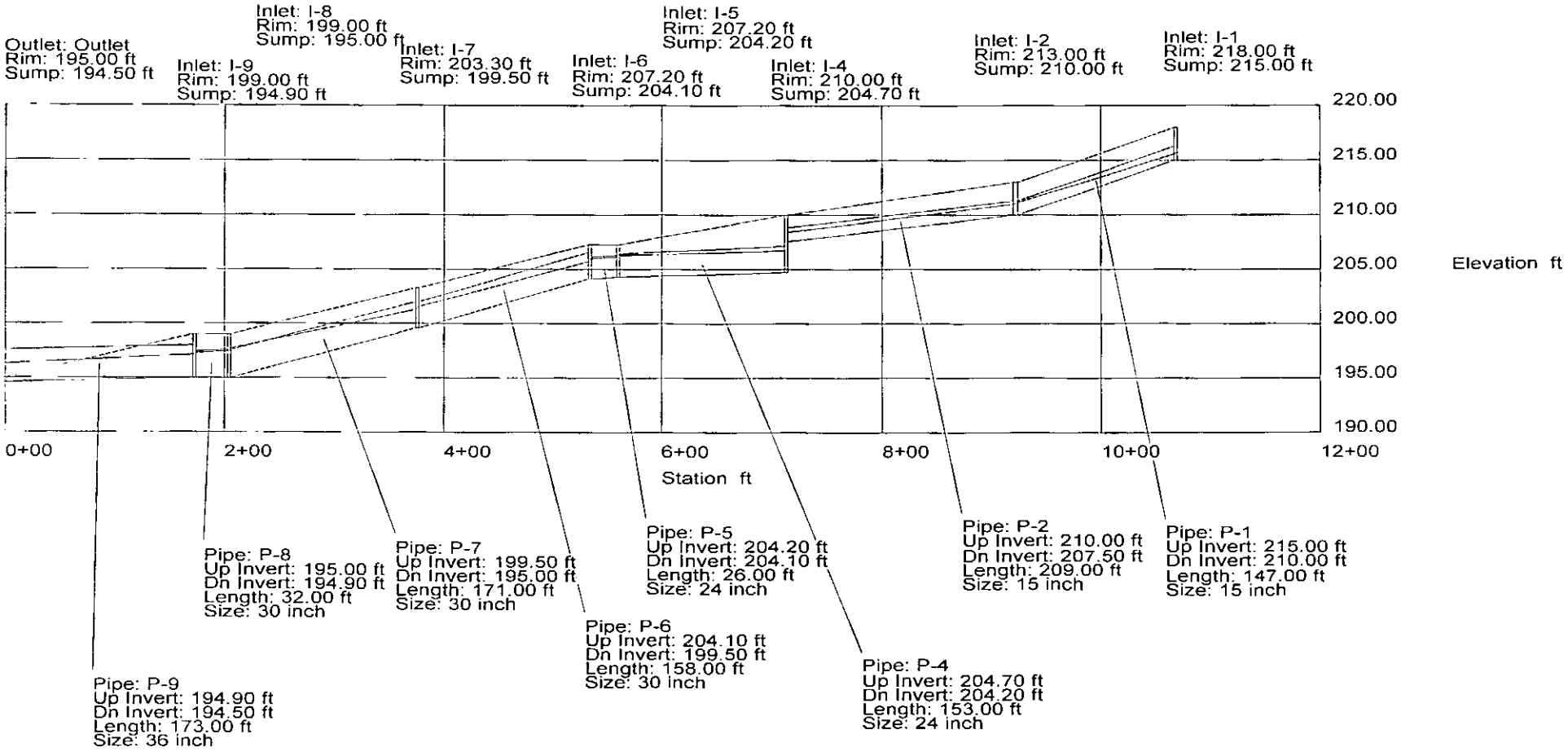

Inlet: I-7
Rim: 202.50 ft
Sump: 196.30 ft
Inlet: I-5
Rim: 200.40 ft
Sump: 197.00 ft
Junction: J-1
Rim: 194.50 ft
Sump: 192.00 ft
Inlet: I-8
Rim: 202.50 ft
Sump: 196.20 ft
Inlet: I-6
Rim: 200.40 ft
Sump: 196.80 ft
Outlet: Outlet
Rim: 194.50 ft
Sump: 191.00 ft
204.00
202.00
200.00
198.00
196.00
194.00
192.00
190.00
Elevation ft
0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50
Station ft
Pipe: P-5
Up Invert: 197.00 ft
Dn Invert: 196.80 ft
Length: 32.00 ft
Size: 18 inch
Pipe: P-6
Up Invert: 196.80 ft
Dn Invert: 196.30 ft
Length: 171.00 ft
Size: 24 inch
Pipe: P-8
Up Invert: 196.20 ft
Dn Invert: 192.00 ft
Length: 148.00 ft
Size: 24 inch
Pipe: P-9
Up Invert: 192.00 ft
Dn Invert: 191.00 ft
Length: 52.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 196.30 ft
Dn Invert: 196.20 ft
Length: 29.00 ft
Size: 24 inch

