DRAINAGE PLAN

LIBERTY PARK 3RD ADDITION

TO

WICHITA, SEDGWICK COUNTY, KANSAS

Baughman Company, P.A.

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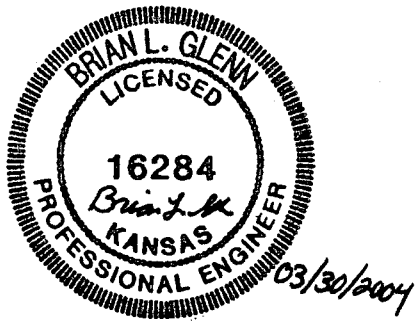

Prepared By

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ENGINEERING, SURVEYING & PLANNING
316/262-7271 FAX 316/262-0149 WICHITA, KANSAS 67211

March 30, 2004

INTRODUCTION

This report provides information and supporting documentation to support the "Drainage Plan" for the property located in the Northwest Quarter of Section 13, T-27-S, R-2-W in Sedgwick County, Kansas.

This property was previously platted as "Liberty Park 2nd Addition". The property has been reconfigured to incorperate a larger detention pond as well as minor adjustments to the street layout.

The "Drainage Plan" being submitted herein in intended to serve as a guide for the design of detention facilities, streets, and storm water sewer improvements to the proposed developments. Modifications to structures, pipes, etc. may be made as necessary during the final design in order to obtain the most economical design and construction possible.

Hydrologic Summary

Return Period years	Existing Peak Discharge at Hickory Creek* Southern Discharge cfs	Developed Peak Discharge at Hickory Creek* Southern Discharge cfs	Peak Discharge From South Detention Facility cfs	Peak Stage of South Detention Facility ft
2	20	12	2	158.9
5	30	20	3	159.3
100	70	46	5	160.7

* These values have been obtained from the "Drainage Plan" for "Liberty Park Addition", new values are derived from new calculations reflecting the increase in the proposed pond size.

Hydrologic Pond Routing
Pond Pack Analysis

Table of Contents

Table of Contents (continued)

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID WICHITA.RNQ COW25100

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2-yr	3.6000	Synthetic Curve	SCSTYPES	TypeII 24hr
5-yr	4.5600	Synthetic Curve	SCSTYPES	TypeII 24hr
100-yr	7.6800	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
*HICKORY		JCT	2	3.699		16.1000	1.80		
*HICKORY		JCT	5	5.472		15.1000	2.98		
*HICKORY		JCT	100	11.696		15.5000	4.92		
POND	IN	POND	2	4.000		12.1000	51.39		
POND	IN	POND	5	5.811		12.1000	74.64		
POND	IN	POND	100	12.159		12.1000	153.09		
POND	OUT	POND	2	3.699		16.1000	1.80	158.88	2.673
POND	OUT	POND	5	5.472		15.1000	2.98	159.25	3.816
POND	OUT	POND	100	11.696		15.5000	4.92	160.67	8.498
POND BASIN		AREA	2	4.000		12.1000	51.39		
POND BASIN		AREA	5	5.811		12.1000	74.64		
POND BASIN		AREA	100	12.159		12.1000	153.09		

DESIGN STORMS SUMMARY

Design Storm File,ID = WICHITA.RNQ COW25100

Storm Tag Name = 2-yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.6000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 5-yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 100-yr

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 100 yr
Total Rainfall Depth= 7.6800 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs

Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 2 year storm
Duration = 24.0000 hrs Rain Depth = 3.6000 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\
HYG File - ID = LIBERTY3.HYG - POND BASIN 2-yr
Tc = .3300 hrs
Drainage Area = 26.800 acres Runoff CN= 81

==========

Computational Time Increment	=	.04400 hrs
Computed Peak Time	=	12.1000 hrs
Computed Peak Flow	=	51.39 cfs
Time Increment for HYG File	=	.0500 hrs
Peak Time, Interpolated Output	=	12.1000 hrs
Peak Flow, Interpolated Output	=	51.39 cfs

==========

DRAINAGE AREA

ID:None Selected
CN = 81
Area = 26.800 acres
S = 2.3457 in
0.2S = .4691 in

Cumulative Runoff

1.7899 in
3.997 ac-ft

HYG Volume... 4.000 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33000 hrs (ID: None Selected)
Computational Incr, Tm = .04400 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 =	92.02 cfs
Unit peak time	Tp =	.22000 hrs
Unit receding limb,	Tr =	.88000 hrs
Total unit time,	Tb =	1.10000 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 5 year storm
Duration = 24.0000 hrs Rain Depth = 4.5600 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\
HYG File - ID = LIBERTY3.HYG - POND BASIN 5-yr
Tc = .3300 hrs
Drainage Area = 26.800 acres Runoff CN= 81

==========
Computational Time Increment = .04400 hrs
Computed Peak Time = 12.1000 hrs
Computed Peak Flow = 74.65 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 74.64 cfs
==========

DRAINAGE AREA

ID:None Selected
CN = 81
Area = 26.800 acres
S = 2.3457 in
0.2S = .4691 in

Cumulative Runoff

2.6000 in
5.807 ac-ft

HYG Volume... 5.811 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33000 hrs (ID: None Selected)
Computational Incr, Tm = .04400 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 = 92.02 cfs
Unit peak time Tp = .22000 hrs
Unit receding limb, Tr = .88000 hrs
Total unit time, Tb = 1.10000 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 7.6800 in
Rain Dir = C:\HAESTAD\PPKW\RAINFALL\
Rain File -ID = SCSTYPES.RNF - TypeII 24hr
Unit Hyd Type = Default Curvilinear
HYG Dir = F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\
HYG File - ID = LIBERTY3.HYG - POND BASIN 100-yr
Tc = .3300 hrs
Drainage Area = 26.800 acres Runoff CN= 81

==========
Computational Time Increment = .04400 hrs
Computed Peak Time = 12.1000 hrs
Computed Peak Flow = 153.09 cfs

Time Increment for HYG File = .0500 hrs
Peak Time, Interpolated Output = 12.1000 hrs
Peak Flow, Interpolated Output = 153.09 cfs
==========

DRAINAGE AREA

ID:None Selected
CN = 81
Area = 26.800 acres
S = 2.3457 in
0.2S = .4691 in

Cumulative Runoff

5.4409 in
12.151 ac-ft

HYG Volume... 12.159 ac-ft (area under HYG curve)

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

Time Concentration, Tc = .33000 hrs (ID: None Selected)
Computational Incr, Tm = .04400 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 = 92.02 cfs
Unit peak time Tp = .22000 hrs
Unit receding limb, Tr = .88000 hrs
Total unit time, Tb = 1.10000 hrs

File.... F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\POND.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
158.00	-----	3.0000	.0000	.000	.000
159.00	-----	3.1000	9.1496	3.050	3.050
160.00	-----	3.3000	9.5984	3.199	6.249
161.00	-----	3.4000	10.0496	3.350	9.599
162.00	-----	3.6000	10.4986	3.500	13.099
163.00	-----	3.7000	10.9497	3.650	16.749

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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 158.00 ft
Increment = .25 ft
Max. Elev.= 163.00 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 SETUP, DS Channel	CV	--->	TW	158.000	163.000

File.... F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\POND.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels	=	1
Barrel Diameter	=	1.2500 ft
Upstream Invert	=	158.00 ft
Dnstream Invert	=	157.50 ft
Horiz. Length	=	300.00 ft
Barrel Length	=	300.00 ft
Barrel Slope	=	.00167 ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130
Ke	=	.5000 (forward entrance loss)
Kb	=	.023225 (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)	=	1.160
T2 ratio (HW/D)	=	1.306
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 = 159.45 ft ---> Flow = 4.80 cfs
At T2 Elev = 159.63 ft ---> Flow = 5.49 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

Type.... Composite Rating Curve
Name.... OUTFALL

File.... F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\POND.PPW

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

WS Elev, Total Q		Notes		
		Converge		
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
158.00	.00	Free Outfall		None contributing
158.25	.17	Free Outfall		CV
158.50	.66	Free Outfall		CV
158.75	1.37	Free Outfall		CV
159.00	2.21	Free Outfall		CV
159.25	2.99	Free Outfall		CV
159.50	3.50	Free Outfall		CV
159.75	3.84	Free Outfall		CV
160.00	4.15	Free Outfall		CV
160.25	4.45	Free Outfall		CV
160.50	4.74	Free Outfall		CV
160.75	5.01	Free Outfall		CV
161.00	5.26	Free Outfall		CV
161.25	5.51	Free Outfall		CV
161.50	5.75	Free Outfall		CV
161.75	5.98	Free Outfall		CV
162.00	6.21	Free Outfall		CV
162.25	6.42	Free Outfall		CV
162.50	6.63	Free Outfall		CV
162.75	6.84	Free Outfall		CV
163.00	7.04	Free Outfall		CV

LEVEL POOL ROUTING SUMMARY

HYG Dir = F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\
Inflow HYG file = LIBERTY3.HYG - POND IN 2-yr
Outflow HYG file = LIBERTY3.HYG - POND OUT 2-yr

Pond Node Data = POND

Pond Volume Data = POND
Pond Outlet Data = OUTFALL

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	158.00 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	=	51.39 cfs	at	12.1000 hrs
Peak Outflow	=	1.80 cfs	at	16.1000 hrs
Peak Elevation	=	158.88 ft		
Peak Storage	=	2.673 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	4.000
- Infiltration	=	.000
- HYG Vol OUT	=	3.699
- Retained Vol	=	.301
Unrouted Vol	=	-.001 ac-ft (.019% of Inflow Volume)

LEVEL POOL ROUTING SUMMARY

HYG Dir = F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\
Inflow HYG file = LIBERTY3.HYG - POND IN 5-yr
Outflow HYG file = LIBERTY3.HYG - POND OUT 5-yr

Pond Node Data = POND
Pond Volume Data = POND
Pond Outlet Data = OUTFALL

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	158.00 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	=	74.64 cfs	at	12.1000 hrs
Peak Outflow	=	2.98 cfs	at	15.1000 hrs

LEVEL POOL ROUTING SUMMARY

HYG Dir = F:\HYDRO\PROJECTS\LIBERTY PARK 3RD\PONDPACK\
Inflow HYG file = LIBERTY3.HYG - POND IN 100-yr
Outflow HYG file = LIBERTY3.HYG - POND OUT 100-yr

Pond Node Data = POND
Pond Volume Data = POND
Pond Outlet Data = OUTFALL

No Infiltration

INITIAL CONDITIONS

Starting WS Elev	=	158.00 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

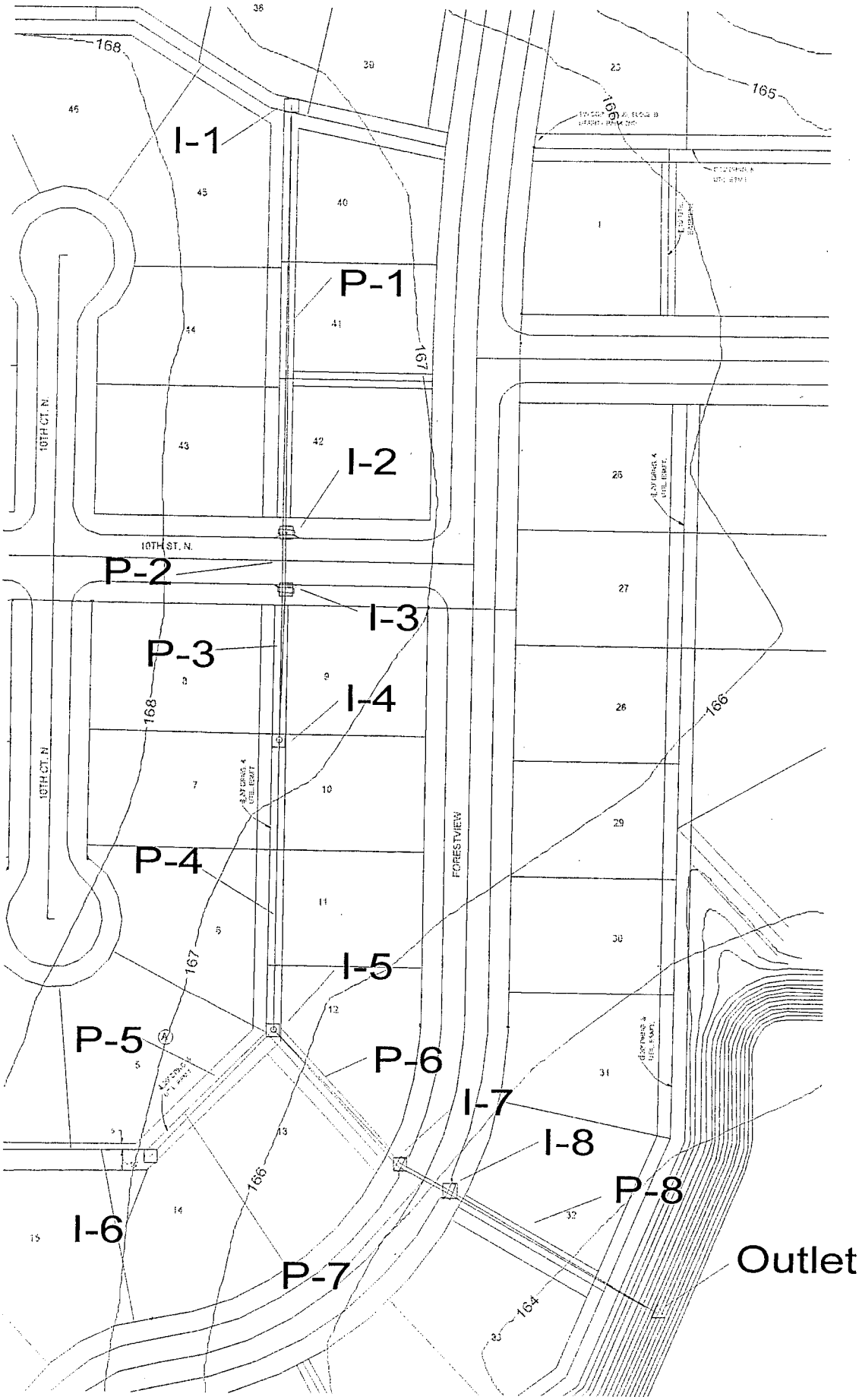
Peak Inflow	=	153.09 cfs	at	12.1000 hrs
Peak Outflow	=	4.93 cfs	at	15.5000 hrs
Peak Elevation	=	160.67 ft		
Peak Storage	=	8.498 ac-ft		

