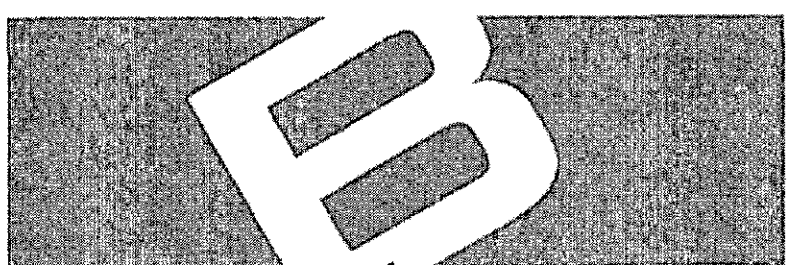
DRAINAGE PLAN
SILVERTON ADDITION
TO
WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By



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DECEMBER 14, 2005

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Drainage Plan
SILVERTON ADDITION
Wichita, Sedgwick County, Kansas

Baughman Company, P.A.
December 14, 2005

Existing Site Conditions

The proposed Silverton Addition is located north on 13th Street North and is bounded on the east by 135th Street West. The property is located directly north of Coppergate North Estates Addition. The development consists of approximately 110 acres of existing agricultural ground including a large pit pond.

The soil types on the site consist of Type B, Type C, and Type D. The west portion of the site is of Type B. The area around the existing pond is Type D. The southern portion of the property is Type B. All of the soil types are of the silty loam variety.

The Preliminary FEMA FIRM map (as provided by Sedgwick County) establishes a Base Flood Elevations (BFE) of approximately 1363.6 NGVD. The mapped Floodplain Boundary encroaches the property at the northwest corner, where a proposed pond will be located. The FEMA Floodway Boundary is not located on the proposed site. The site will be filled, where necessary, to raise the property above the base flood elevation. *NEED TO IDENTIFY THE LOTS IN FLOOD PLAIN

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 245± 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. There will be a three pond system utilized in this subdivision which will drain into an existing/proposed storm water sewer and pond system in Coppergate North Estates Addition. The ponds will be located in Reserves C, B, and A and will act as a system to convey storm waters. There will also be a pond located in Reserve D. This pond will drain into the west offsite adjacent property and will release at most the existing drainage at this point.

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Proposed Pond

The proposed system will drain the majority of the property and slowly release the storm water to the existing/proposed storm sewer system in Coppergate North Addition. Pond C will be directly connected to Pond B via a 24" RCP.. Pond B will be the main detention facility and will drain and interact directly with Pond A. Pond A will then drain into the Coppergate North Addition via an 18" RCP.

The pond system is also designed to accept a maximum of 50 cfs of runoff from the Cheryl's Hollow Addition pond located in the north east corner of its plat.

The existing pond will be improved and resized and will become the proposed Pond B. The existing pond has no defined outlet. Based on elevation and site visits, the existing pond has very little detention effect. The water surface on the existing pond is approximately 1359, whereas the surrounding site is also a 1359 to 1360. The east line of the property along 135th Street West then drops to a 1358 with an associated ditch section at a 1357 and below. Based on these accounts, the proposed subdivision seems to be vastly improving the flooding problems in the area.

The three pond system will have a maximum discharge of approximately 4 cfs due to downstream constraints. The pond system is storing most of the runoff created by this development.

Pond Summary

Pond A		
Static Water Surface Elevation	=	*1356.8*
100 year Design Surface Elevation	=	*1358.9*
Outlet	=	*18" RCP*
Pond B		
Static Water Surface Elevation	=	*1356.8*
100 year Design Surface Elevation	=	*1358.9*
Outlet	=	*24" RCP*
Pond C		
Static Water Surface Elevation	=	*1358.0*
100 year Design Surface Elevation	=	*1359.6*
Outlet	=	*24" RCP*
Pond D		
Static Water Surface Elevation	=	*1361.0*
100 year Design Surface Elevation	=	*1363.6*
Outlet	=	*20' Weir*

NOTE: The pond referred to as the 'NE Pond' in PondPack is actually the NW pond and is Pond D (located in Reserve D) above.

Offsite Flow

There is very little, if any, offsite flow. A small flow from the north might be expected and will flow directly into the existing/proposed pond. The existing 135th Street ditch carries much of the existing runoff from this site. With this

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development, the amount of existing runoff will be drastically reduced to the existing ditch.

Detention Summary

The proposed development meets or exceeds current City of Wichita requirements pertaining to detention of existing and proposed runoff rates. The existing site produces approximately 500 cfs of runoff as where the site, when developed, will produce approximately 600 cfs. This means the pond system will have detain at least 100 cfs to meet current COW design standards.

The proposed three pond system will release at maximum discharge of approximately 4 cfs. Pond D will release a maximum discharge of approximately 50 cfs. Based on the pond routings, the site will discharge a maximum of 55 cfs. This site detains approximately 90% of its total runoff produced.

The existing 135th Street West ditch will be utilized only near the entrances and as emergency overflows in the case the storm water sewer systems fail.

Overall Site Flow Summary

The proposed development provides adequate detention as required by the City of Wichita. The existing site detains approximately 90% of the total runoff produced. The three pond system is designed to provide maximum detention as well as help downstream flooding conditions.

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.

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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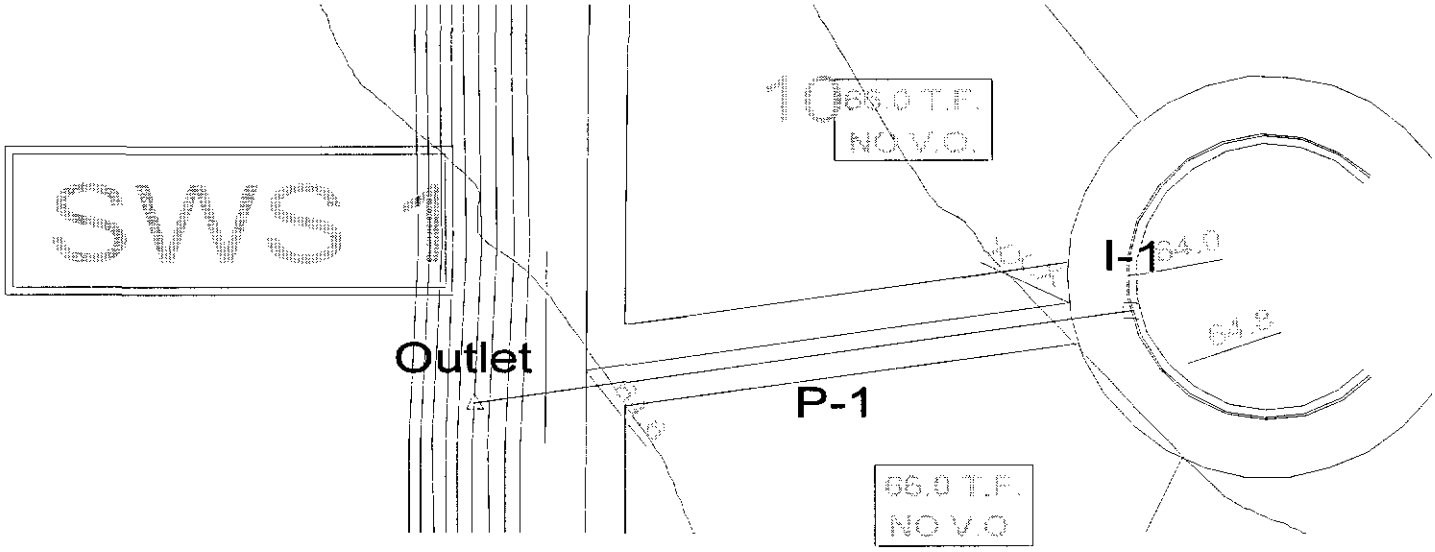
StormCad

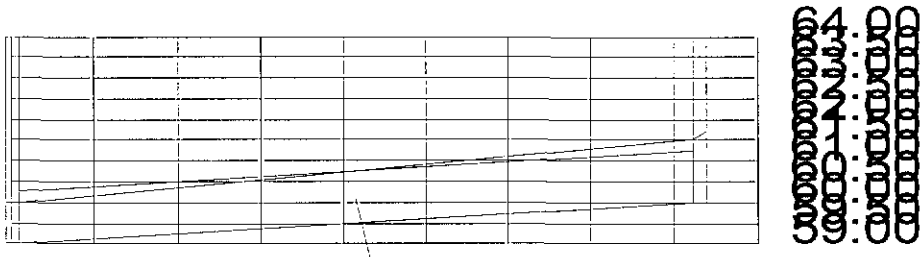
Existing	2yr	5yr	100yr	*Developed*	2yr	5yr	100yr
Intensity	3.83	4.56	7.37	Intensity	3.83	4.56	7.37
Rational C	0.45	0.5	0.6	Rational C	0.53	0.56	0.7

Basin ID	Area	Existing Flowrates			Developed Flowrates		
	acres	2-yr cfs	5-yr cfs	100-yr cfs	2-yr cfs	5-yr cfs	100-yr cfs
1	5.0	8.6	11	22	10	13	26
2	1.3	2.2	3.0	6	2.6	3.3	7
3	0.4	0.7	0.9	1.8	0.8	1.0	2.1
4	1.0	1.7	2.3	4.4	2.0	2.6	5.2
5	3.1	5.3	7.1	14	6.3	7.9	16
6	14	25	33	64	29	37	74
7	1.4	2.4	3.2	6	2.8	3.6	7
8	1.5	2.6	3.4	6.6	3.0	3.8	7.7
9	1.6	2.8	3.6	7.1	3.2	4.1	8.3
10	2.5	4.3	5.7	11	5.1	6.4	13
11	0.7	1.2	1.6	3.1	1.4	1.8	3.6
12	2.4	4.1	5.5	11	4.9	6.1	12
13	1.7	2.9	3.9	7.5	3.5	4.3	8.8
14	2.5	4.3	5.7	11.1	5.1	6.4	12.9
15	3.1	5.3	7.1	14	6.3	7.9	16
16	2.4	4.1	5.5	11	4.9	6.1	12
17	1.2	2.1	2.7	5.3	2.4	3.1	6.2
18	27	46	61	118	54	68	138
19	3.3	5.7	7.5	15	6.7	8.4	17
20	1.9	3.3	4.3	8.4	3.9	4.9	9.8
21	1.0	1.7	2.3	4.4	2.0	2.6	5.2
22	2.3	4.0	5.2	10	4.7	5.9	12
23	3.6	6.2	8.2	16	7.3	9	19
24	0.7	1.2	1.6	3.1	1.4	1.8	3.6
25	3.1	5.3	7.1	14	6.3	7.9	16
26	5.5	9.5	13	24	11.2	14	28
27	1.4	2.4	3.2	6	2.8	3.6	7
28	0.5	0.9	1.1	2.2	1.0	1.3	2.6
29	12	20	26	51	23	29	59
30	2.7	4.7	6.2	12	5.5	6.9	14
31	1.1	1.9	2.5	4.9	2.2	2.8	5.7
32	1.5	2.6	3.4	6.6	3.0	3.8	7.7
33	1.0	1.7	2.3	4.4	2.0	2.6	5.2
34	0.5	0.9	1.1	2.2	1.0	1.3	2.6
TOTAL	**114.5**	**197**	**261**	**506**	**232**	**292**	**591**


SWS 1
Outlet
P-1
I-1
66.0 T.F.
NO V.O.
66.0 T.F.
NO V.O.

Outlet: Outlet
Rim: 64.00 ft
Sump: 59.00 ft

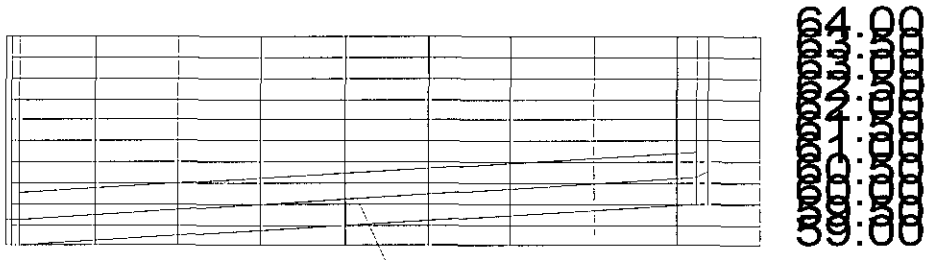
Inlet: I-1
Rim: 64.00 ft
Sump: 60.00 ft



Pipe: P-1
Up Invert: 60.00 ft
Dn Invert: 59.00 ft
Length: 166.00 ft
Size: 15 inch

Outlet: Outlet
Rim: 64.00 ft
Sump: 59.00 ft

Inlet: I-1
Rim: 64.00 ft
Sump: 60.00 ft



Pipe: P-1
Up Invert: 60.00 ft
Dn Invert: 59.00 ft
Length: 166.00 ft
Size: 15 inch