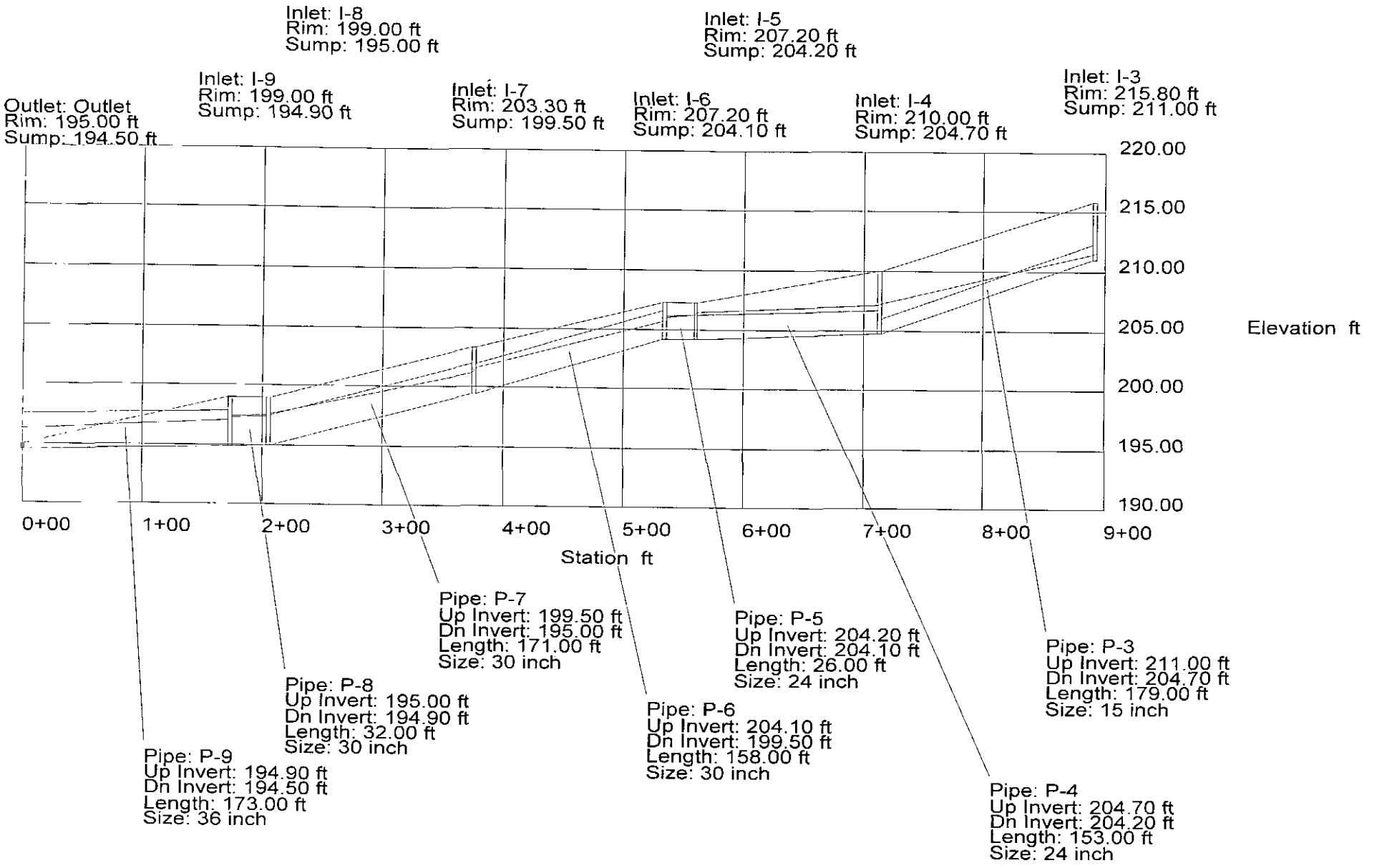

I-1
I-2
I-3
I-4
I-5
I-6
I-7
I-8
I-9
I-10
P-1
P-2
P-3
P-4
P-5
P-6
P-7
P-8
P-9
P-10
Outlet

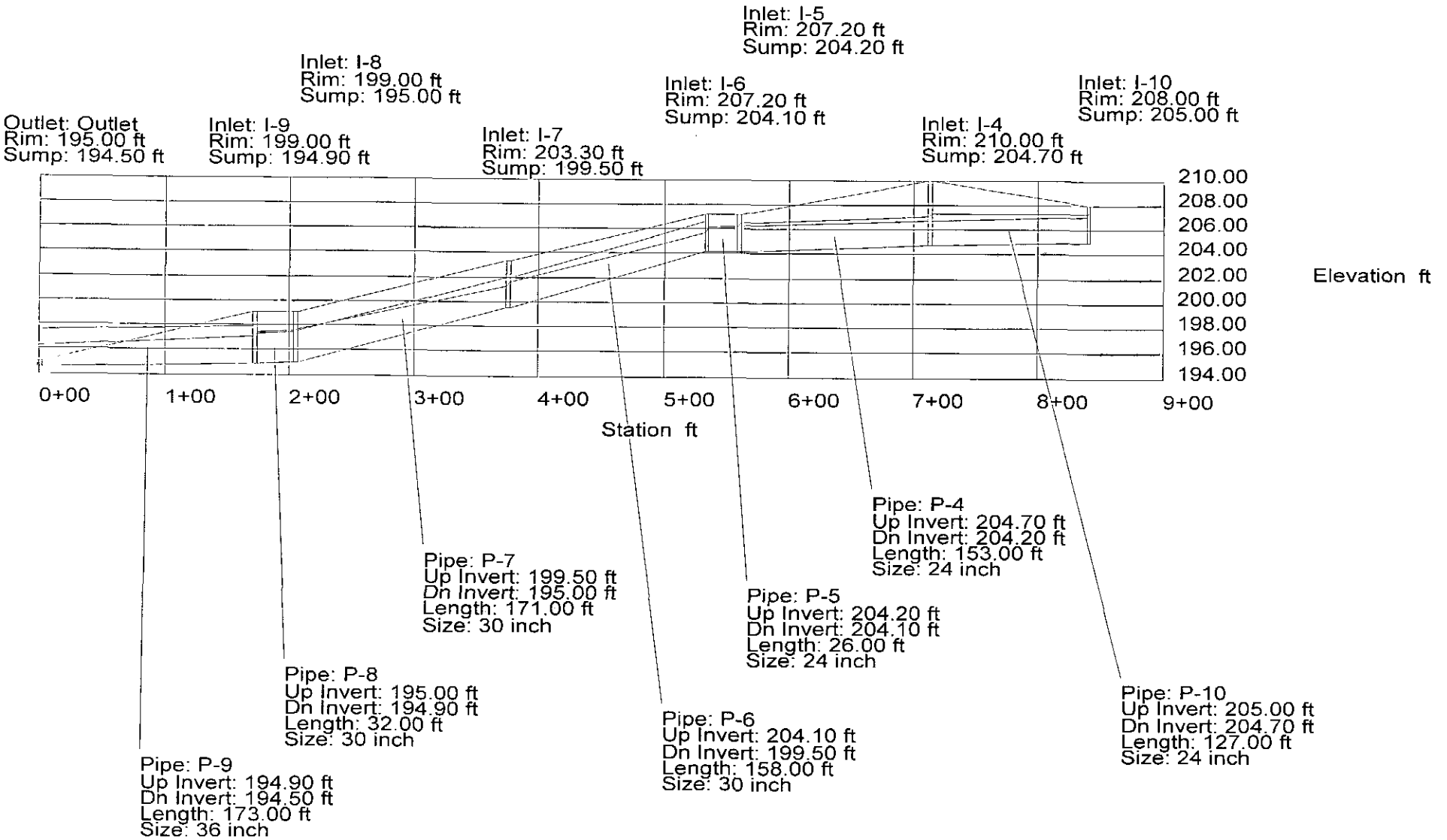


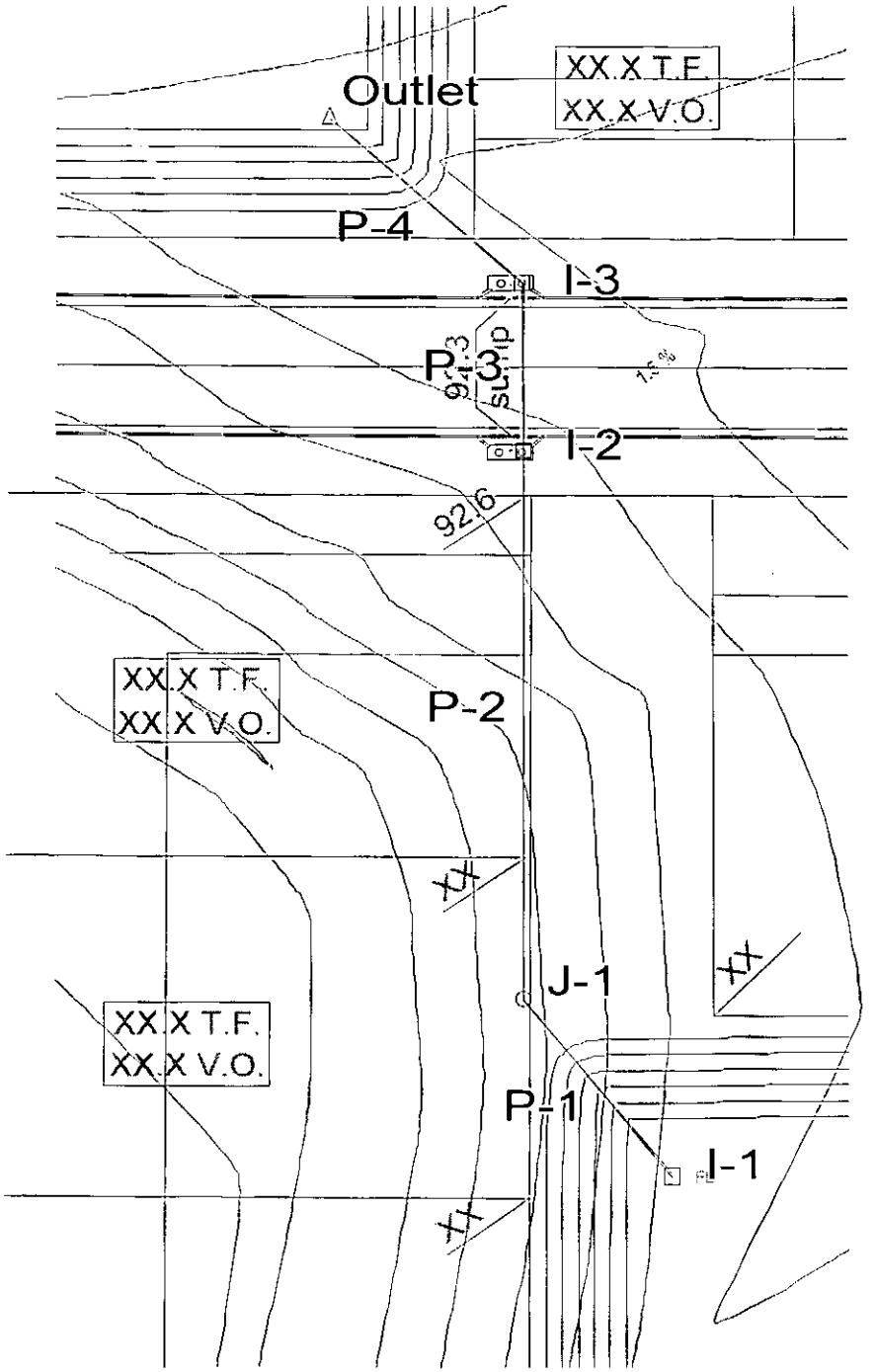

Outlet: Outlet
Rim: 195.00 ft
Sump: 194.50 ft
Inlet: I-9
Rim: 206.00 ft
Sump: 194.90 ft
Inlet: I-8
Rim: 206.00 ft
Sump: 195.00 ft
Inlet: I-7
Rim: 203.30 ft
Sump: 199.50 ft
Inlet: I-6
Rim: 213.80 ft
Sump: 204.10 ft
Inlet: I-5
Rim: 213.80 ft
Sump: 204.20 ft
Inlet: I-4
Rim: 210.00 ft
Sump: 204.70 ft
Inlet: I-3
Rim: 214.80 ft
Sump: 211.00 ft
215.00
210.00
205.00
200.00
195.00
190.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
Station ft
Pipe: P-9
Up Invert: 194.90 ft
Dn Invert: 194.50 ft
Length: 174.00 ft
Size: 36 inch
Pipe: P-8
Up Invert: 195.00 ft
Dn Invert: 194.90 ft
Length: 30.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 199.50 ft
Dn Invert: 195.00 ft
Length: 171.00 ft
Size: 30 inch
Pipe: P-6
Up Invert: 204.10 ft
Dn Invert: 199.50 ft
Length: 158.00 ft
Size: 30 inch
Pipe: P-5
Up Invert: 204.20 ft
Dn Invert: 204.10 ft
Length: 26.00 ft
Size: 30 inch
Pipe: P-4
Up Invert: 204.70 ft
Dn Invert: 204.20 ft
Length: 153.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 211.00 ft
Dn Invert: 204.70 ft
Length: 179.00 ft
Size: 15 inch


Inlet: I-8
Rim: 206.00 ft
Sump: 195.00 ft
Inlet: I-5
Rim: 213.80 ft
Sump: 204.20 ft
Inlet: I-10
Rim: 208.00 ft
Sump: 205.00 ft
Outlet: Outlet
Rim: 195.00 ft
Sump: 194.50 ft
Inlet: I-9
Rim: 206.00 ft
Sump: 194.90 ft
Inlet: I-7
Rim: 203.30 ft
Sump: 199.50 ft
Inlet: I-6
Rim: 213.80 ft
Sump: 204.10 ft
Inlet: I-4
Rim: 210.00 ft
Sump: 204.70 ft
214.00
212.00
210.00
208.00
206.00
204.00
202.00
200.00
198.00
196.00
194.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
Station ft
Pipe: P-7
Up Invert: 199.50 ft
Dn Invert: 195.00 ft
Length: 171.00 ft
Size: 30 inch
Pipe: P-4
Up Invert: 204.70 ft
Dn Invert: 204.20 ft
Length: 153.00 ft
Size: 24 inch
Pipe: P-8
Up Invert: 195.00 ft
Dn Invert: 194.90 ft
Length: 30.00 ft
Size: 30 inch
Pipe: P-5
Up Invert: 204.20 ft
Dn Invert: 204.10 ft
Length: 26.00 ft
Size: 30 inch
Pipe: P-9
Up Invert: 194.90 ft
Dn Invert: 194.50 ft
Length: 174.00 ft
Size: 36 inch
Pipe: P-6
Up Invert: 204.10 ft
Dn Invert: 199.50 ft
Length: 158.00 ft
Size: 30 inch
Pipe: P-10
Up Invert: 205.00 ft
Dn Invert: 204.70 ft
Length: 127.00 ft
Size: 24 inch


Outlet: Outlet
Rim: 195.00 ft
Sump: 194.50 ft
Inlet: I-9
Rim: 199.00 ft
Sump: 194.90 ft
Inlet: I-8
Rim: 199.00 ft
Sump: 195.00 ft
Inlet: I-7
Rim: 203.30 ft
Sump: 199.50 ft
Inlet: I-6
Rim: 207.20 ft
Sump: 204.10 ft
Inlet: I-5
Rim: 207.20 ft
Sump: 204.20 ft
Inlet: I-4
Rim: 210.00 ft
Sump: 204.70 ft
Inlet: I-2
Rim: 213.00 ft
Sump: 210.00 ft
Inlet: I-1
Rim: 218.00 ft
Sump: 215.00 ft
220.00
215.00
210.00
205.00
200.00
195.00
190.00
Elevation ft
0+00
2+00
4+00
6+00
8+00
10+00
12+00
Station ft
Pipe: P-9
Up Invert: 194.90 ft
Dn Invert: 194.50 ft
Length: 173.00 ft
Size: 36 inch
Pipe: P-8
Up Invert: 195.00 ft
Dn Invert: 194.90 ft
Length: 32.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 199.50 ft
Dn Invert: 195.00 ft
Length: 171.00 ft
Size: 30 inch
Pipe: P-6
Up Invert: 204.10 ft
Dn Invert: 199.50 ft
Length: 158.00 ft
Size: 30 inch
Pipe: P-5
Up Invert: 204.20 ft
Dn Invert: 204.10 ft
Length: 26.00 ft
Size: 24 inch
Pipe: P-4
Up Invert: 204.70 ft
Dn Invert: 204.20 ft
Length: 153.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 210.00 ft
Dn Invert: 207.50 ft
Length: 209.00 ft
Size: 15 inch
Pipe: P-1
Up Invert: 215.00 ft
Dn Invert: 210.00 ft
Length: 147.00 ft
Size: 15 inch


Inlet: I-8
Rim: 199.00 ft
Sump: 195.00 ft
Inlet: I-5
Rim: 207.20 ft
Sump: 204.20 ft
Inlet: I-9
Rim: 199.00 ft
Sump: 194.90 ft
Inlet: I-7
Rim: 203.30 ft
Sump: 199.50 ft
Inlet: I-6
Rim: 207.20 ft
Sump: 204.10 ft
Inlet: I-4
Rim: 210.00 ft
Sump: 204.70 ft
Inlet: I-3
Rim: 215.80 ft
Sump: 211.00 ft
Outlet: Outlet
Rim: 195.00 ft
Sump: 194.50 ft
220.00
215.00
210.00
205.00
200.00
195.00
190.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
Station ft
Pipe: P-7
Up Invert: 199.50 ft
Dn Invert: 195.00 ft
Length: 171.00 ft
Size: 30 inch
Pipe: P-5
Up Invert: 204.20 ft
Dn Invert: 204.10 ft
Length: 26.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 211.00 ft
Dn Invert: 204.70 ft
Length: 179.00 ft
Size: 15 inch
Pipe: P-8
Up Invert: 195.00 ft
Dn Invert: 194.90 ft
Length: 32.00 ft
Size: 30 inch
Pipe: P-6
Up Invert: 204.10 ft
Dn Invert: 199.50 ft
Length: 158.00 ft
Size: 30 inch
Pipe: P-9
Up Invert: 194.90 ft
Dn Invert: 194.50 ft
Length: 173.00 ft
Size: 36 inch
Pipe: P-4
Up Invert: 204.70 ft
Dn Invert: 204.20 ft
Length: 153.00 ft
Size: 24 inch


Outlet: Outlet
Rim: 195.00 ft
Sump: 194.50 ft
Inlet: I-9
Rim: 199.00 ft
Sump: 194.90 ft
Inlet: I-8
Rim: 199.00 ft
Sump: 195.00 ft
Inlet: I-7
Rim: 203.30 ft
Sump: 199.50 ft
Inlet: I-6
Rim: 207.20 ft
Sump: 204.10 ft
Inlet: I-5
Rim: 207.20 ft
Sump: 204.20 ft
Inlet: I-4
Rim: 210.00 ft
Sump: 204.70 ft
Inlet: I-10
Rim: 208.00 ft
Sump: 205.00 ft
210.00
208.00
206.00
204.00
202.00
200.00
198.00
196.00
194.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
Station ft
Pipe: P-9
Up Invert: 194.90 ft
Dn Invert: 194.50 ft
Length: 173.00 ft
Size: 36 inch
Pipe: P-8
Up Invert: 195.00 ft
Dn Invert: 194.90 ft
Length: 32.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 199.50 ft
Dn Invert: 195.00 ft
Length: 171.00 ft
Size: 30 inch
Pipe: P-6
Up Invert: 204.10 ft
Dn Invert: 199.50 ft
Length: 158.00 ft
Size: 30 inch
Pipe: P-5
Up Invert: 204.20 ft
Dn Invert: 204.10 ft
Length: 26.00 ft
Size: 24 inch
Pipe: P-4
Up Invert: 204.70 ft
Dn Invert: 204.20 ft
Length: 153.00 ft
Size: 24 inch
Pipe: P-10
Up Invert: 205.00 ft
Dn Invert: 204.70 ft
Length: 127.00 ft
Size: 24 inch