MASS BALANCE (ac-ft)

+ Initial Vol	=	.000
+ HYG Vol IN	=	12.159
- Infiltration	=	.000
- HYG Vol OUT	=	11.696
- Retained Vol	=	.463
Unrouted Vol	=	-.001 ac-ft (.006% of Inflow Volume)

Index of Starting Page Numbers for ID Names

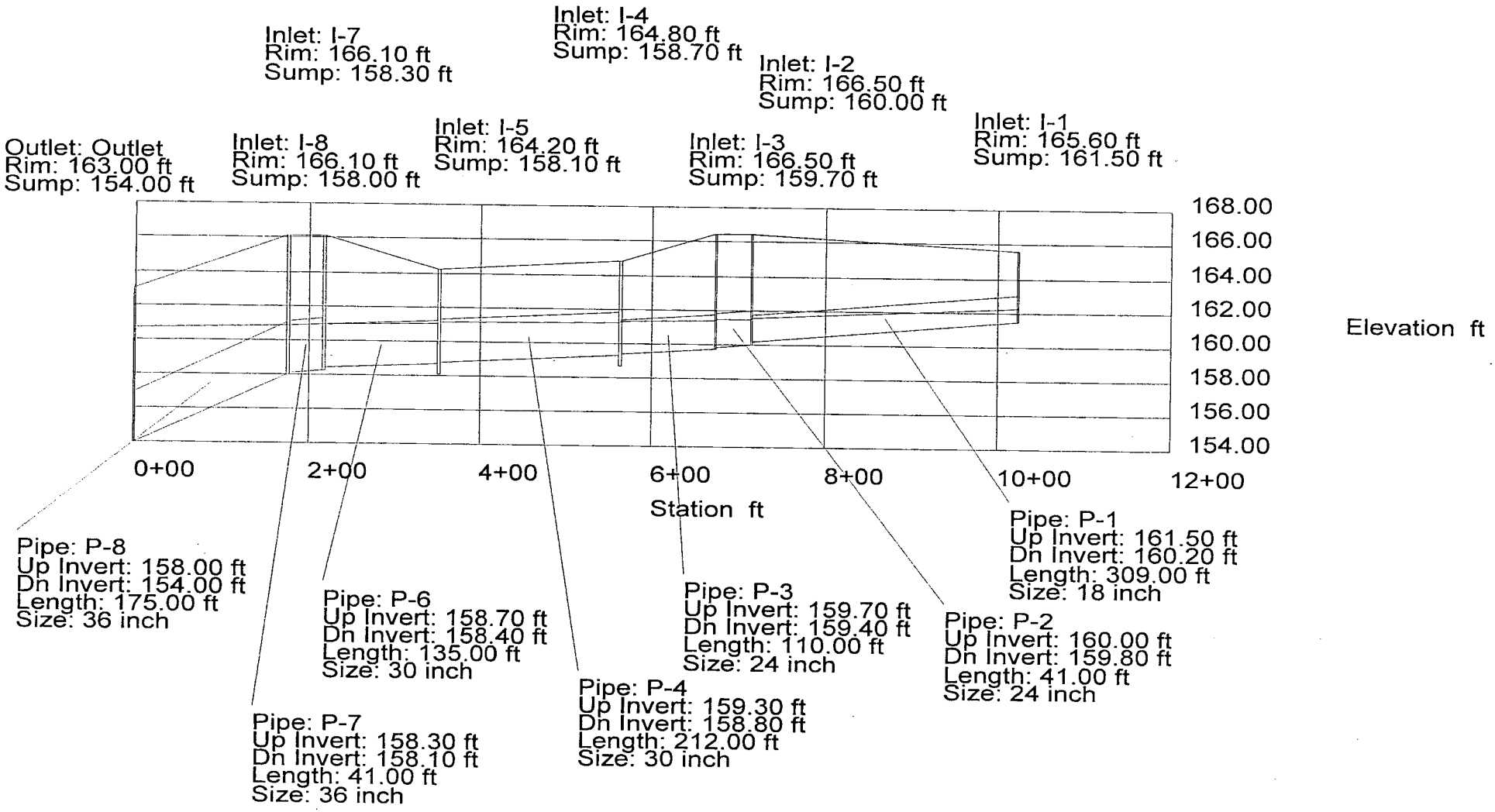
Stormwater Sewer #1
StormCad Analysis



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

System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream Downstream	-Section- Shape Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-5	1.40	0.00	1.40	I-6	Circular	161.70	161.20	165.00	162.21	0.003923	1.40	129.00
				I-5	15 inch			164.20	161.67	0.003876	4.02	
P-1	3.20	0.00	3.20	I-1	Circular	161.50	160.20	165.60	162.22	0.002733	3.20	309.00
				I-2	18 inch			166.50	161.55	0.004207	6.81	
P-2	3.00	3.20	6.20	I-2	Circular	160.00	159.80	166.50	161.50	0.000807	6.20	41.00
				I-3	24 inch			166.50	161.48	0.004878	15.80	
P-3	2.80	6.20	9.00	I-3	Circular	159.70	159.40	166.50	161.41	0.001415	9.00	110.00
				I-4	24 inch			164.80	161.27	0.002727	11.81	
P-4	1.10	9.00	10.10	I-4	Circular	159.30	158.80	164.80	161.22	0.000589	10.10	212.00
				I-5	30 inch			164.20	161.12	0.002358	19.92	
P-6	1.20	11.50	12.70	I-5	Circular	158.70	158.40	164.20	161.07	0.000914	12.70	135.00
				I-7	30 inch			166.10	160.95	0.002222	19.33	
P-7	3.20	12.70	15.90	I-7	Circular	158.30	158.10	166.10	160.90	0.000504	15.90	41.00
				I-8	36 inch			166.10	160.89	0.004878	46.58	
P-8	3.00	15.90	18.90	I-8	Circular	158.00	154.00	166.10	160.84	0.000801	18.90	175.00
				Outlet	36 inch			163.00	160.70	0.022857	100.83	



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

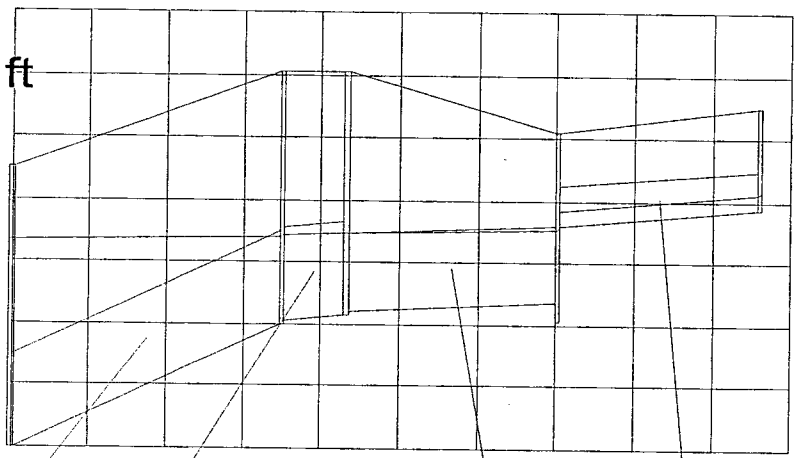
Inlet: I-7
Rim: 166.10 ft
Sump: 158.30 ft

Inlet: I-6
Rim: 165.00 ft
Sump: 161.70 ft

Inlet: I-8
Rim: 166.10 ft
Sump: 158.00 ft

Inlet: I-5
Rim: 164.20 ft
Sump: 158.10 ft

Outlet: Outlet
Rim: 163.00 ft
Sump: 154.00 ft



Pipe: P-5
Up Invert: 161.70 ft
Dn Invert: 161.20 ft
Length: 129.00 ft
Size: 15 inch

Pipe: P-7
Up Invert: 158.30 ft
Dn Invert: 158.10 ft
Length: 41.00 ft
Size: 36 inch

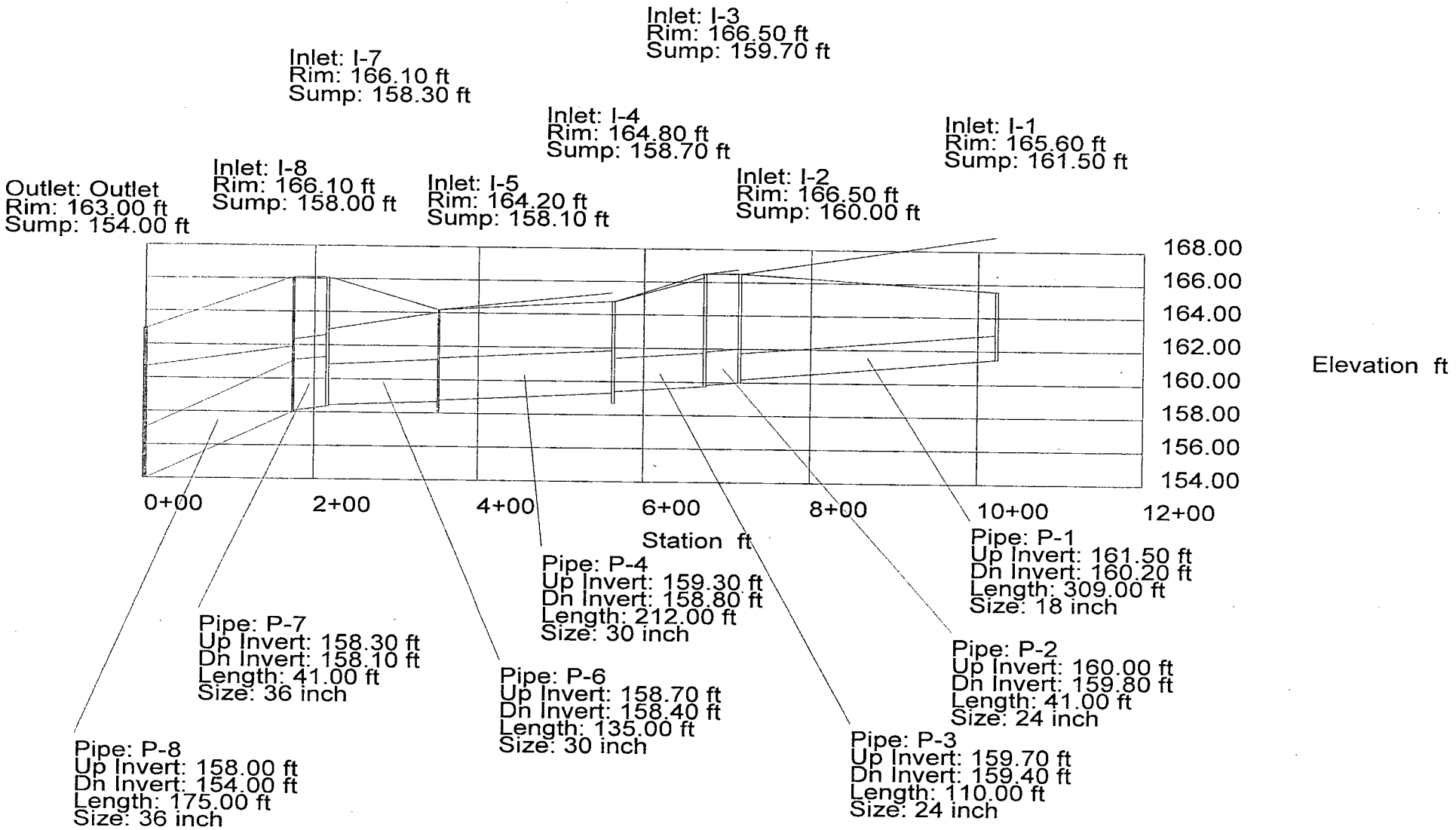
Pipe: P-8
Up Invert: 158.00 ft
Dn Invert: 154.00 ft
Length: 175.00 ft
Size: 36 inch

