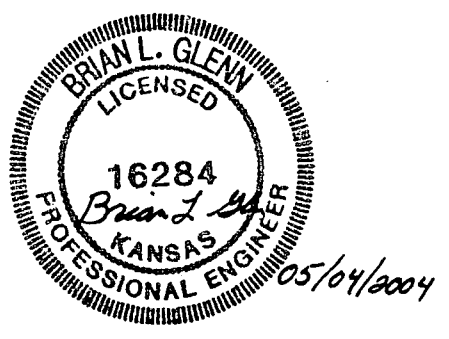


DRAINAGE PLAN
BLUE LAKE
ADDITION
TO
WICHITA, SEDGWICK COUNTY, KANSAS

Prepared By

 **BAUGHMAN COMPANY, P.A.**
ENGINEERING, SURVEYING & PLANNING
316/262-7271 FAX 316/262-0149 WICHITA, KANSAS 67211

May 4, 2004



INTRODUCTION

This report provides information and supporting documentation to support the "Drainage Plan" for the property located in Section 11, T-28-S, R-1-W in Sedgwick County, Kansas.

The "Drainage Plan" being submitted herein is 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.

This property was previously used as for sand extraction, and has an existing 38-acre groundwater lake. Proposed residential development will utilize this lake as both an amenity feature, as well as for receiving rainfall runoff.

The 100-yr water surface elevation was determined by a logical approach. The total contributing area that discharges to the lake is 146 acres. During a 100-yr-rainfall event, with a rainfall depth of 7.9 inches over a 24-hr period, the total rainfall volume would be 96 ac-ft. By dividing this total possible volume of rain by the surface area of the existing lake, it is determined that the increase of the water surface would be 2.5 feet. This rise in the normal level of the pond assumes that there is no infiltration during the rainfall event, and that there is no discharge from the lake. Noting that the normal level of the lake is at elevation 90 city datum, the corresponding 100-yr water surface would be 92.5 city datum.

Since the lake facility is not expected to discharge naturally, an emergency outfall pipe is proposed for construction in the northeast portion of the lake. This outlet pipe will discharge only under the most extreme circumstances. Based on the elevation of the channel at the northeast of the property, this outlet pipe will be established at an elevation of 96.5 city datum. In order to provide protection to the structures that will abut the lake, the grading plan will establish that the lowest opening to the structures will exceed the elevation of this outlet.

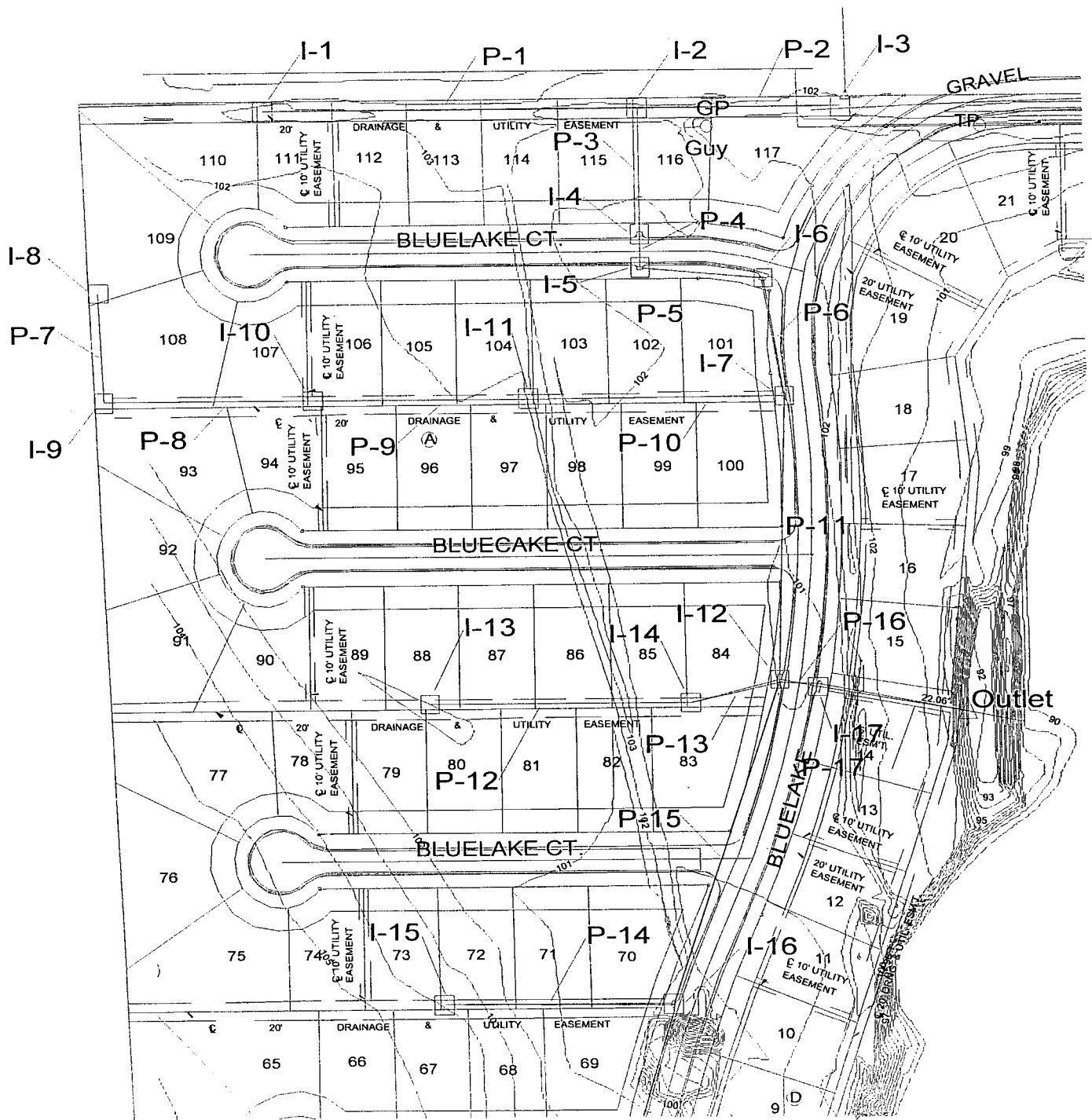
Since the grading plan will control the elevation of the structures, the existing lake would be able to accommodate a rainfall event of nearly 18 inches prior to any discharge.

