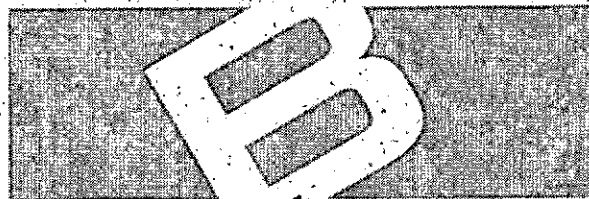


DRAINAGE PLAN
Blackstone
Addition
TO
WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By



Baughman

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

14 NOVEMBER 2005



Baughman

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PLANNING
LANDSCAPE
ARCHITECTURE

Baughman Company, P.A.
315 Ellis
Wichita, Kansas 67211
P 316-262-7271 F 316-262-0149

Drainage Plan

BLACKSTONE ADDITION

Wichita, Sedgwick County, Kansas

Baughman Company, P.A.
November 14, 2005

Existing Site Conditions

The proposed Blackstone Addition is located north on 13th Street North and in between 135th and 151st Streets West. The property is bounded on the west by Dry Creek. The development consists of approximately 60 acres of existing agricultural ground.

The soil types on the site consist of Type B and Type C. The western portion for the site is Type B whereas the Eastern portion of the site is Type C. Type D soil is present near the center of the property. All of the soil types are of the silty loam variety.

The Preliminary FEMA FIRM map (as provided by Sedgwick County) establishes Base Flood Elevations (BFE) ranging from a 1372.0 to a 1364.6 across and adjacent to portions of the proposed site. The site will be filled, where necessary, to raise the property above these elevations. The FEMA Floodway is also located on the site. These locations will be sequestered in Reserves.

Proposed Site Conditions

The proposed site will consist of a residential subdivision with associated streets, ponds, and utilities. The proposed subdivision will consist of approximately 105± lots. Storm sewer will be utilized throughout the subdivision to convey the runoff to detention pond systems. The detention ponds will limit the overall site developed runoff to at least the existing runoff. The pond is located near the center of the development in the Type D soils. The pond will discharge into a storm water sewer system that will drain into the proposed Cheryl's Hollow Addition. Backyard drainage along Dry Creek will be graded to allow direct runoff into the creek. All lots adjacent to Dry Creek will be raised to at least 1 foot above the adjacent BFE to not allow floodwaters to enter the development. All storm water sewer will also be protected from flood water inundation. The ditch along 13th Street North has a high point at an elevation of 1272.3. This elevation is above the BFE at this point and will be graded into Lots 5 and 6 to not allow flood waters to flow in the ditch.

Proposed Pond

The proposed pond will be located near the center of the development. The pond will discharge into the proposed storm sewer system proposed in Cheryl's Hollow Addition. The pond will detain *at least* the developed runoff from the proposed subdivision. The pond's outlet will consist of a 24" RCP.

The static water surface elevation of the pond will be at a 1362.0. The 100-year design water surface elevation will be a 1365.2. The pond will have a maximum 100-yr discharge of 11 cfs. This outlet and storm water system will then drain an eastern portion of the subdivision and discharge approximately 40 cfs into Cheryl's Hollow Addition.

The backyard grades on the lots adjacent to the pond will be graded to 1 foot above 100-year WSE and the minimum openings on the structures on these lots will be 2 feet higher than that of the lowest lot corner.

Pond Summary

Static Water Surface Elevation	=	1362.0
100 year Design Surface Elevation	=	1365.2
Outlet	=	24" RCP

Offsite Flow

There is very little, if any, offsite flow. The ditch along 13th Street will carry drainage from Lots 1-6, Block C. A portion of the ditch as well as 13th Street is located in Zone AO (depth 1"). Upon development, the existing high point of 1372.0 will be graded into the corner of Lot 5 to not allow the flood waters to inundate the ditch flowing to the east.

Detention Summary

The proposed development meets or exceeds current City of Wichita requirements pertaining to detention of existing and proposed runoff rates. The following summary chart relates existing and proposed discharges at critical points of the site.

POINT	Q ₂ Existing	Q ₂ Proposed	Q ₁₀₀ Existing	Q ₁₀₀ Proposed
Overall Site Runoff Produced	104 cfs	122 cfs	266 cfs	311 cfs
North Site Basin	12 cfs	4 cfs	31 cfs	9 cfs
Center Basin	55 cfs	65 cfs	140 cfs	160 cfs

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The detention pond will accept a maximum 100 year runoff of 270 cfs and discharging via a 24" storm water sewer pipe a runoff of 11 cfs. The pond is detaining approximately 260 cfs.

Overall Site Flow Summary

The proposed development provides adequate detention as required by the City of Wichita. The existing site detains approximately 260 cfs in the proposed pond. The existing agricultural land produces approximately 266 cfs of runoff. The proposed development produces approximately 310 cfs of runoff. Per City of Wichita requirements, the pond only has to detain 50 cfs.

NOTES:

The Preliminary FEMA FIRM Map Panel 310 shows a BFE of a 1370 and a 1365 approximately 2000 feet north of 13th Street. The BFE boundary is separated by a Zone X boundary at this point. The BFE listed as a 1370 is an error in mapping and a BFE of 1365 was used in this area. The study of this region in 1999 notes a BFE of 1365 as does the FIS Profile.

The mapped FEMA Floodway encroaches the property in two locations. These locations are contained in Reserves and will not include any development.

All BFE's used in grading and drainage calculations were converted to NGVD. The Preliminary FEMA FIRM Maps are in NAVD.

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StormCad

EXIST
TU = 100% PL

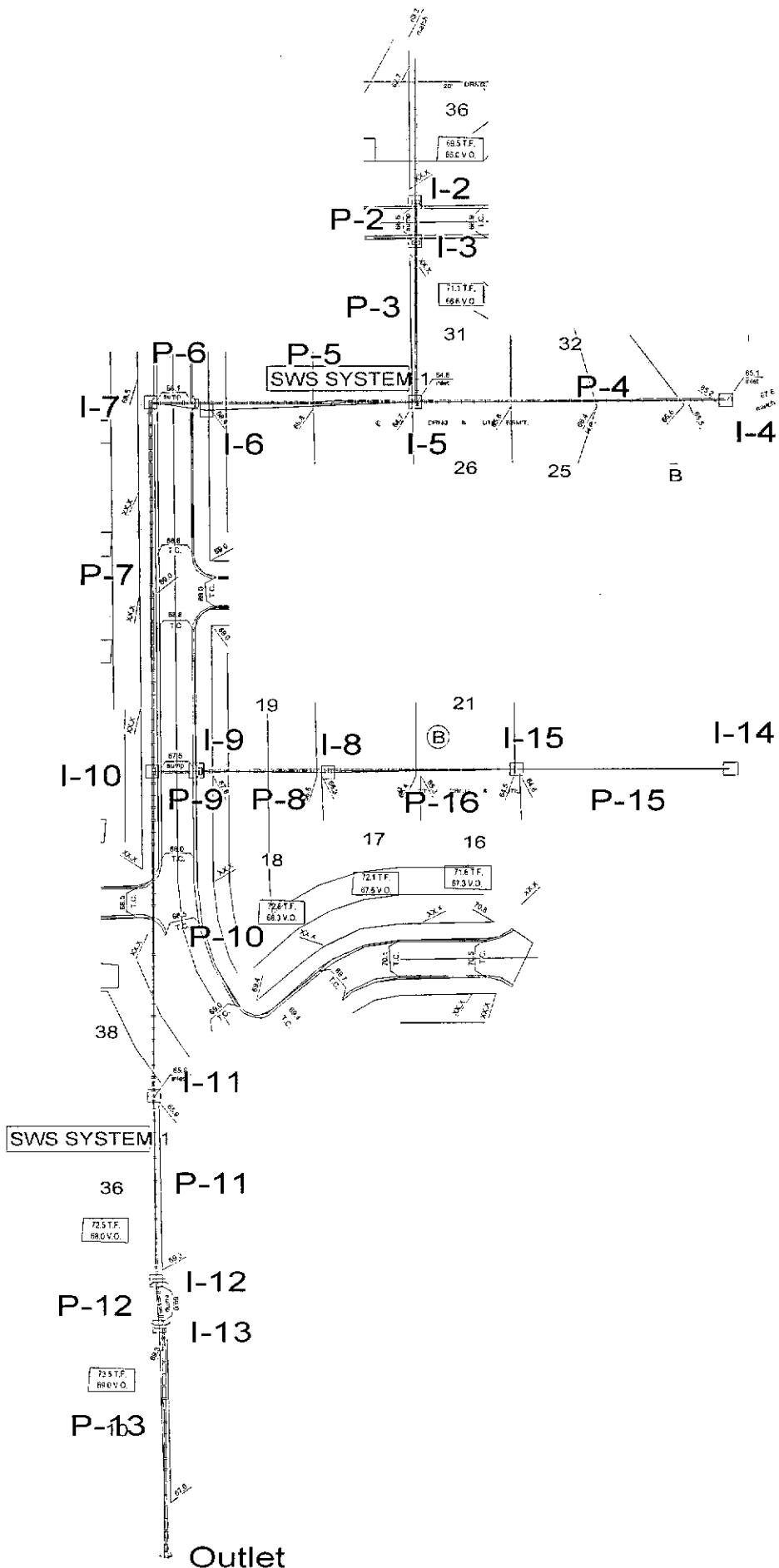
Existing	2yr	5yr	100yr	Developed	2yr	5yr	100yr
Intensity	3.83	4.56	7.37	Intensity	3.83	4.56	7.37
Rational C	0.45	0.5	0.6	Rational C	0.53	0.56	0.7