Pipe: P-6
Up Invert: 158.70 ft
Dn Invert: 158.40 ft
Length: 135.00 ft
Size: 30 inch

System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream Downstream	-Section- Shape Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-5	4.10	0.00	4.10	I-6	Circular	161.70	161.20	165.00	164.72	0.004029	4.10	129.00
				I-5	15 inch			164.20	164.20	0.003876	4.02	
P-1	9.30	0.00	9.30	I-1	Circular	161.50	160.20	165.60	168.92	0.007839	9.30	309.00
				I-2	18 inch			166.50	166.50	0.004207	6.81	
P-2	8.80	9.30	18.10	I-2	Circular	160.00	159.80	166.50	166.76	0.006402	18.10	41.00
				I-3	24 inch			166.50	166.50	0.004878	15.80	
P-3	8.30	18.10	26.40	I-3	Circular	159.70	159.40	166.50	166.30	0.013620	26.40	110.00
				I-4	24 inch			164.80	164.80	0.002727	11.81	
P-4	3.10	26.40	29.50	I-4	Circular	159.30	158.80	164.80	165.30	0.005173	29.50	212.00
				I-5	30 inch			164.20	164.20	0.002358	19.92	
P-6	3.60	33.60	37.20	I-5	Circular	158.70	158.40	164.20	164.02	0.008226	37.20	135.00
				I-7	30 inch			166.10	162.91	0.002222	19.33	
P-7	9.30	37.20	46.50	I-7	Circular	158.30	158.10	166.10	162.58	0.004861	46.50	41.00
				I-8	36 inch			166.10	162.38	0.004878	46.58	
P-8	8.80	46.50	55.30	I-8	Circular	158.00	154.00	166.10	161.90	0.006875	55.30	175.00
				Outlet	36 inch			163.00	160.70	0.022857	100.83	

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



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

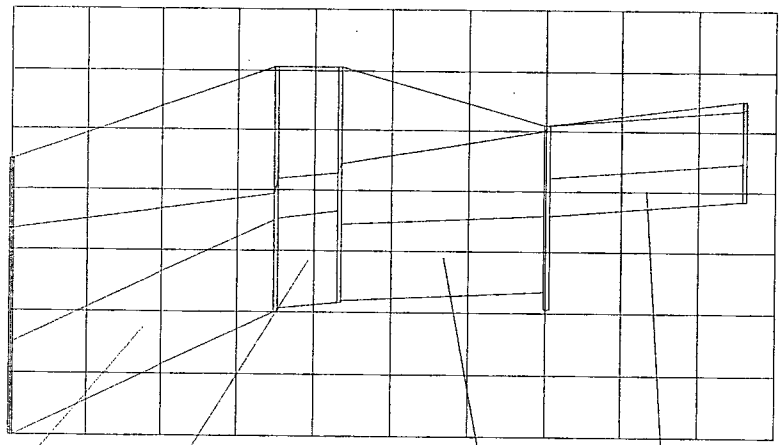
Inlet: I-7
Rim: 166.10 ft
Sump: 158.30 ft

Inlet: I-6
Rim: 165.00 ft
Sump: 161.70 ft

Inlet: I-8
Rim: 166.10 ft
Sump: 158.00 ft

Inlet: I-5
Rim: 164.20 ft
Sump: 158.10 ft

Outlet: Outlet
Rim: 163.00 ft
Sump: 154.00 ft



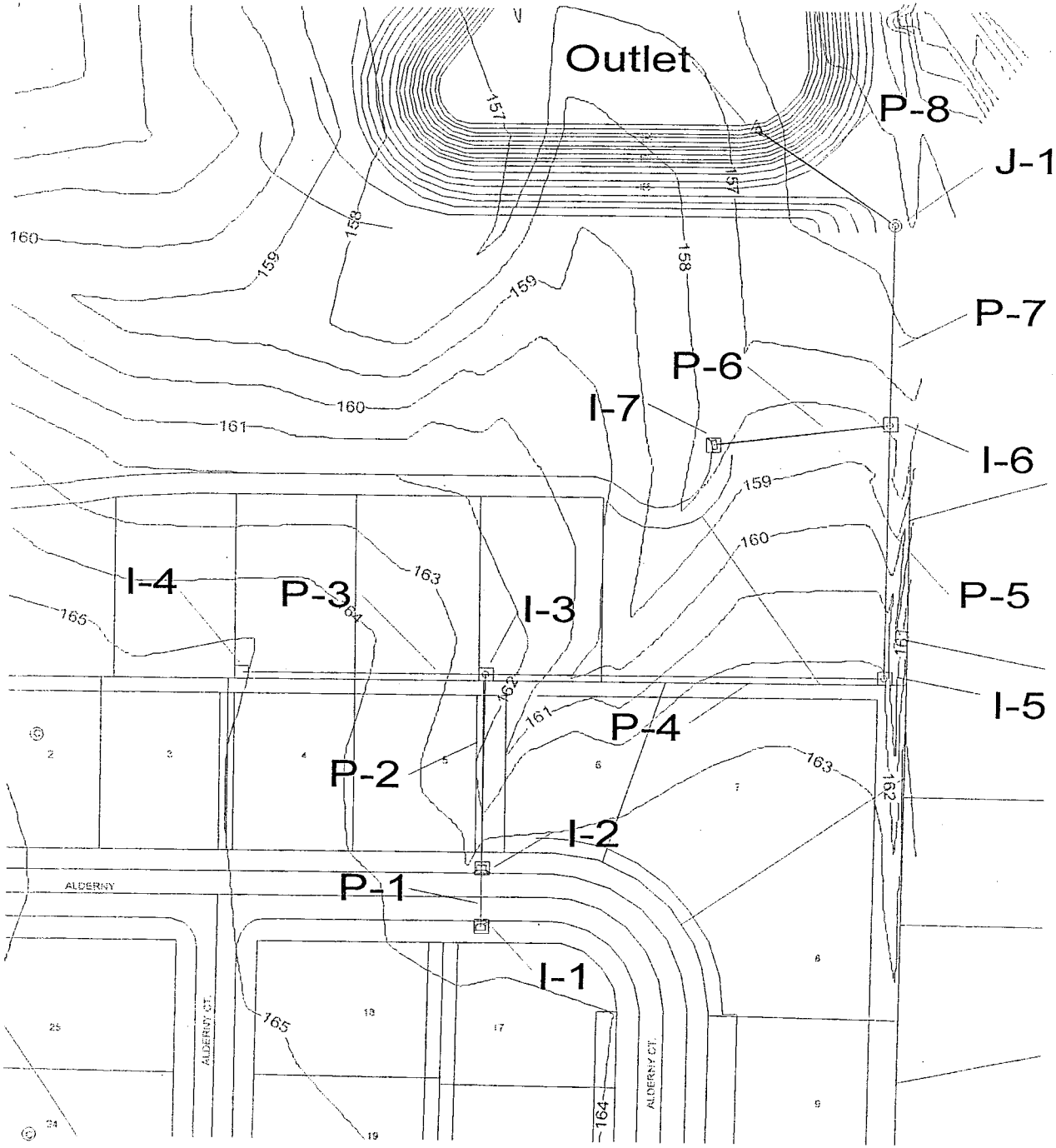
Pipe: P-7
Up Invert: 158.30 ft
Dn Invert: 158.10 ft
Length: 41.00 ft
Size: 36 inch

Pipe: P-5
Up Invert: 161.70 ft
Dn Invert: 161.20 ft
Length: 129.00 ft
Size: 15 inch

Pipe: P-8
Up Invert: 158.00 ft
Dn Invert: 154.00 ft
Length: 175.00 ft
Size: 36 inch

Pipe: P-6
Up Invert: 158.70 ft
Dn Invert: 158.40 ft
Length: 135.00 ft
Size: 30 inch

Stormwater Sewer #2
StormCad Analysis



Project Title: Liberty Park 3rd Addition, system 2
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03/29/04 04:24:33 PM

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

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

System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream	Downstream	-Section- Shape	Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream	Downstream (ft)	-HGL- Upstream	Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-6	3.70	0.00	3.70	I-7	I-6	Circular	15 inch	158.00	153.50	162.50	157.00	158.78	154.83	0.033398	3.70	124.00
P-3	6.70	0.00	6.70	I-4	I-3	Circular	18 inch	156.20	155.50	159.30	159.40	158.10	157.40	0.036290	12.31	
P-1	4.80	0.00	4.80	I-1	I-2	Circular	18 inch	160.00	159.50	163.60	163.60	160.84	160.61	0.004069	6.70	172.00
P-2	3.30	4.80	8.10	I-2	I-3	Circular	24 inch	159.40	155.40	163.60	159.40	160.41	157.40	0.004070	6.70	
P-4	4.60	14.80	19.40	I-3	I-5	Circular	30 inch	155.30	154.60	159.40	160.00	157.22	156.49	0.009538	4.80	41.00
P-5	3.60	19.40	23.00	I-5	I-6	Circular	30 inch	154.50	152.80	160.00	157.00	156.13	154.83	0.012195	11.60	
P-7	0.40	26.70	27.10	I-6	J-1	Circular	36 inch	152.80	151.00	157.00	155.00	154.48	153.45	0.024318	8.10	136.00
P-8	N/A	27.10	27.10	J-1	Outlet	Circular	36 inch	151.00	148.00	155.00	155.00	153.28	153.20	0.029412	38.79	
														0.002578	19.40	280.00
														0.002500	20.51	
														0.008707	23.00	180.00
														0.009444	39.86	
														0.010127	27.10	140.00
														0.012857	75.62	
														0.001640	27.10	119.00
														0.025210	105.90	

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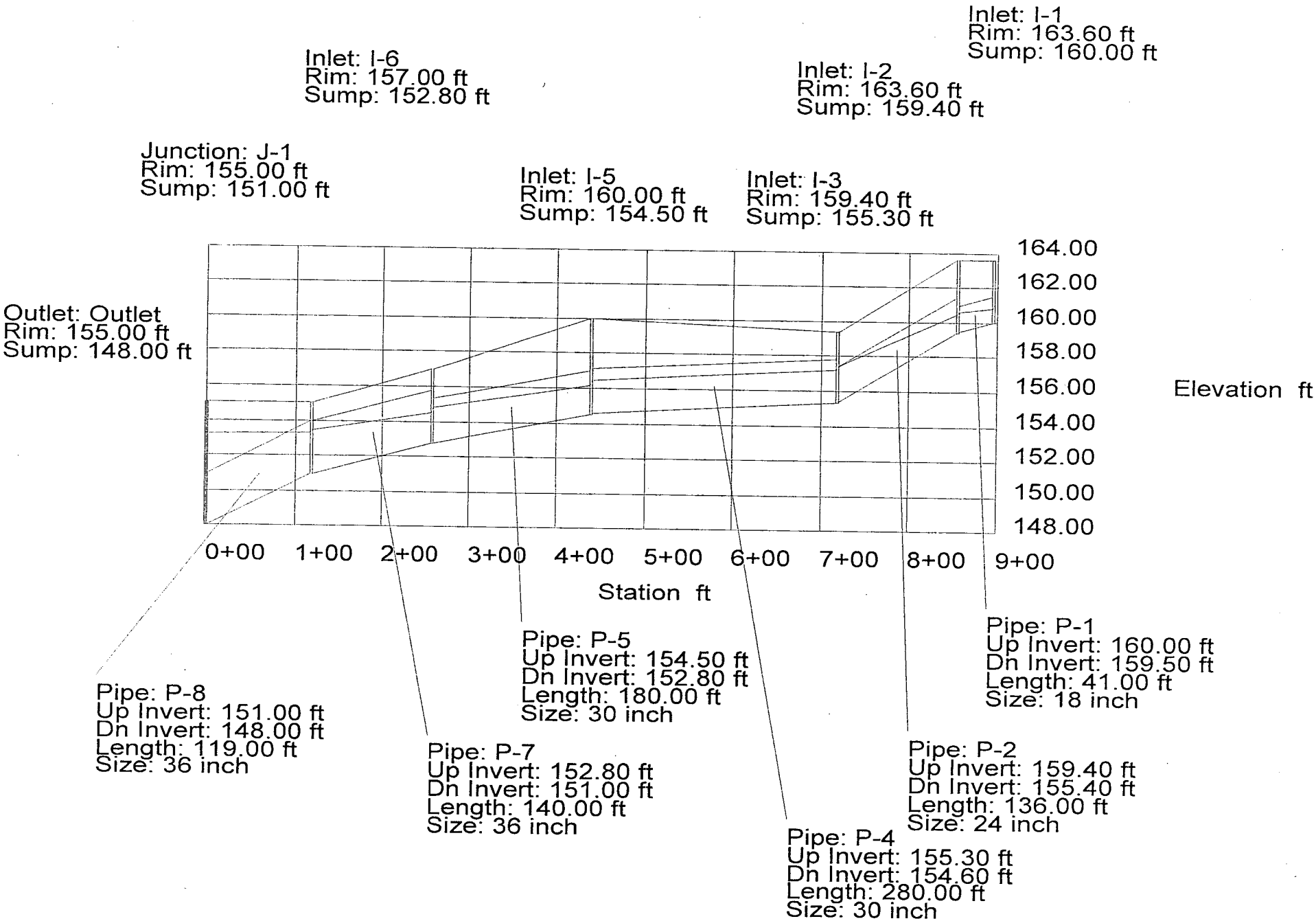