Project Title: Auburn Hills 16th
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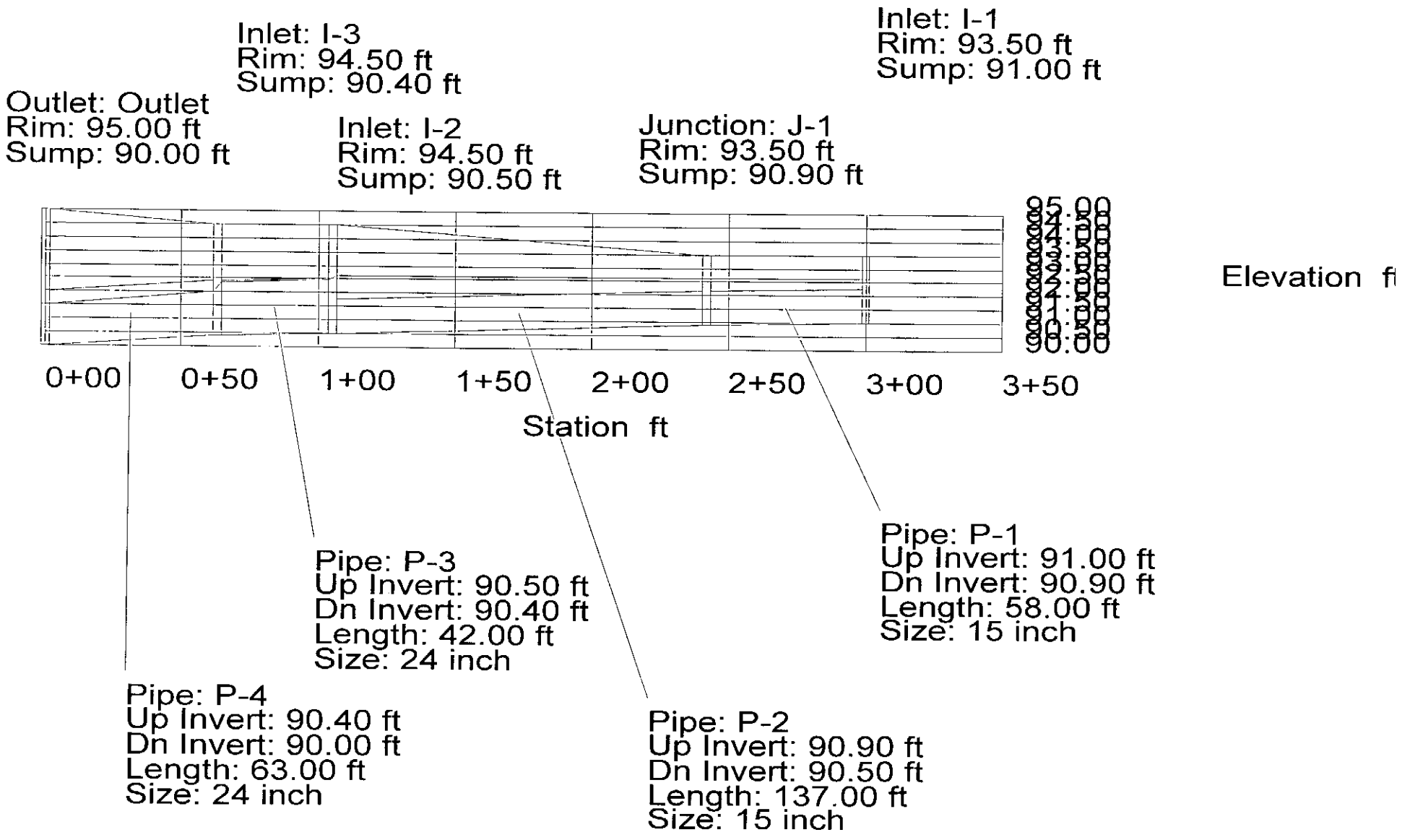
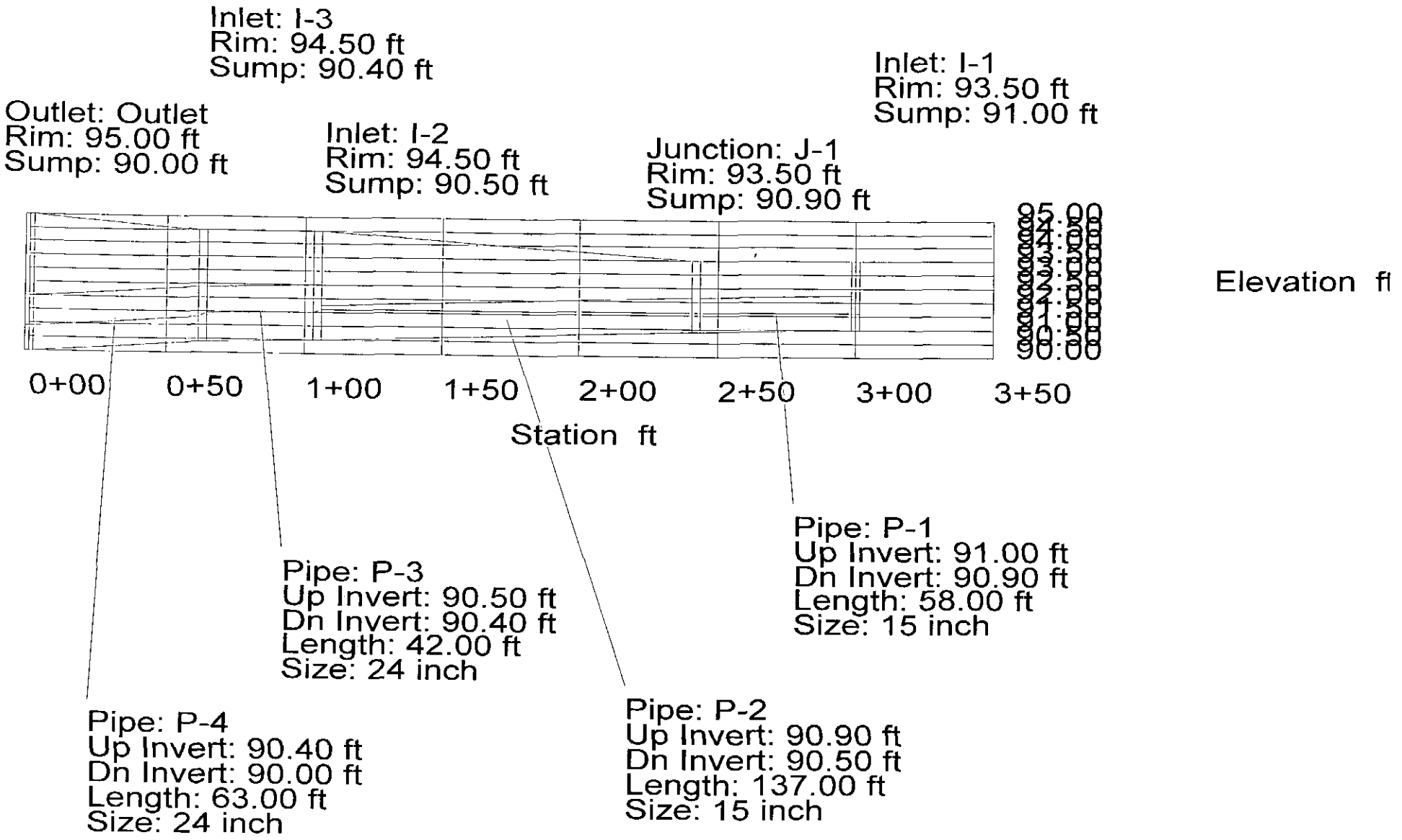
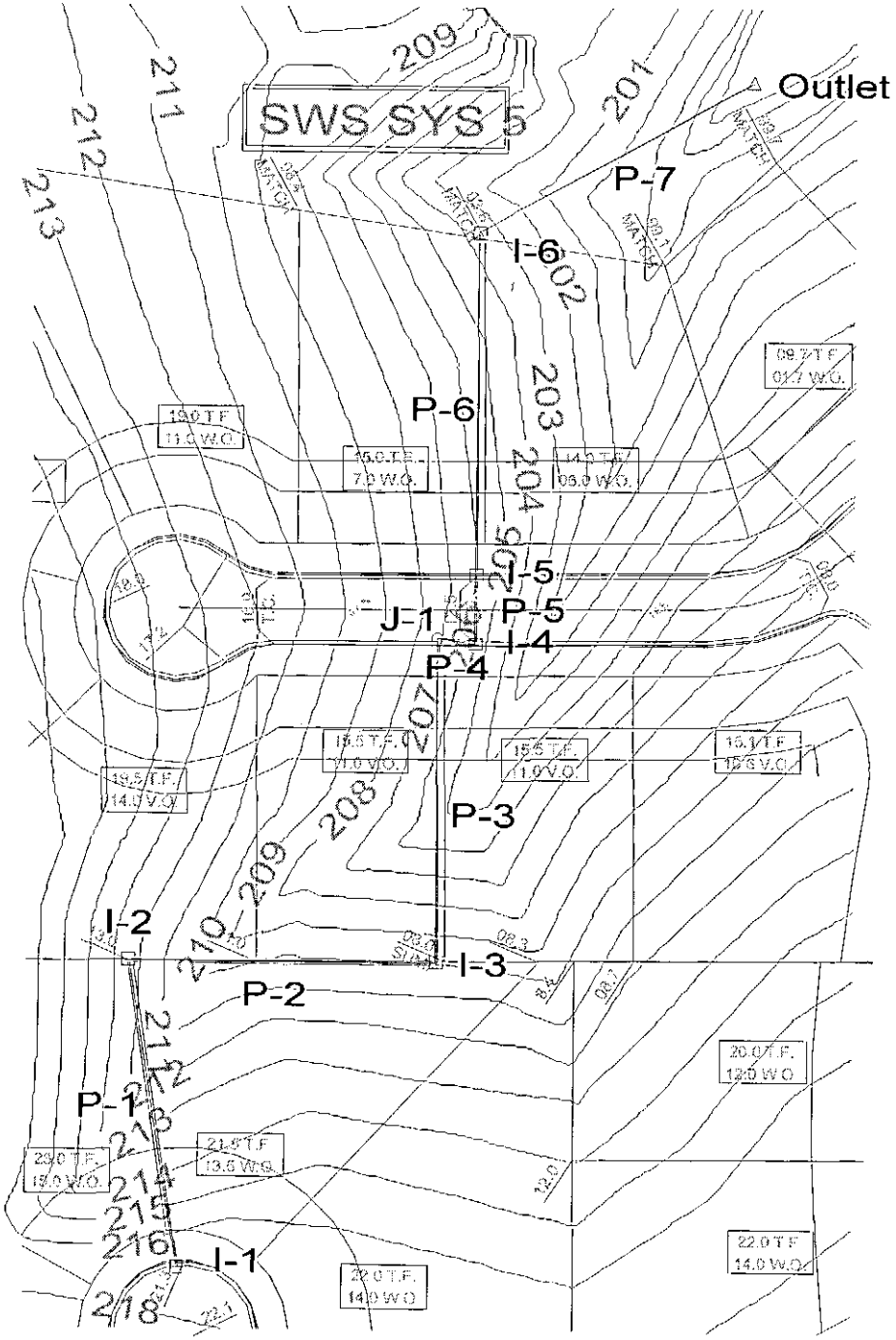
08/05/05 11:15:43 AM

Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0


Inlet: I-3
Rim: 94.50 ft
Sump: 90.40 ft
Inlet: I-1
Rim: 93.50 ft
Sump: 91.00 ft
Outlet: Outlet
Rim: 95.00 ft
Sump: 90.00 ft
Inlet: I-2
Rim: 94.50 ft
Sump: 90.50 ft
Junction: J-1
Rim: 93.50 ft
Sump: 90.90 ft
95.00
94.50
94.00
93.50
93.00
92.50
92.00
91.50
91.00
90.50
90.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
Station ft
Pipe: P-3
Up Invert: 90.50 ft
Dn Invert: 90.40 ft
Length: 42.00 ft
Size: 24 inch
Pipe: P-1
Up Invert: 91.00 ft
Dn Invert: 90.90 ft
Length: 58.00 ft
Size: 15 inch
Pipe: P-4
Up Invert: 90.40 ft
Dn Invert: 90.00 ft
Length: 63.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 90.90 ft
Dn Invert: 90.50 ft
Length: 137.00 ft
Size: 15 inch


Inlet: I-3
Rim: 94.50 ft
Sump: 90.40 ft
Outlet: Outlet
Rim: 95.00 ft
Sump: 90.00 ft
Inlet: I-2
Rim: 94.50 ft
Sump: 90.50 ft
Junction: J-1
Rim: 93.50 ft
Sump: 90.90 ft
Inlet: I-1
Rim: 93.50 ft
Sump: 91.00 ft
95.00
94.50
94.00
93.50
93.00
92.50
92.00
91.50
91.00
90.50
90.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
Station ft
Pipe: P-3
Up Invert: 90.50 ft
Dn Invert: 90.40 ft
Length: 42.00 ft
Size: 24 inch
Pipe: P-1
Up Invert: 91.00 ft
Dn Invert: 90.90 ft
Length: 58.00 ft
Size: 15 inch
Pipe: P-4
Up Invert: 90.40 ft
Dn Invert: 90.00 ft
Length: 63.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 90.90 ft
Dn Invert: 90.50 ft
Length: 137.00 ft
Size: 15 inch