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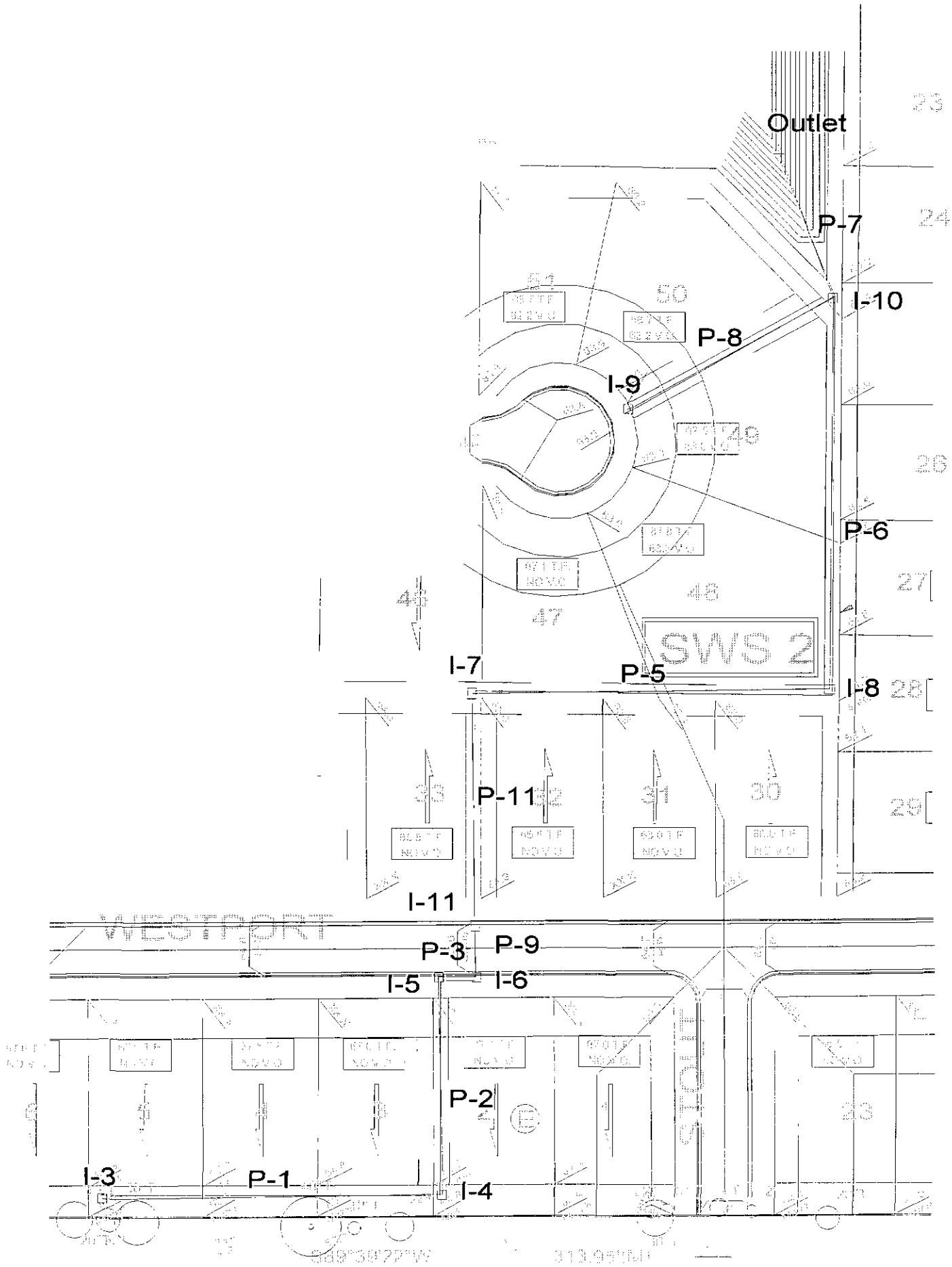
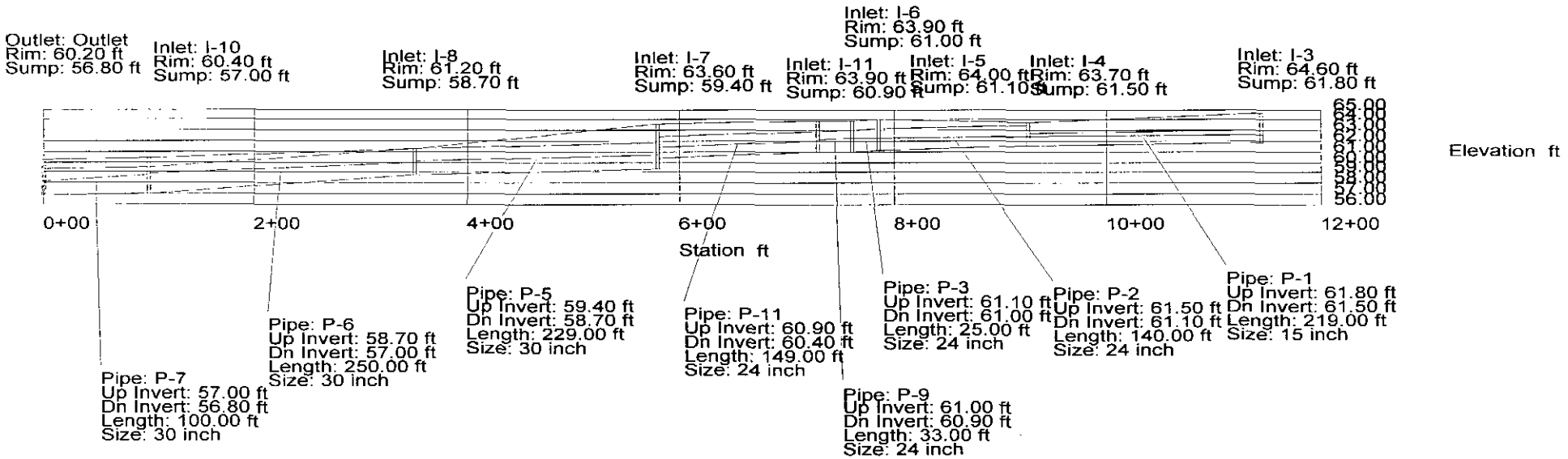
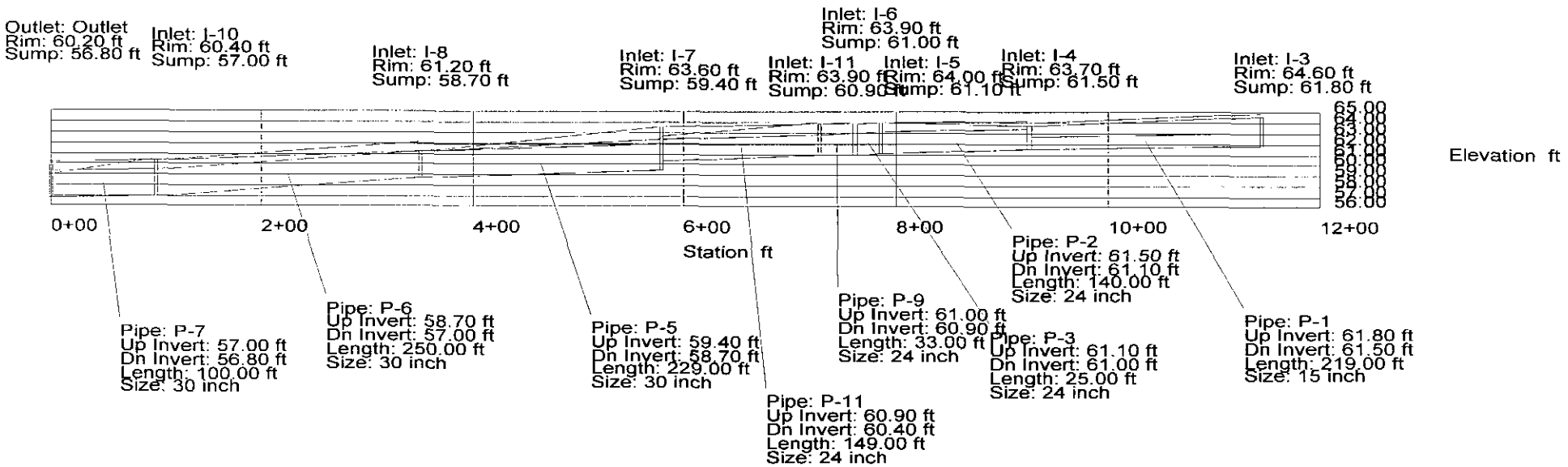
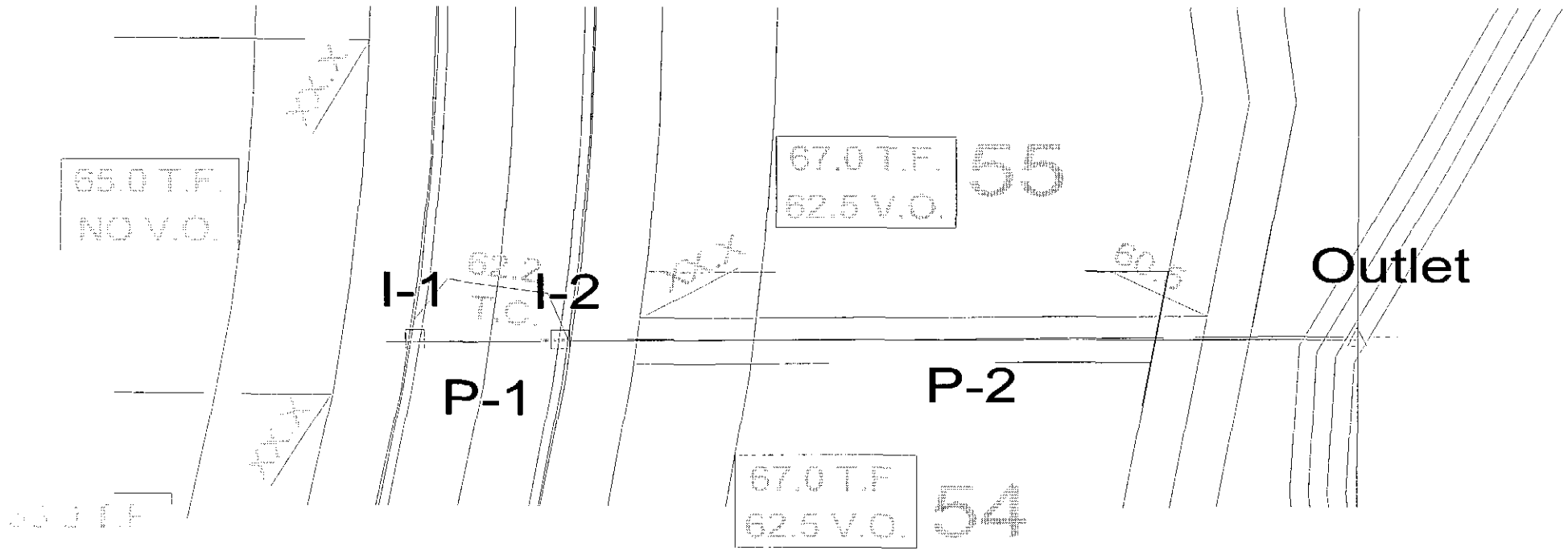

Outlet
P-7
I-10
P-8
I-9
P-6
SWS 2
I-7
P-5
I-8
P-11
I-11
P-3
P-9
I-5
I-6
P-2
I-3
P-1
I-4







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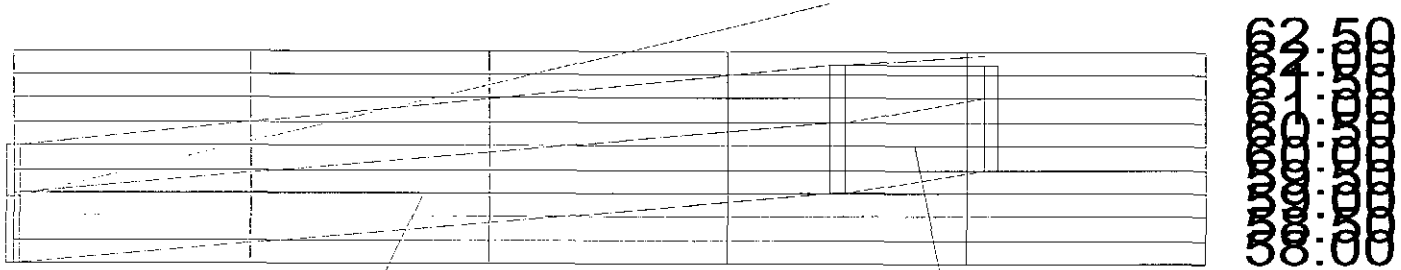
Inlet: I-1
Rim: 62.20 ft
Sump: 60.00 ft