Inlet: I-1
Rim: 163.60 ft
Sump: 160.00 ft
Inlet: I-6
Rim: 157.00 ft
Sump: 152.80 ft
Inlet: I-2
Rim: 163.60 ft
Sump: 159.40 ft
Junction: J-1
Rim: 155.00 ft
Sump: 151.00 ft
Inlet: I-5
Rim: 160.00 ft
Sump: 154.50 ft
Inlet: I-3
Rim: 159.40 ft
Sump: 155.30 ft
Outlet: Outlet
Rim: 155.00 ft
Sump: 148.00 ft
164.00
162.00
160.00
158.00
156.00
154.00
152.00
150.00
148.00
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-1
Up Invert: 160.00 ft
Dn Invert: 159.50 ft
Length: 41.00 ft
Size: 18 inch
Pipe: P-5
Up Invert: 154.50 ft
Dn Invert: 152.80 ft
Length: 180.00 ft
Size: 30 inch
Pipe: P-8
Up Invert: 151.00 ft
Dn Invert: 148.00 ft
Length: 119.00 ft
Size: 36 inch
Pipe: P-7
Up Invert: 152.80 ft
Dn Invert: 151.00 ft
Length: 140.00 ft
Size: 36 inch
Pipe: P-2
Up Invert: 159.40 ft
Dn Invert: 155.40 ft
Length: 136.00 ft
Size: 24 inch
Pipe: P-4
Up Invert: 155.30 ft
Dn Invert: 154.60 ft
Length: 280.00 ft
Size: 30 inch

Inlet: I-5
Rim: 160.00 ft
Sump: 154.50 ft

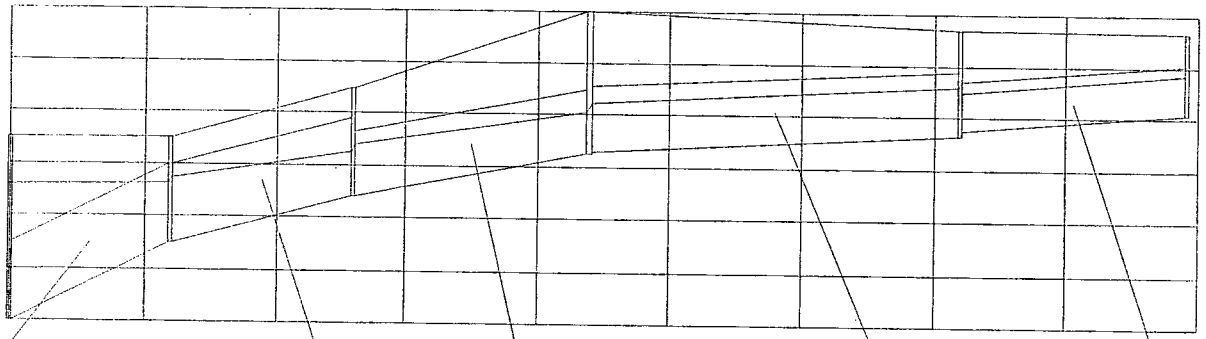
Inlet: I-4
Rim: 159.30 ft
Sump: 156.20 ft

Junction: J-1
Rim: 155.00 ft
Sump: 151.00 ft

Inlet: I-3
Rim: 159.40 ft
Sump: 155.30 ft

Outlet: Outlet
Rim: 155.00 ft
Sump: 148.00 ft

Inlet: I-6
Rim: 157.00 ft
Sump: 152.80 ft



Pipe: P-3
Up Invert: 156.20 ft
Dn Invert: 155.50 ft
Length: 172.00 ft
Size: 18 inch

Pipe: P-5
Up Invert: 154.50 ft
Dn Invert: 152.80 ft
Length: 180.00 ft
Size: 30 inch

Pipe: P-4
Up Invert: 155.30 ft
Dn Invert: 154.60 ft
Length: 280.00 ft
Size: 30 inch

Pipe: P-8
Up Invert: 151.00 ft
Dn Invert: 148.00 ft
Length: 119.00 ft
Size: 36 inch

Pipe: P-7
Up Invert: 152.80 ft
Dn Invert: 151.00 ft
Length: 140.00 ft
Size: 36 inch

System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream	Downstream	-Section- Shape	Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream	Downstream (ft)	-HGL- Upstream	Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-6	11.00	0.00	11.00	I-7	I-6	Circular	15 inch	158.00	153.50	162.50	157.00	159.81	156.22	0.029000	11.00	124.00
P-3	6.70	0.00	6.70	I-4	I-3	Circular	18 inch	156.20	155.50	159.30	159.40	160.10	159.40	0.036290	12.31	172.00
P-1	12.00	0.00	12.00	I-1	I-2	Circular	18 inch	160.00	159.50	163.60	163.60	162.20	161.67	0.004069	6.70	41.00
P-2	12.00	12.00	24.00	I-2	I-3	Circular	24 inch	159.40	155.40	163.60	159.40	161.14	159.40	0.004070	6.70	136.00
P-4	4.60	30.70	35.30	I-3	I-5	Circular	30 inch	155.30	154.60	159.40	160.00	160.40	158.33	0.012195	12.00	280.00
P-5	3.60	35.30	38.90	I-5	I-6	Circular	30 inch	154.50	152.80	160.00	157.00	157.84	156.22	0.013052	11.60	180.00
P-7	1.00	49.90	50.90	I-6	J-1	Circular	36 inch	152.80	151.00	157.00	157.00	155.82	155.00	0.013943	24.00	140.00
P-8	N/A	50.90	50.90	J-1	Outlet	Circular	36 inch	151.00	148.00	155.00	155.00	155.59	154.90	0.009444	39.86	119.00
														0.005824	50.90	
														0.012857	75.62	
														0.029412	38.79	
														0.007407	35.30	
														0.002500	20.51	
														0.008995	38.90	
														0.005824	50.90	
														0.025210	105.90	

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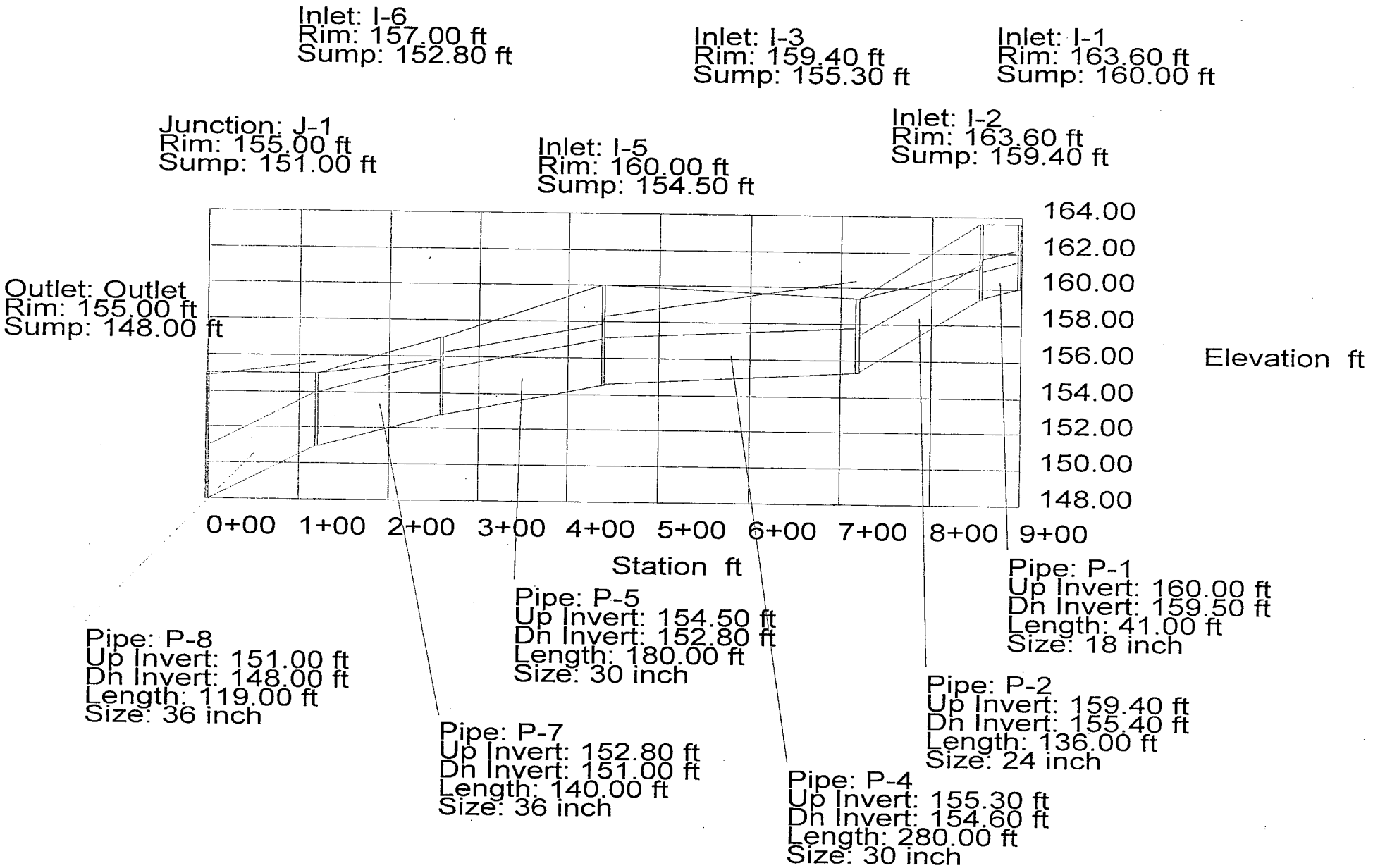
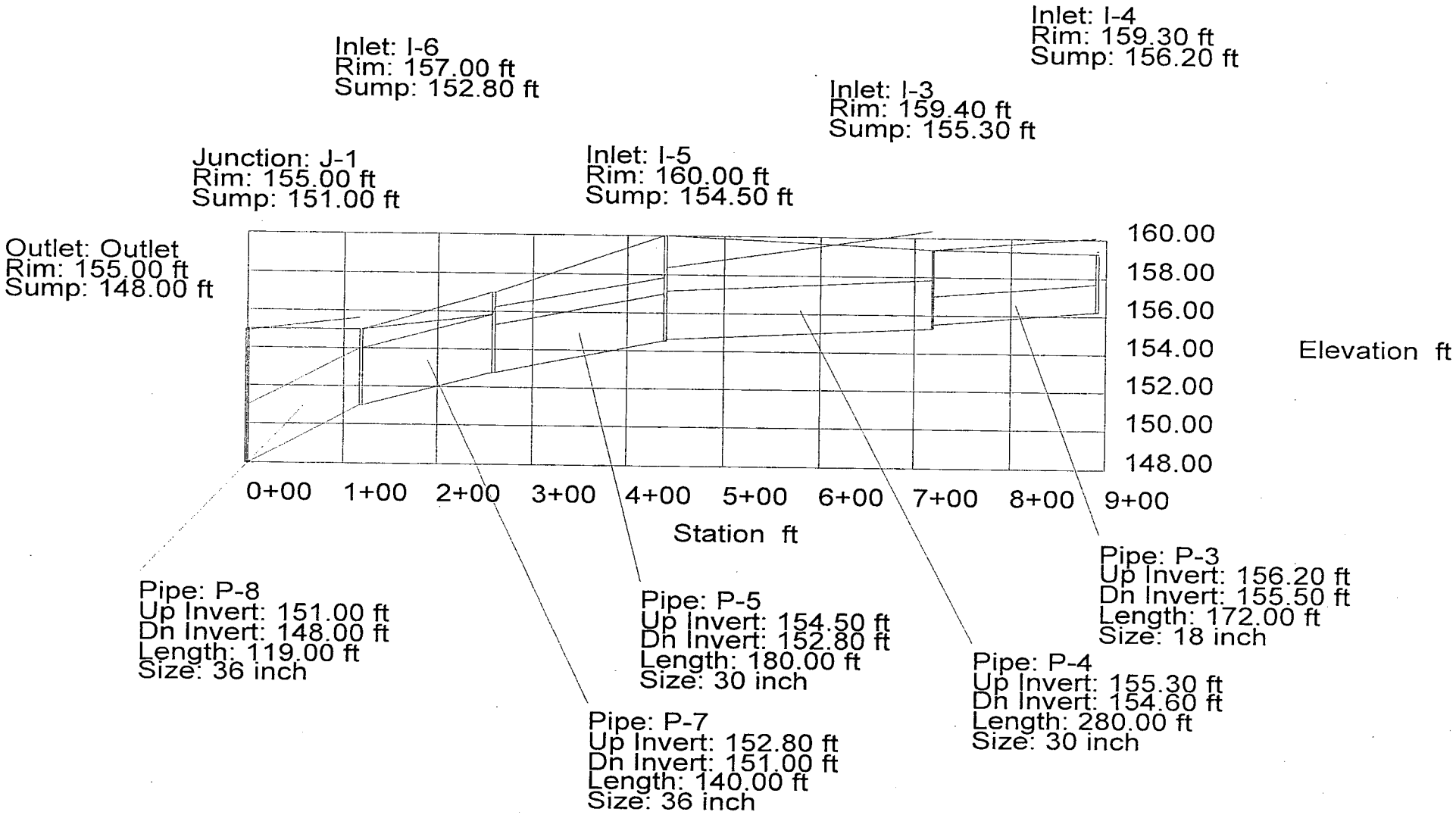
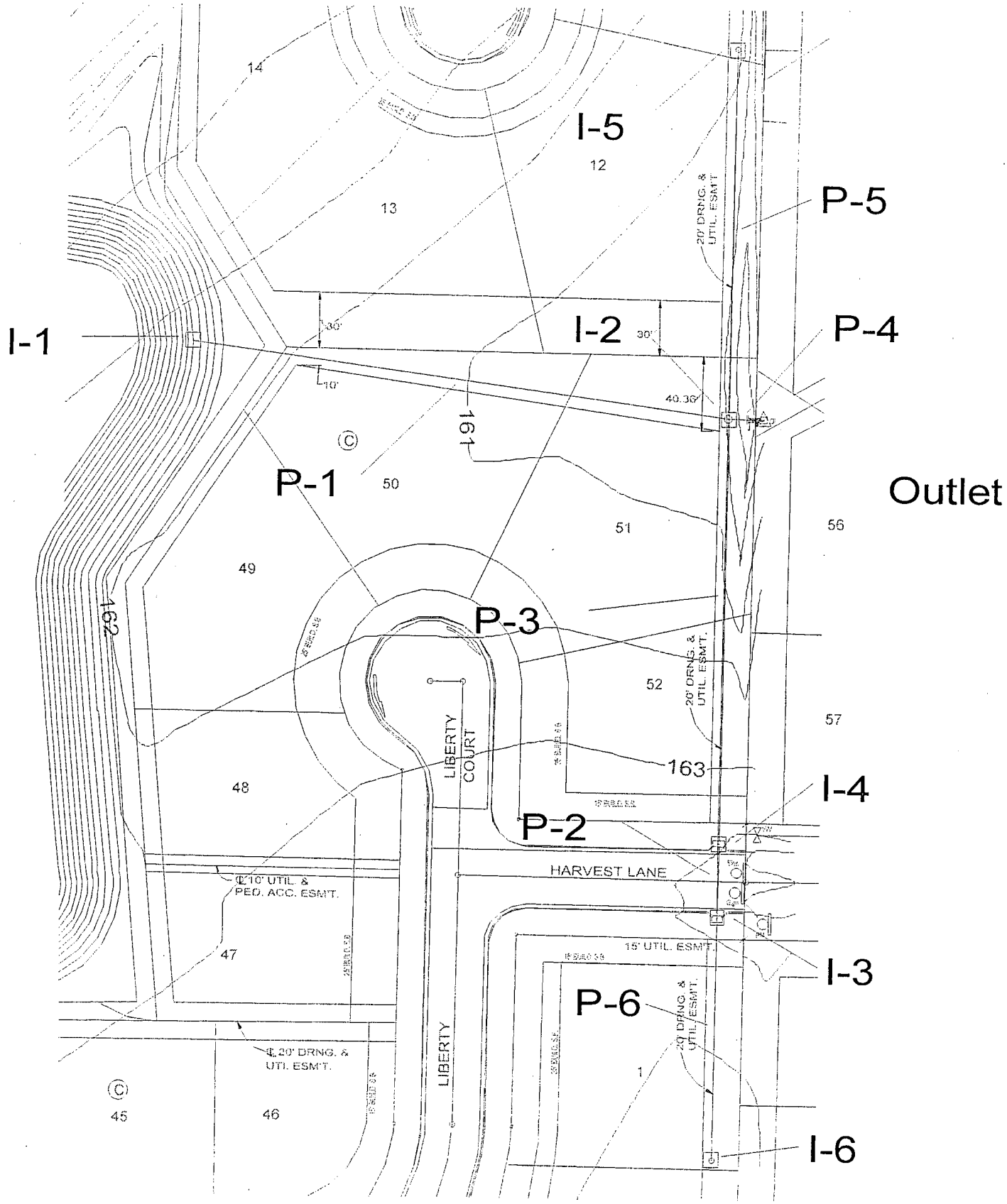
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666