Project Title: Auburn Hills 16th
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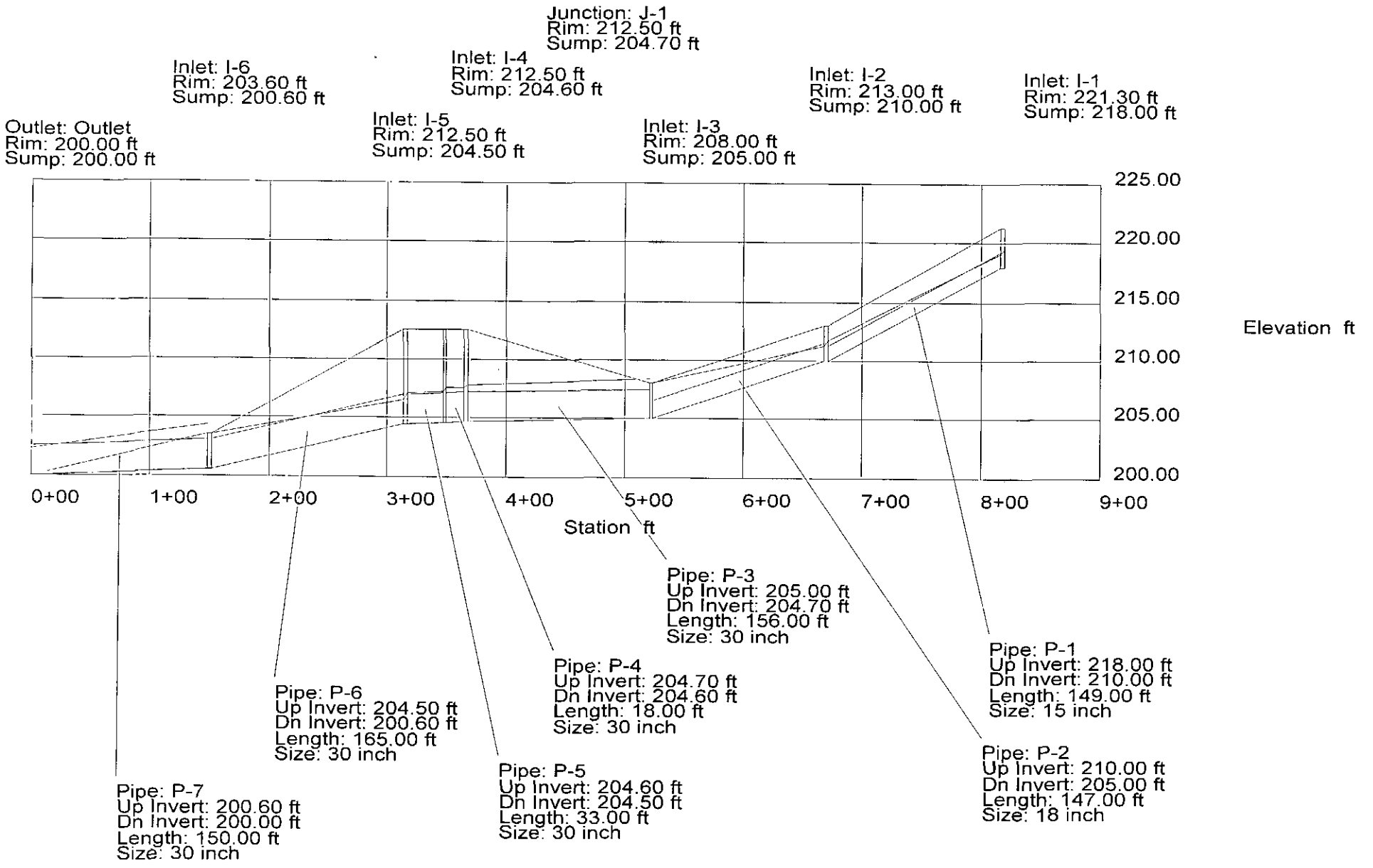
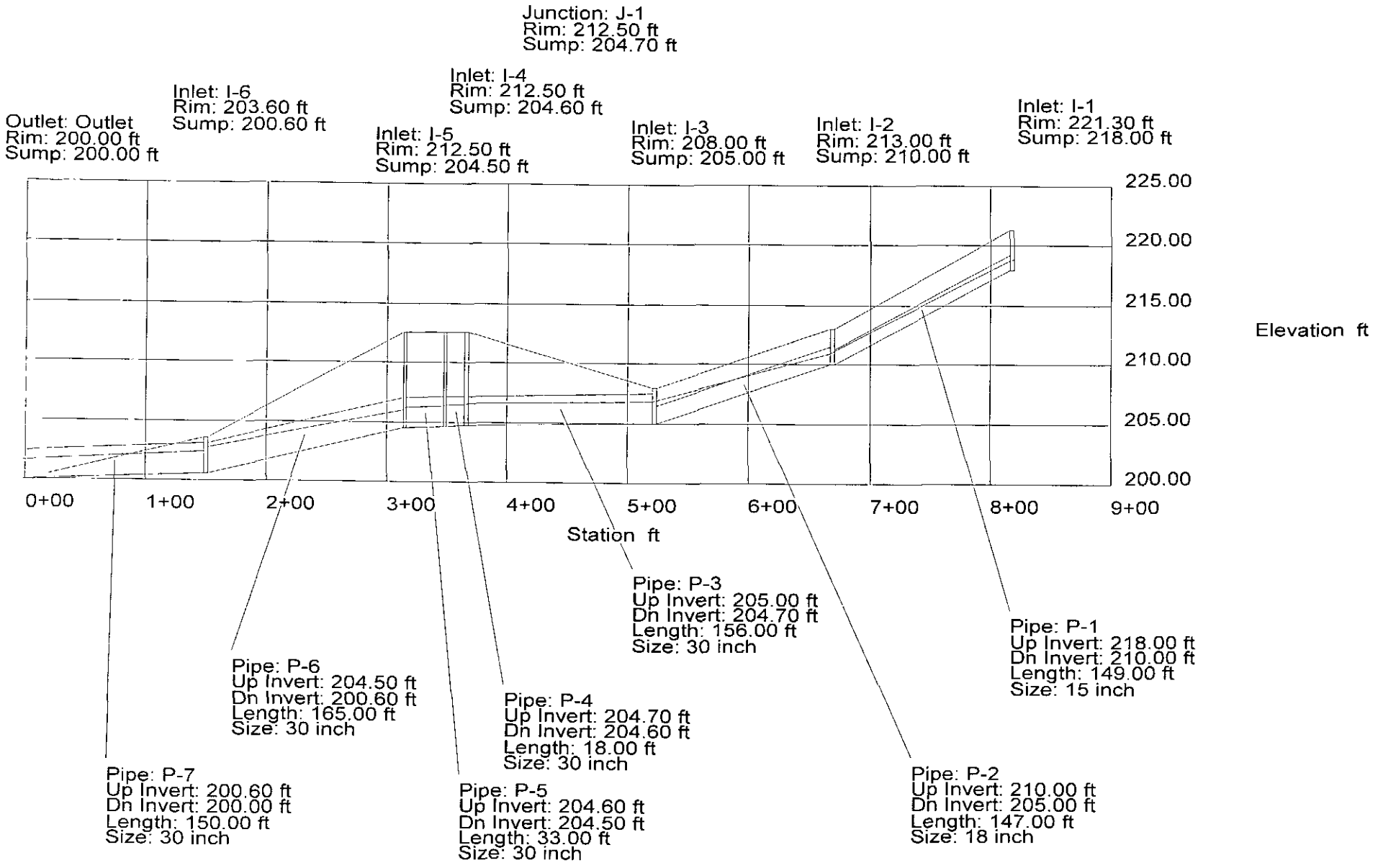
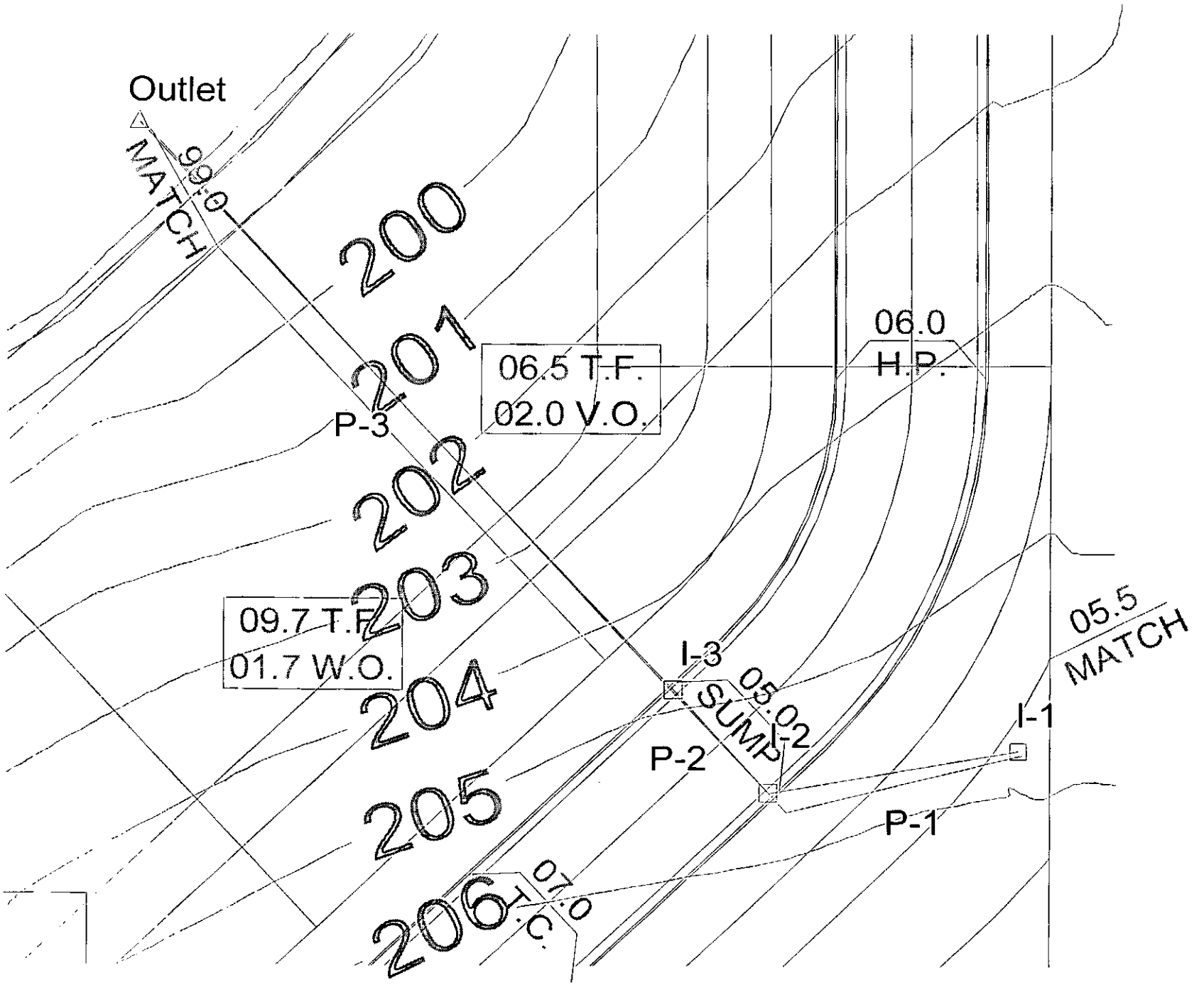
Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0


Junction: J-1
Rim: 212.50 ft
Sump: 204.70 ft
Inlet: I-6
Rim: 203.60 ft
Sump: 200.60 ft
Inlet: I-4
Rim: 212.50 ft
Sump: 204.60 ft
Inlet: I-2
Rim: 213.00 ft
Sump: 210.00 ft
Inlet: I-1
Rim: 221.30 ft
Sump: 218.00 ft
Outlet: Outlet
Rim: 200.00 ft
Sump: 200.00 ft
Inlet: I-5
Rim: 212.50 ft
Sump: 204.50 ft
Inlet: I-3
Rim: 208.00 ft
Sump: 205.00 ft
225.00
220.00
215.00
210.00
205.00
200.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
Station ft
Pipe: P-3
Up Invert: 205.00 ft
Dn Invert: 204.70 ft
Length: 156.00 ft
Size: 30 inch
Pipe: P-1
Up Invert: 218.00 ft
Dn Invert: 210.00 ft
Length: 149.00 ft
Size: 15 inch
Pipe: P-4
Up Invert: 204.70 ft
Dn Invert: 204.60 ft
Length: 18.00 ft
Size: 30 inch
Pipe: P-6
Up Invert: 204.50 ft
Dn Invert: 200.60 ft
Length: 165.00 ft
Size: 30 inch
Pipe: P-2
Up Invert: 210.00 ft
Dn Invert: 205.00 ft
Length: 147.00 ft
Size: 18 inch
Pipe: P-5
Up Invert: 204.60 ft
Dn Invert: 204.50 ft
Length: 33.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 200.60 ft
Dn Invert: 200.00 ft
Length: 150.00 ft
Size: 30 inch