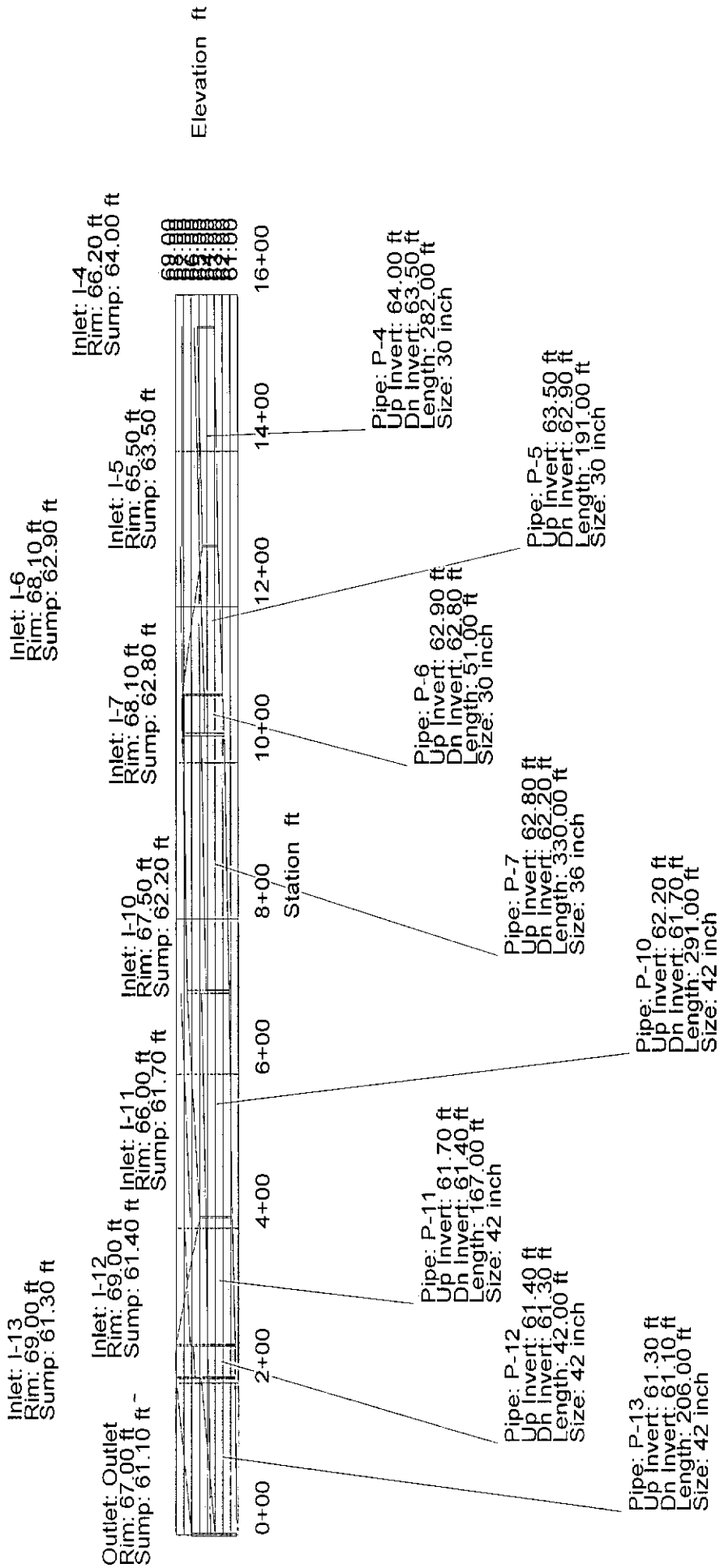
Basin ID	Area acres	Existing Flowrates			Developed Flowrates		
		2-yr cfs	5-yr cfs	100-yr cfs	2-yr cfs	5-yr cfs	100-yr cfs
1	1.0	1.7	2.3	4	2.0	2.6	5
2	1.0	1.7	2.3	4.4	2.0	2.6	5.2
3	0.3	0.5	0.7	1.3	0.6	0.8	1.5
4	1.0	1.7	2.3	4	2.0	2.6	5
5	1.0	1.7	2.3	4.4	2.0	2.6	5.2
6	0.7	1.2	1.6	3.1	1.4	1.8	3.6
7	2.4	4	5	11	5	6	12
8	8.0	14	18	35	16	20	41
9	6.9	12	16	31	14	18	36
10	3.7	6.4	8.4	16	7.5	9.4	19
11	1.3	2.2	3.0	5.7	2.6	3.3	6.7
12	4.8	8.3	11	21	9.7	12	25
13	1.6	2.8	3.6	7.1	3.2	4.1	8.3
14	2.8	4.8	6.4	12	5.7	7.2	14
15	1.3	2.2	3.0	5.7	2.6	3.3	6.7
16	1.7	2.9	3.9	7.5	3.5	4.3	8.8
17	0.9	1.6	2.1	4.0	1.8	2.3	4.6
18	1.1	1.9	2.5	4.9	2.2	2.8	5.7
19	2.1	3.6	4.8	9.3	4.3	5.4	11
20	1.0	1.7	2.3	4.4	2.0	2.6	5.2
21	2.4	4.1	5.5	11	4.9	6.1	12
22	0.4	0.7	0.9	1.8	0.8	1.0	2.1
23	0.2	0.3	0.5	0.9	0.4	0.5	1.0
24	0.4	0.7	0.9	1.8	0.8	1.0	2.1
25	9.0	16	21	40	18	23	46
26	0.4	0.7	0.9	1.8	0.8	1.0	2.1
27	0.0	-	-	-	-	-	-
28	0.8	1.4	1.8	3.5	1.6	2.0	4.1
29	1.4	2.4	3.2	6.2	2.8	3.6	7.2
30	0.6	1.0	1.4	2.7	1.2	1.5	3.1
TOTAL	60.2	104	137	266	122	154	311