Inlet: I-6
Rim: 157.00 ft
Sump: 152.80 ft
Inlet: I-3
Rim: 159.40 ft
Sump: 155.30 ft
Inlet: I-1
Rim: 163.60 ft
Sump: 160.00 ft
Junction: J-1
Rim: 155.00 ft
Sump: 151.00 ft
Inlet: I-5
Rim: 160.00 ft
Sump: 154.50 ft
Inlet: I-2
Rim: 163.60 ft
Sump: 159.40 ft
Outlet: Outlet
Rim: 155.00 ft
Sump: 148.00 ft
164.00
162.00
160.00
158.00
156.00
154.00
152.00
150.00
148.00
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-1
Up Invert: 160.00 ft
Dn Invert: 159.50 ft
Length: 41.00 ft
Size: 18 inch
Pipe: P-2
Up Invert: 159.40 ft
Dn Invert: 155.40 ft
Length: 136.00 ft
Size: 24 inch
Pipe: P-4
Up Invert: 155.30 ft
Dn Invert: 154.60 ft
Length: 280.00 ft
Size: 30 inch
Pipe: P-5
Up Invert: 154.50 ft
Dn Invert: 152.80 ft
Length: 180.00 ft
Size: 30 inch
Pipe: P-7
Up Invert: 152.80 ft
Dn Invert: 151.00 ft
Length: 140.00 ft
Size: 36 inch
Pipe: P-8
Up Invert: 151.00 ft
Dn Invert: 148.00 ft
Length: 119.00 ft
Size: 36 inch



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

Stormwater Sewer #3
StormCad Analysis



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

System Report

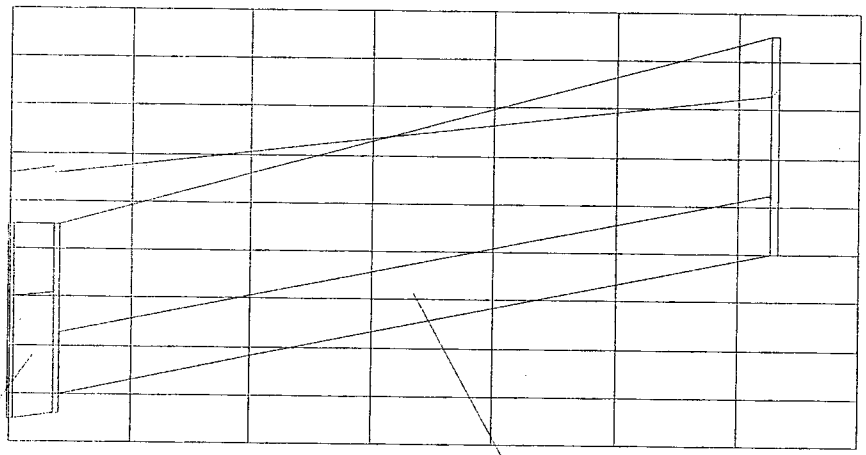
Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream Downstream	-Section- Shape Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-5	4.10	0.00	4.10	I-5	Circular	155.80	155.00	159.70	160.41	0.004029	4.10	200.00
				I-2	15 inch			158.50	159.60	0.004000	4.09	
P-6	4.10	0.00	4.10	I-6	Circular	158.20	157.70	160.90	161.29	0.004029	4.10	131.00
				I-3	15 inch			164.40	160.76	0.003817	3.99	
P-2	2.60	4.10	6.70	I-3	Circular	157.60	157.40	164.40	160.65	0.004069	6.70	41.00
				I-4	18 inch			164.40	160.48	0.004878	7.34	
P-3	6.20	6.70	12.90	I-4	Circular	157.30	155.00	164.40	160.35	0.003252	12.90	230.00
				I-2	24 inch			158.50	159.60	0.010000	22.62	
P-1	4.90	0.00	4.90	I-1	Circular	158.00	155.00	162.50	161.30	0.005754	4.90	296.00
				I-2	15 inch			158.50	159.60	0.010135	6.50	
P-4	7.20	21.90	29.10	I-2	Circular	154.60	154.50	158.50	159.70	0.005034	29.10	19.00
				Outlet	30 inch			158.50	159.60	0.005263	29.76	

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

Inlet: I-2
Rim: 158.50 ft
Sump: 154.60 ft

Inlet: I-1
Rim: 162.50 ft
Sump: 158.00 ft

Outlet: Outlet
Rim: 158.50 ft
Sump: 154.50 ft



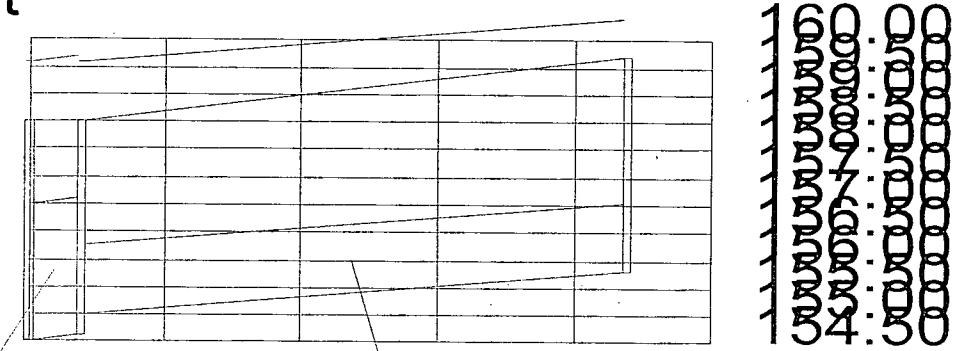
Pipe: P-4
Up Invert: 154.60 ft
Dn Invert: 154.50 ft
Length: 19.00 ft
Size: 30 inch

Pipe: P-1
Up Invert: 158.00 ft
Dn Invert: 155.00 ft
Length: 296.00 ft
Size: 15 inch

Inlet: I-2
Rim: 158.50 ft
Sump: 154.60 ft

Inlet: I-5
Rim: 159.70 ft
Sump: 155.80 ft

Outlet: Outlet
Rim: 158.50 ft
Sump: 154.50 ft



Pipe: P-4
Up Invert: 154.60 ft
Dn Invert: 154.50 ft
Length: 19.00 ft
Size: 30 inch

Pipe: P-5
Up Invert: 155.80 ft
Dn Invert: 155.00 ft
Length: 200.00 ft
Size: 15 inch

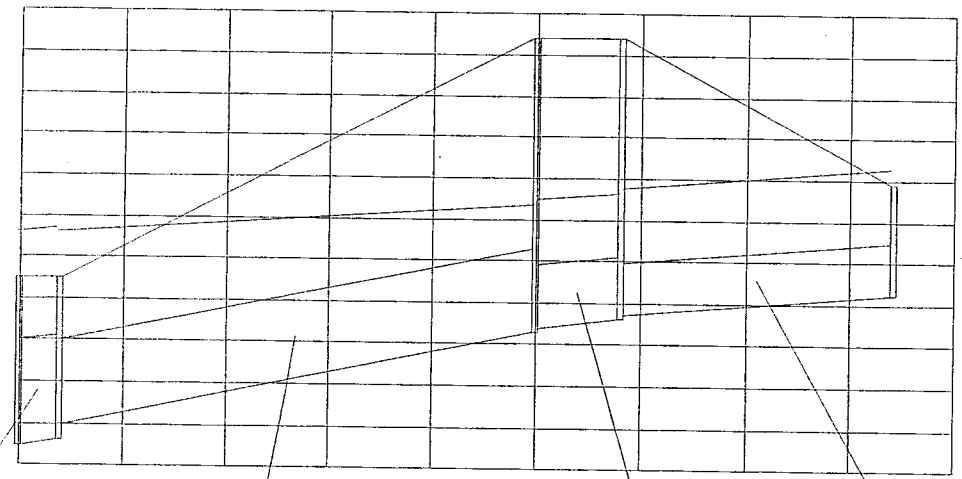
Inlet: I-2
Rim: 158.50 ft
Sump: 154.60 ft