Appendix A
USGS Quadrangle Map



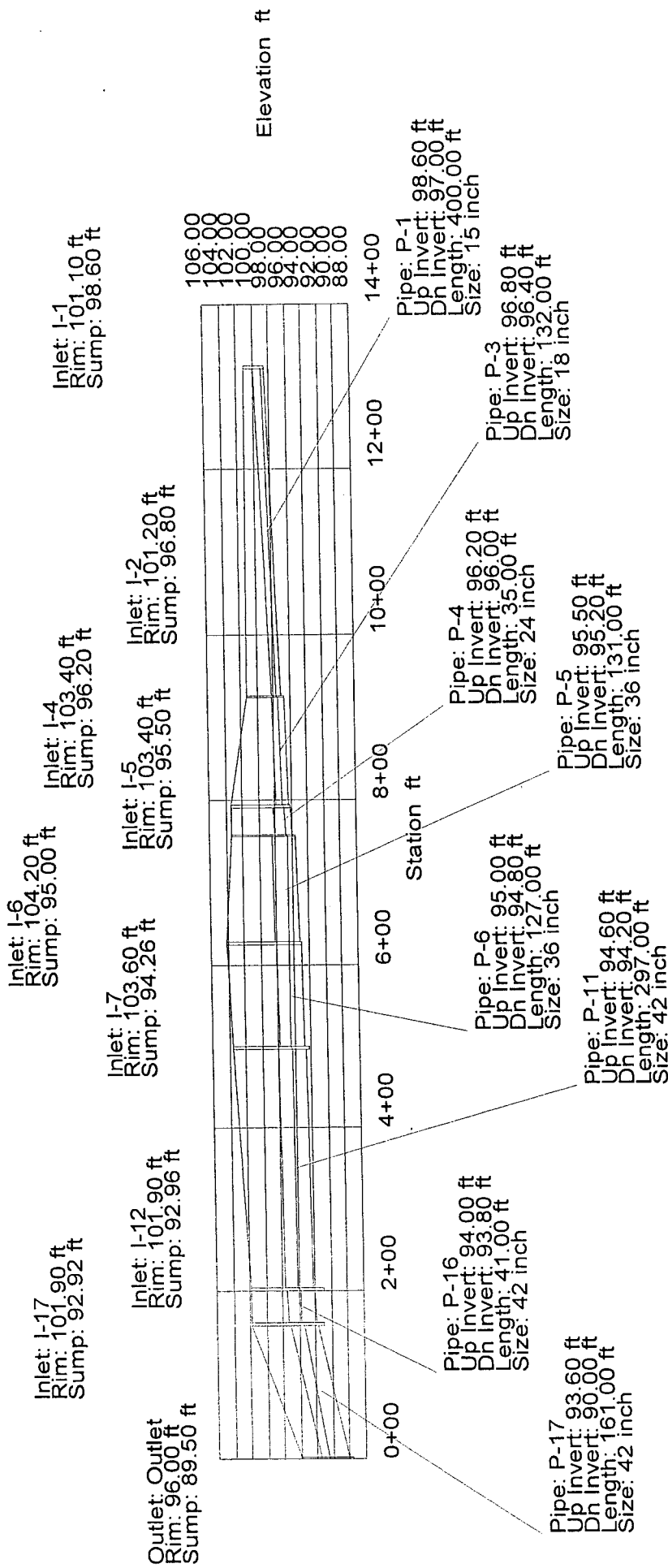
T. 27
T. 28
4168
4167000
SOUTH WICHITA INTERCHANGE 3.8 MI.
37°3
97°22'30"
655