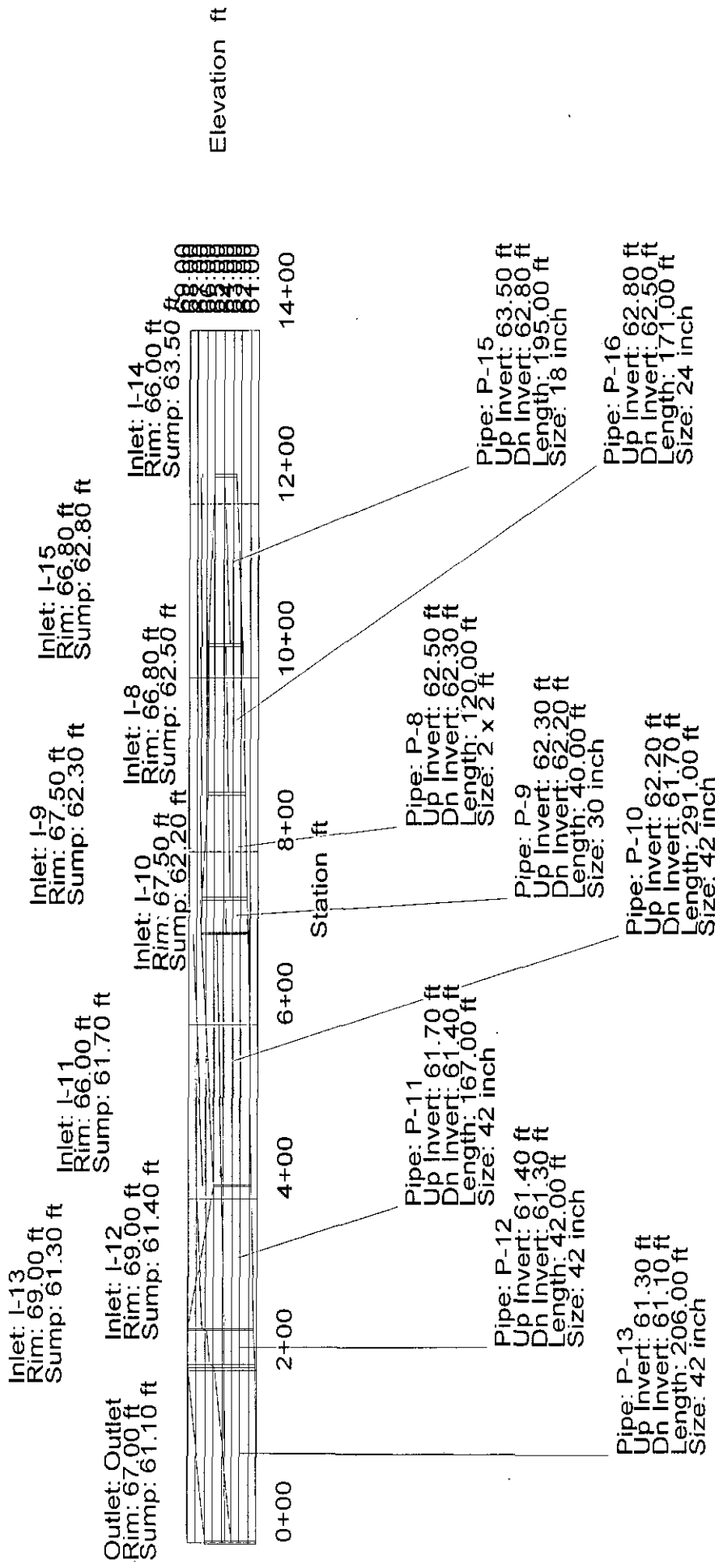
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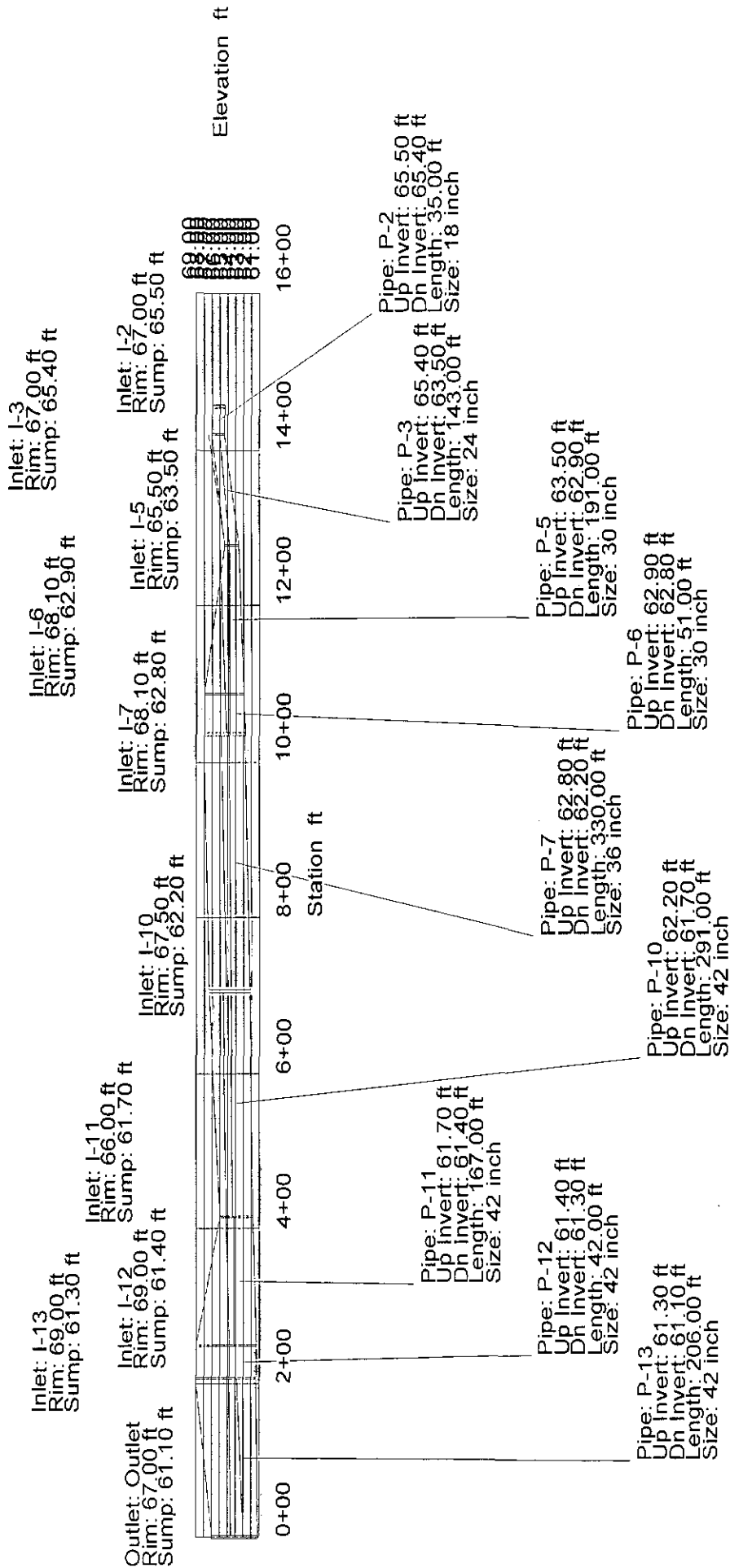
+
7 - 24
24 - 14
1 - 16
30 - 1
2 - 1.4
29 - 1.3
3 - 2.8
14 - 9.9

51.1 cfs









Inlet: I-6
Rim: 68.10 ft
Sump: 62.90 ft

Inlet: I-13
Rim: 69.00 ft
Sump: 61.30 ft

Inlet: I-4
Rim: 66.20 ft
Sump: 64.00 ft

Inlet: I-5
Rim: 65.50 ft
Sump: 63.50 ft

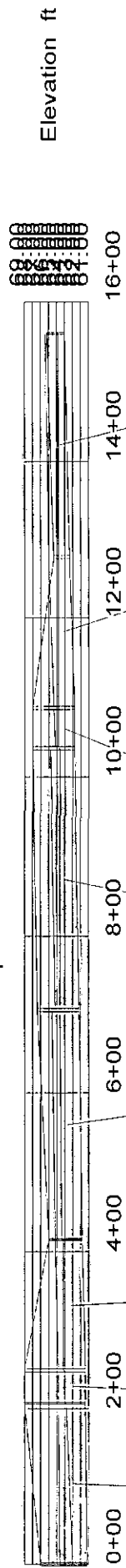
Inlet: I-7
Rim: 68.10 ft
Sump: 62.80 ft

Inlet: I-10
Rim: 67.50 ft
Sump: 62.20 ft

Inlet: I-11
Rim: 66.00 ft
Sump: 61.70 ft

Inlet: I-12
Rim: 69.00 ft
Sump: 61.40 ft

Outlet: Outlet
Rim: 67.00 ft
Sump: 61.10 ft



Pipe: P-4
Up Invert: 64.00 ft
Dh Invert: 63.50 ft
Length: 282.00 ft
Size: 30 inch

Pipe: P-5
Up Invert: 63.50 ft
Dh Invert: 62.90 ft
Length: 191.00 ft
Size: 30 inch

Pipe: P-6
Up Invert: 62.90 ft
Dh Invert: 62.80 ft
Length: 51.00 ft
Size: 30 inch

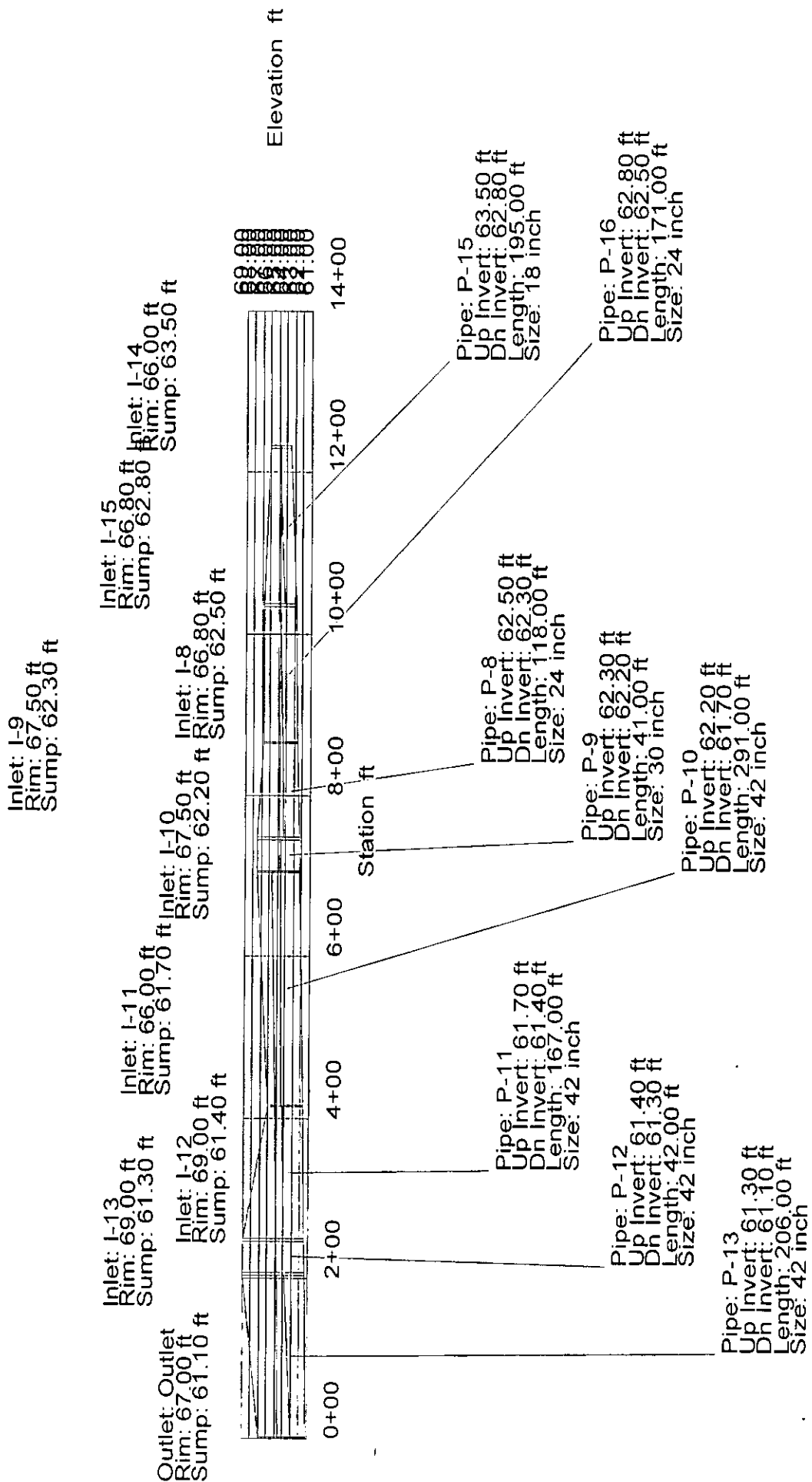
Pipe: P-7
Up Invert: 62.80 ft
Dh Invert: 62.20 ft
Length: 330.00 ft
Size: 36 inch