Inlet: I-3
Rim: 164.40 ft
Sump: 157.60 ft

Inlet: I-6
Rim: 160.90 ft
Sump: 158.20 ft

Inlet: I-4
Rim: 164.40 ft
Sump: 157.30 ft

Outlet: Outlet
Rim: 158.50 ft
Sump: 154.50 ft



Pipe: P-6
Up Invert: 158.20 ft
Dn Invert: 157.70 ft
Length: 131.00 ft
Size: 15 inch

Pipe: P-3
Up Invert: 157.30 ft
Dn Invert: 155.00 ft
Length: 230.00 ft
Size: 24 inch

Pipe: P-4
Up Invert: 154.60 ft
Dn Invert: 154.50 ft
Length: 19.00 ft
Size: 30 inch

Pipe: P-2
Up Invert: 157.60 ft
Dn Invert: 157.40 ft
Length: 41.00 ft
Size: 18 inch

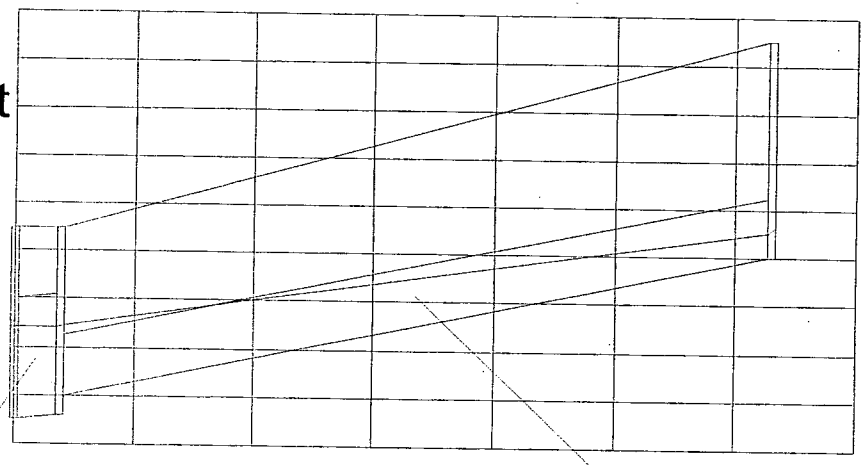
System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream Downstream	-Section- Shape Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-5	1.40	0.00	1.40	I-5	Circular	155.80	155.00	159.70	156.54	0.000560	1.40	200.00
				I-2	15 inch			158.50	156.46	0.004000	4.09	
P-6	1.40	0.00	1.40	I-6	Circular	158.20	157.70	160.90	158.71	0.003398	1.40	131.00
				I-3	15 inch			164.40	158.32	0.003817	3.99	
P-2	1.10	1.40	2.50	I-3	Circular	157.60	157.40	164.40	158.22	0.002978	2.50	41.00
				I-4	18 inch			164.40	158.19	0.004878	7.34	
P-3	2.10	2.50	4.60	I-4	Circular	157.30	155.00	164.40	158.05	0.007909	4.60	230.00
				I-2	24 inch			158.50	156.46	0.010000	22.62	
P-1	1.80	0.00	1.80	I-1	Circular	158.00	155.00	162.50	158.53	0.007572	1.80	296.00
				I-2	15 inch			158.50	156.46	0.010135	6.50	
P-4	2.50	7.80	10.30	I-2	Circular	154.60	154.50	158.50	156.40	0.000784	10.30	19.00
				Outlet	30 inch			158.50	156.40	0.005263	29.76	

Inlet: I-2
Rim: 158.50 ft
Sump: 154.60 ft

Inlet: I-1
Rim: 162.50 ft
Sump: 158.00 ft

Outlet: Outlet
Rim: 158.50 ft
Sump: 154.50 ft



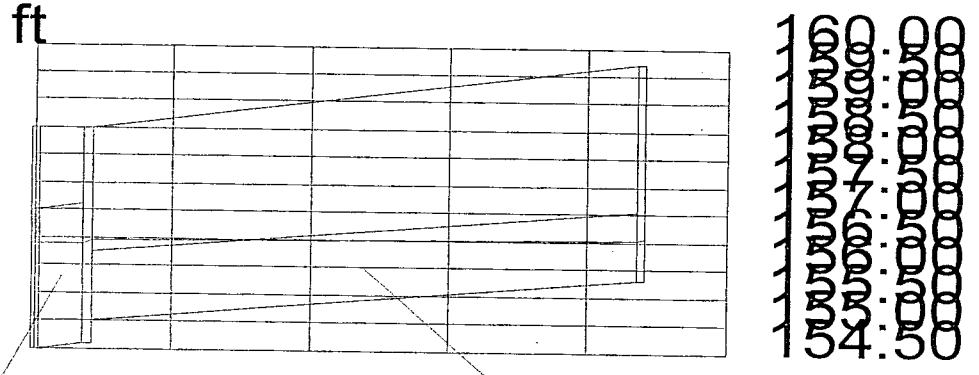
Pipe: P-4
Up Invert: 154.60 ft
Dn Invert: 154.50 ft
Length: 19.00 ft
Size: 30 inch

Pipe: P-1
Up Invert: 158.00 ft
Dn Invert: 155.00 ft
Length: 296.00 ft
Size: 15 inch

Inlet: I-2
Rim: 158.50 ft
Sump: 154.60 ft

Inlet: I-5
Rim: 159.70 ft
Sump: 155.80 ft

Outlet: Outlet
Rim: 158.50 ft
Sump: 154.50 ft



Pipe: P-4
Up Invert: 154.60 ft
Dn Invert: 154.50 ft
Length: 19.00 ft
Size: 30 inch

Pipe: P-5
Up Invert: 155.80 ft
Dn Invert: 155.00 ft
Length: 200.00 ft
Size: 15 inch

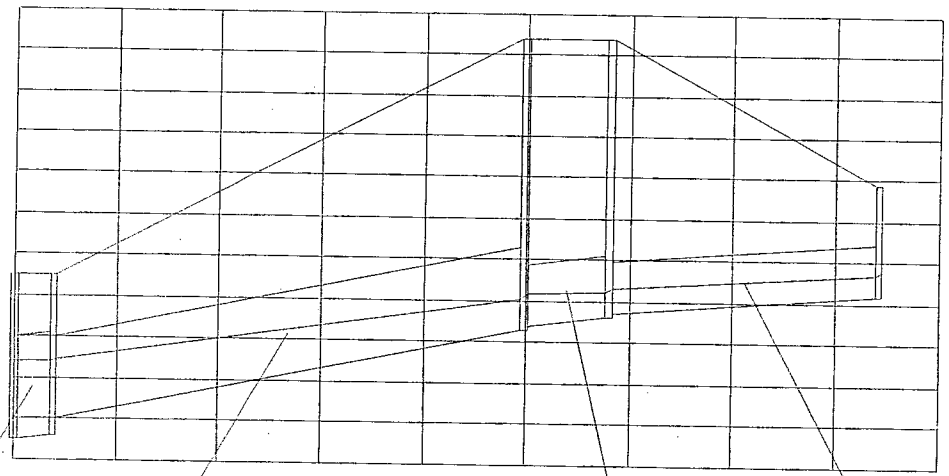
Inlet: I-3
Rim: 164.40 ft
Sump: 157.60 ft

Inlet: I-2
Rim: 158.50 ft
Sump: 154.60 ft

Inlet: I-4
Rim: 164.40 ft
Sump: 157.30 ft

Inlet: I-6
Rim: 160.90 ft
Sump: 158.20 ft

Outlet: Outlet
Rim: 158.50 ft
Sump: 154.50 ft



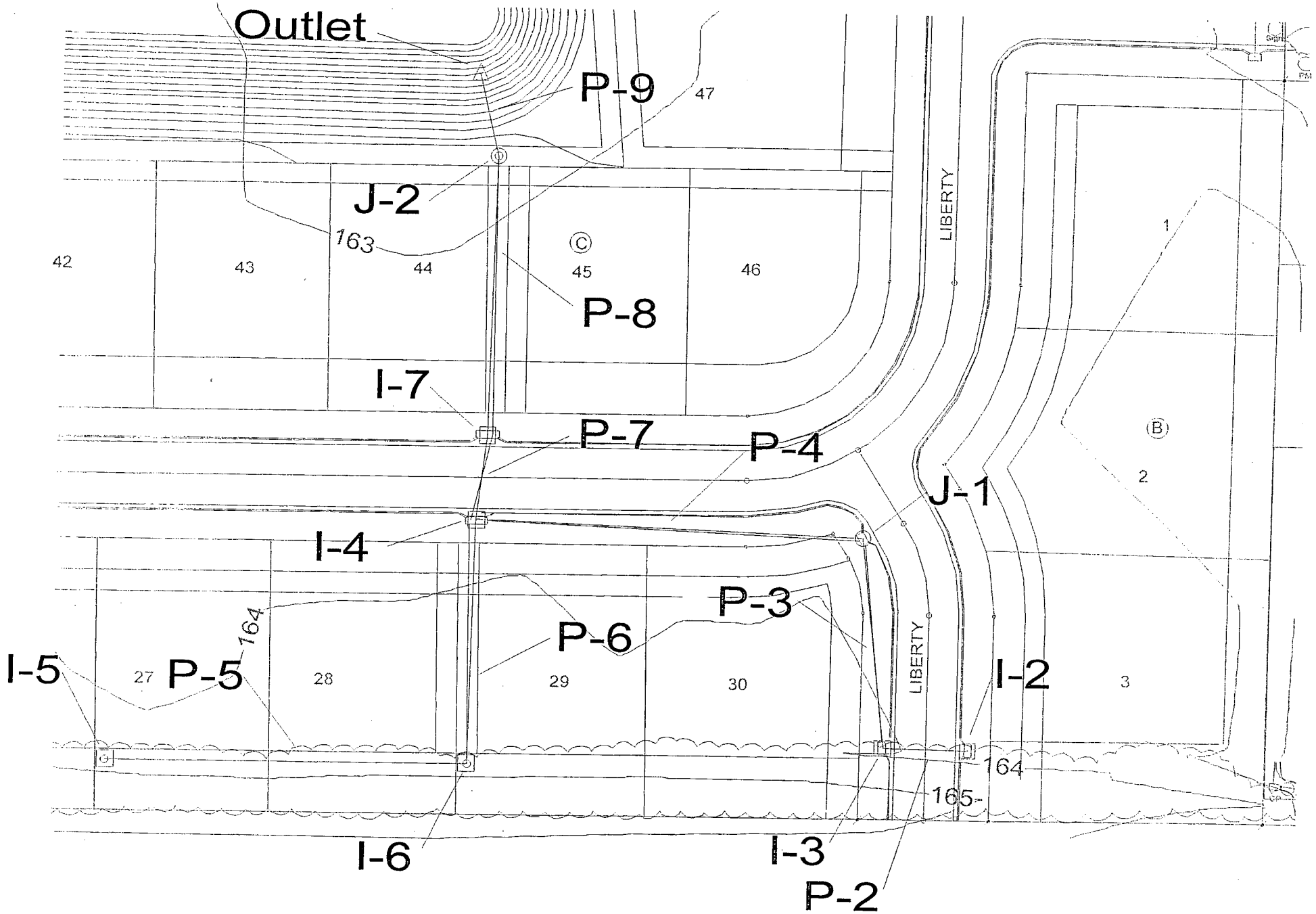
Pipe: P-3
Up Invert: 157.30 ft
Dn Invert: 155.00 ft
Length: 230.00 ft
Size: 24 inch

Pipe: P-6
Up Invert: 158.20 ft
Dn Invert: 157.70 ft
Length: 131.00 ft
Size: 15 inch

Pipe: P-4
Up Invert: 154.60 ft
Dn Invert: 154.50 ft
Length: 19.00 ft
Size: 30 inch

Pipe: P-2
Up Invert: 157.60 ft
Dn Invert: 157.40 ft
Length: 41.00 ft
Size: 18 inch