Outlet: Outlet
Rim: 60.50 ft
Sump: 58.00 ft

Inlet: I-2
Rim: 62.20 ft
Sump: 59.50 ft



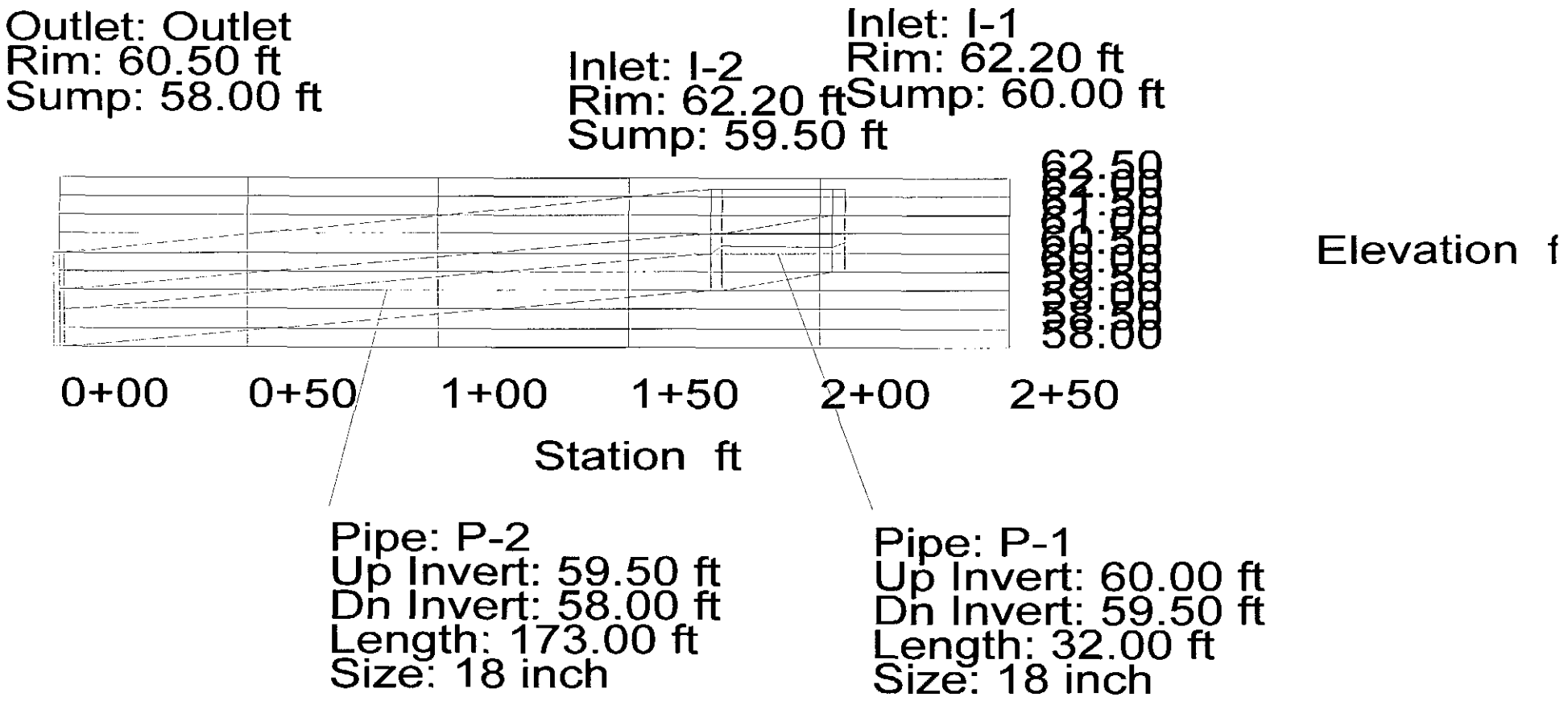
Elevation f

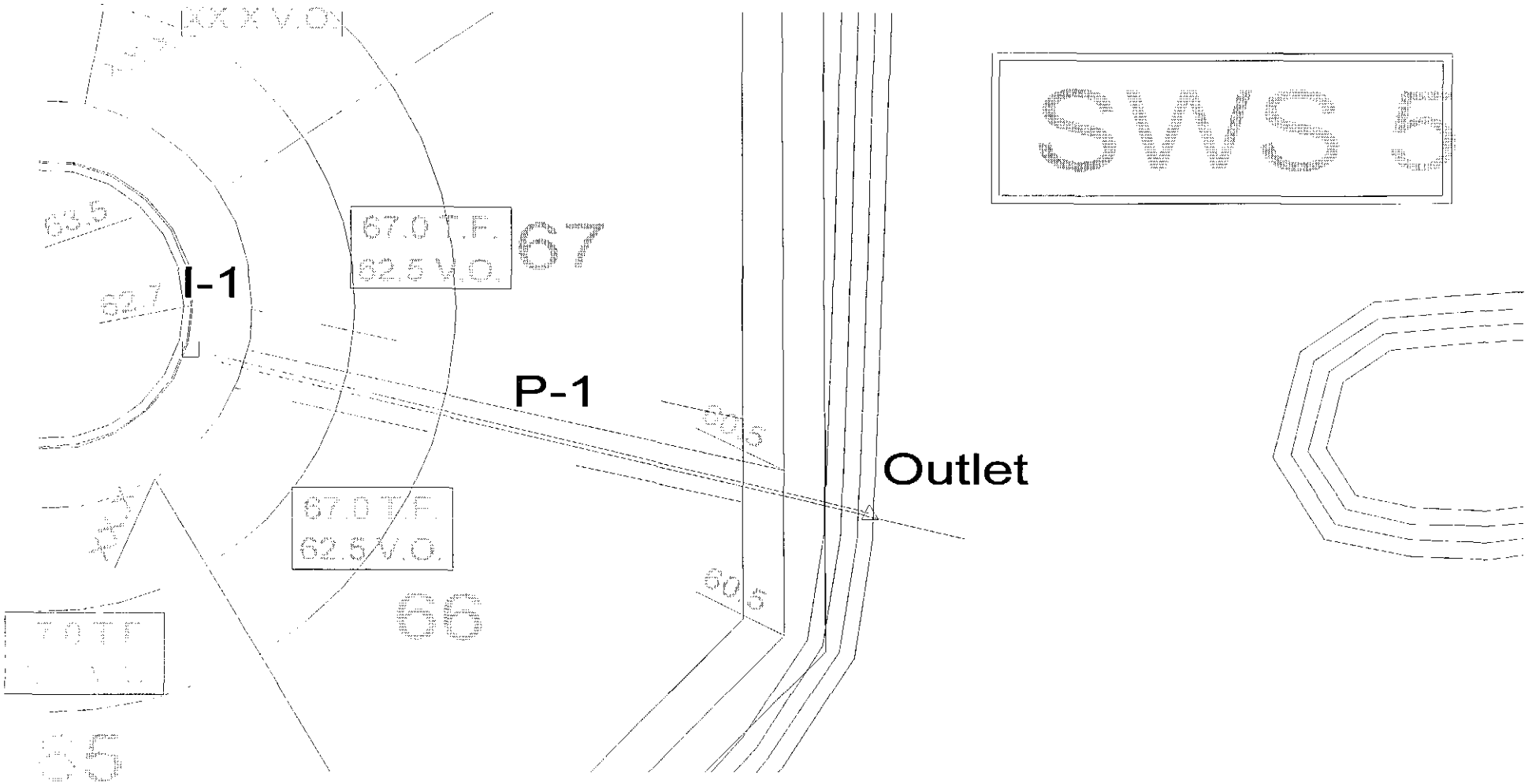
0+00 0+50 1+00 1+50 2+00 2+50

Station ft

Pipe: P-2
Up Invert: 59.50 ft
Dn Invert: 58.00 ft
Length: 173.00 ft
Size: 18 inch

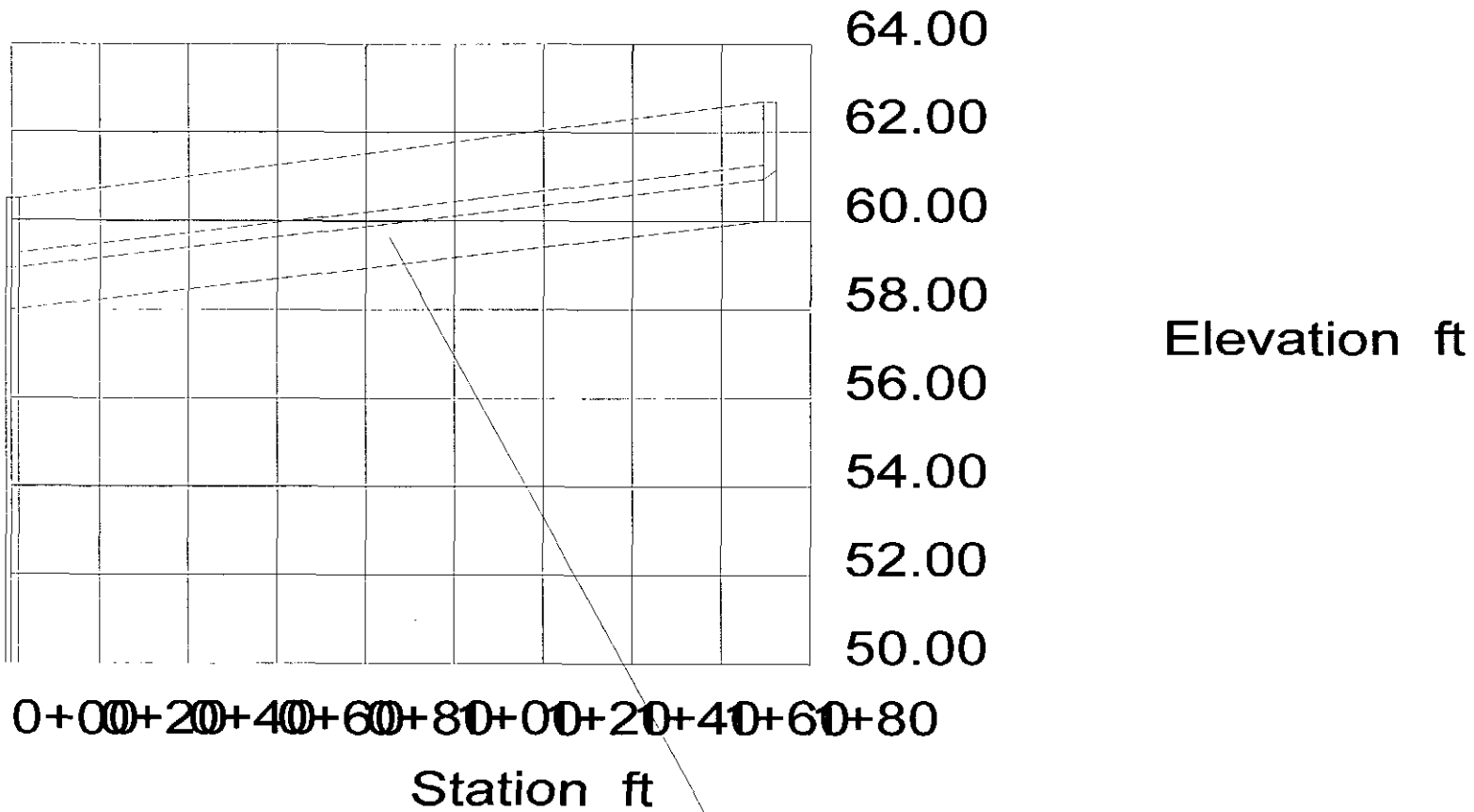
Pipe: P-1
Up Invert: 60.00 ft
Dn Invert: 59.50 ft
Length: 32.00 ft
Size: 18 inch


Outlet: Outlet
Rim: 60.50 ft
Sump: 58.00 ft
Inlet: I-2
Rim: 62.20 ft
Sump: 59.50 ft
Inlet: I-1
Rim: 62.20 ft
Sump: 60.00 ft
62.50
58.00
Elevation f
0+00
0+50
1+00
1+50
2+00
2+50
Station ft
Pipe: P-2
Up Invert: 59.50 ft
Dn Invert: 58.00 ft
Length: 173.00 ft
Size: 18 inch
Pipe: P-1
Up Invert: 60.00 ft
Dn Invert: 59.50 ft
Length: 32.00 ft
Size: 18 inch


SWS 5
I-1
P-1
Outlet
67.0 T.F.
62.5 V.O.
67
66
65
63.5
62.7
60.5
60.5
70 T.F.

Outlet: Outlet
Rim: 60.50 ft
Sump: 50.00 ft

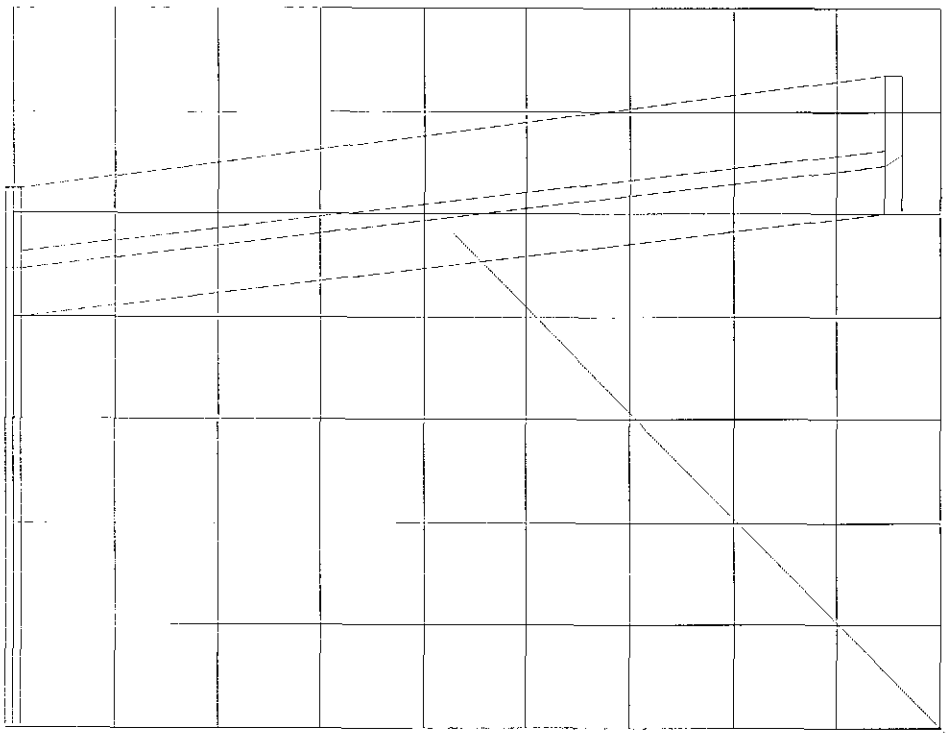
Inlet: I-1
Rim: 62.70 ft
Sump: 60.00 ft



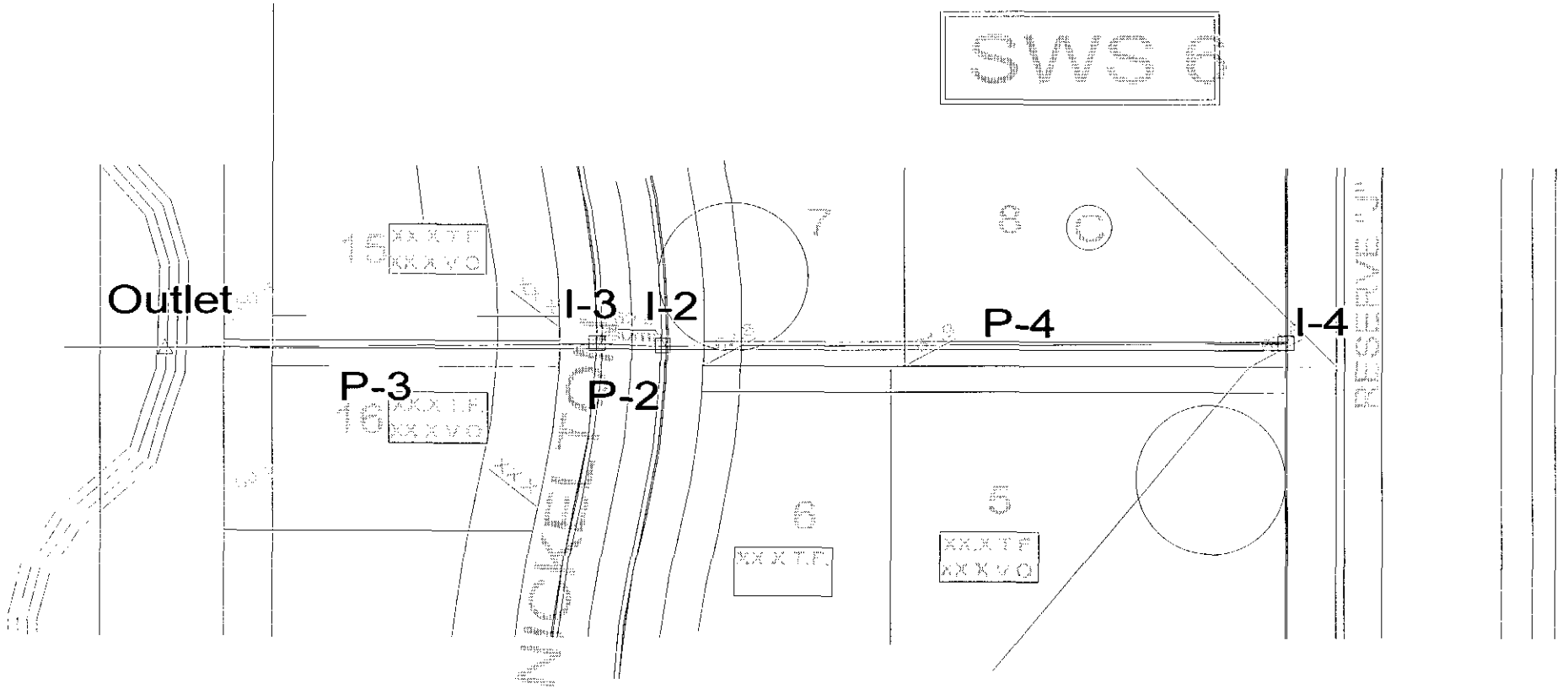
Pipe: P-1
Up Invert: 60.00 ft
Dn Invert: 58.00 ft
Length: 171.00 ft
Size: 15 inch