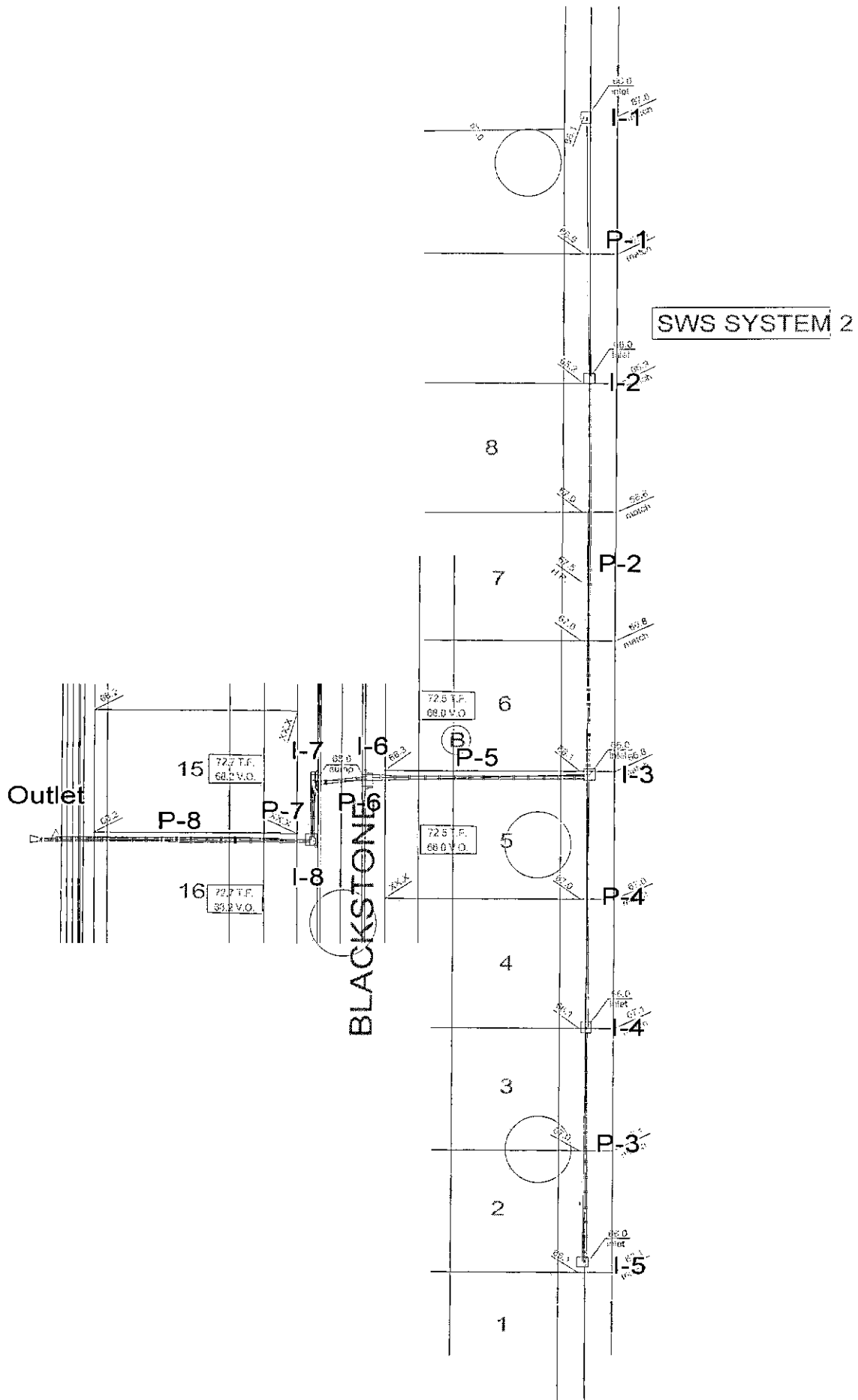
Pipe: P-10
Up Invert: 62.20 ft
Dh Invert: 61.70 ft
Length: 291.00 ft
Size: 42 inch

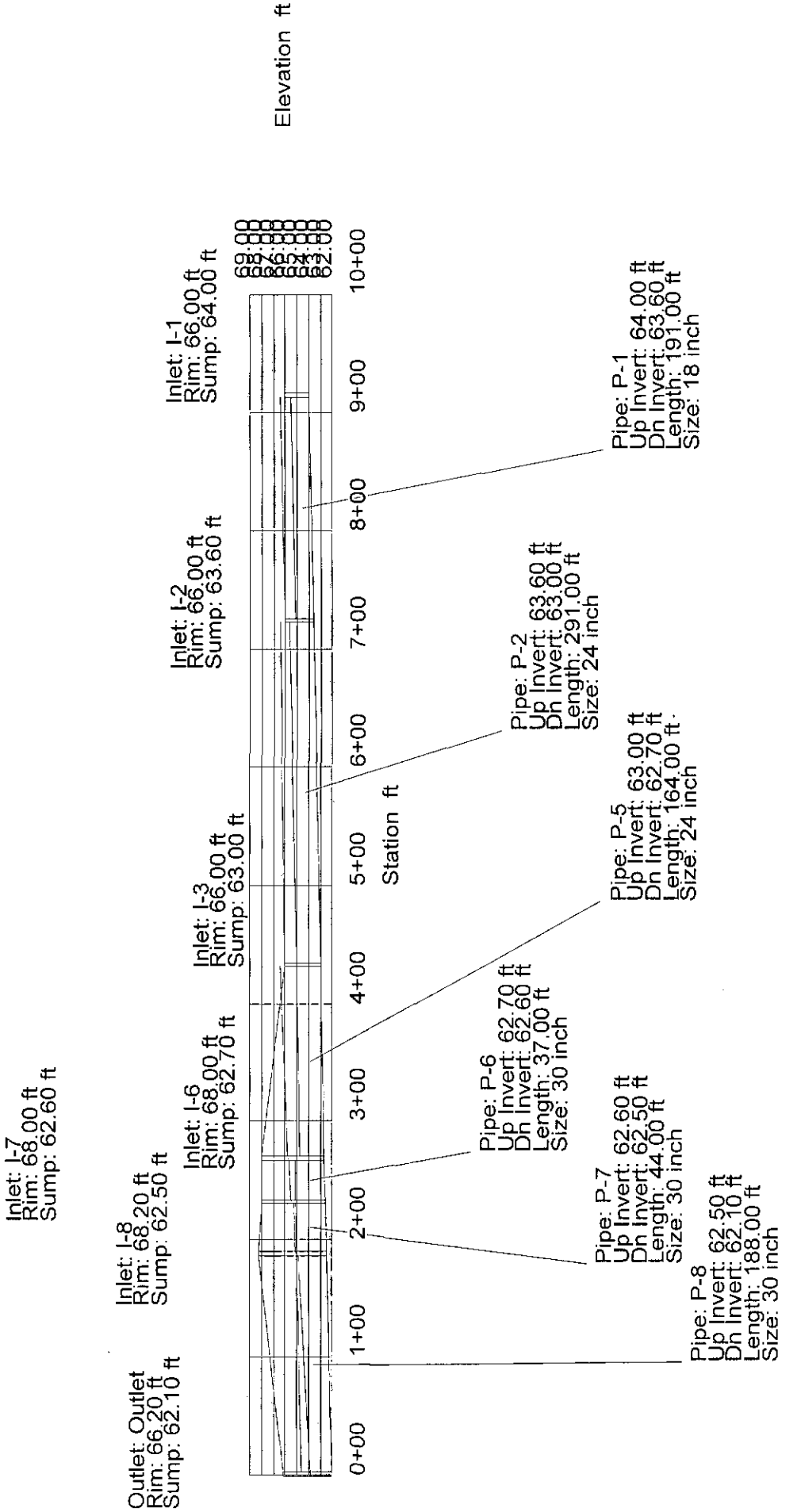
Pipe: P-11
Up Invert: 61.70 ft
Dh Invert: 61.40 ft
Length: 167.00 ft
Size: 42 inch

Pipe: P-12
Up Invert: 61.40 ft
Dh Invert: 61.30 ft
Length: 42.00 ft
Size: 42 inch

Pipe: P-13
Up Invert: 61.30 ft
Dh Invert: 61.10 ft
Length: 206.00 ft
Size: 42 inch







Inlet: I-7
Rim: 68.00 ft
Sump: 62.60 ft

Inlet: I-8
Rim: 68.20 ft
Sump: 62.50 ft

Outlet: Outlet
Rim: 66.20 ft
Sump: 62.10 ft

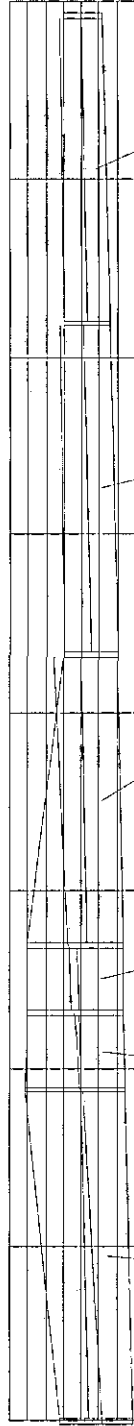
Inlet: I-6
Rim: 68.00 ft
Sump: 62.70 ft

Inlet: I-3
Rim: 66.00 ft
Sump: 63.00 ft

Inlet: I-4
Rim: 66.00 ft
Sump: 63.40 ft

Inlet: I-5
Rim: 66.00 ft
Sump: 63.80 ft

9.88
9.87
9.86
9.85
9.84
9.83
9.82



0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00

Station ft

Elevation ft

Pipe: P-3
Up Invert: 63.80 ft
Dn Invert: 63.40 ft
Length: 173.00 ft
Size: 15 inch