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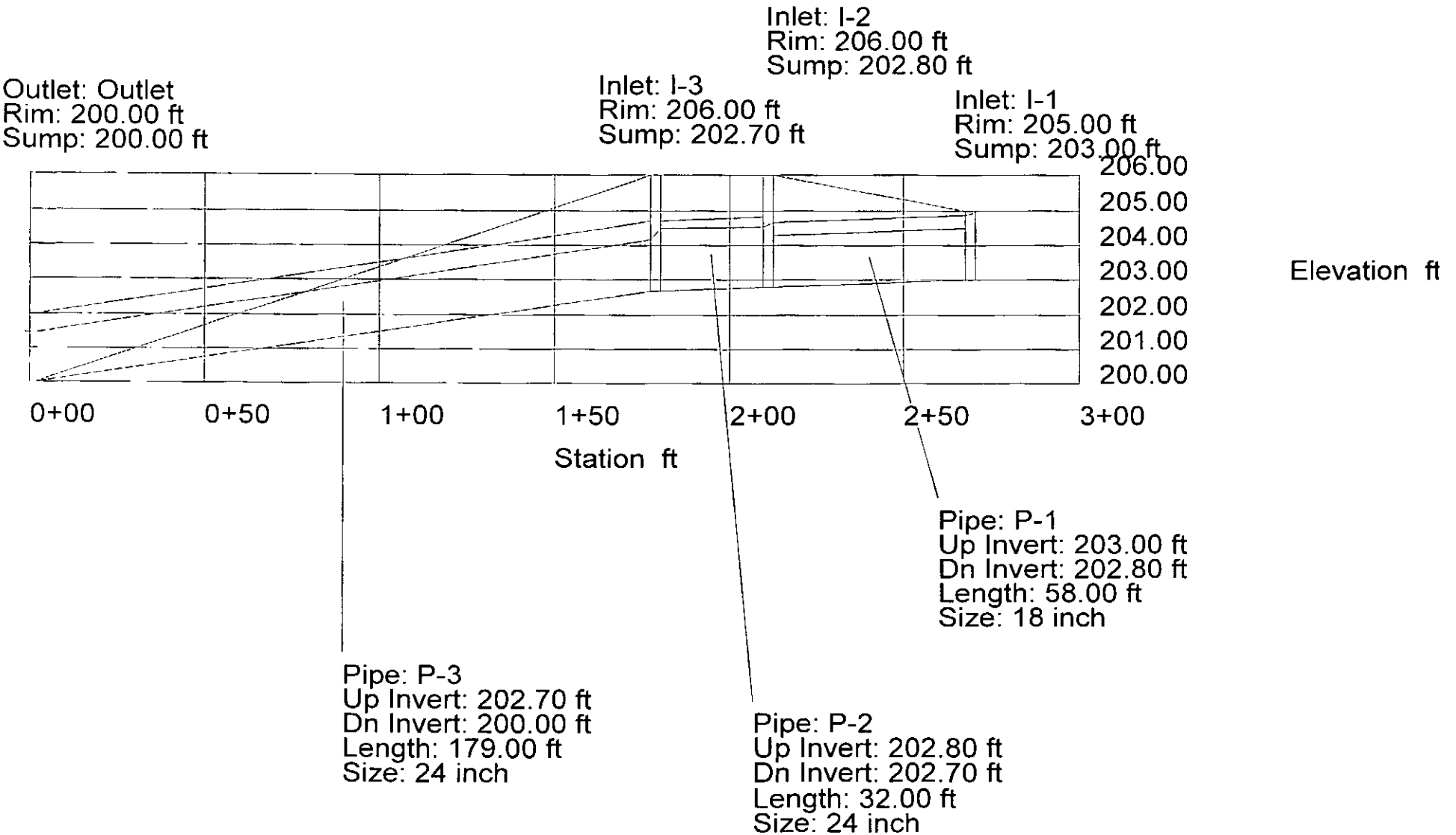
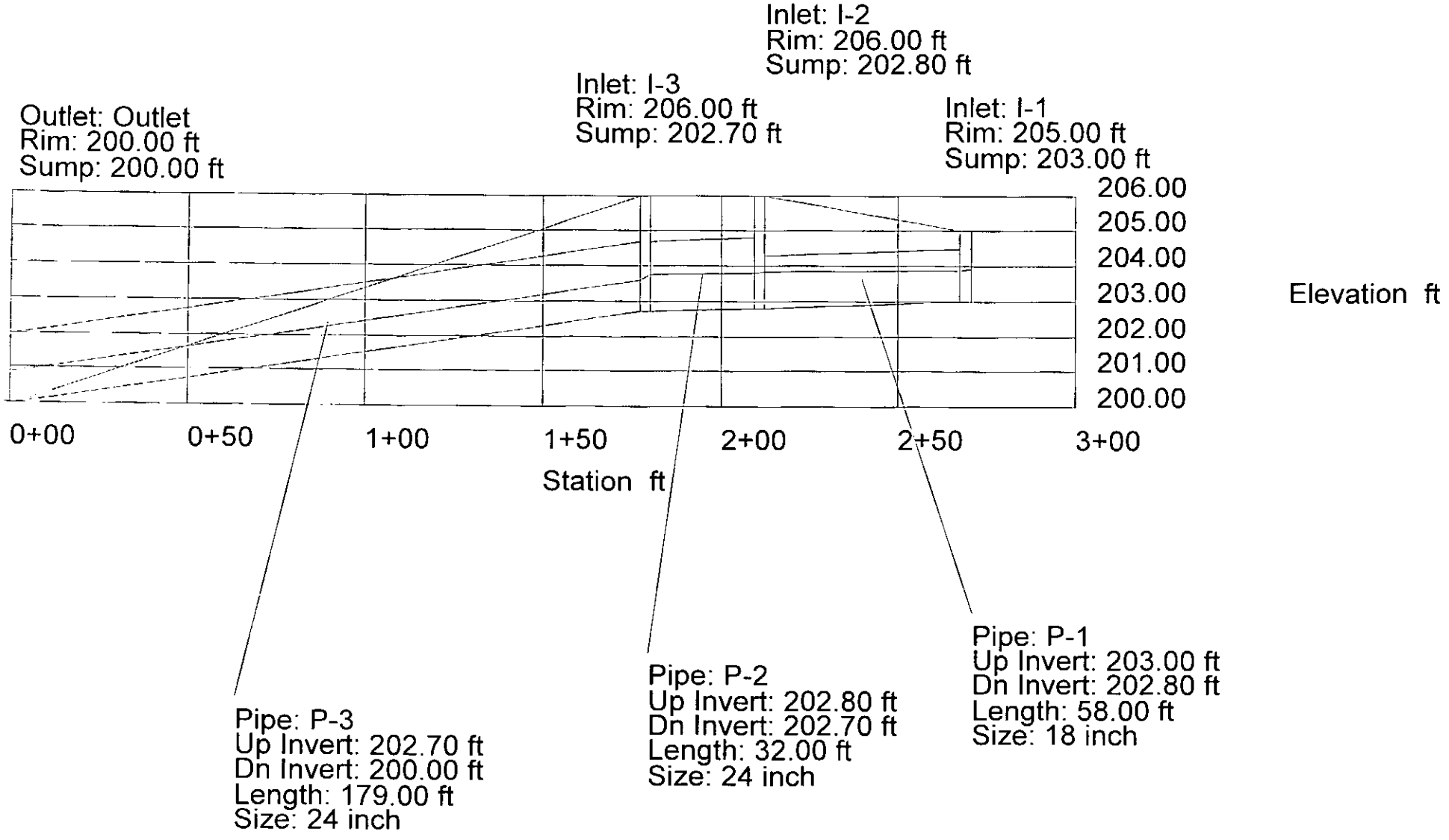
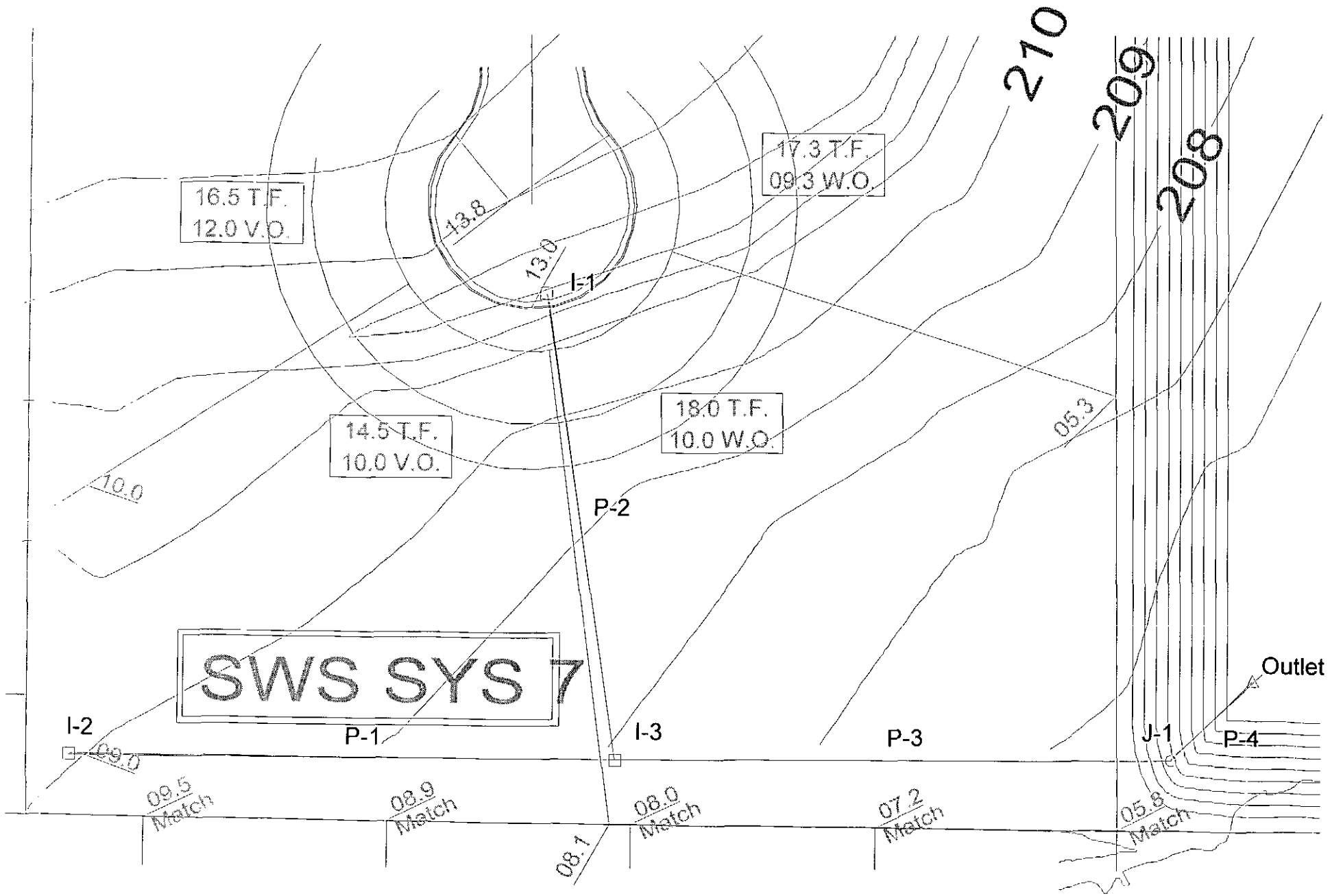

Inlet: I-2
Rim: 206.00 ft
Sump: 202.80 ft
Outlet: Outlet
Rim: 200.00 ft
Sump: 200.00 ft
Inlet: I-3
Rim: 206.00 ft
Sump: 202.70 ft
Inlet: I-1
Rim: 205.00 ft
Sump: 203.00 ft
206.00
205.00
204.00
203.00
202.00
201.00
200.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
Station ft
Pipe: P-1
Up Invert: 203.00 ft
Dn Invert: 202.80 ft
Length: 58.00 ft
Size: 18 inch
Pipe: P-3
Up Invert: 202.70 ft
Dn Invert: 200.00 ft
Length: 179.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 202.80 ft
Dn Invert: 202.70 ft
Length: 32.00 ft
Size: 24 inch


Inlet: I-2
Rim: 206.00 ft
Sump: 202.80 ft
Inlet: I-3
Rim: 206.00 ft
Sump: 202.70 ft
Inlet: I-1
Rim: 205.00 ft
Sump: 203.00 ft
Outlet: Outlet
Rim: 200.00 ft
Sump: 200.00 ft
206.00
205.00
204.00
203.00
202.00
201.00
200.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
Station ft
Pipe: P-3
Up Invert: 202.70 ft
Dn Invert: 200.00 ft
Length: 179.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 202.80 ft
Dn Invert: 202.70 ft
Length: 32.00 ft
Size: 24 inch
Pipe: P-1
Up Invert: 203.00 ft
Dn Invert: 202.80 ft
Length: 58.00 ft
Size: 18 inch



Project Title: Auburn Hills 16th
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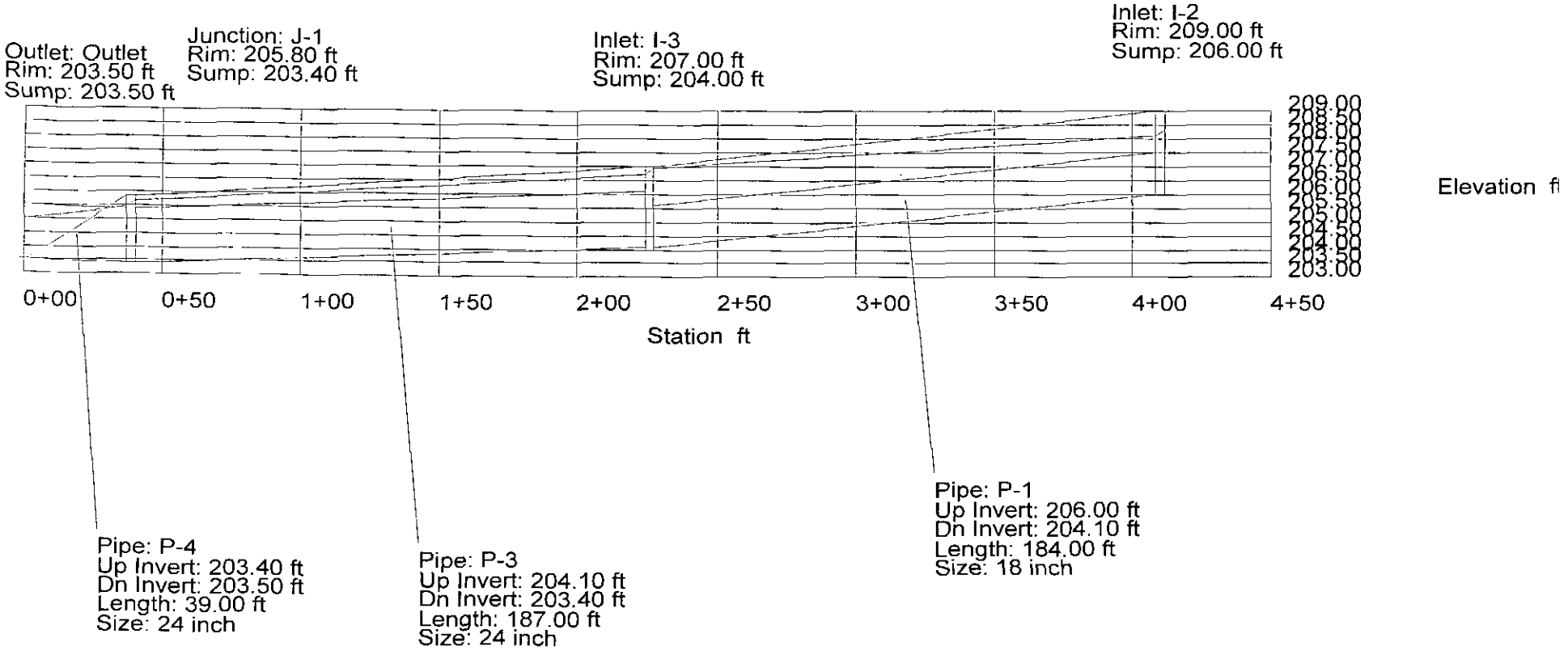
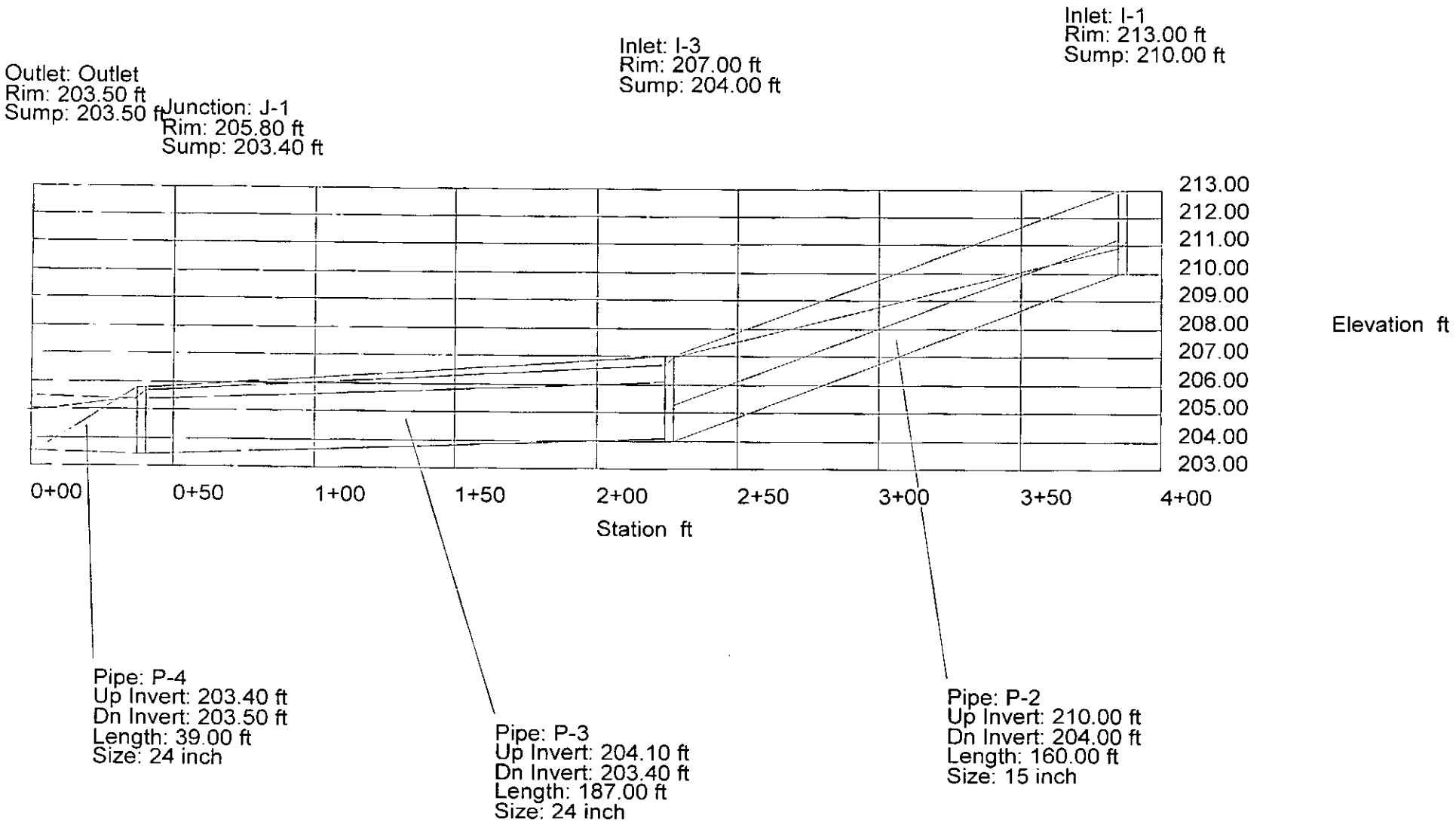
08/05/05 11:18:14 AM