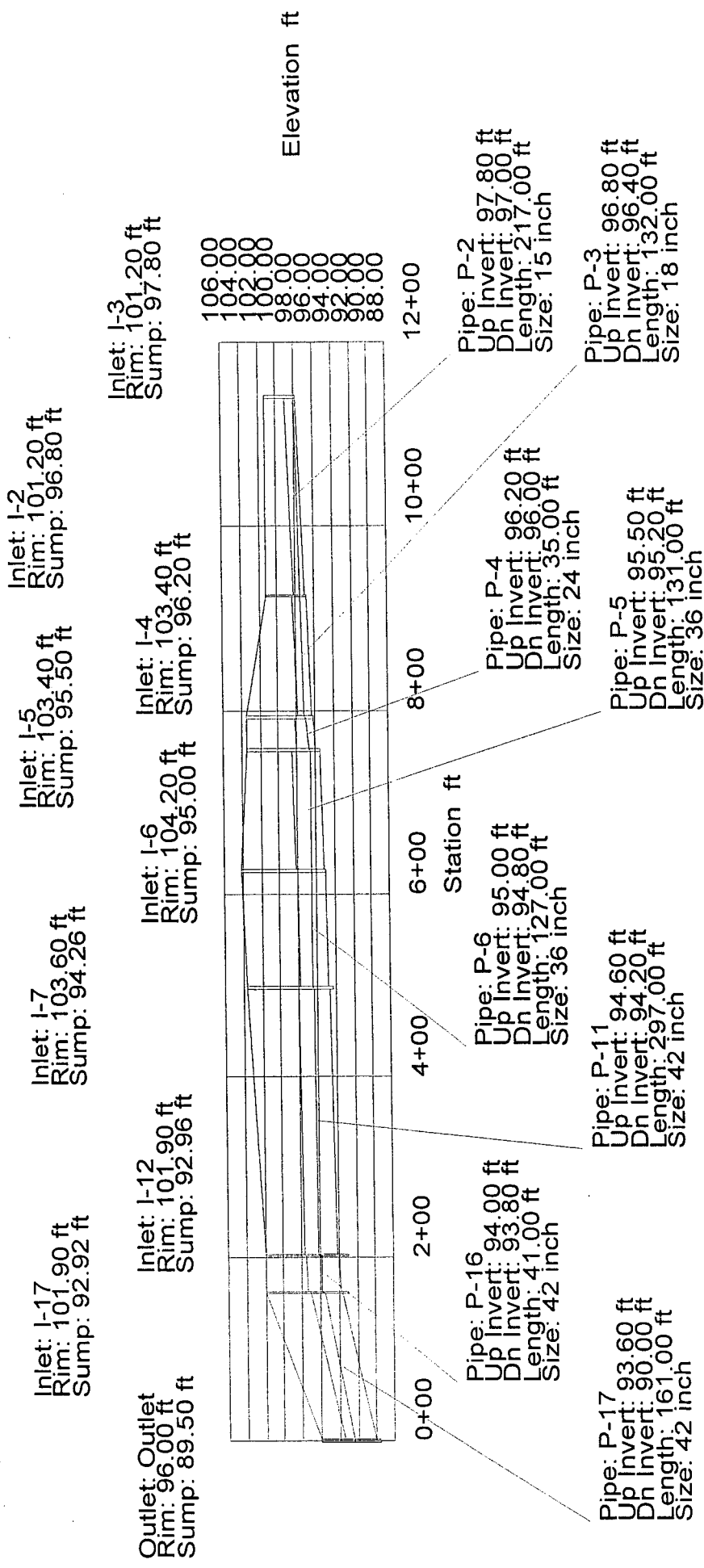
Appendix B
StormCad Analysis
Stormsewer System #1