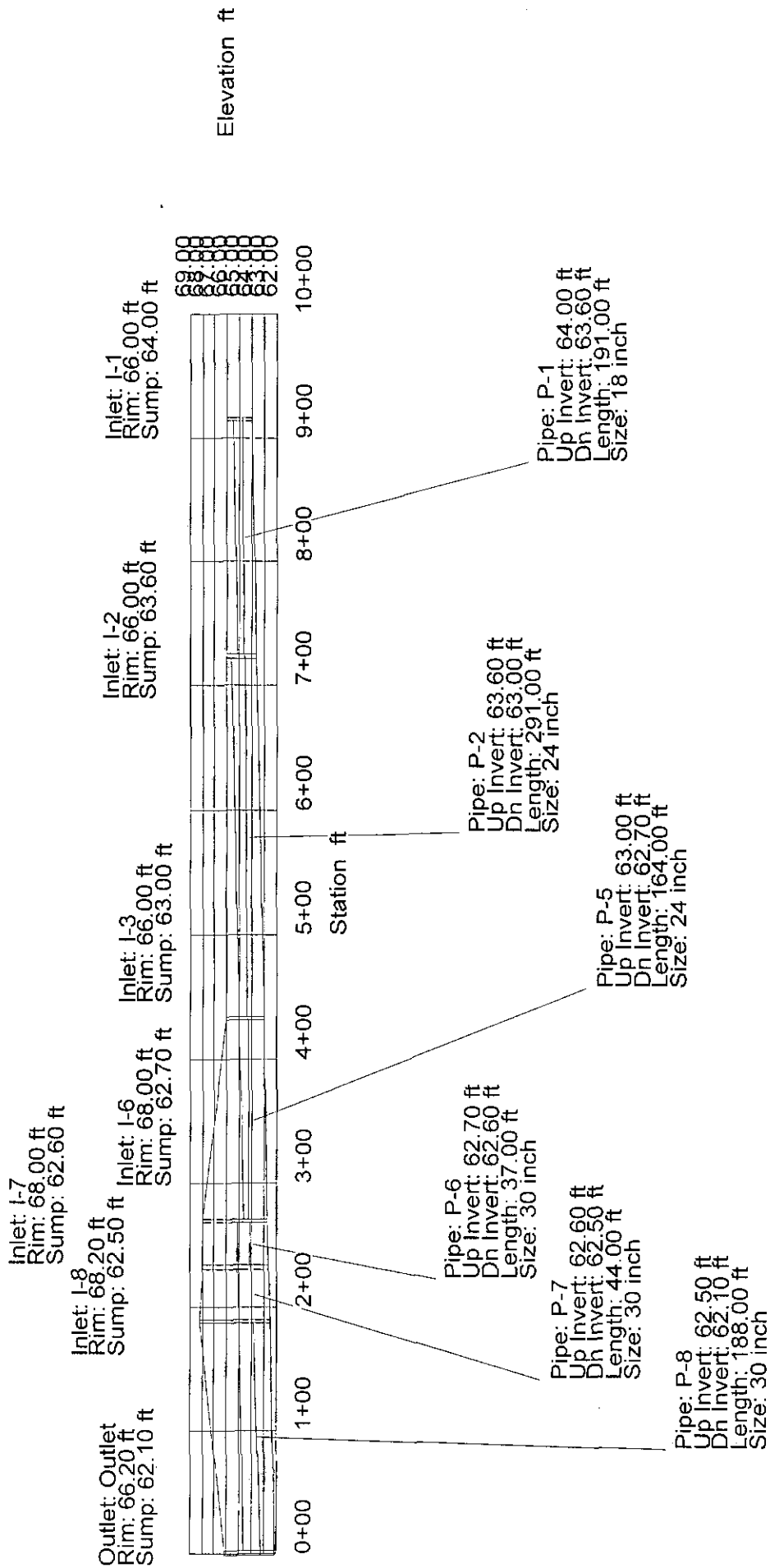
Pipe: P-4
Up Invert: 63.40 ft
Dn Invert: 63.00 ft
Length: 186.00 ft
Size: 18 inch

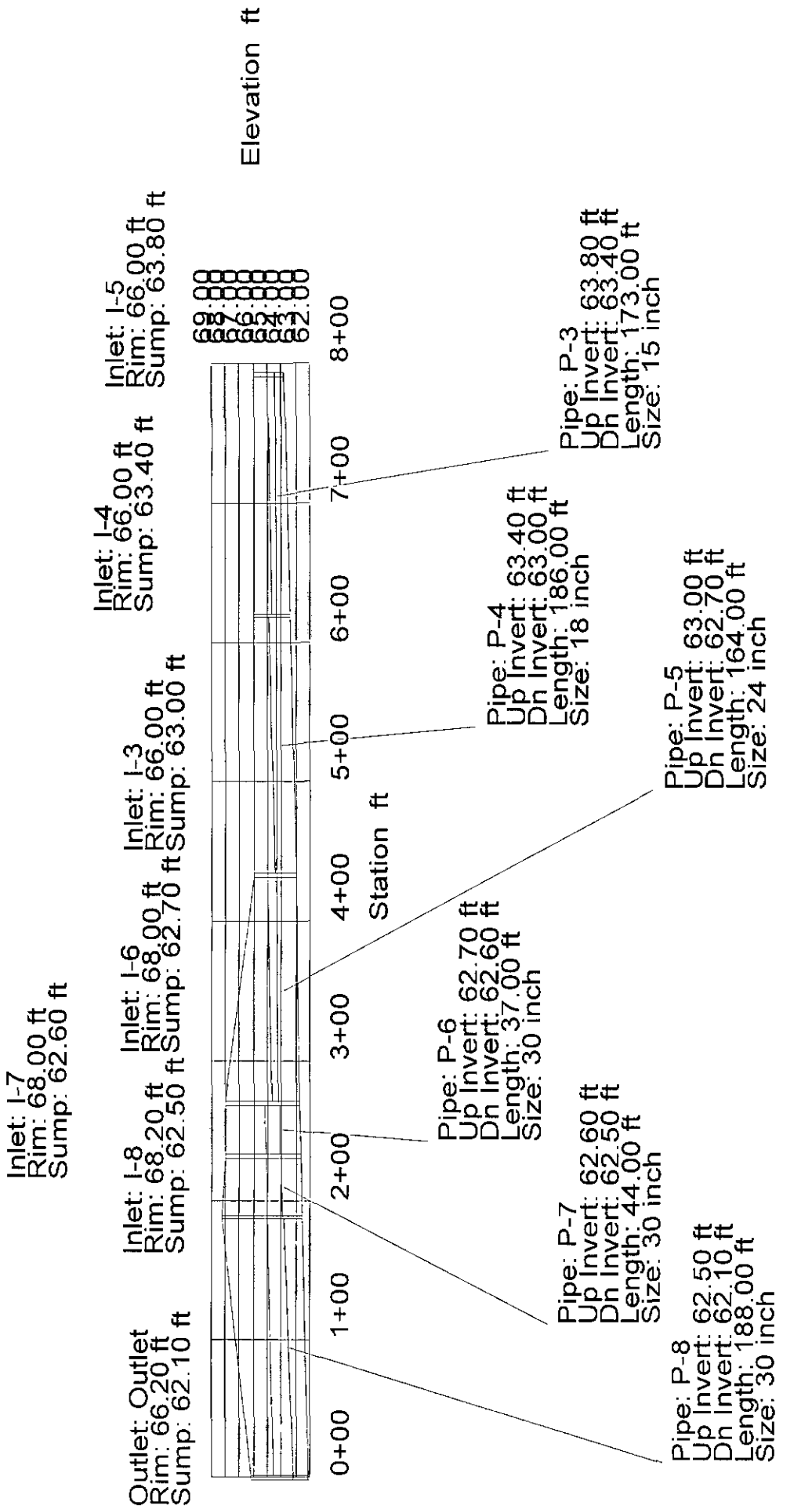
Pipe: P-5
Up Invert: 63.00 ft
Dn Invert: 62.70 ft
Length: 164.00 ft
Size: 24 inch