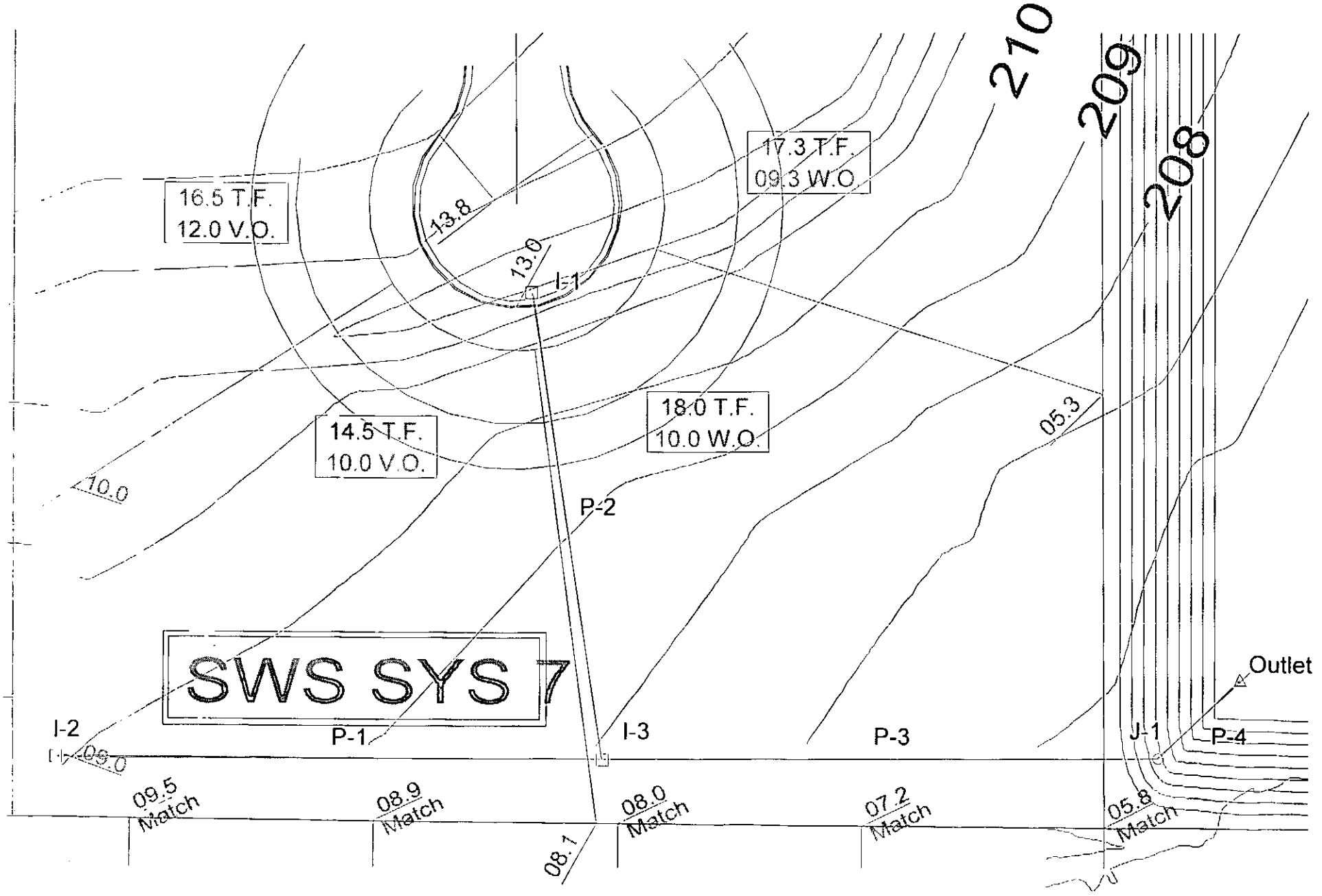
Baughman Company, P.A.

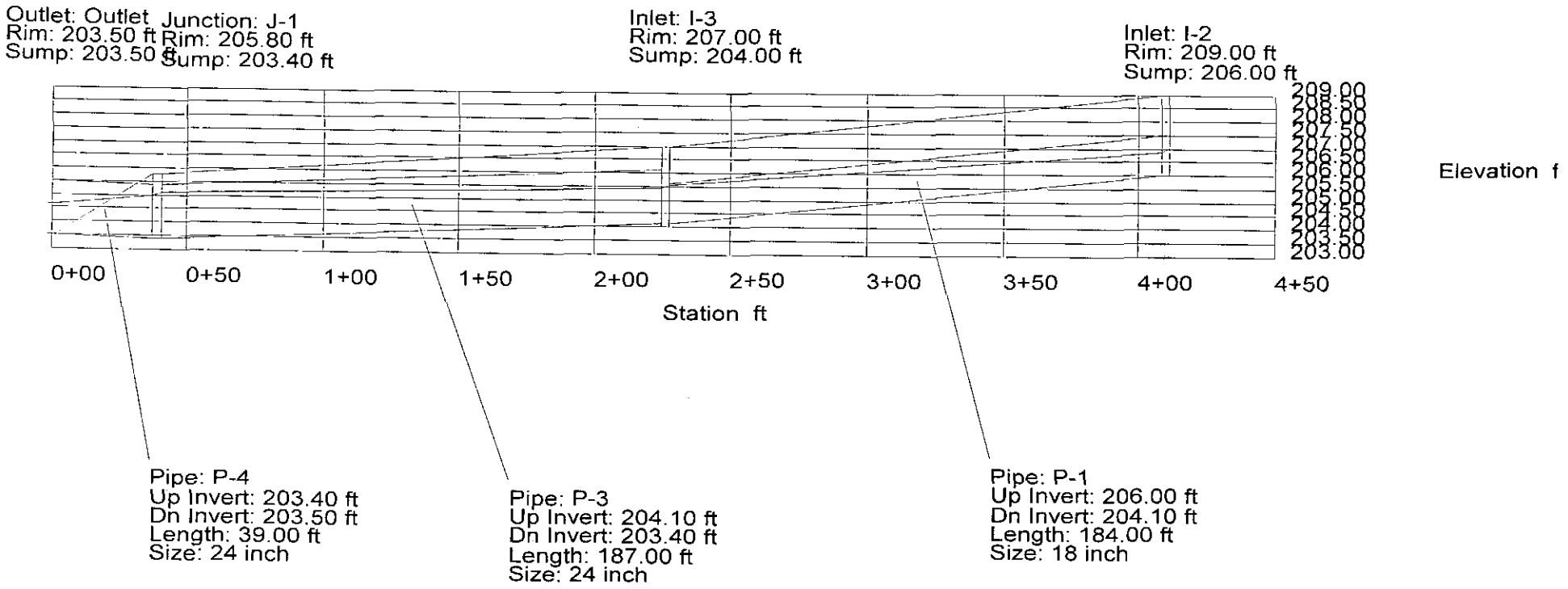
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0


Outlet: Outlet
Rim: 203.50 ft
Sump: 203.50 ft
Junction: J-1
Rim: 205.80 ft
Sump: 203.40 ft
Inlet: I-3
Rim: 207.00 ft
Sump: 204.00 ft
Inlet: I-2
Rim: 209.00 ft
Sump: 206.00 ft
209.00
208.50
208.00
207.50
207.00
206.50
206.00
205.50
205.00
204.50
204.00
203.50
203.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
Station ft
Pipe: P-4
Up Invert: 203.40 ft
Dn Invert: 203.50 ft
Length: 39.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 204.10 ft
Dn Invert: 203.40 ft
Length: 187.00 ft
Size: 24 inch
Pipe: P-1
Up Invert: 206.00 ft
Dn Invert: 204.10 ft
Length: 184.00 ft
Size: 18 inch


Outlet: Outlet
Rim: 203.50 ft
Sump: 203.50 ft
Junction: J-1
Rim: 205.80 ft
Sump: 203.40 ft
Inlet: I-3
Rim: 207.00 ft
Sump: 204.00 ft
Inlet: I-1
Rim: 213.00 ft
Sump: 210.00 ft
213.00
212.00
211.00
210.00
209.00
208.00
207.00
206.00
205.00
204.00
203.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
Station ft
Pipe: P-4
Up Invert: 203.40 ft
Dn Invert: 203.50 ft
Length: 39.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 204.10 ft
Dn Invert: 203.40 ft
Length: 187.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 210.00 ft
Dn Invert: 204.00 ft
Length: 160.00 ft
Size: 15 inch


210
209
208
16.5 T.F.
12.0 V.O.
17.3 T.F.
09.3 W.O.
13.8
13.0
I-1
14.5 T.F.
10.0 V.O.
18.0 T.F.
10.0 W.O.
05.3
10.0
P-2
SWS SYS 7
Outlet
I-2
P-1
I-3
P-3
J-1
P-4
09.0
09.5
Match
08.9
Match
08.0
Match
07.2
Match
05.8
Match
08.1