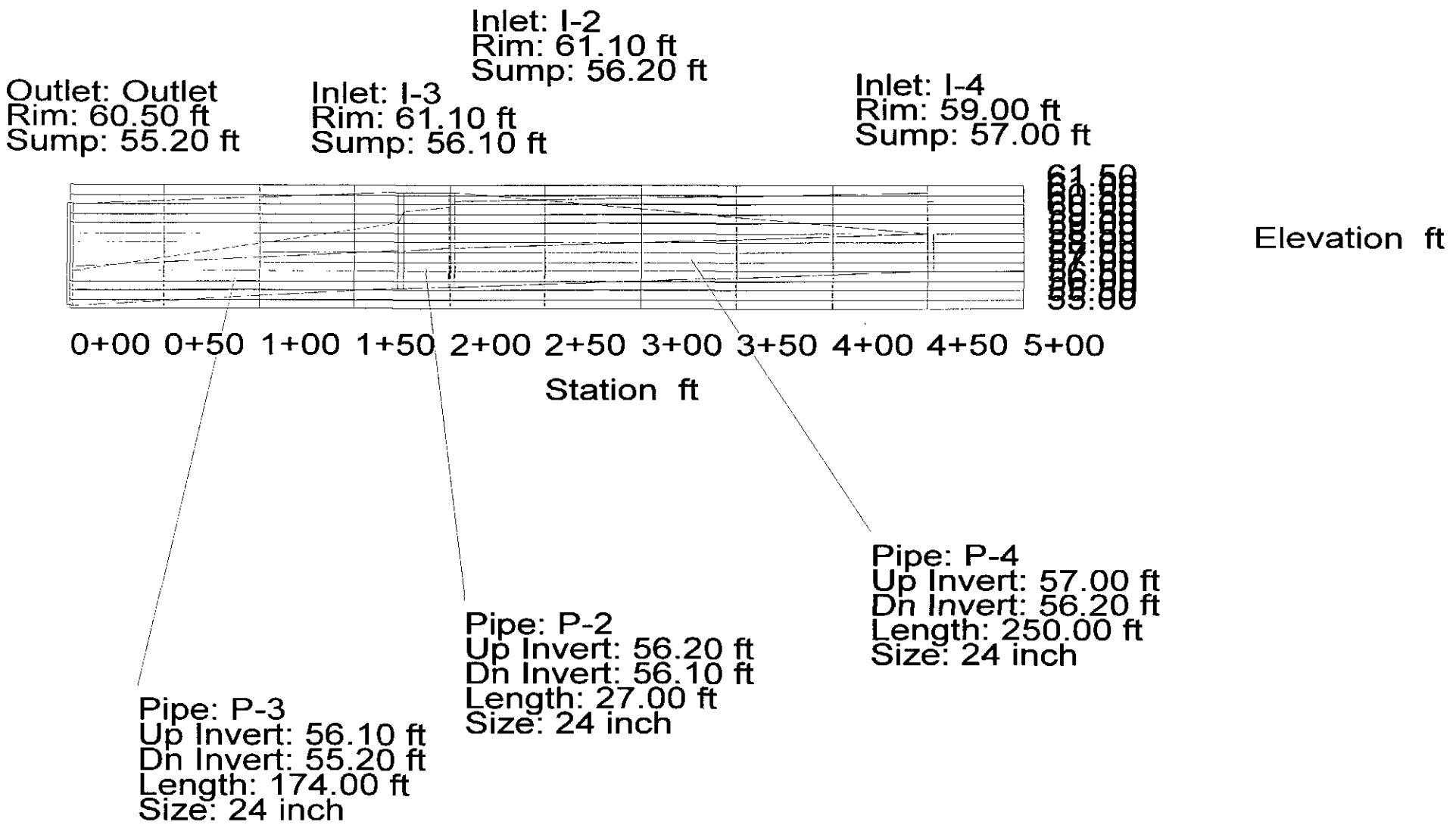
Inlet: I-1
Rim: 62.70 ft
Sump: 60.00 ft

Outlet: Outlet
Rim: 60.50 ft
Sump: 50.00 ft



Pipe: P-1
Up Invert: 60.00 ft
Dn Invert: 58.00 ft
Length: 171.00 ft
Size: 15 inch


SWS 6
Outlet
I-3
I-2
P-4
I-4
P-3
P-2

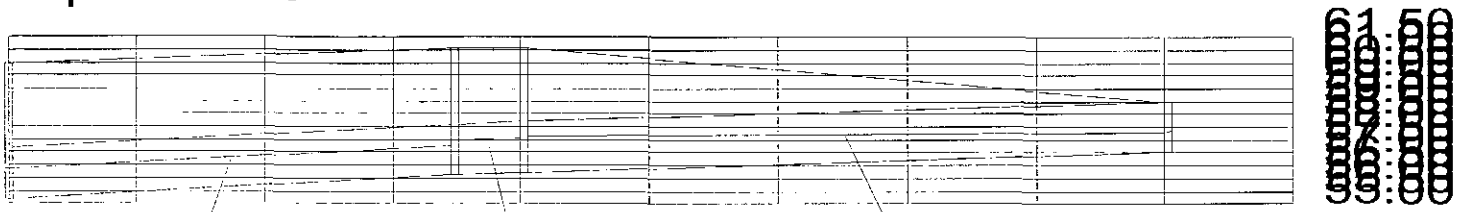

Inlet: I-2
Rim: 61.10 ft
Sump: 56.20 ft
Outlet: Outlet
Rim: 60.50 ft
Sump: 55.20 ft
Inlet: I-3
Rim: 61.10 ft
Sump: 56.10 ft
Inlet: I-4
Rim: 59.00 ft
Sump: 57.00 ft
61.50
Elevation ft
0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00
Station ft
Pipe: P-4
Up Invert: 57.00 ft
Dn Invert: 56.20 ft
Length: 250.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 56.20 ft
Dn Invert: 56.10 ft
Length: 27.00 ft
Size: 24 inch
Pipe: P-3
Up Invert: 56.10 ft
Dn Invert: 55.20 ft
Length: 174.00 ft
Size: 24 inch

Inlet: I-2
Rim: 61.10 ft
Sump: 56.20 ft

Outlet: Outlet
Rim: 60.50 ft
Sump: 55.20 ft

Inlet: I-3
Rim: 61.10 ft
Sump: 56.10 ft

Inlet: I-4
Rim: 59.00 ft
Sump: 57.00 ft



Elevation ft

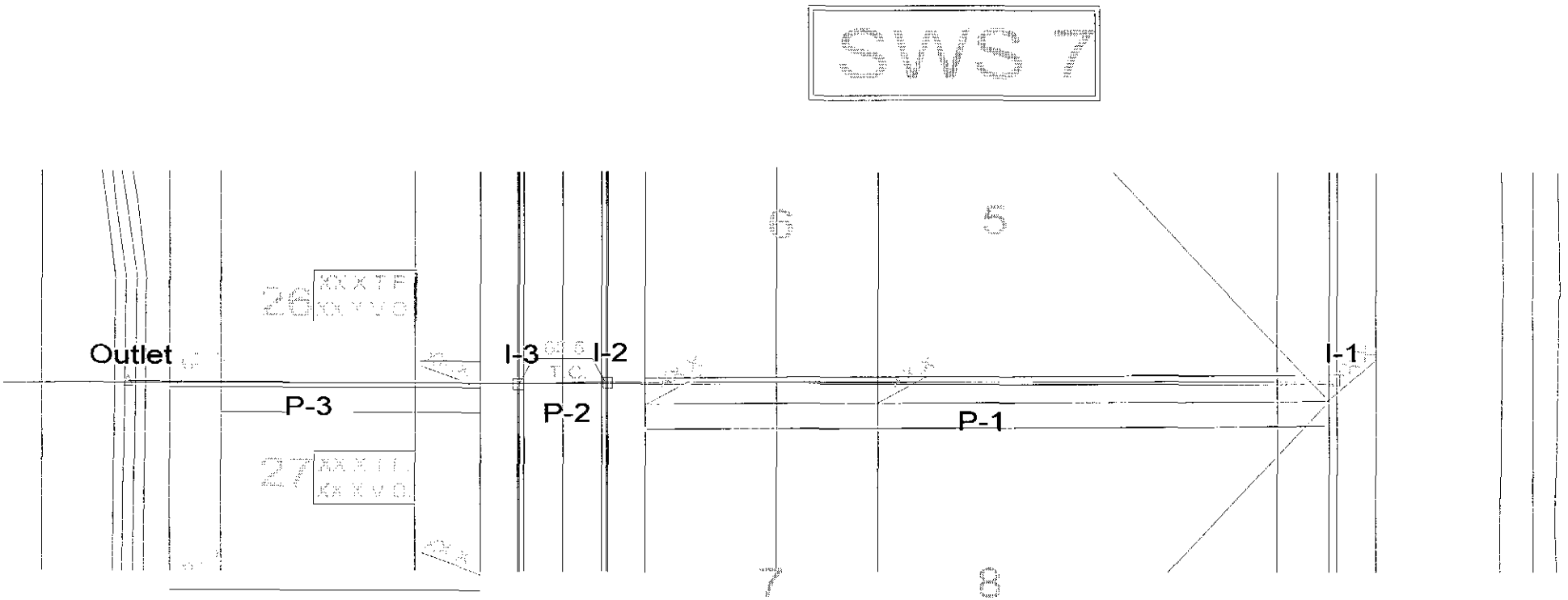
0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00

Station ft

Pipe: P-3
Up Invert: 56.10 ft
Dn Invert: 55.20 ft
Length: 174.00 ft
Size: 24 inch

Pipe: P-2
Up Invert: 56.20 ft
Dn Invert: 56.10 ft
Length: 27.00 ft
Size: 24 inch

Pipe: P-4
Up Invert: 57.00 ft
Dn Invert: 56.20 ft
Length: 250.00 ft
Size: 24 inch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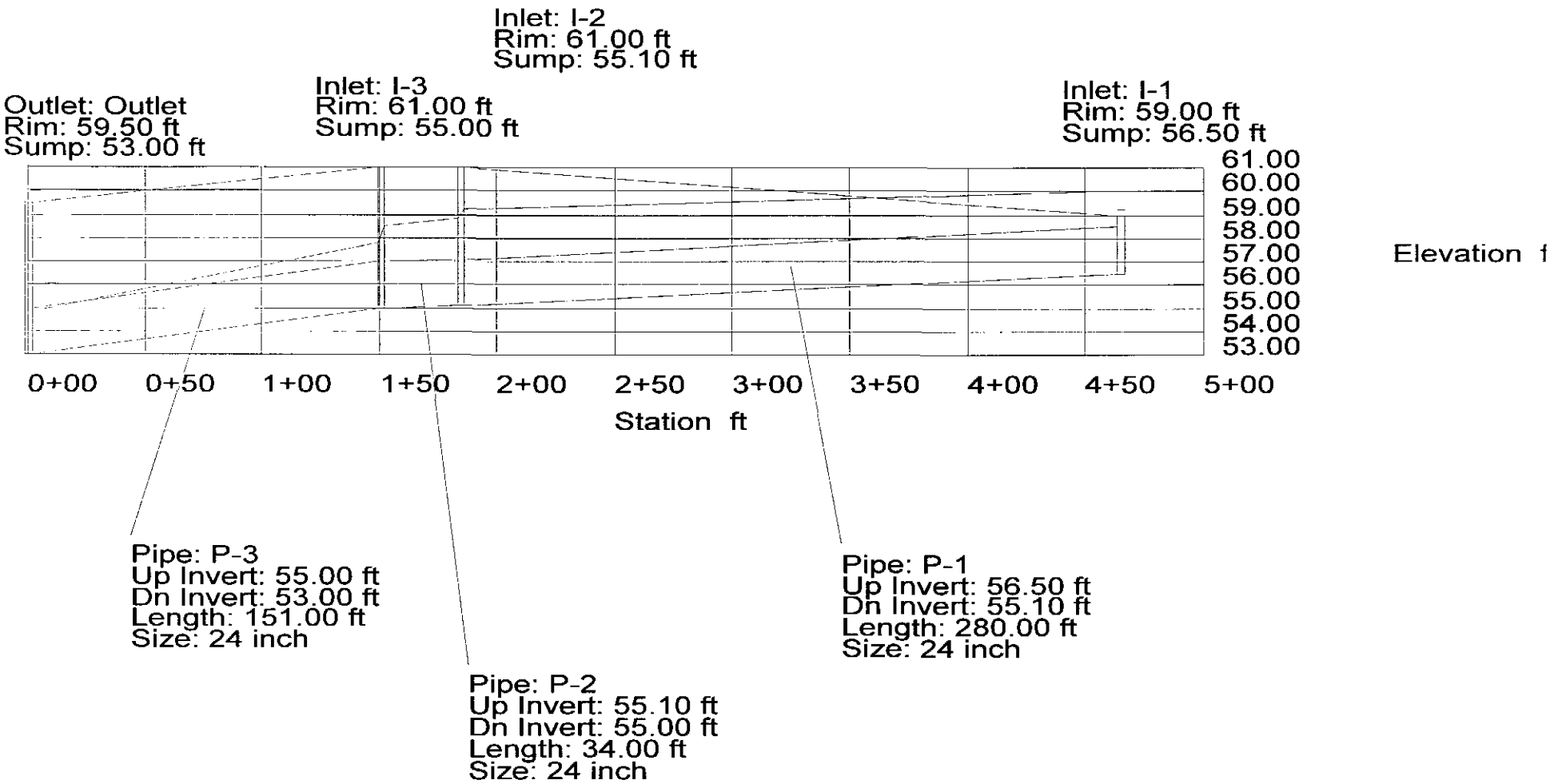
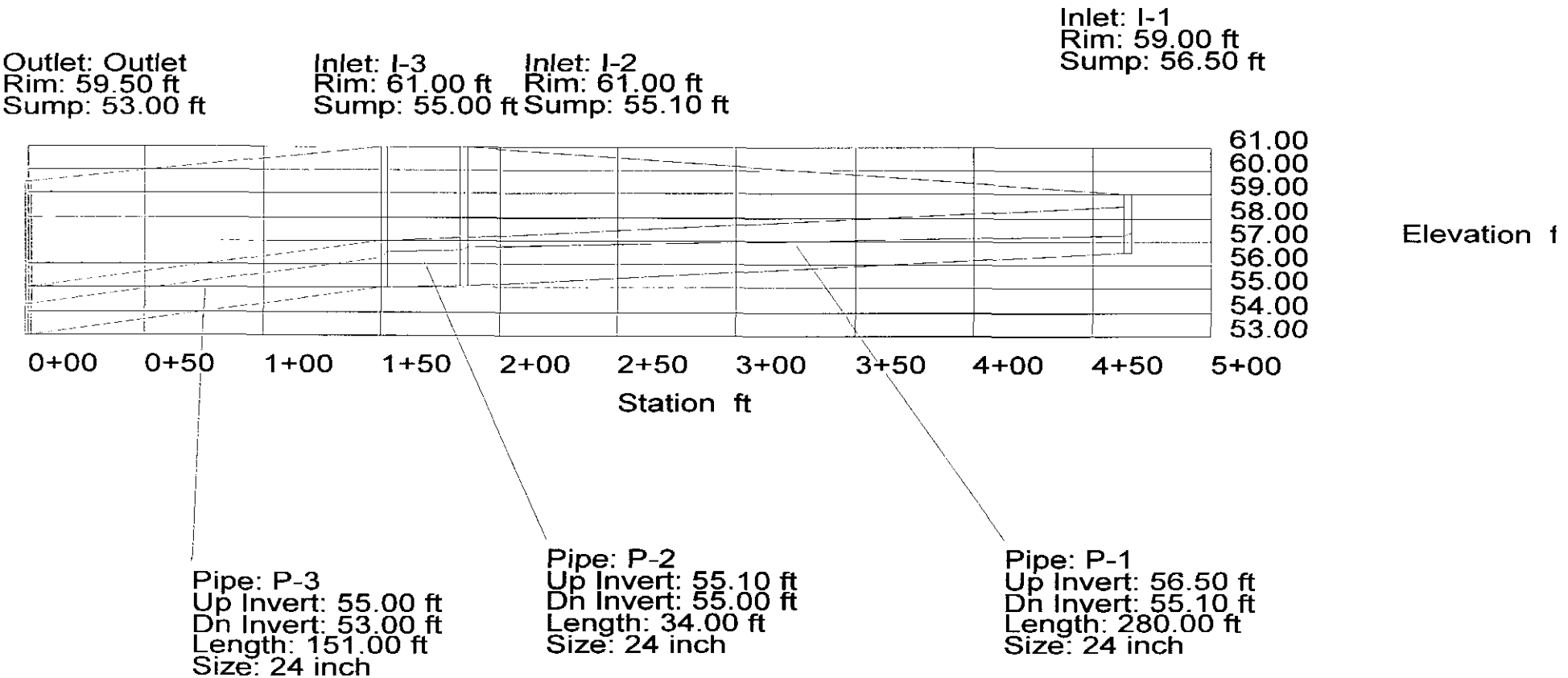
Outlet
I-3
I-2
I-1
P-3
P-2
P-1
26
27
5
6
7
8