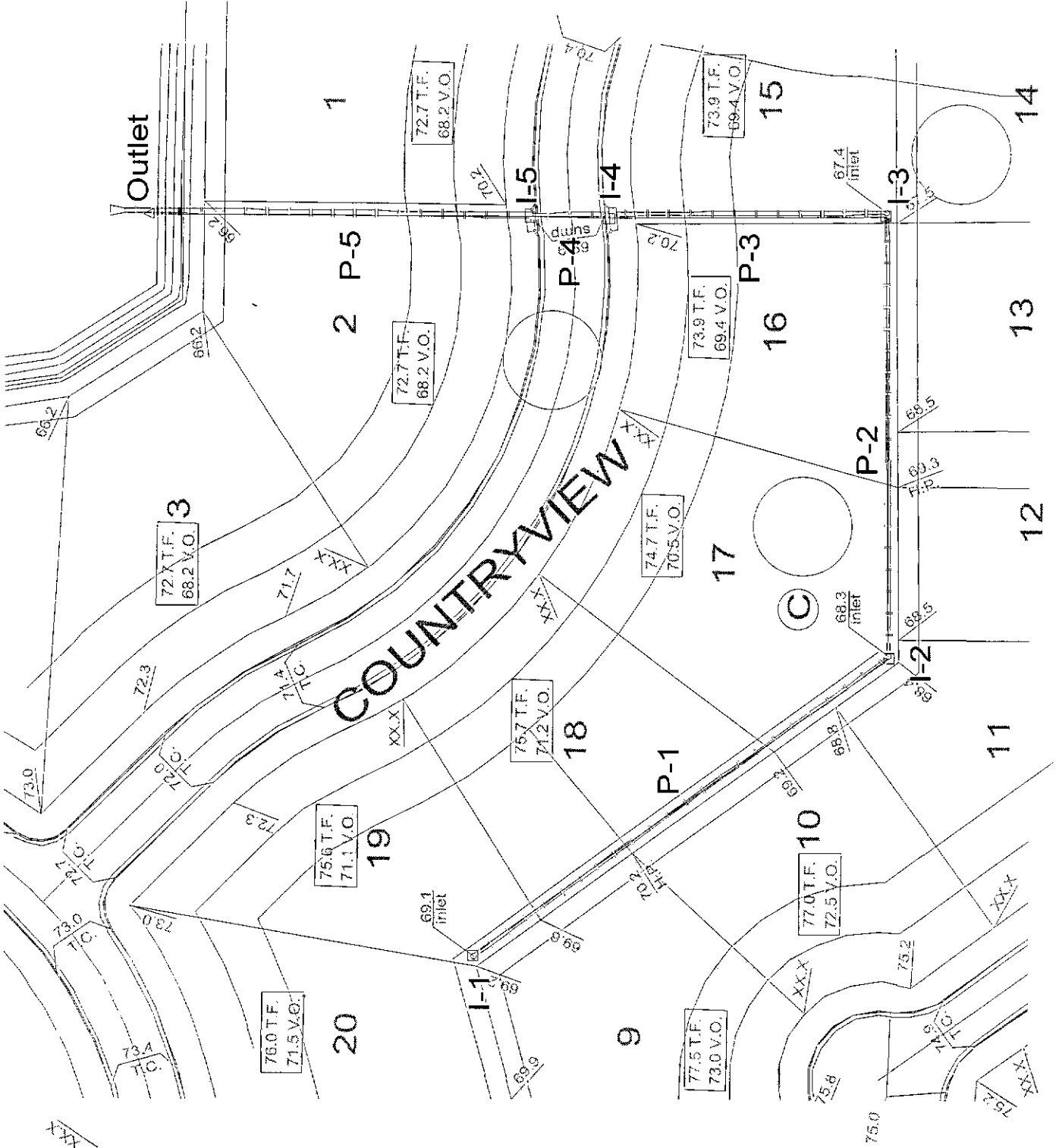
Pipe: P-6
Up Invert: 62.70 ft
Dn Invert: 62.60 ft
Length: 37.00 ft
Size: 30 inch

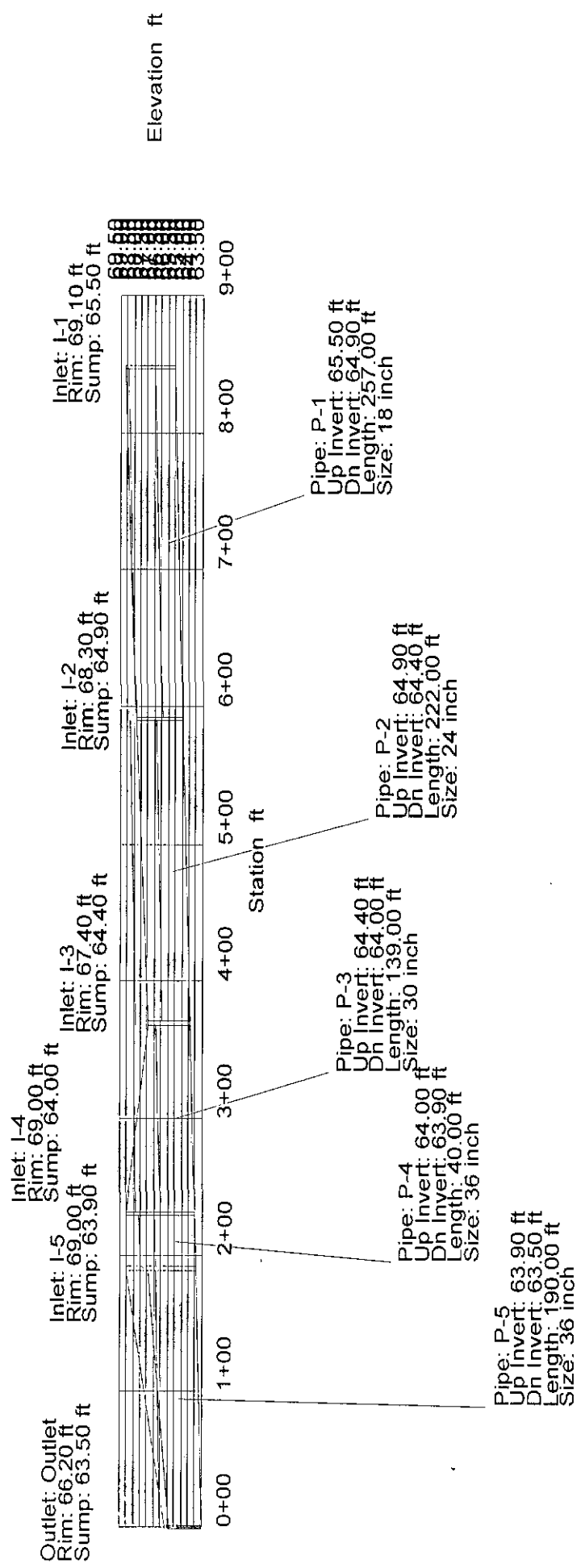
Pipe: P-7
Up Invert: 62.60 ft
Dn Invert: 62.50 ft
Length: 44.00 ft
Size: 30 inch

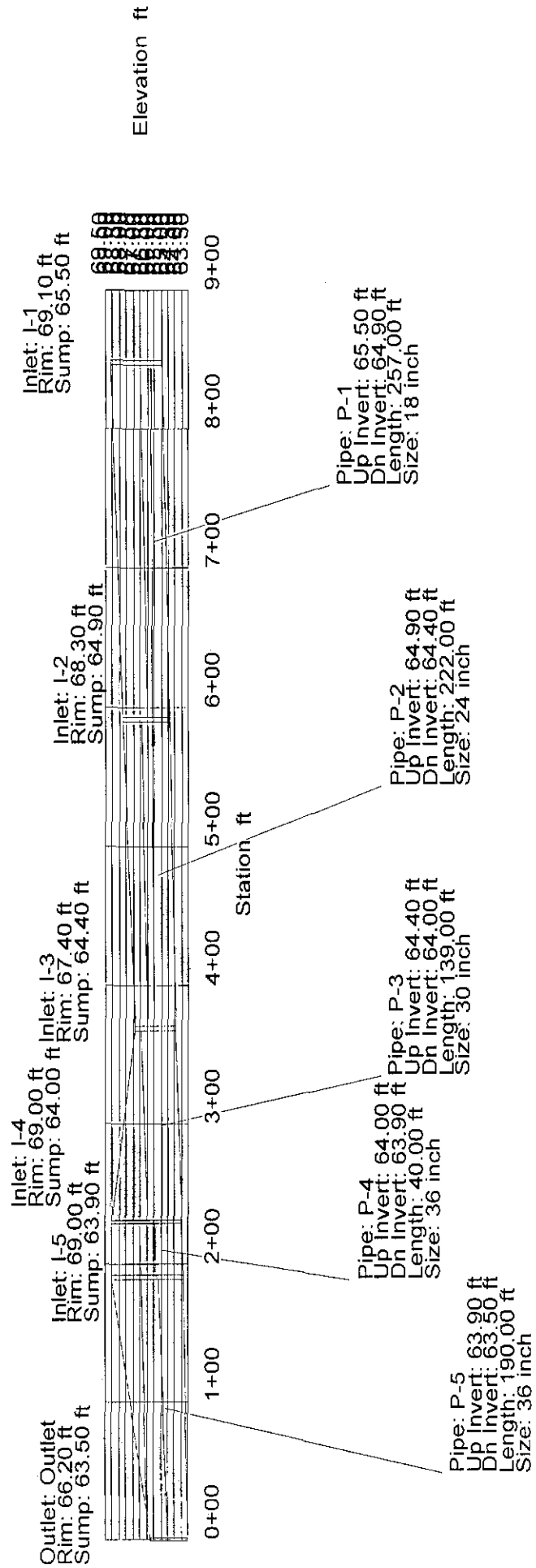
Pipe: P-8
Up Invert: 62.50 ft
Dn Invert: 62.10 ft
Length: 188.00 ft
Size: 30 inch