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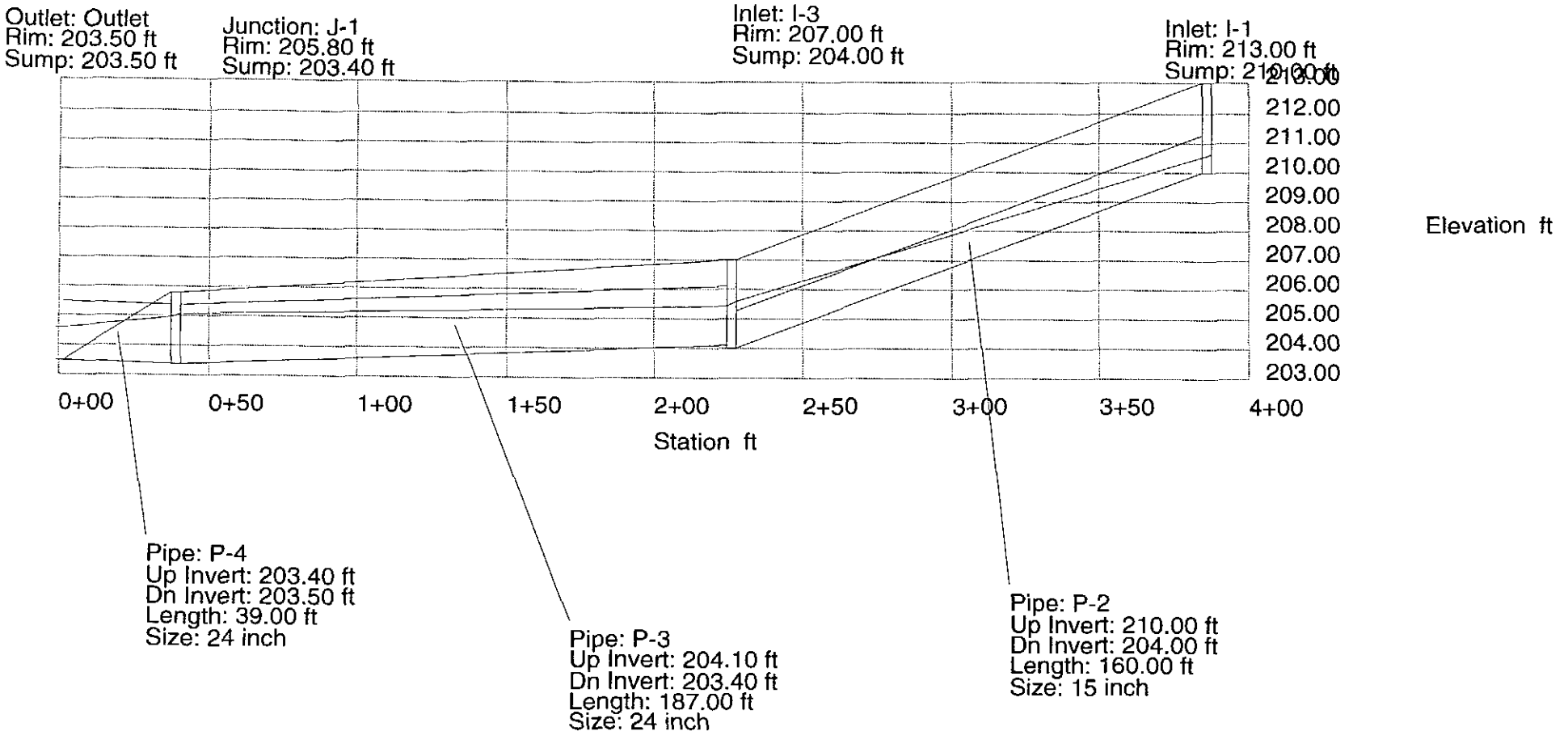
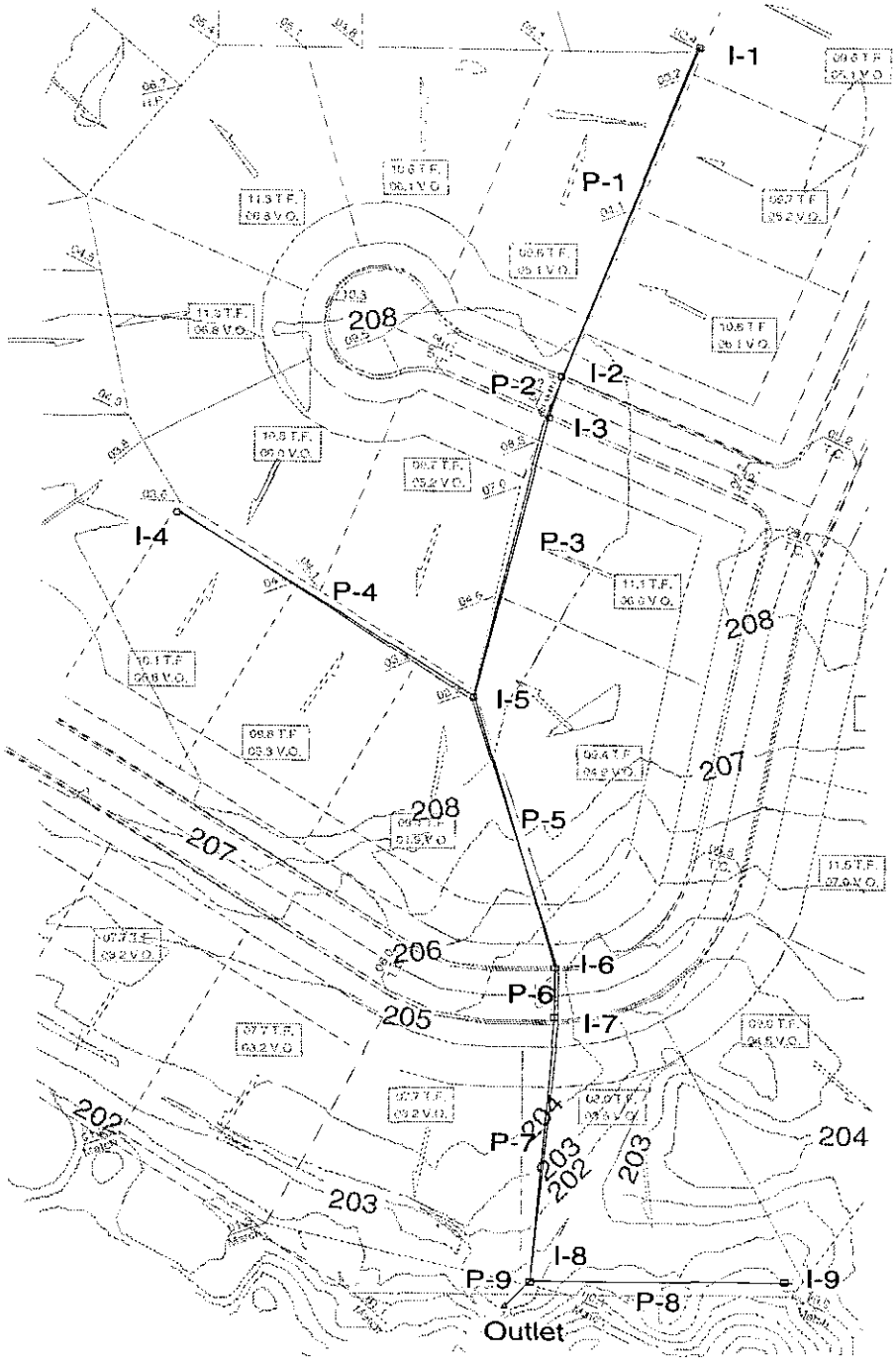

Outlet: Outlet
Rim: 203.50 ft
Sump: 203.50 ft
Junction: J-1
Rim: 205.80 ft
Sump: 203.40 ft
Inlet: I-3
Rim: 207.00 ft
Sump: 204.00 ft
Inlet: I-1
Rim: 213.00 ft
Sump: 210.00 ft
213.00
212.00
211.00
210.00
209.00
208.00
207.00
206.00
205.00
204.00
203.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
Station ft
Pipe: P-4
Up Invert: 203.40 ft
Dn Invert: 203.50 ft
Length: 39.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 204.10 ft
Dn Invert: 203.40 ft
Length: 187.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 210.00 ft
Dn Invert: 204.00 ft
Length: 160.00 ft
Size: 15 inch



Project Title: Auburn Hills 16th
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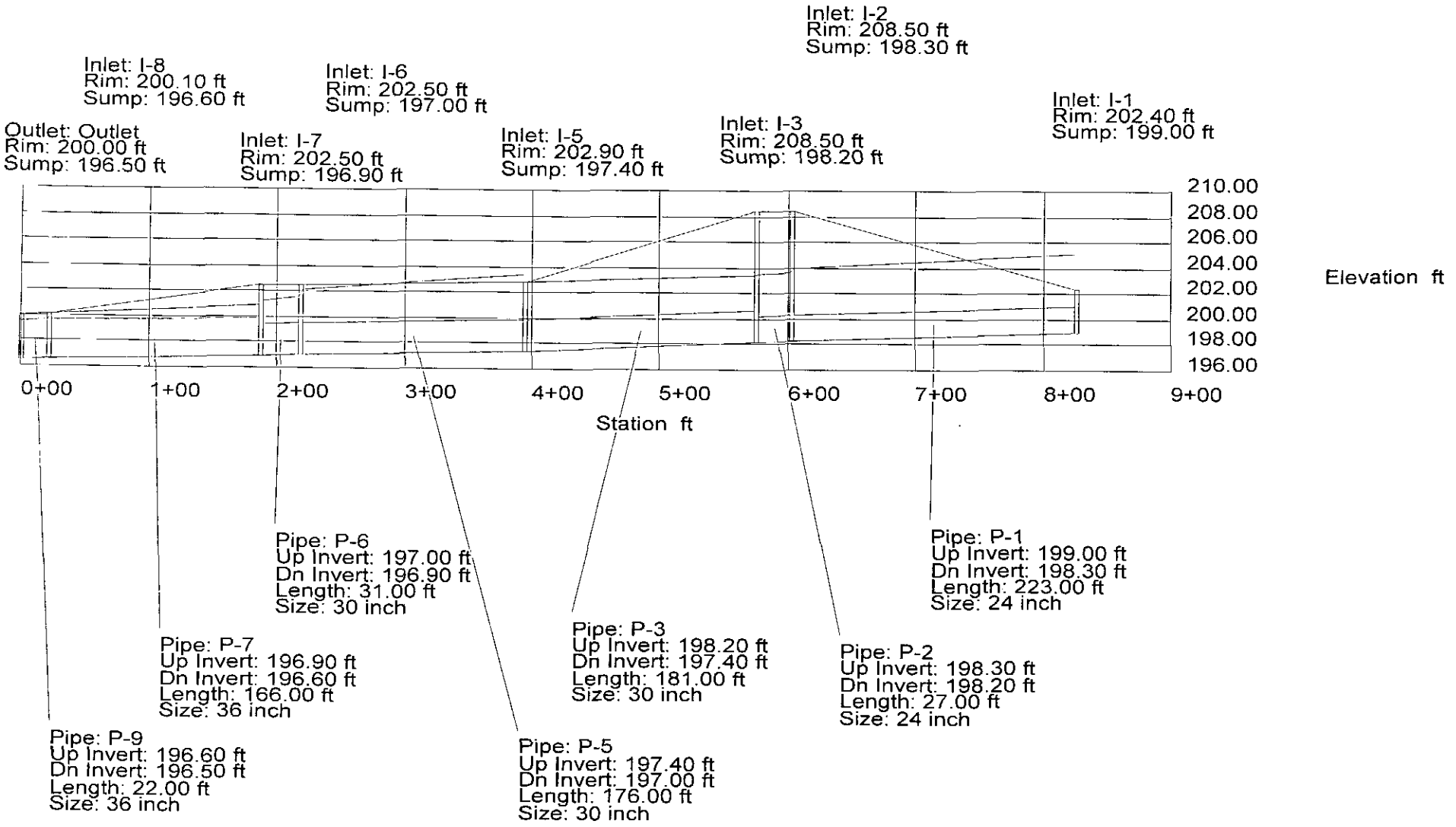
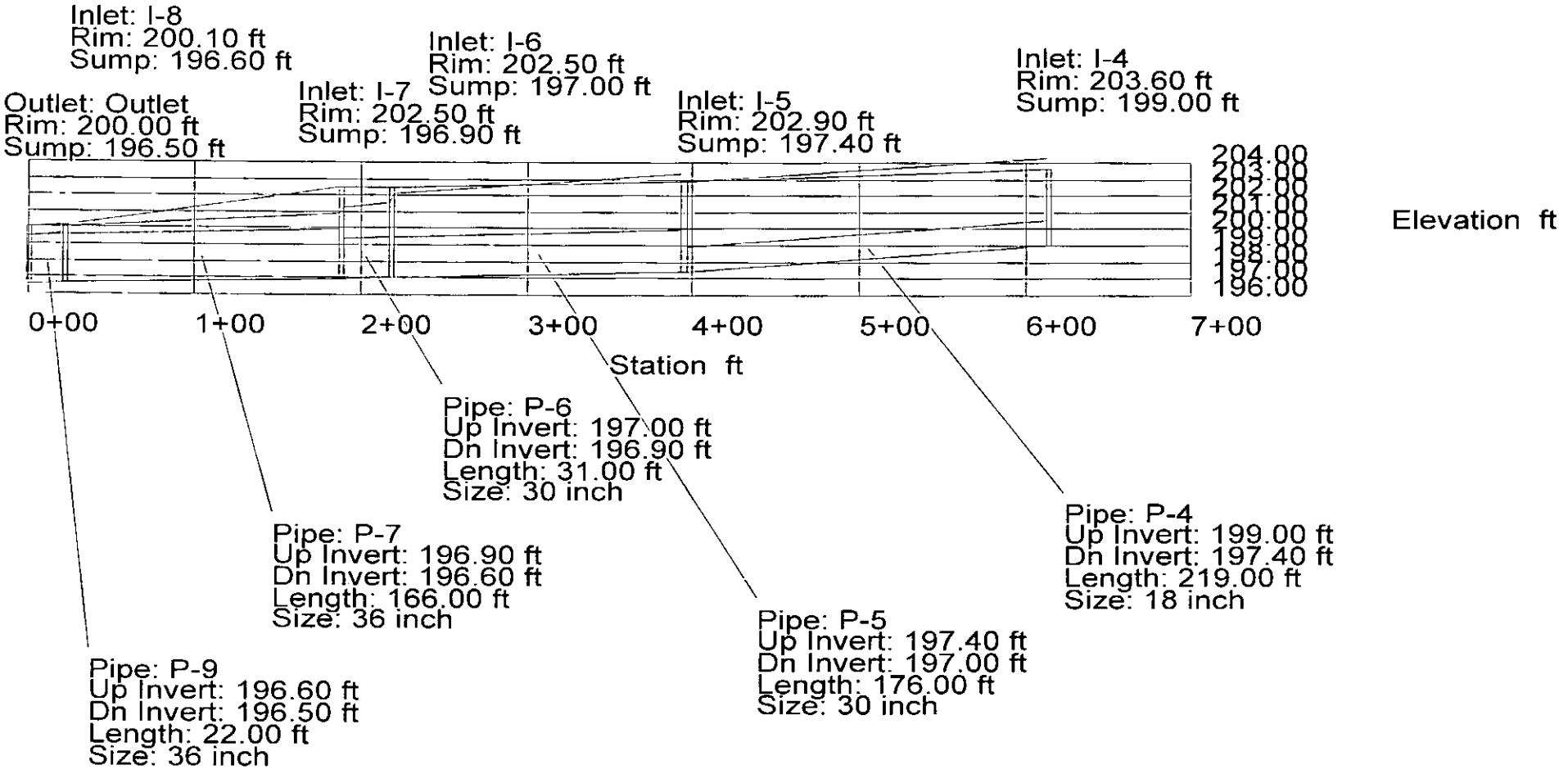
08/05/05 11:19:21 AM

Baughman Company, P.A.
 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Project Engineer: Baughman Company, P.A.
StormCAD v1.0