Inlet: I-2
Rim: 61.00 ft
Sump: 55.10 ft
Inlet: I-3
Rim: 61.00 ft
Sump: 55.00 ft
Outlet: Outlet
Rim: 59.50 ft
Sump: 53.00 ft
Inlet: I-1
Rim: 59.00 ft
Sump: 56.50 ft
61.00
60.00
59.00
58.00
57.00
56.00
55.00
54.00
53.00
Elevation ft
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
Station ft
Pipe: P-3
Up Invert: 55.00 ft
Dn Invert: 53.00 ft
Length: 151.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 55.10 ft
Dn Invert: 55.00 ft
Length: 34.00 ft
Size: 24 inch
Pipe: P-1
Up Invert: 56.50 ft
Dn Invert: 55.10 ft
Length: 280.00 ft
Size: 24 inch


Outlet: Outlet
Rim: 59.50 ft
Sump: 53.00 ft
Inlet: I-3
Rim: 61.00 ft
Sump: 55.00 ft
Inlet: I-2
Rim: 61.00 ft
Sump: 55.10 ft
Inlet: I-1
Rim: 59.00 ft
Sump: 56.50 ft
61.00
60.00
59.00
58.00
57.00
56.00
55.00
54.00
53.00
Elevation f
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
4+50
5+00
Station ft
Pipe: P-3
Up Invert: 55.00 ft
Dn Invert: 53.00 ft
Length: 151.00 ft
Size: 24 inch
Pipe: P-2
Up Invert: 55.10 ft
Dn Invert: 55.00 ft
Length: 34.00 ft
Size: 24 inch
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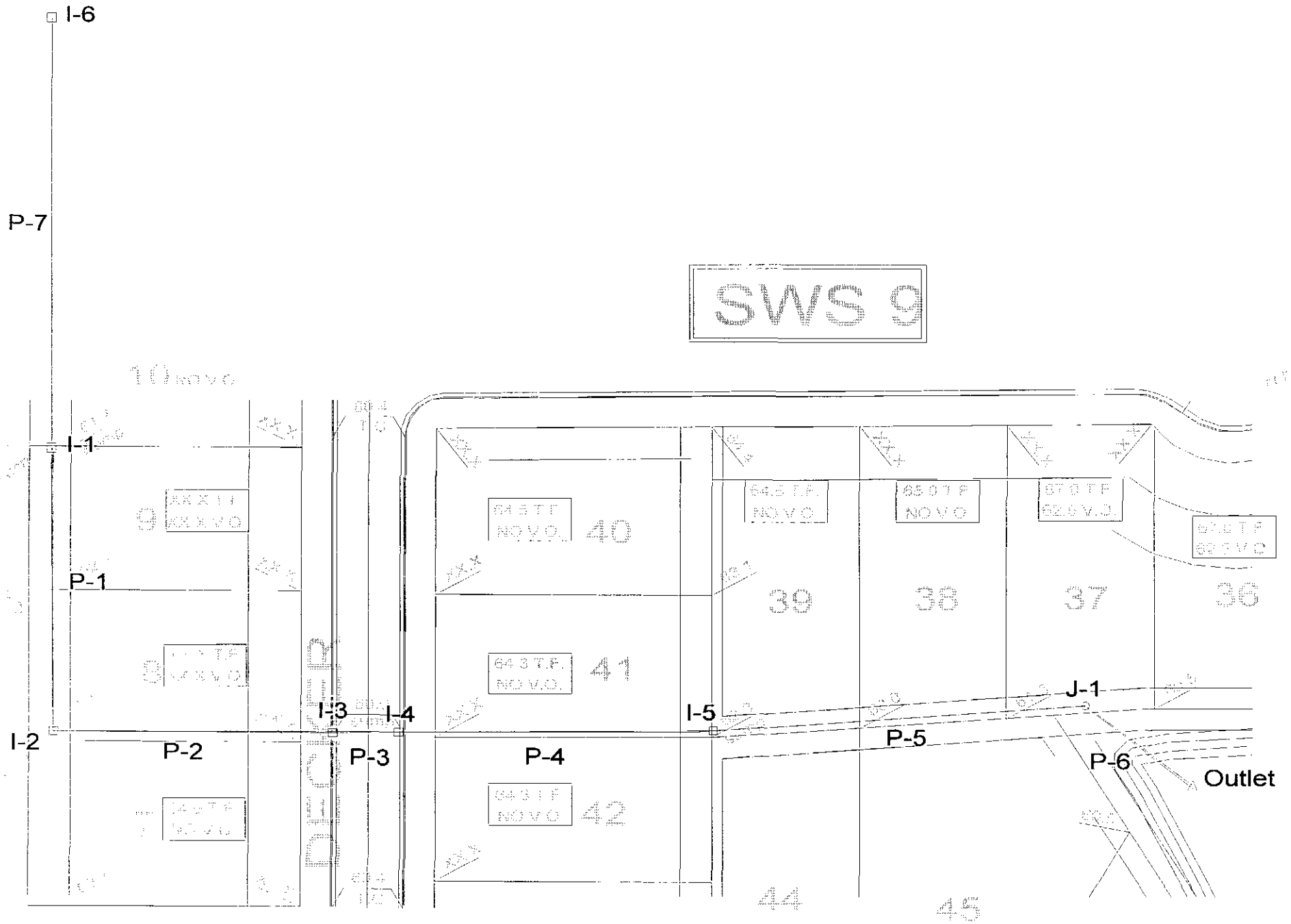
Up Invert: 56.50 ft
Dn Invert: 55.10 ft
Length: 280.00 ft
Size: 24 inch



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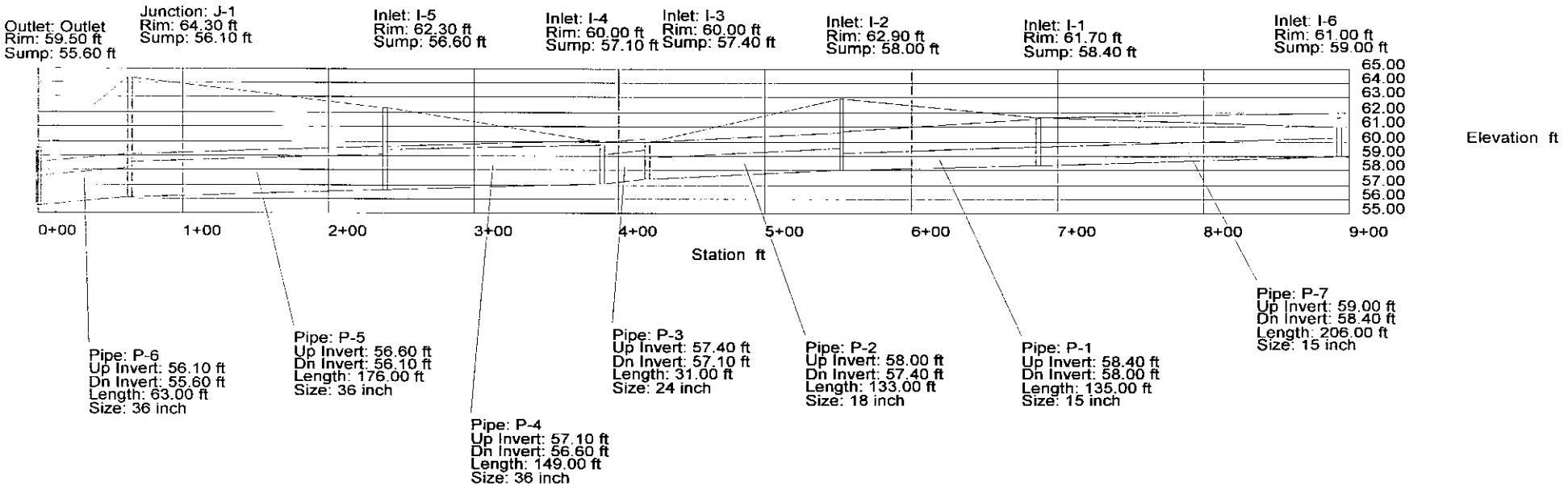
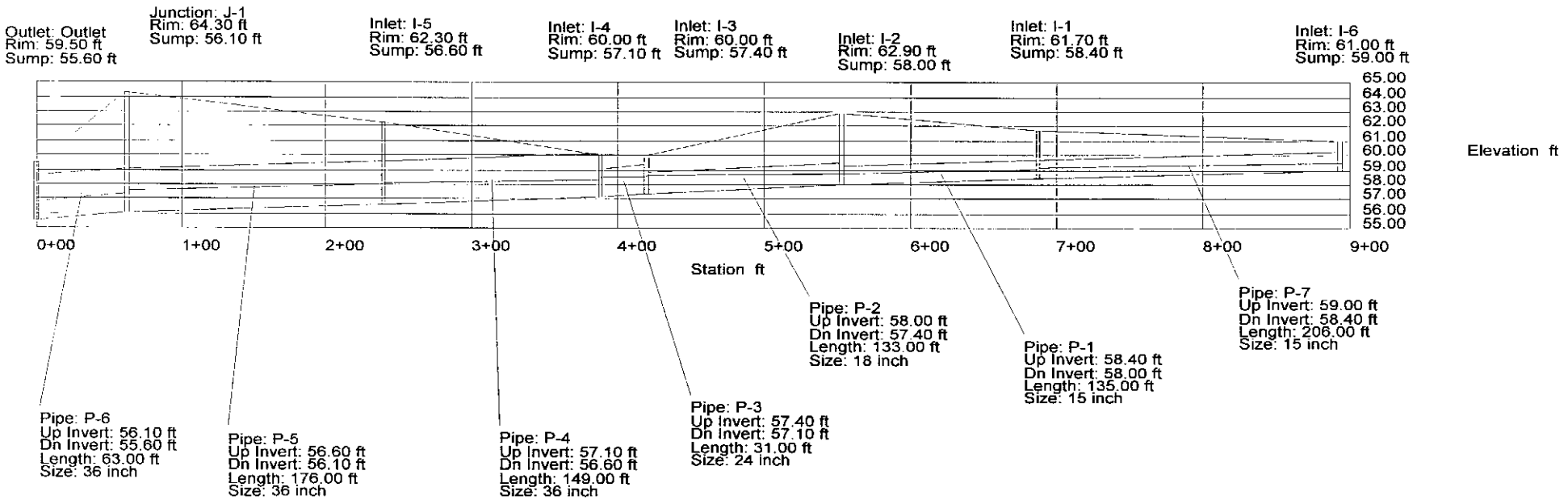
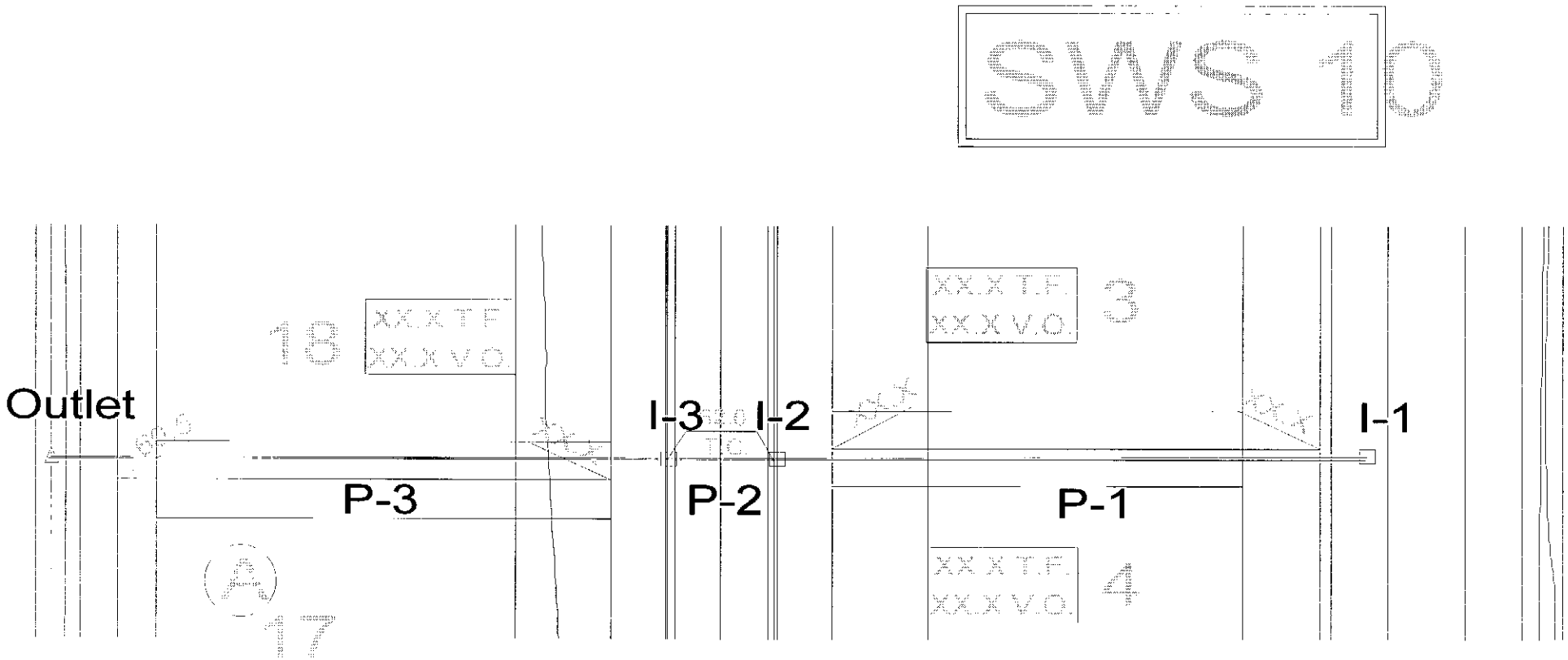
Project Engineer: Baughman Company, P.A.
StormCAD v1.0