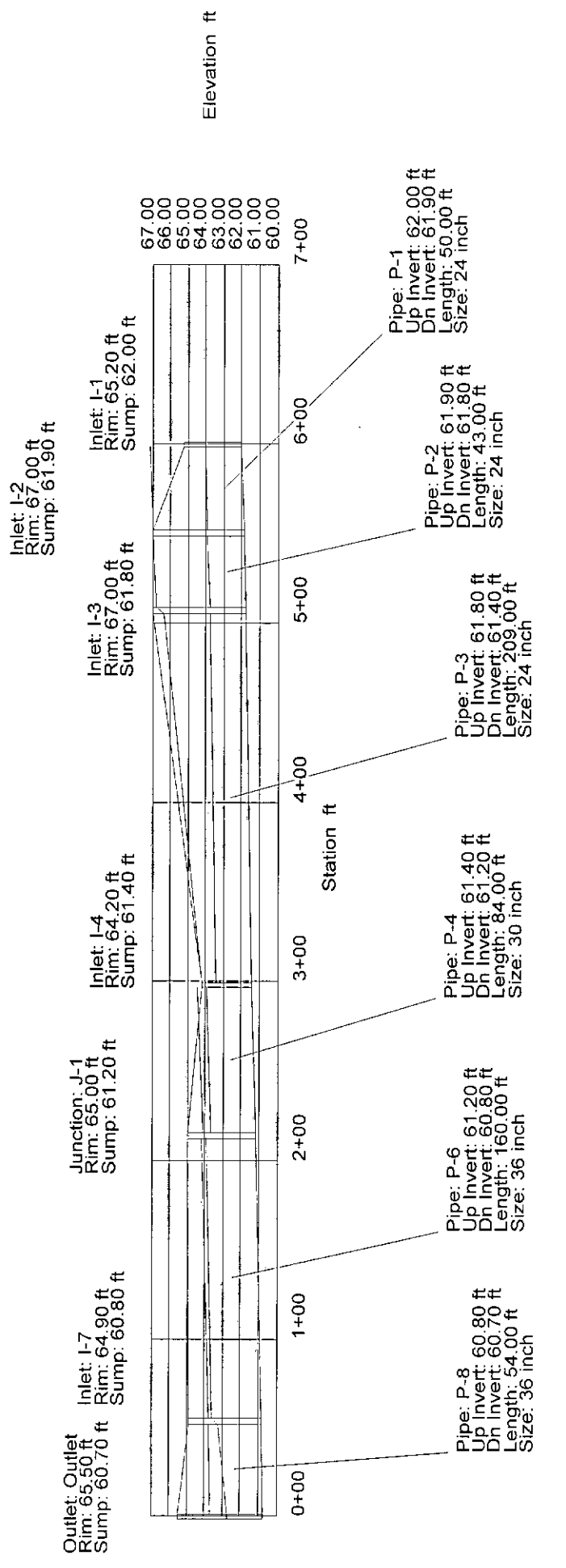


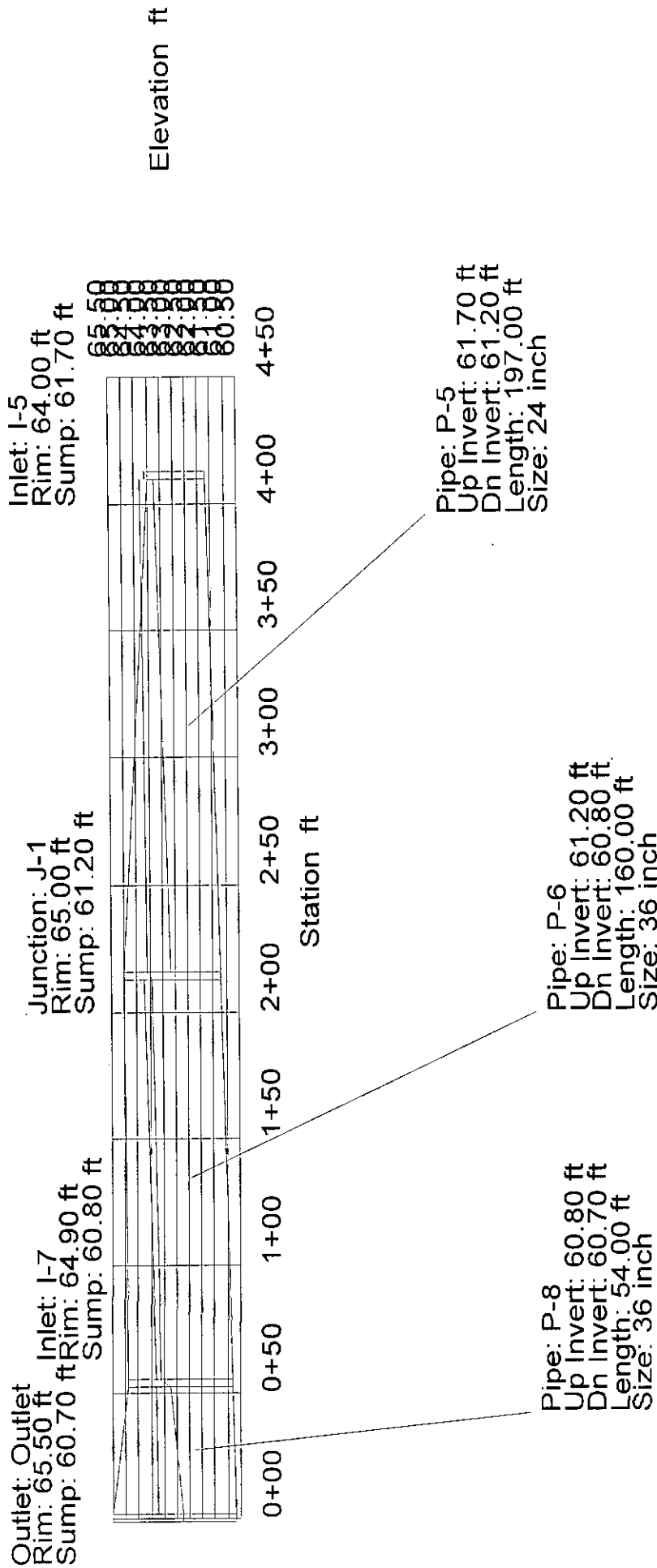












Outlet: Outlet
Rim: 65.50 ft
Sump: 60.70 ft

Inlet: I-7
Rim: 64.90 ft
Sump: 60.80 ft

Junction: J-1
Rim: 65.00 ft
Sump: 61.20 ft

Inlet: I-5
Rim: 64.00 ft
Sump: 61.70 ft

Pipe: P-8
Up Invert: 60.80 ft
Dn Invert: 60.70 ft
Length: 54.00 ft
Size: 36 inch

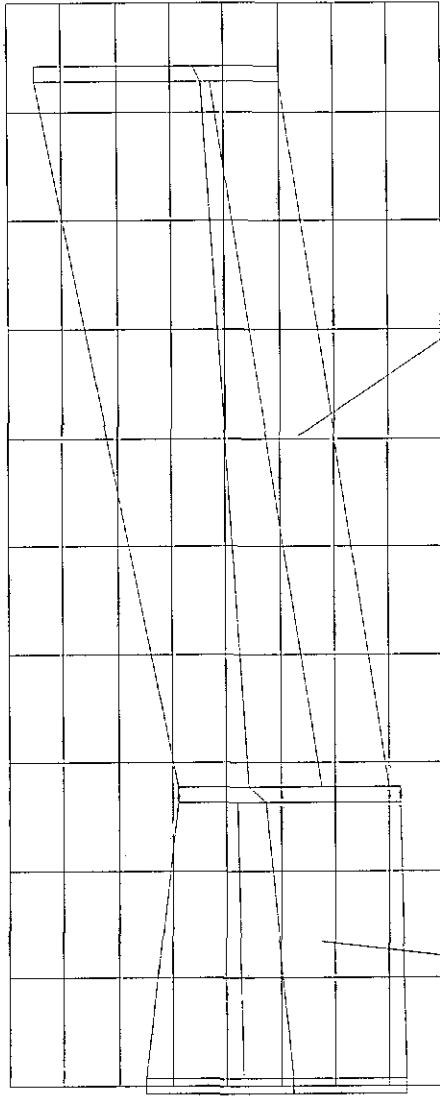
Pipe: P-6
Up Invert: 61.20 ft
Dn Invert: 60.80 ft
Length: 160.00 ft
Size: 36 inch

Pipe: P-5
Up Invert: 61.70 ft
Dn Invert: 61.20 ft
Length: 197.00 ft
Size: 24 inch

Outlet: Outlet
 Rim: 65.50 ft
 Sump: 60.70 ft

Inlet: I-7
 Rim: 64.90 ft
 Sump: 60.80 ft

Inlet: I-6
 Rim: 67.50 ft
 Sump: 63.00 ft



0+00+20+40+60+80+00+20+40+60+80+00

Station ft

Pipe: P-8
 Up Invert: 60.80 ft
 Dn Invert: 60.70 ft
 Length: 54.00 ft
 Size: 36 inch

Pipe: P-7
 Up Invert: 63.00 ft
 Dn Invert: 61.00 ft
 Length: 133.00 ft
 Size: 15 inch

Elevation 1

Flowmaster

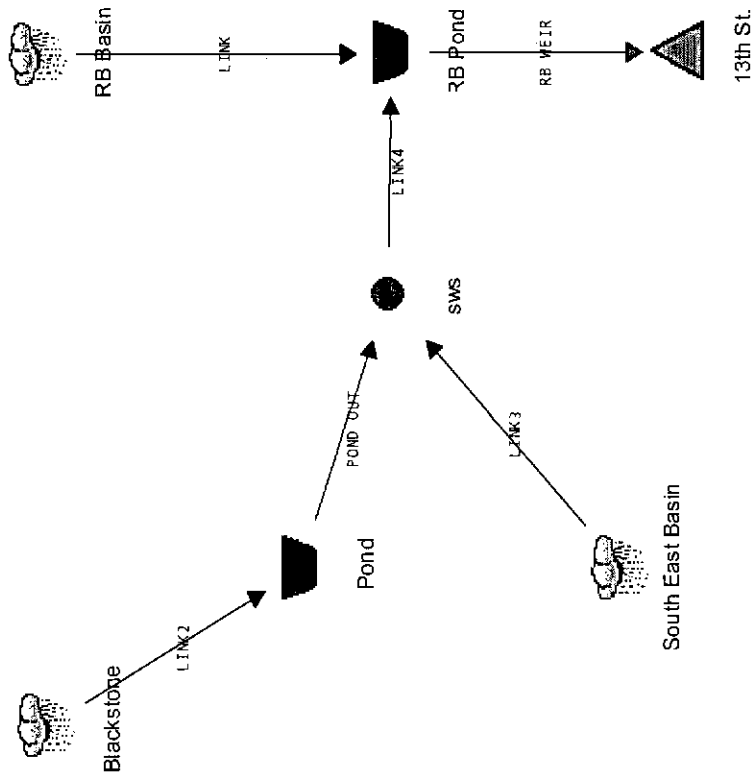
Blackstone
Worksheet for Circular Channel