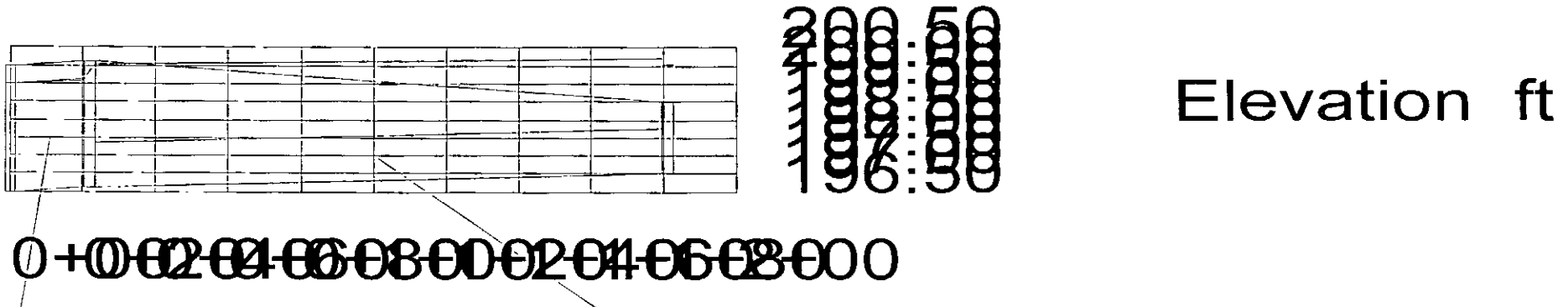

Inlet: I-2
Rim: 208.50 ft
Sump: 198.30 ft
Inlet: I-8
Rim: 200.10 ft
Sump: 196.60 ft
Inlet: I-6
Rim: 202.50 ft
Sump: 197.00 ft
Inlet: I-1
Rim: 202.40 ft
Sump: 199.00 ft
Outlet: Outlet
Rim: 200.00 ft
Sump: 196.50 ft
Inlet: I-7
Rim: 202.50 ft
Sump: 196.90 ft
Inlet: I-5
Rim: 202.90 ft
Sump: 197.40 ft
Inlet: I-3
Rim: 208.50 ft
Sump: 198.20 ft
210.00
208.00
206.00
204.00
202.00
200.00
198.00
196.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
Station ft
Pipe: P-6
Up Invert: 197.00 ft
Dn Invert: 196.90 ft
Length: 31.00 ft
Size: 30 inch
Pipe: P-1
Up Invert: 199.00 ft
Dn Invert: 198.30 ft
Length: 223.00 ft
Size: 24 inch
Pipe: P-7
Up Invert: 196.90 ft
Dn Invert: 196.60 ft
Length: 166.00 ft
Size: 36 inch
Pipe: P-3
Up Invert: 198.20 ft
Dn Invert: 197.40 ft
Length: 181.00 ft
Size: 30 inch
Pipe: P-2
Up Invert: 198.30 ft
Dn Invert: 198.20 ft
Length: 27.00 ft
Size: 24 inch
Pipe: P-9
Up Invert: 196.60 ft
Dn Invert: 196.50 ft
Length: 22.00 ft
Size: 36 inch
Pipe: P-5
Up Invert: 197.40 ft
Dn Invert: 197.00 ft
Length: 176.00 ft
Size: 30 inch


Inlet: I-8
Rim: 200.10 ft
Sump: 196.60 ft
Outlet: Outlet
Rim: 200.00 ft
Sump: 196.50 ft
Inlet: I-7
Rim: 202.50 ft
Sump: 196.90 ft
Inlet: I-6
Rim: 202.50 ft
Sump: 197.00 ft
Inlet: I-5
Rim: 202.90 ft
Sump: 197.40 ft
Inlet: I-4
Rim: 203.60 ft
Sump: 199.00 ft
204.00
203.00
202.00
201.00
200.00
199.00
198.00
197.00
196.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
Station ft
Pipe: P-6
Up Invert: 197.00 ft
Dn Invert: 196.90 ft
Length: 31.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 196.90 ft
Dn Invert: 196.60 ft
Length: 166.00 ft
Size: 36 inch
Pipe: P-4
Up Invert: 199.00 ft
Dn Invert: 197.40 ft
Length: 219.00 ft
Size: 18 inch
Pipe: P-9
Up Invert: 196.60 ft
Dn Invert: 196.50 ft
Length: 22.00 ft
Size: 36 inch
Pipe: P-5
Up Invert: 197.40 ft
Dn Invert: 197.00 ft
Length: 176.00 ft
Size: 30 inch

Inlet: I-8
Rim: 200.10 ft
Sump: 196.60 ft

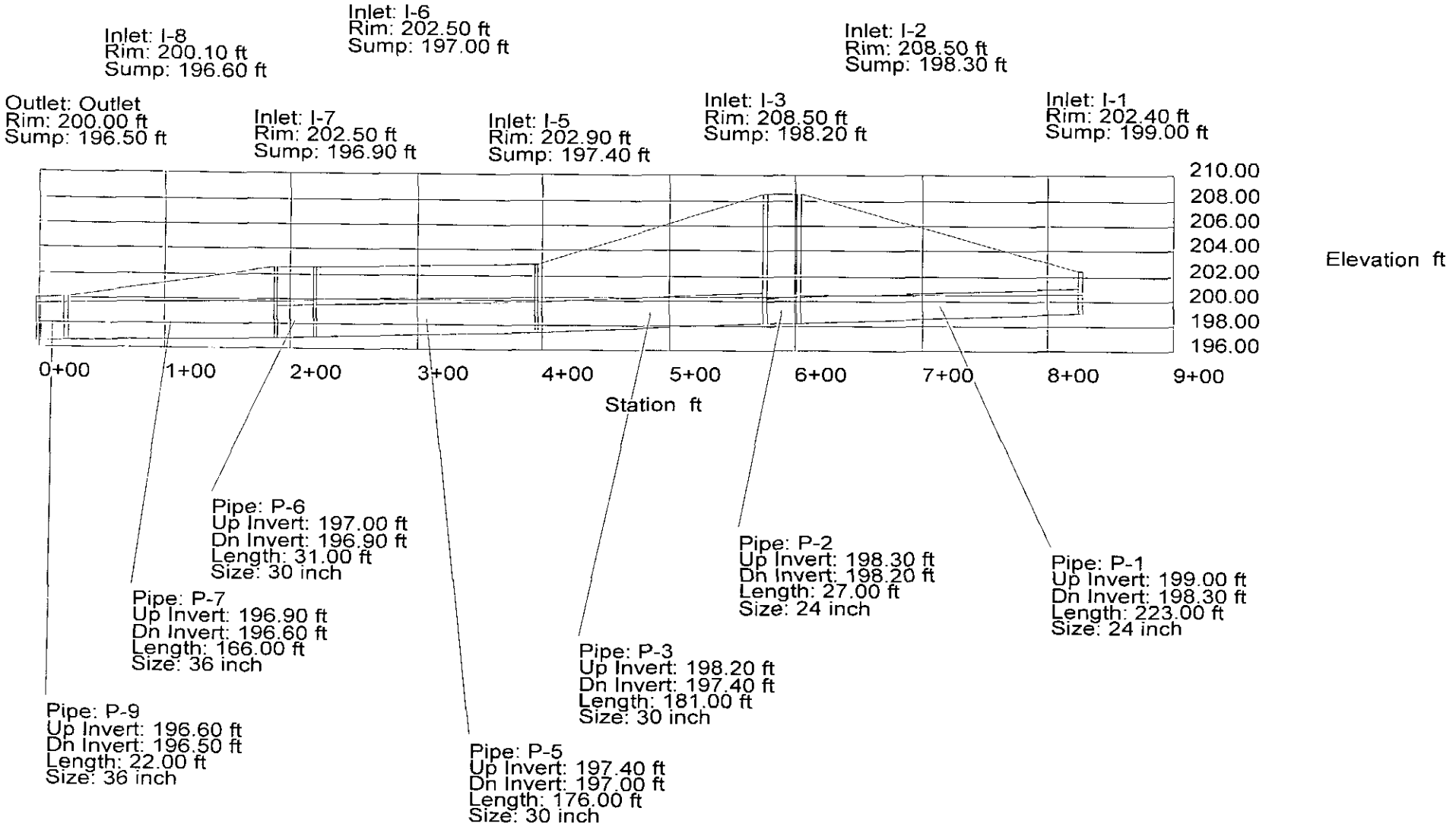
Outlet: Outlet
Rim: 200.00 ft
Sump: 196.50 ft

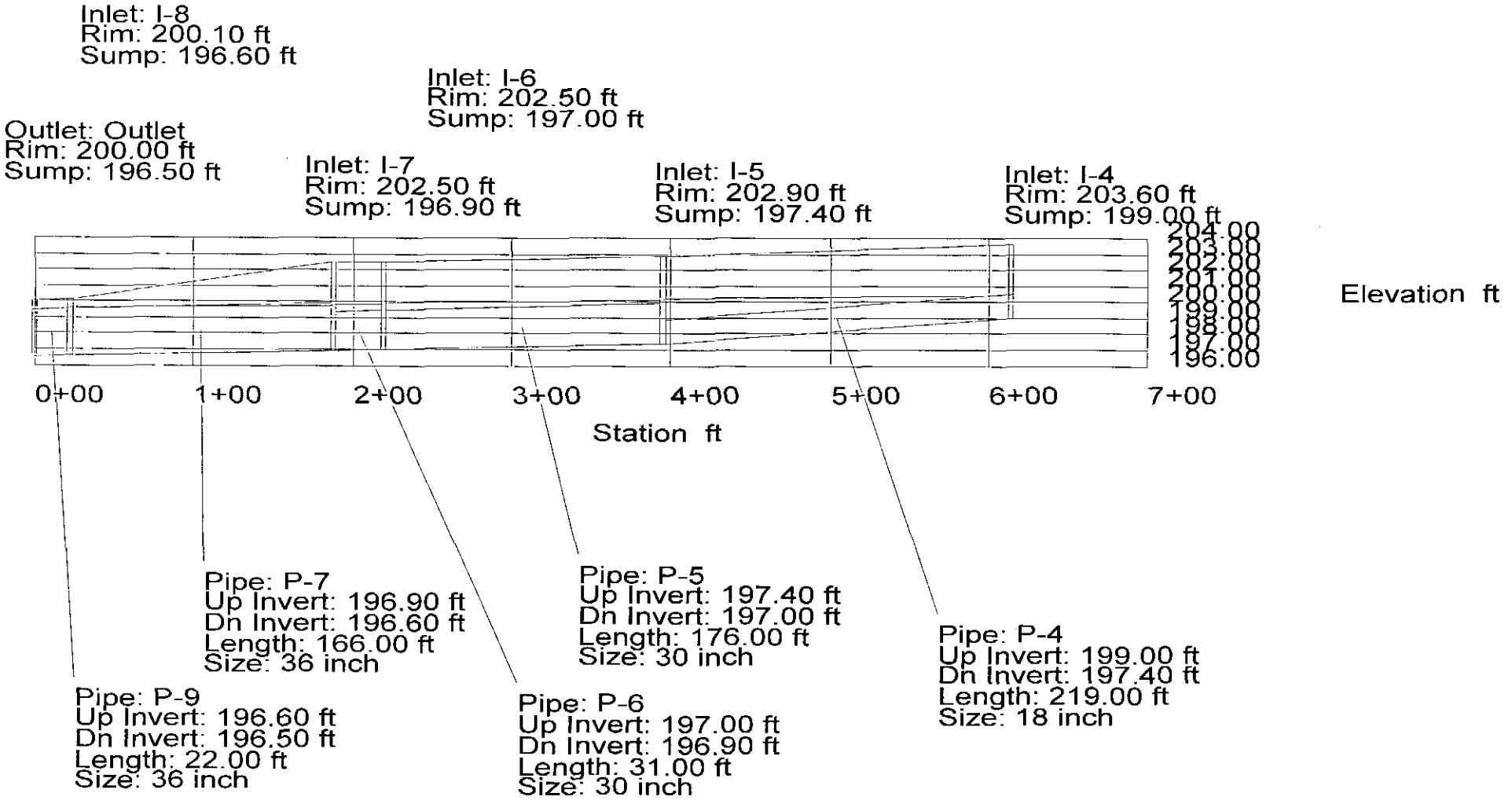
Inlet: I-9
Rim: 199.00 ft
Sump: 197.00 ft



Pipe: P-8
Up Invert: 197.00 ft
Dn Invert: 196.60 ft
Length: 159.00 ft
Size: 15 inch

Pipe: P-9
Up Invert: 196.60 ft
Dn Invert: 196.50 ft
Length: 22.00 ft
Size: 36 inch




Inlet: I-8
Rim: 200.10 ft
Sump: 196.60 ft
Inlet: I-6
Rim: 202.50 ft
Sump: 197.00 ft
Outlet: Outlet
Rim: 200.00 ft
Sump: 196.50 ft
Inlet: I-7
Rim: 202.50 ft
Sump: 196.90 ft
Inlet: I-5
Rim: 202.90 ft
Sump: 197.40 ft
Inlet: I-4
Rim: 203.60 ft
Sump: 199.00 ft
204.00
203.00
202.00
201.00
200.00
199.00
198.00
197.00
196.00
Elevation ft
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
Station ft
Pipe: P-7
Up Invert: 196.90 ft
Dn Invert: 196.60 ft
Length: 166.00 ft
Size: 36 inch
Pipe: P-5
Up Invert: 197.40 ft
Dn Invert: 197.00 ft
Length: 176.00 ft
Size: 30 inch
Pipe: P-4
Up Invert: 199.00 ft
Dn Invert: 197.40 ft
Length: 219.00 ft
Size: 18 inch
Pipe: P-9
Up Invert: 196.60 ft
Dn Invert: 196.50 ft
Length: 22.00 ft
Size: 36 inch
Pipe: P-6
Up Invert: 197.00 ft
Dn Invert: 196.90 ft
Length: 31.00 ft
Size: 30 inch