Stormwater Sewer #4
StormCad Analysis



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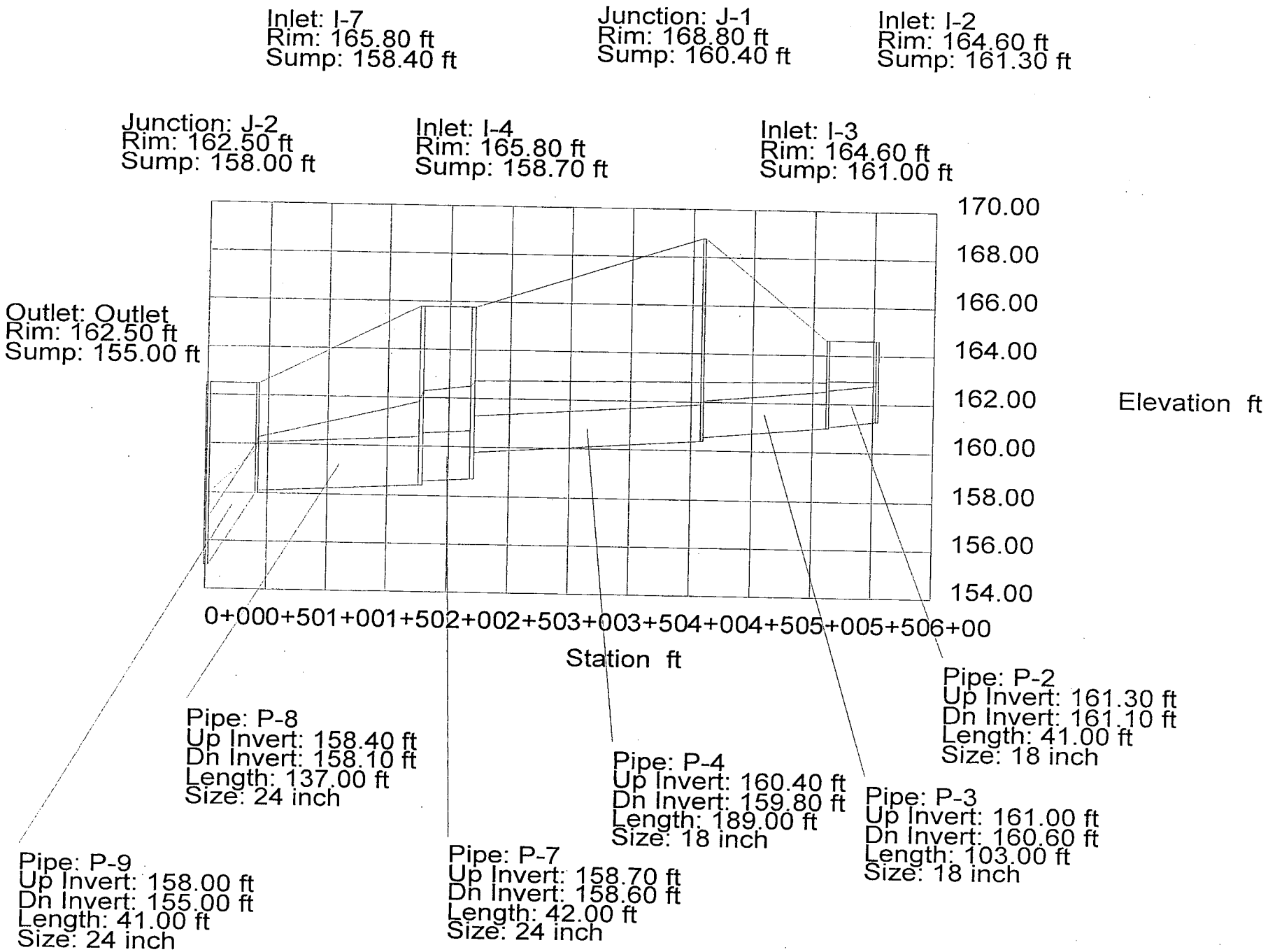
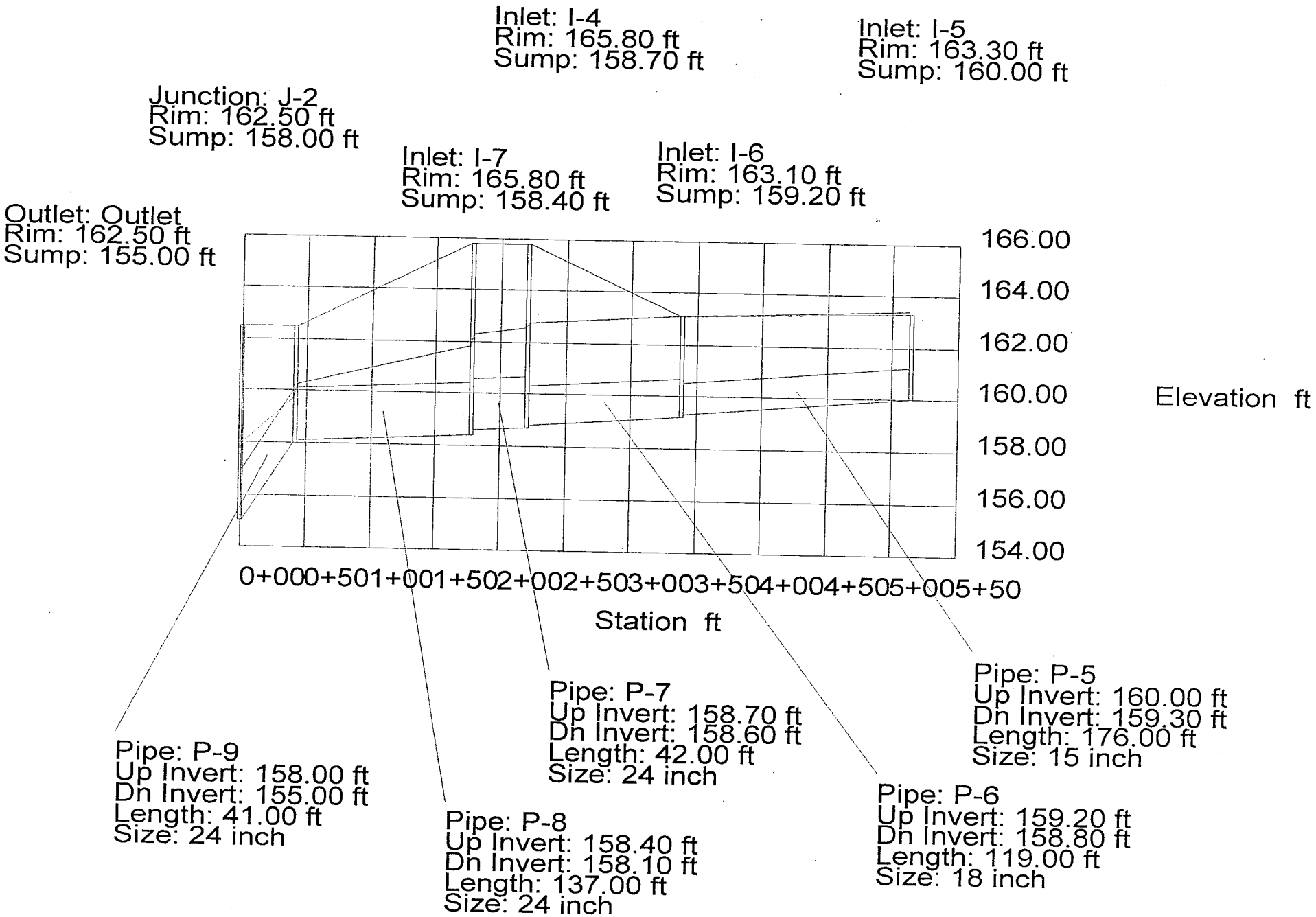
Baughman Company, P.A.
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

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

System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream Downstream	-Section- Shape Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-5	2.60	0.00	2.60	I-5	Circular	160.00	159.30	163.30	163.39	0.001620	2.60	176.00
				I-6	15 inch			163.10	163.10	0.003977	4.07	
P-6	3.10	2.60	5.70	I-6	Circular	159.20	158.80	163.10	163.10	0.002945	5.70	119.00
				I-4	18 inch			165.80	162.75	0.003361	6.09	
P-2	1.50	0.00	1.50	I-2	Circular	161.30	161.10	164.60	162.95	0.000204	1.50	41.00
				I-3	18 inch			164.60	162.94	0.004878	7.34	
P-3	1.00	1.50	2.50	I-3	Circular	161.00	160.60	164.60	162.93	0.000566	2.50	103.00
				J-1	18 inch			168.80	162.87	0.003883	6.55	
P-4	N/A	2.50	2.50	J-1	Circular	160.40	159.80	168.80	162.85	0.000566	2.50	189.00
				I-4	18 inch			165.80	162.75	0.003175	5.92	
P-7	8.30	8.20	16.50	I-4	Circular	158.70	158.60	165.80	162.53	0.005320	16.50	42.00
				I-7	24 inch			165.80	162.31	0.002381	11.04	
P-8	7.70	16.50	24.20	I-7	Circular	158.40	158.10	165.80	161.85	0.011445	24.20	137.00
				J-2	24 inch			162.50	160.28	0.002190	10.59	
P-9	N/A	24.20	24.20	J-2	Circular	158.00	155.00	162.50	159.74	0.046313	24.20	41.00
				Outlet	24 inch			162.50	158.00	0.073171	61.19	

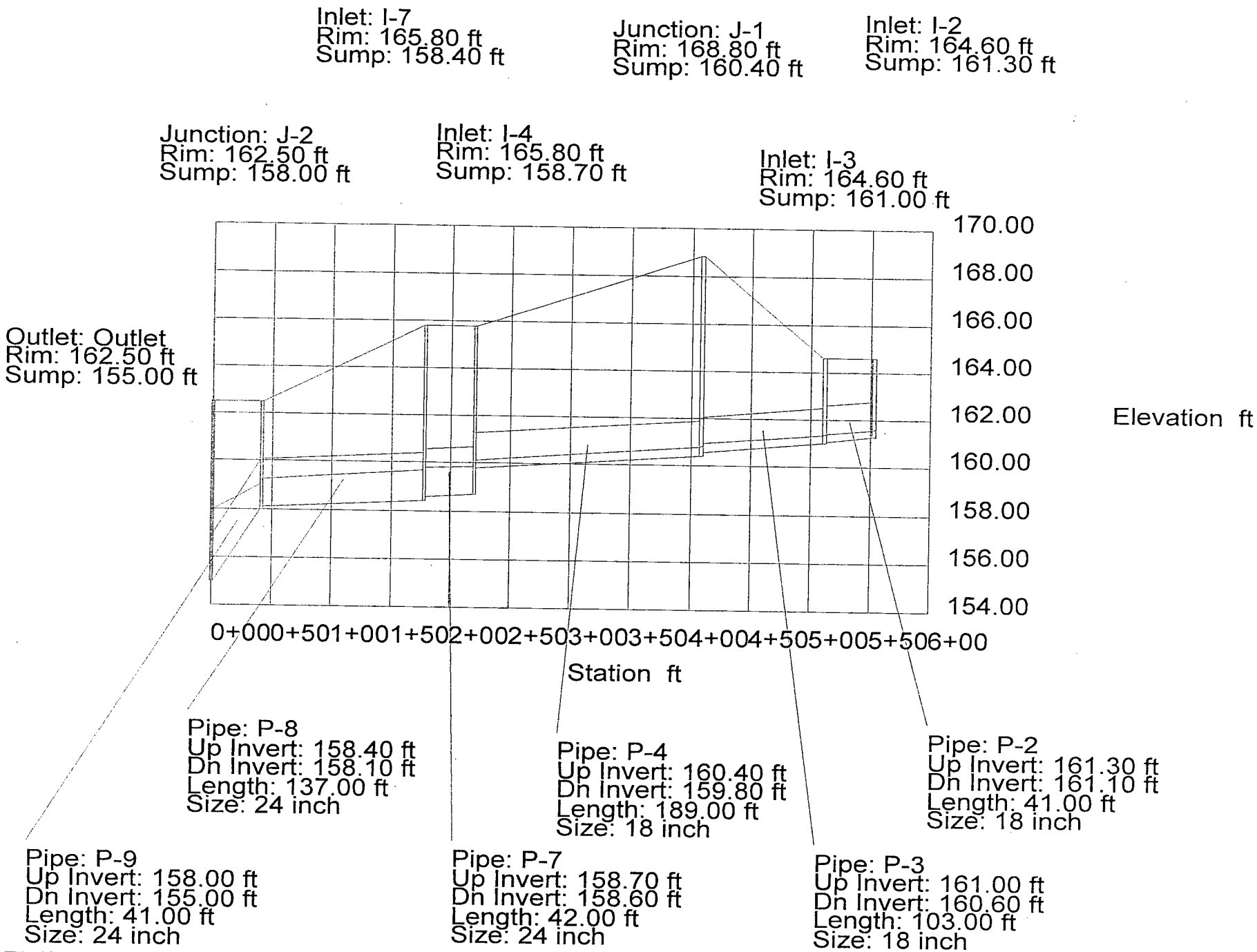

Inlet: I-7
Rim: 165.80 ft
Sump: 158.40 ft
Junction: J-1
Rim: 168.80 ft
Sump: 160.40 ft
Inlet: I-2
Rim: 164.60 ft
Sump: 161.30 ft
Junction: J-2
Rim: 162.50 ft
Sump: 158.00 ft
Inlet: I-4
Rim: 165.80 ft
Sump: 158.70 ft
Inlet: I-3
Rim: 164.60 ft
Sump: 161.00 ft
Outlet: Outlet
Rim: 162.50 ft
Sump: 155.00 ft
170.00
168.00
166.00
164.00
162.00
160.00
158.00
156.00
154.00
Elevation ft
0+000+501+001+502+002+503+003+504+004+505+005+506+00
Station ft
Pipe: P-8
Up Invert: 158.40 ft
Dn Invert: 158.10 ft
Length: 137.00 ft
Size: 24 inch
Pipe: P-4
Up Invert: 160.40 ft
Dn Invert: 159.80 ft
Length: 189.00 ft
Size: 18 inch
Pipe: P-2
Up Invert: 161.30 ft
Dn Invert: 161.10 ft
Length: 41.00 ft
Size: 18 inch
Pipe: P-3
Up Invert: 161.00 ft
Dn Invert: 160.60 ft
Length: 103.00 ft
Size: 18 inch
Pipe: P-9
Up Invert: 158.00 ft
Dn Invert: 155.00 ft
Length: 41.00 ft
Size: 24 inch
Pipe: P-7
Up Invert: 158.70 ft
Dn Invert: 158.60 ft
Length: 42.00 ft
Size: 24 inch