Project Description	
Project File	untitled.fm2
Worksheet	Blackstone - 13th Street Culvert
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Diameter

Input Data	
Mannings Coefficient	0.013
Channel Slope	0.010000 ft/ft
Depth	1.00 ft
Discharge	15.00 cfs

Results	
Diameter	33.17 in
Flow Area	1.96 ft ²
Wetted Perimeter	3.57 ft
Top Width	2.66 ft
Critical Depth	1.27 ft
Percent Full	36.18
Critical Slope	0.004237 ft/ft
Velocity	7.66 ft/s
Velocity Head	0.91 ft
Specific Energy	1.91 ft
Froude Number	1.57
Maximum Discharge	57.66 cfs
Full Flow Capacity	53.60 cfs
Full Flow Slope	0.000783 ft/ft
Flow is supercritical.	

Pond Pack



Job File: F:\HYDRO\PROJECTS\BLACKSTONE\PONDPACK\DEVELOPED.PPW
Rain Dir: C:\HAESTAD\PPKW\RAINFALL\

=====
JOB TITLE
=====

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

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***** DESIGN STORMS SUMMARY *****

Sedgwick24..... Design Storms 2.01

Sedgwick24..... 5y24h
Design Storms 2.03

***** OUTLET STRUCTURES *****

POND OUT..... Outlet Input Data 3.01

RB WEIR..... Outlet Input Data 3.03

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNQ Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
5y24h	4.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
25y24h	6.1000	Synthetic Curve	SCS	SCSII
100y24	7.9000	Synthetic Curve	SCSTYPES	TypeII 24hr
10y24h	5.3000	Synthetic Curve	SCSTYPES	TypeII 24hr
2y24h	3.5000	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
*13TH ST.	JCT	5	20.887		12.6000	48.31		
*13TH ST.	JCT	25	31.223		12.4000	63.55		
*13TH ST.	JCT	100	43.211		12.5000	104.62		
*13TH ST.	JCT	10	26.002		12.5500	61.30		
*13TH ST.	JCT	2	14.712		12.6000	32.88		
BLACKSTONE	AREA	5	8.290		12.0500	120.49		
BLACKSTONE	AREA	25	13.375		12.0000	88.02		
BLACKSTONE	AREA	100	19.435		12.0500	278.70		
BLACKSTONE	AREA	10	10.785		12.0500	156.72		
BLACKSTONE	AREA	2	5.365		12.0500	77.25		
POND	IN POND	5	8.290		12.0500	120.49		
POND	IN POND	25	13.375		12.0000	88.02		
POND	IN POND	100	19.435		12.0500	278.70		
POND	IN POND	10	10.785		12.0500	156.72		
POND	IN POND	2	5.365		12.0500	77.25		
POND	OUT POND	5	8.124		14.8000	5.02	1363.40	5.124
POND	OUT POND	25	13.170		14.2500	8.62	1364.21	8.206
POND	OUT POND	100	19.178		14.5000	10.92	1365.34	12.585
POND	OUT POND	10	10.599		14.2000	7.08	1363.80	6.632

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	Return Type Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond ac-ft
POND	OUT POND	2	5.228	16.1000	2.60	1362.94	3.434
RB BASIN	AREA	5	11.510	12.1500	111.42		
RB BASIN	AREA	25	16.277	12.0000	90.34		
RB BASIN	AREA	100	21.667	12.1500	203.46		
RB BASIN	AREA	10	13.889	12.1500	133.23		
RB BASIN	AREA	2	8.554	12.2000	84.06		
RB POND	IN POND	5	20.905	12.1500	125.94		
RB POND	IN POND	25	31.246	12.0000	105.86		
RB POND	IN POND	100	43.239	12.1500	234.38		
RB POND	IN POND	10	26.023	12.1500	151.70		
RB POND	IN POND	2	14.728	12.1500	94.03		
RB POND	OUT POND	5	20.887	12.6000	48.31	1361.62	5.172
RB POND	OUT POND	25	31.223	12.4000	63.55	1362.14	6.258
RB POND	OUT POND	100	43.211	12.5000	104.62	1363.38	8.891
RB POND	OUT POND	10	26.002	12.5500	61.30	1362.07	6.106
RB POND	OUT POND	2	14.712	12.6000	32.88	1361.03	3.971
SOUTH EAST BASIN	AREA	5	1.272	12.0500	17.10		
SOUTH EAST BASIN	AREA	25	1.799	12.0000	10.26		
SOUTH EAST BASIN	AREA	100	2.394	12.0500	31.05		
SOUTH EAST BASIN	AREA	10	1.535	12.0500	20.40		
SOUTH EAST BASIN	AREA	2	.945	12.0500	12.93		
SWS	JCT	5	9.396	12.0500	18.49		
SWS	JCT	25	14.969	12.0500	15.73		
SWS	JCT	100	21.572	12.0500	38.38		
SWS	JCT	10	12.134	12.0500	22.87		
SWS	JCT	2	6.173	12.0500	13.49		

Type.... Design Storms
Name.... Sedgwick24

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 = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25y24h
Description: Sedgwick County - 25 year - 24hour

Data Type, File, ID = Synthetic Storm SCS.RNF SCSII
Storm Frequency = 25 yr
Total Rainfall Depth= 6.1000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= 1.0000 hrs End= 24.0000 hrs

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

Storm Tag Name = 10y24h
Description: Sedgwick County 10-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 5.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Design Storms
Name.... Sedgwick24

Page 2.02

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 = 2y24h
Description: Sedgwick County 2-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Design Storms
Name.... Sedgwick24
File.... C:\HAESTAD\PPKW\RAINFALL\SEDGWICK.RNQ
Storm... TypeII 24hr Tag: 5y24h

Page 2.03
Event: 5 yr

DESIGN STORMS SUMMARY

Design Storm File, ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 5y24h
Description: Sedgwick County 5-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 5 yr
Total Rainfall Depth= 4.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Storm Tag Name = 25y24h
Description: Sedgwick County - 25 year - 24hour

Data Type, File, ID = Synthetic Storm SCS.RNF SCSII
Storm Frequency = 25 yr
Total Rainfall Depth= 6.1000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= 1.0000 hrs End= 24.0000 hrs

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

Storm Tag Name = 10y24h
Description: Sedgwick County 10-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 10 yr
Total Rainfall Depth= 5.3000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Design Storms
Name.... Sedgwick24
File.... C:\HAESTAD\PPKW\RAINFALL\SEDGWICK.RNQ
Storm... TypeII 24hr Tag: 5y24h

Page 2.04
Event: 5 yr

DESIGN STORMS SUMMARY

Design Storm File, ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h
Description: Sedgwick County 2-yr 24 hour Duration

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 2 yr
Total Rainfall Depth= 3.5000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 hrs End= 24.0000 hrs

Type.... Outlet Input Data
Name.... POND OUT

File.... F:\HYDRO\PROJECTS\BLACKSTONE\PONDPACK\DEVELOPED.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1362.00 ft
Increment = .50 ft
Max. Elev.= 1369.00 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	CV	---> TW	1362.000	1369.000
TW SETUP, DS Channel				

File.... F:\HYDRO\PROJECTS\BLACKSTONE\PONDPACK\DEVELOPED.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels = 1
Barrel Diameter = 2.0000 ft
Upstream Invert = 1362.00 ft
Dnstream Invert = 1361.00 ft
Horiz. Length = 1100.00 ft
Barrel Length = 1100.00 ft
Barrel Slope = .00091 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) = 1.160
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 = 1364.32 ft ---> Flow = 15.55 cfs
At T2 Elev = 1364.61 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

S/N: 121201A06A8A
PondPack Ver. 7.5 (767)

Baughman Company PA
Compute Time: 09:41:09

Date: 11/14/2005

Type.... Outlet Input Data
Name.... RB WEIR

File.... F:\HYDRO\PROJECTS\BLACKSTONE\PONDPACK\DEVELOPED.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1359.00 ft
Increment = .50 ft
Max. Elev.= 1370.00 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
-----	----	-----	-----	-----
User Defined Table	WR	---> TW	.000	1370.000
TW SETUP, DS Channel				

Type.... Outlet Input Data
Name.... RB WEIR

File.... F:\HYDRO\PROJECTS\BLACKSTONE\PONDPACK\DEVELOPED.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID = WR
Structure Type = User Defined Table

ELEV-FLOW RATING TABLE

Elev, ft	Flow, cfs
1359.00	.00
1359.50	4.00
1360.00	11.40
1360.50	20.90
1361.00	32.20
1361.50	45.00
1362.00	59.20
1362.50	74.60
1363.00	91.20
1363.50	108.80
1364.00	134.20
1370.00	437.00

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

Index of Starting Page Numbers for ID Names

----- P -----

POND OUT... 3.01

----- R -----

RB WEIR... 3.03

----- S -----

Sedgwick24... 2.01, 2.03

----- W -----

Watershed... 1.01