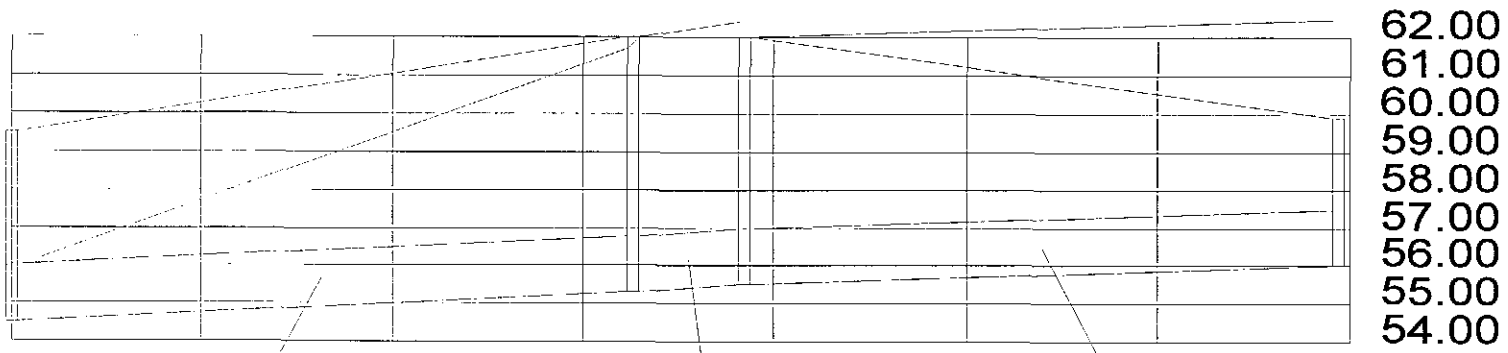

SWS 10
Outlet
I-3
I-2
I-1
P-3
P-2
P-1
18
17
3
4
XX.X T.F.
XX.X V.O.

Outlet: Outlet
Rim: 59.50 ft
Sump: 54.50 ft

Inlet: I-3
Rim: 62.00 ft
Sump: 55.30 ft

Inlet: I-2
Rim: 62.00 ft
Sump: 55.50 ft

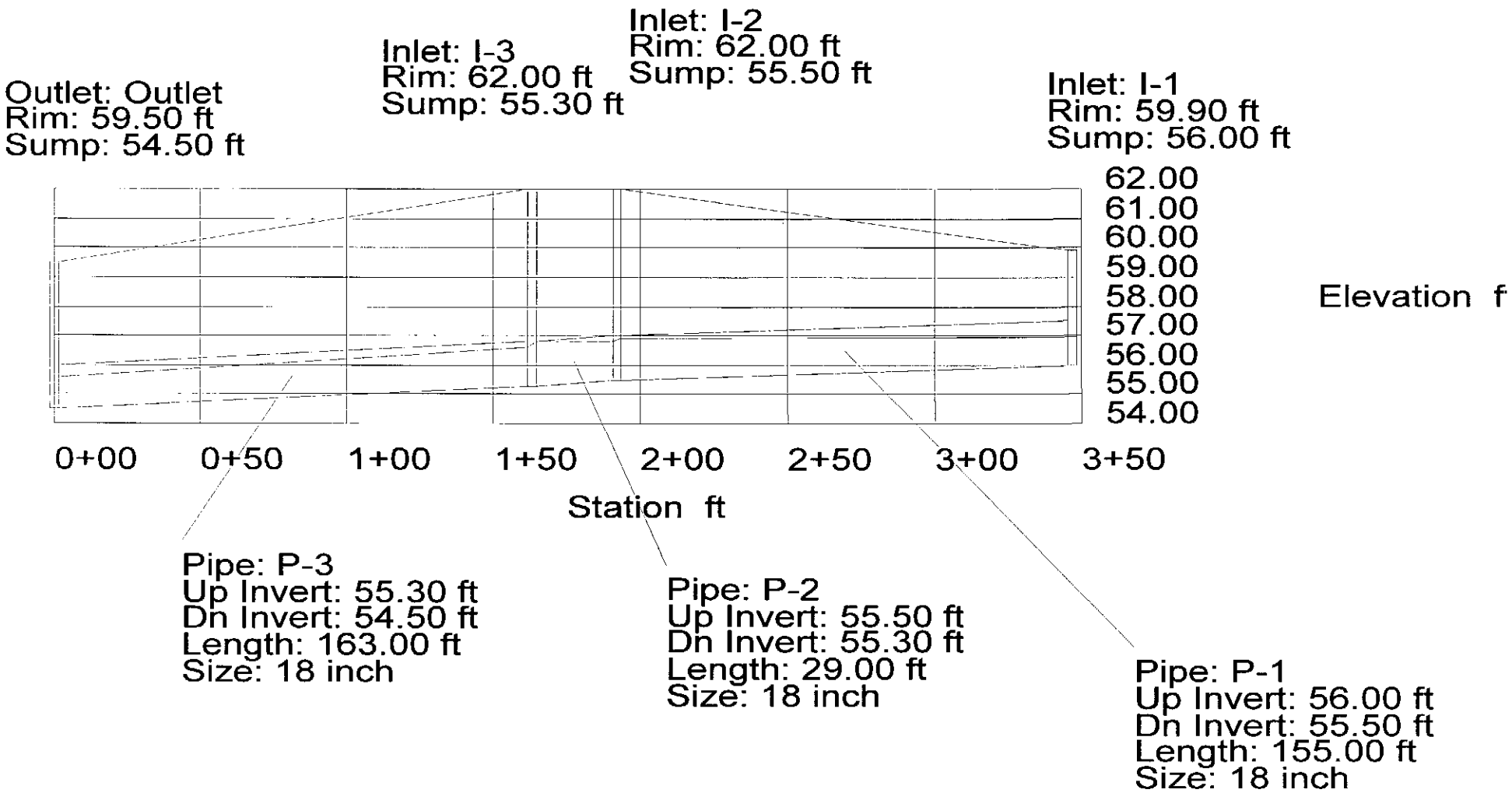
Inlet: I-1
Rim: 59.90 ft
Sump: 56.00 ft

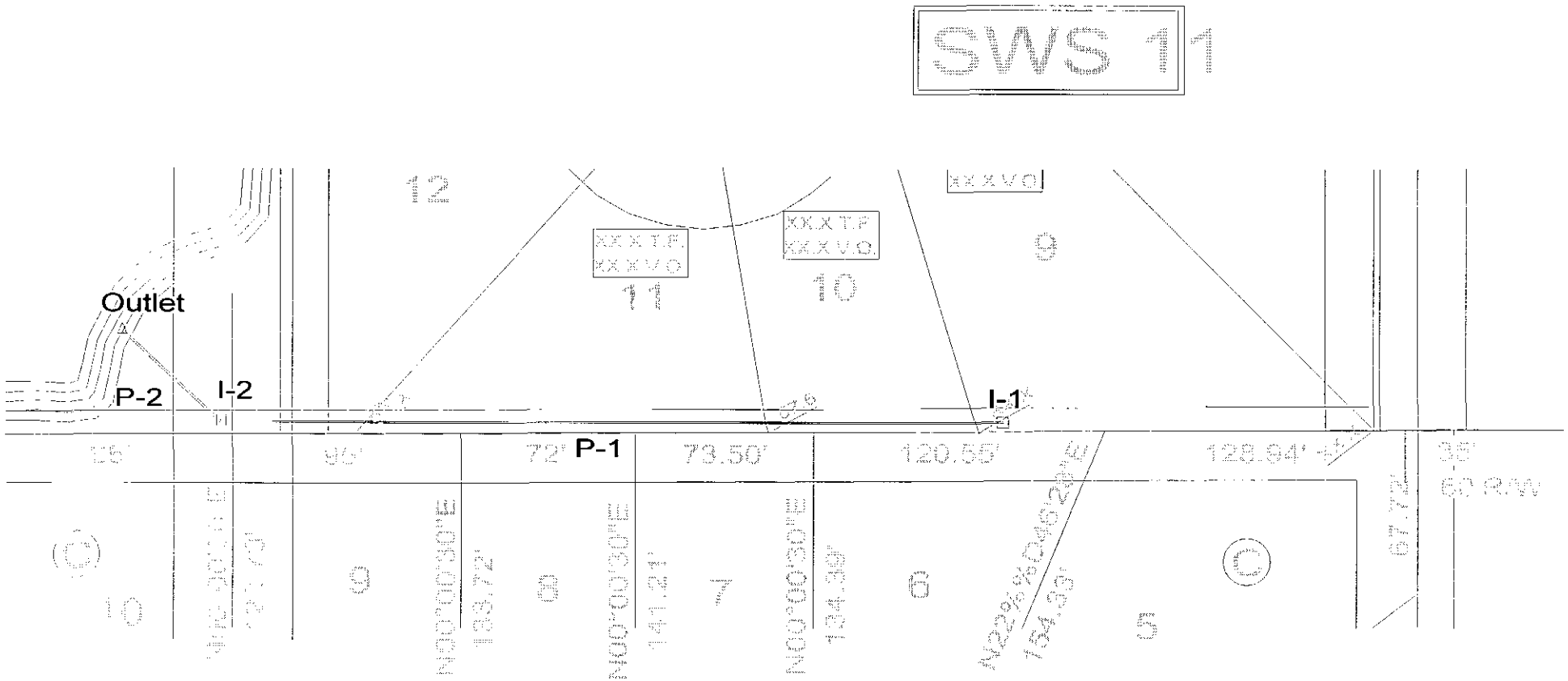


Pipe: P-3
Up Invert: 55.30 ft
Dn Invert: 54.50 ft
Length: 163.00 ft
Size: 18 inch

Pipe: P-2
Up Invert: 55.50 ft
Dn Invert: 55.30 ft
Length: 29.00 ft
Size: 18 inch

Pipe: P-1
Up Invert: 56.00 ft
Dn Invert: 55.50 ft
Length: 155.00 ft
Size: 18 inch

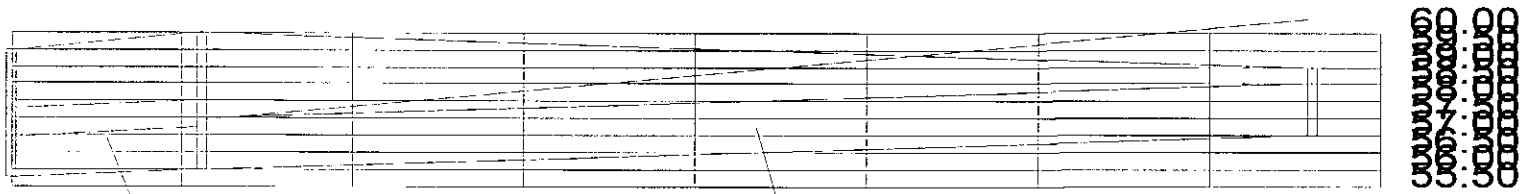

Outlet: Outlet
Rim: 59.50 ft
Sump: 54.50 ft
Inlet: I-3
Rim: 62.00 ft
Sump: 55.30 ft
Inlet: I-2
Rim: 62.00 ft
Sump: 55.50 ft
Inlet: I-1
Rim: 59.90 ft
Sump: 56.00 ft
62.00
61.00
60.00
59.00
58.00
57.00
56.00
55.00
54.00
Elevation f
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
Station ft
Pipe: P-3
Up Invert: 55.30 ft
Dn Invert: 54.50 ft
Length: 163.00 ft
Size: 18 inch
Pipe: P-2
Up Invert: 55.50 ft
Dn Invert: 55.30 ft
Length: 29.00 ft
Size: 18 inch
Pipe: P-1
Up Invert: 56.00 ft
Dn Invert: 55.50 ft
Length: 155.00 ft
Size: 18 inch


SWS 11
Outlet
P-2
I-2
I-1
P-1
12
11
10
9
8
7
6
5
73.50'
120.55'
128.84'
35'
60' R/W