Inlet: I-4
Rim: 165.80 ft
Sump: 158.70 ft
Inlet: I-5
Rim: 163.30 ft
Sump: 160.00 ft
Junction: J-2
Rim: 162.50 ft
Sump: 158.00 ft
Inlet: I-7
Rim: 165.80 ft
Sump: 158.40 ft
Inlet: I-6
Rim: 163.10 ft
Sump: 159.20 ft
Outlet: Outlet
Rim: 162.50 ft
Sump: 155.00 ft
166.00
164.00
162.00
160.00
158.00
156.00
154.00
Elevation ft
0+000+501+001+502+002+503+003+504+004+505+005+50
Station ft
Pipe: P-9
Up Invert: 158.00 ft
Dn Invert: 155.00 ft
Length: 41.00 ft
Size: 24 inch
Pipe: P-8
Up Invert: 158.40 ft
Dn Invert: 158.10 ft
Length: 137.00 ft
Size: 24 inch
Pipe: P-7
Up Invert: 158.70 ft
Dn Invert: 158.60 ft
Length: 42.00 ft
Size: 24 inch
Pipe: P-6
Up Invert: 159.20 ft
Dn Invert: 158.80 ft
Length: 119.00 ft
Size: 18 inch
Pipe: P-5
Up Invert: 160.00 ft
Dn Invert: 159.30 ft
Length: 176.00 ft
Size: 15 inch

System Report

Pipe	Additional Flow (cfs)	Total Upstream Added (cfs)	Structure Discharge (cfs)	-Node- Upstream Downstream	-Section- Shape Size	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	-Ground- Upstream Downstream (ft)	-HGL- Upstream Downstream (ft)	-Slope- Energy Constructed (ft/ft)	-Section- Discharge Capacity (cfs)	Length (ft)
P-5	0.90	0.00	0.90	I-5	Circular	160.00	159.30	163.30	160.40	0.002694	0.90	176.00
				I-6	15 inch			163.10	160.01	0.003977	4.07	
P-6	1.10	0.90	2.00	I-6	Circular	159.20	158.80	163.10	159.97	0.000760	2.00	119.00
				I-4	18 inch			165.80	159.93	0.003361	6.09	
P-2	0.50	0.00	0.50	I-2	Circular	161.30	161.10	164.60	161.57	0.004316	0.50	41.00
				I-3	18 inch			164.60	161.43	0.004878	7.34	
P-3	0.40	0.50	0.90	I-3	Circular	161.00	160.60	164.60	161.38	0.003908	0.90	103.00
				J-1	18 inch			168.80	160.95	0.003883	6.55	
P-4	N/A	0.90	0.90	J-1	Circular	160.40	159.80	168.80	160.80	0.003218	0.90	189.00
				I-4	18 inch			165.80	160.15	0.003175	5.92	
P-7	2.80	2.90	5.70	I-4	Circular	158.70	158.60	165.80	159.86	0.001481	5.70	42.00
				I-7	24 inch			165.80	159.81	0.002381	11.04	
P-8	2.60	5.70	8.30	I-7	Circular	158.40	158.10	165.80	159.69	0.002734	8.30	137.00
				J-2	24 inch			162.50	159.23	0.002190	10.59	
P-9	N/A	8.30	8.30	J-2	Circular	158.00	155.00	162.50	159.03	0.032294	8.30	41.00
				Outlet	24 inch			162.50	158.00	0.073171	61.19	

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



Project Title: Liberty Park 3rd Addition, system 4
f:\...\liberty park 3rd\stormcad\sys4\sys4_2.stm
03/30/04 09:15:35 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-4
Rim: 165.80 ft
Sump: 158.70 ft

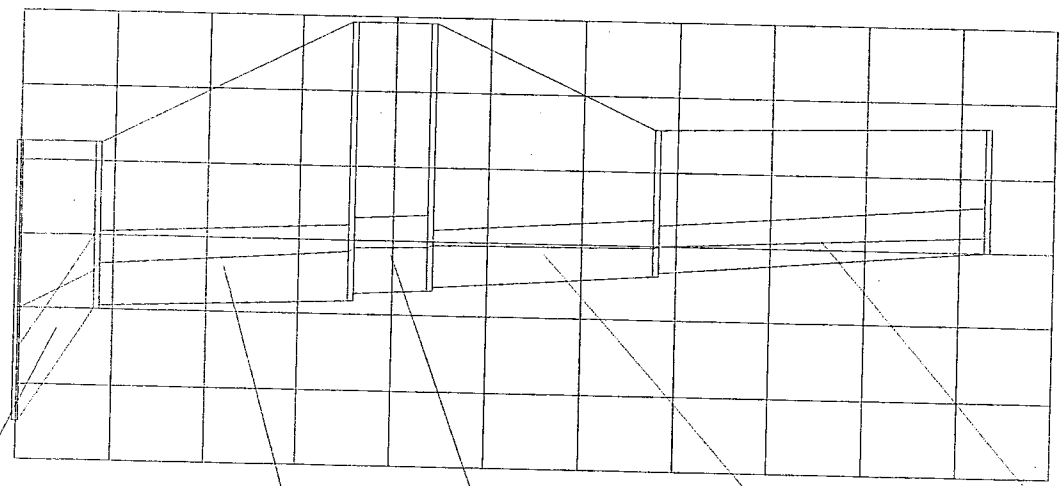
Inlet: I-5
Rim: 163.30 ft
Sump: 160.00 ft

Junction: J-2
Rim: 162.50 ft
Sump: 158.00 ft

Inlet: I-7
Rim: 165.80 ft
Sump: 158.40 ft

Inlet: I-6
Rim: 163.10 ft
Sump: 159.20 ft

Outlet: Outlet
Rim: 162.50 ft
Sump: 155.00 ft



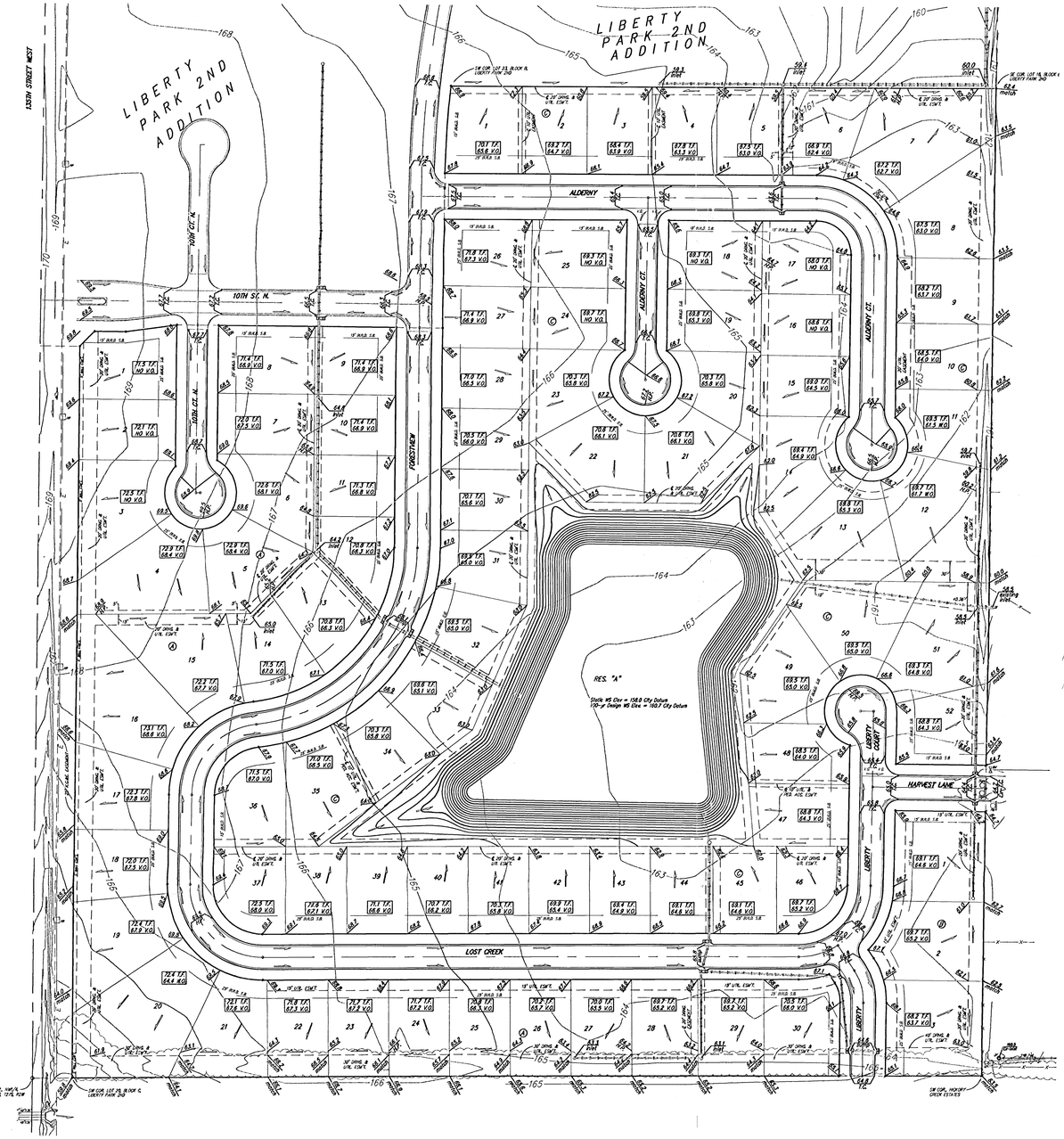
Pipe: P-5
Up Invert: 160.00 ft
Dn Invert: 159.30 ft
Length: 176.00 ft
Size: 15 inch

Pipe: P-7
Up Invert: 158.70 ft
Dn Invert: 158.60 ft
Length: 42.00 ft
Size: 24 inch

Pipe: P-9
Up Invert: 158.00 ft
Dn Invert: 155.00 ft
Length: 41.00 ft
Size: 24 inch

Pipe: P-6
Up Invert: 159.20 ft
Dn Invert: 158.80 ft
Length: 119.00 ft
Size: 18 inch

Pipe: P-8
Up Invert: 158.40 ft
Dn Invert: 158.10 ft
Length: 137.00 ft
Size: 24 inch



PRELIMINARY PLAN
NOT FOR CONSTRUCTION

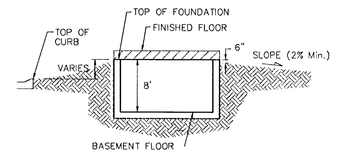
MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION CITY DATUM
13,14, 20–23,	C	163.5
29–35, 38–45	C	163.5
47–50	C	163.5

BENCHMARKS:

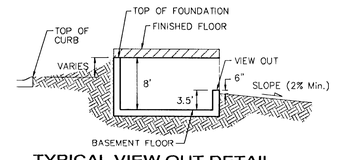
1.35th St. W. & 13th St. N. – City of Wichita Benchmark Disc, SE corner of intersection.
56' East of Centerline
55' South of Centerline
Elev. = 167.83 City Datum
(1355.23 NGVD29)

60d Nail in High Line Pole, 800' W. & 31' N. of the NE cor., NW1/4, Sec. 13, Twp. 27-S, R-2-W
Elev. = 1350.08 NGVD29
(162.68 City Datum)

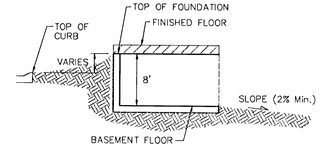
0 80 160
CONTOUR INTERVALS = 1 FOOT



TYPICAL NON-VIEW OUT DETAIL
NO SCALE



TYPICAL VIEW OUT DETAIL
NO SCALE



TYPICAL WALK OUT DETAIL
NO SCALE

NOTES:

Proposed Top of Foundation Elevations Are Shown On Plans. Contractor to Set Finished Floor Elevations.

All Street Elevations Shown on Plans Are for Top of Curb (Full-Height).

This Grading Plan is Designed with View-Out and Walk-Out structures. Elevations for View-Outs are shown as XX.X V.O. Elevations for Walk-Outs are shown as XX.X W.O.

Lot dimensions have been ommited on this plan, refer to the recorded plat for this information.

* May Require Extra Deep Foundation

LIBERTY PARK 3RD ADDITION
GRADING PLAN
WICHITA, KANSAS

BAUGHMAN COMPANY P.A.
ENGINEERING, SURVEYING, & PLANNING
316-262-7271 • 319 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER				SHEET
				OF 1 1
DESIGN	DRAWN	APPROVED	DATE	SCALE
	BLG		3-30-04	NOTED

PRE-GRADE.DWG