Outlet: Outlet
Rim: 59.50 ft
Sump: 55.80 ft

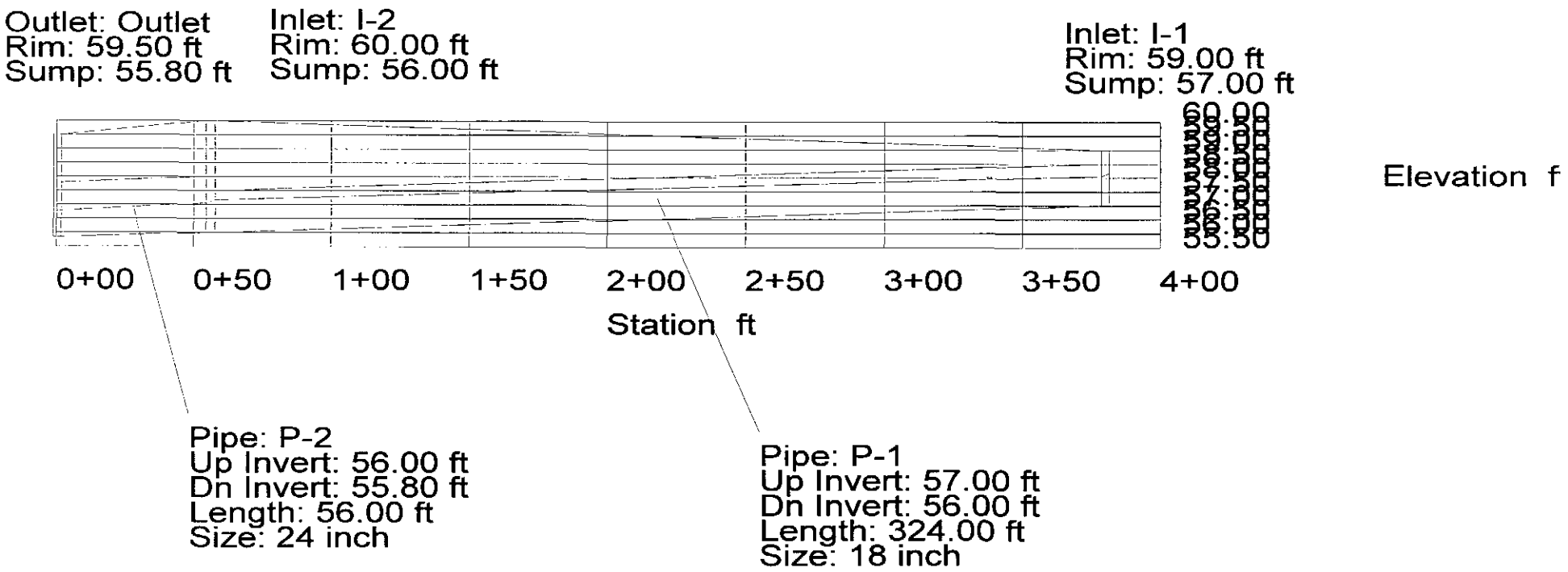
Inlet: I-2
Rim: 60.00 ft
Sump: 56.00 ft

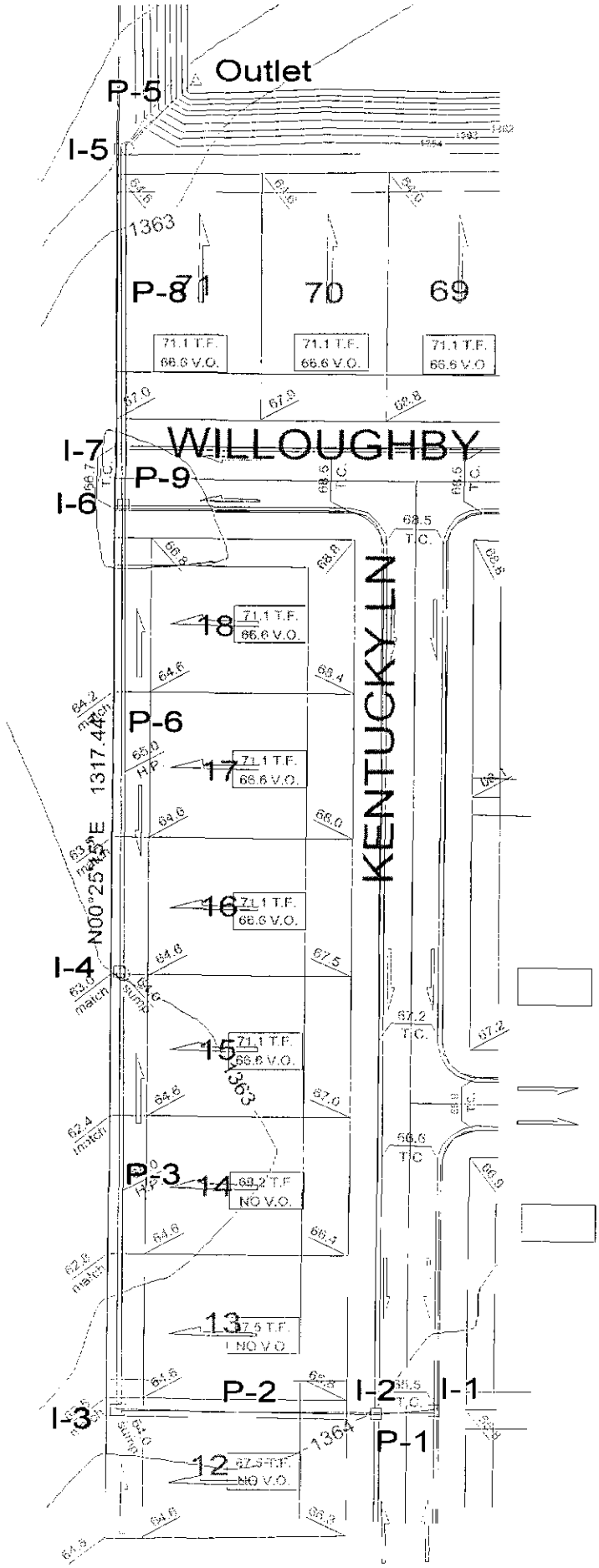
Inlet: I-1
Rim: 59.00 ft
Sump: 57.00 ft



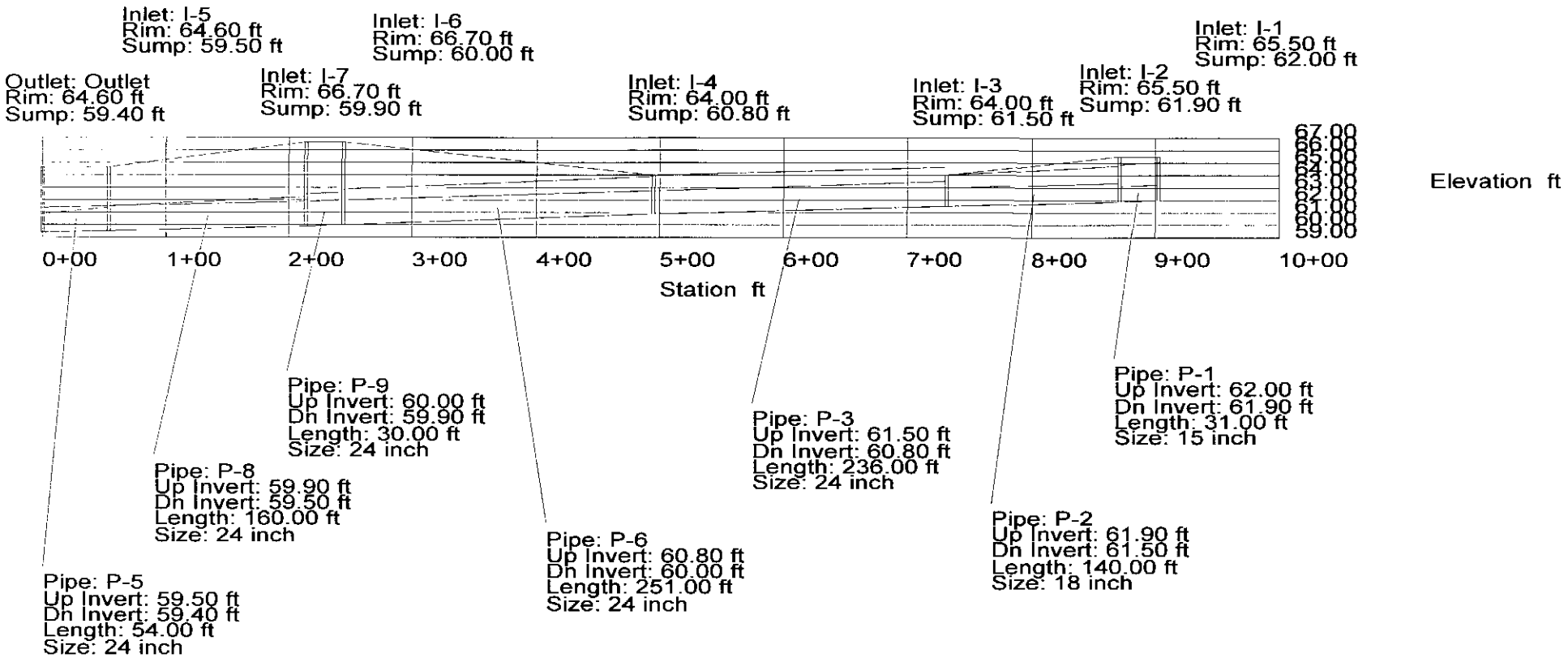
Pipe: P-2
Up Invert: 56.00 ft
Dn Invert: 55.80 ft
Length: 56.00 ft
Size: 24 inch

Pipe: P-1
Up Invert: 57.00 ft
Dn Invert: 56.00 ft
Length: 324.00 ft
Size: 18 inch


Outlet: Outlet
Rim: 59.50 ft
Sump: 55.80 ft
Inlet: I-2
Rim: 60.00 ft
Sump: 56.00 ft
Inlet: I-1
Rim: 59.00 ft
Sump: 57.00 ft
60.00
55.50
Elevation f
0+00
0+50
1+00
1+50
2+00
2+50
3+00
3+50
4+00
Station ft
Pipe: P-2
Up Invert: 56.00 ft
Dn Invert: 55.80 ft
Length: 56.00 ft
Size: 24 inch
Pipe: P-1
Up Invert: 57.00 ft
Dn Invert: 56.00 ft
Length: 324.00 ft
Size: 18 inch



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



Soil Survey

HYDROLOGIC GROUP RATING FOR SEDGWICK COUNTY, KANSAS

USDA Natural Resources Conservation Service

HYDROLOGIC GROUP RATING FOR SEDGWICK COUNTY, KANSAS

Silverton

MAP LEGEND

Hydrologic Group

{Dominant Condition, <}

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available
- Soil Map Units
- Cities
- Detailed Counties
- Interstate Highways
- Roads
- Rails
- Water
- Hydrography
- Oceans

MAP INFORMATION

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov

Coordinate System: UTM Zone 14

Soil Survey Area: Sedgwick County, Kansas
Spatial Version of Data: 1
Soil Map Compilation Scale: 1:24000

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables - Hydrologic Group

Summary by Map Unit - Sedgwick County, Kansas

Soil Survey Area Map Unit Symbol	Map Unit Name	Rating	Total Acres in AOI	Percent of AOI
5976	Vanoss silt loam, 0 to 1 percent slopes	B	33.9	24.3
5977	Vanoss silt loam, 1 to 3 percent slopes	B	1.7	1.2
6254	Waurika silt loam, 0 to 1 percent slopes	D	46.7	33.5
6322	Blanket silt loam, 0 to 1 percent slopes	C	47.4	34.0
6323	Blanket silt loam, 1 to 3 percent slopes	C	0.6	0.4
9970	Aquolls	C	9.1	6.5

Description - Hydrologic Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are placed into four groups A, B, C, and D, and three dual classes, A/D, B/D, and C/D. Definitions of the classes are as follows:

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only soils that are rated D in their natural condition are assigned to dual classes.

Parameter Summary - Hydrologic Group

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

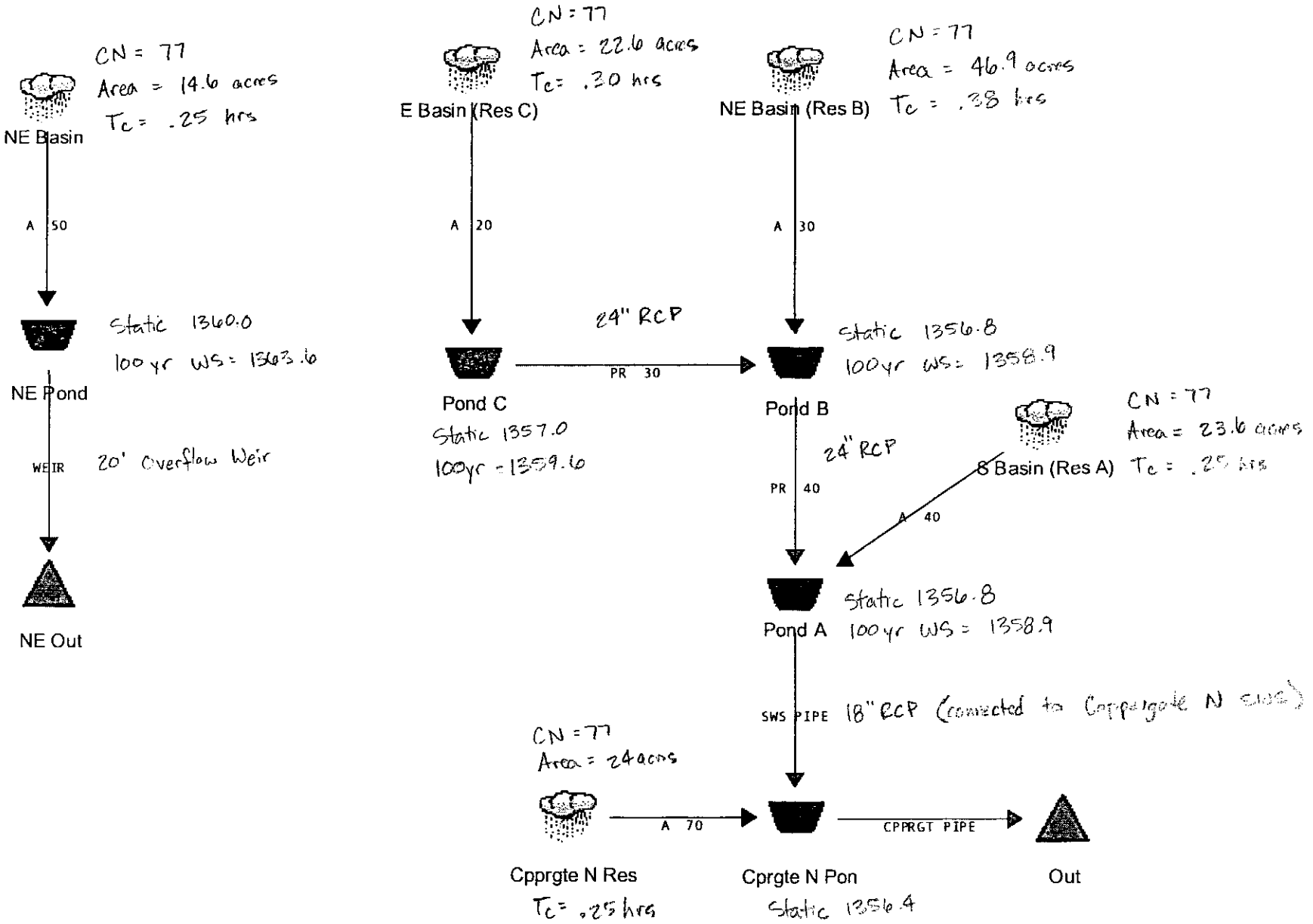
Component Percent Cutoff:

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

PondPack


CN = 77
Area = 14.6 acres
Tc = .25 hrs
NE Basin
A 50
Static 1360.0
100 yr WS = 1363.16
NE Pond
WEIR
20' Overflow Weir
NE Out
CN = 77
Area = 22.6 acres
Tc = .30 hrs
E Basin (Res C)
A 20
CN = 77
Area = 46.9 acres
Tc = .38 hrs
NE Basin (Res B)
A 30
24" RCP
PR 30
Static 1356.8
100yr WS = 1358.9
Pond C
Static 1357.0
100yr = 1359.16
Pond B
24" RCP
PR 40
CN = 77
Area = 23.6 acres
S Basin (Res A) Tc = .25 hrs
A 40
Static 1356.8
Pond A 100yr WS = 1358.9
SWS PIPE 18" RCP (connected to Cpprgate N side)
CN = 77
Area = 24 acres
A 70
CPPRGT PIPE
Cpprgte N Res
Tc = .25 hrs
Cprgte N Pon
Static 1356.4
Out

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

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

Table of Contents

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID SEDGWICK.RNQ Sedgwick24

Return Event	Total Depth in	Rainfall Type	RNF File	RNF ID
2y24h	3.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
5y24h	4.5000	Synthetic Curve	SCSTYPES	TypeII 24hr
10y24h	5.3000	Synthetic Curve	SCSTYPES	TypeII 24hr
25y24h	6.1000	Synthetic Curve	SCS	SCSII
50y24h	7.0000	Synthetic Curve	SCSTYPES	TypeII 24hr
100y24	7.9000	Synthetic Curve	SCSTYPES	TypeII 24hr

ICPM CALCULATION TOLERANCES

Target Convergence= .000 cfs +/-
Max. Iterations = 35 loops
ICPM Time Step = .0500 hrs
Output Time Step = .0500 hrs
ICPM Ending Time = 35.0000 hrs

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
CPPRGTE N RES	AREA	2	2.861		12.0500	41.20		
CPPRGTE N RES	AREA	5	4.421		12.0500	64.26		
CPPRGTE N RES	AREA	10	5.752		12.0500	83.58		
CPPRGTE N RES	AREA	25	7.133		12.0000	46.95		
CPPRGTE N RES	AREA	50	8.732		12.0500	125.90		
CPPRGTE N RES	AREA	100	10.366		12.0500	148.64		
CPRGTE N PON	POND	2	4.152		12.0500	41.56		
CPRGTE N PON	POND	5	6.914		12.0500	65.02		
CPRGTE N PON	POND	10	9.166		12.0500	84.99		
CPRGTE N PON	POND	25	11.347		12.0000	49.69		
CPRGTE N PON	POND	50	13.697		12.0500	128.98		

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
-								
CPRGTE N PON	POND	100	15.887		12.0500	151.96		
CPRGTE N PON OUT	POND	2	1.973		23.8000	1.26	1357.02	2.595
CPRGTE N PON OUT	POND	5	3.894		19.5000	2.34	1357.28	3.703
CPRGTE N PON OUT	POND	10	5.517		18.1500	3.40	1357.50	4.623
CPRGTE N PON OUT	POND	25	7.099		16.1500	4.40	1357.68	5.368
CPRGTE N PON OUT	POND	50	9.040		15.8500	5.79	1357.92	6.385
CPRGTE N PON OUT	POND	100	10.820		15.2000	7.22	1358.15	7.353
E BASIN (RES C)	AREA	2	2.694		12.1000	35.36		
E BASIN (RES C)	AREA	5	4.163		12.0500	55.24		
E BASIN (RES C)	AREA	10	5.416		12.0500	72.22		
E BASIN (RES C)	AREA	25	6.717		12.0000	43.59		
E BASIN (RES C)	AREA	50	8.222		12.0500	109.55		
E BASIN (RES C)	AREA	100	9.761		12.0500	129.67		
NE BASIN	AREA	2	1.741		12.0500	25.06		
NE BASIN	AREA	5	2.690		12.0500	39.09		
NE BASIN	AREA	10	3.499		12.0500	50.85		
NE BASIN	AREA	25	4.339		12.0000	28.56		
NE BASIN	AREA	50	5.312		12.0500	76.59		
NE BASIN	AREA	100	6.306		12.0500	90.42		
NE BASIN (RES B)	AREA	2	5.590		12.1000	64.81		
NE BASIN (RES B)	AREA	5	8.639		12.1000	102.24		
NE BASIN (RES B)	AREA	10	11.239		12.1000	133.76		
NE BASIN (RES B)	AREA	25	13.940		12.0500	88.31		
NE BASIN (RES B)	AREA	50	17.062		12.1000	203.10		
NE BASIN (RES B)	AREA	100	20.254		12.1000	240.49		
*NE OUT	JCT	2	1.740		12.2500	10.76		
*NE OUT	JCT	5	2.690		12.2500	17.15		
*NE OUT	JCT	10	3.499		12.2500	24.83		
*NE OUT	JCT	25	4.339		12.1500	22.62		
*NE OUT	JCT	50	5.312		12.2000	42.48		

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
*NE OUT		JCT	100	6.306		12.2000	51.70		
NE POND	IN	POND	2	1.741		12.0500	25.06		
NE POND	IN	POND	5	2.690		12.0500	39.09		
NE POND	IN	POND	10	3.499		12.0500	50.85		
NE POND	IN	POND	25	4.339		12.0000	28.56		
NE POND	IN	POND	50	5.312		12.0500	76.59		
NE POND	IN	POND	100	6.306		12.0500	90.42		
NE POND	OUT	POND	2	1.740		12.2500	10.76	1360.29	.471
NE POND	OUT	POND	5	2.690		12.2500	17.15	1360.47	.753
NE POND	OUT	POND	10	3.499		12.2500	24.83	1360.60	.964
NE POND	OUT	POND	25	4.339		12.1500	22.62	1360.56	.910
NE POND	OUT	POND	50	5.312		12.2000	42.48	1360.86	1.395
NE POND	OUT	POND	100	6.306		12.2000	51.70	1361.00	1.622
*OUT		JCT	2	1.973		23.8000	1.26		
*OUT		JCT	5	3.894		19.5000	2.34		
*OUT		JCT	10	5.517		18.1500	3.40		
*OUT		JCT	25	7.099		16.1500	4.40		
*OUT		JCT	50	9.040		15.8500	5.79		
*OUT		JCT	100	10.820		15.2000	7.22		
POND A		POND	2	2.256		12.0500	40.38		
POND A		POND	5	4.362		12.0500	62.48		
POND A		POND	10	5.677		12.0500	80.92		
POND A		POND	25	7.255		12.0000	42.85		
POND A		POND	50	8.827		12.0500	120.79		
POND A		POND	100	10.355		12.0500	142.02		
POND A	OUT	POND	2	1.291		13.8000	1.10	1357.39	1.532
POND A	OUT	POND	5	2.493		12.7000	2.15	1357.70	2.327
POND A	OUT	POND	10	3.414		12.4000	2.87	1357.97	3.038
POND A	OUT	POND	25	4.214		12.2000	2.98	1358.20	3.687
POND A	OUT	POND	50	4.966		12.2000	3.38	1358.58	4.747

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
POND A	OUT POND	100	5.521		12.1500	3.51	1358.92	5.697
POND B	POND	2	7.574		12.1500	66.15		
POND B	POND	5	11.601		12.1000	104.42		
POND B	POND	10	15.003		12.1000	136.77		
POND B	POND	25	18.601		12.0500	94.04		
POND B	POND	50	22.928		12.1000	209.70		
POND B	POND	100	26.771		12.1000	249.70		
POND B	OUT POND	2	.143		34.7500	.33	1357.37	8.270
POND B	OUT POND	5	.997		34.2500	1.03	1357.66	12.419
POND B	OUT POND	10	1.382		33.6500	1.46	1357.92	16.147
POND B	OUT POND	25	2.001		32.1000	2.00	1358.17	19.726
POND B	OUT POND	50	2.405		34.7000	2.46	1358.48	24.224
POND B	OUT POND	100	2.764		32.6000	2.77	1358.79	28.789
POND B	OUT POND	2	-.701		13.5000	-1.39(-Q)		
POND C	POND	2	2.694		12.1000	35.36		
POND C	POND	5	4.163		12.0500	55.24		
POND C	POND	10	5.416		12.0500	72.22		
POND C	POND	25	6.717		12.0000	43.59		
POND C	POND	50	8.222		12.0500	109.55		
POND C	POND	100	9.761		12.0500	129.67		
POND C	OUT POND	2	1.984		13.5500	2.51	1357.74	1.410
POND C	OUT POND	5	2.962		13.2500	4.54	1358.16	2.210
POND C	OUT POND	10	3.764		12.9500	7.02	1358.48	2.845
POND C	OUT POND	25	4.661		13.2000	9.36	1358.75	3.366
POND C	OUT POND	50	5.867		12.6000	12.65	1359.21	4.286
POND C	OUT POND	100	6.517		12.4500	14.02	1359.63	5.163
S BASIN (RES A)	AREA	2	2.813		12.0500	40.51		
S BASIN (RES A)	AREA	5	4.348		12.0500	63.19		
S BASIN (RES A)	AREA	10	5.656		12.0500	82.19		
S BASIN (RES A)	AREA	25	7.014		12.0000	46.16		

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
S BASIN (RES A)	AREA	50	8.586		12.0500	123.80		
S BASIN (RES A)	AREA	100	10.193		12.0500	146.16		

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

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

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 = 10y24h

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

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

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 = 50y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 7.0000 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1000 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

DESIGN STORMS SUMMARY

Design Storm File,ID = SEDGWICK.RNQ Sedgwick24

Storm Tag Name = 2y24h

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

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 = 10y24h

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

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 = 50y24h

Data Type, File, ID = Synthetic Storm SCSTYPES.RNF TypeII 24hr
Storm Frequency = 50 yr
Total Rainfall Depth= 7.0000 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

File.... F:\HYDRO\PROJECTS\SILVERTON ADDITION\PONDPACK\PONDSYSTEMS_REVISED.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1356.40	-----	4.2000	.0000	.000	.000
1362.40	-----	4.2000	12.6000	25.200	25.200

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

File.... F:\HYDRO\PROJECTS\SILVERTON ADDITION\PONDPACK\PONDSYSTEMS_REVISED.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1360.00	-----	1.6000	.0000	.000	.000
1361.00	-----	1.6600	4.8897	1.630	1.630
1362.00	-----	1.7000	5.0399	1.680	3.310
1363.00	-----	1.8000	5.2493	1.750	5.060
1364.00	-----	2.0000	5.6974	1.899	6.959
1365.00	-----	2.2000	6.2976	2.099	9.058

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

File.... F:\HYDRO\PROJECTS\SILVERTON ADDITION\PONDPACK\PONDSYSTEMS_REVISED.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1356.80	-----	2.5000	.0000	.000	.000
1358.00	-----	2.7000	7.7981	3.119	3.119
1359.00	-----	2.9000	8.3982	2.799	5.919
1360.00	-----	3.1000	8.9983	2.999	8.918
1361.00	-----	3.3000	9.5984	3.199	12.117

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

File.... F:\HYDRO\PROJECTS\SILVERTON ADDITION\PONDPACK\PONDSYSTEMS_REVISED.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1356.80	-----	14.3000	.0000	.000	.000
1358.00	-----	14.5000	43.1997	17.279	17.279
1359.00	-----	14.7000	43.7997	14.600	31.879
1360.00	-----	14.9000	44.3997	14.800	46.679

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

File.... F:\HYDRO\PROJECTS\SILVERTON ADDITION\PONDPACK\PONDSYSTEMS_REVISED.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1357.00	-----	1.9000	.0000	.000	.000
1358.00	-----	1.9000	5.7000	1.900	1.900
1359.00	-----	2.0000	5.8494	1.950	3.850
1360.00	-----	2.2000	6.2976	2.099	5.949
1361.00	-----	2.3000	6.7494	2.250	8.199
1362.00	-----	2.5000	7.1979	2.399	10.598

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

File.... F:\HYDRO\PROJECTS\SILVERTON ADDITION\PONDPACK\PONDSYSTEMS_REVISED.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1356.40 ft
Increment = .50 ft
Max. Elev.= 1362.40 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	1356.400	1362.400
TW SETUP, DS Channel				

OUTLET STRUCTURE INPUT DATA

Structure ID = CV
Structure Type = Culvert-Circular

No. Barrels	=	1
Barrel Diameter	=	1.5000 ft
Upstream Invert	=	1356.40 ft
Dnstream Invert	=	1355.00 ft
Horiz. Length	=	100.00 ft
Barrel Length	=	100.01 ft
Barrel Slope	=	.01400 ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130
Ke	=	.5000 (forward entrance loss)
Kb	=	.018213 (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)	=	1.153
T2 ratio (HW/D)	=	1.300
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 = 1358.13 ft ---> Flow = 7.58 cfs
At T2 Elev = 1358.35 ft ---> Flow = 8.66 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

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 1360.00 ft
Increment = .50 ft
Max. Elev.= 1365.00 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
Weir-Rectangular	WR	--->	TW	1360.000	1365.000

TW SETUP, DS Channel

OUTLET STRUCTURE INPUT DATA

Structure ID = WR
Structure Type = Weir-Rectangular

# of Openings = 1
Crest Elev. = 1360.00 ft
Weir Length = 20.00 ft
Weir Coeff. = 2.600000

Weir TW effects (Use adjustment equation)

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