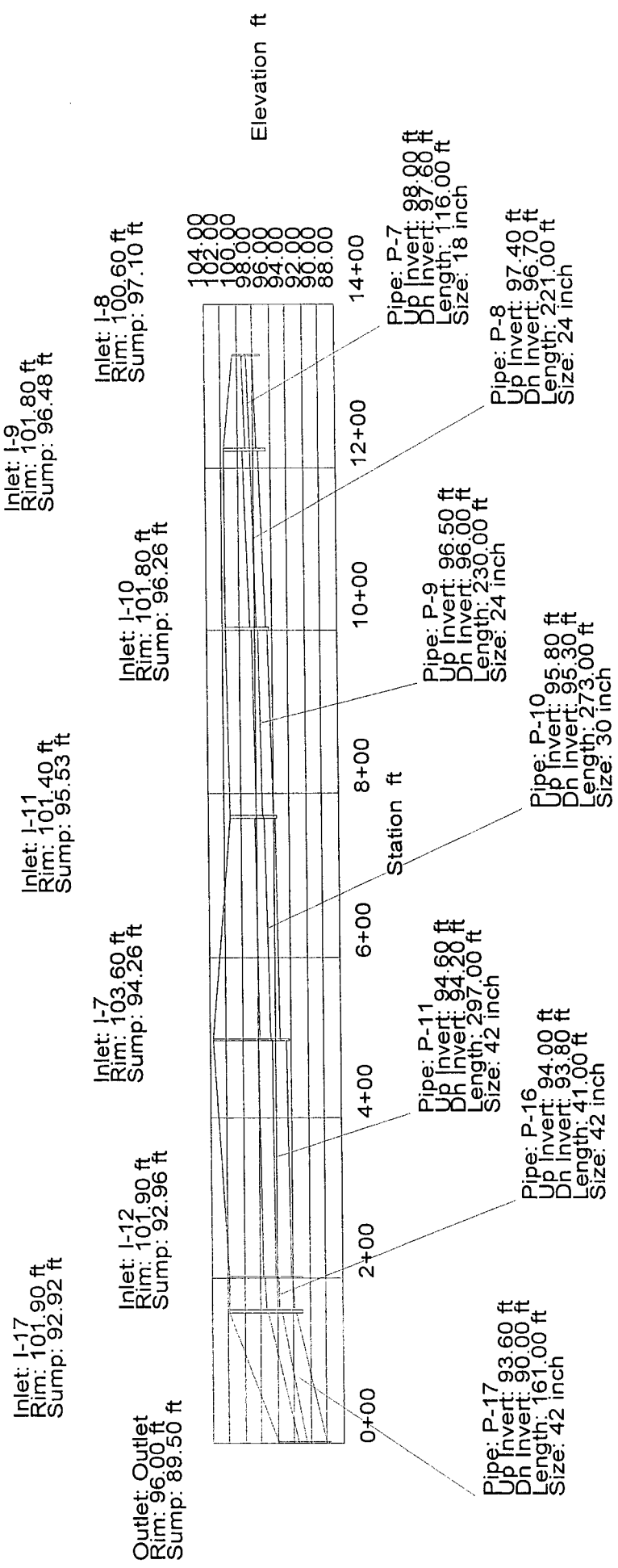


System Report

| 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-14 | 3.20 | 0.00 | 3.20 | I-15 | Circular | 98.60 | 97.80 | 101.60 | 99.38 | 0.003379 | 3.20 | 243.00 |
| | | | | I-16 | 18 inch | | | 103.90 | 98.48 | 0.003292 | 6.03 | |
| P-15 | 0.00 | 3.20 | 3.20 | I-16 | Circular | 97.60 | 95.00 | 103.90 | 98.23 | 0.006308 | 3.20 | 364.00 |
| | | | | I-12 | 24 inch | | | 101.90 | 96.10 | 0.007143 | 19.12 | |
| P-12 | 2.60 | 0.00 | 2.60 | I-13 | Circular | 98.60 | 97.60 | 101.60 | 99.27 | 0.003632 | 2.60 | 278.00 |
| | | | | I-14 | 18 inch | | | 101.30 | 98.21 | 0.003597 | 6.30 | |
| P-13 | 1.60 | 2.60 | 4.20 | I-14 | Circular | 97.10 | 95.00 | 101.30 | 97.82 | 0.019318 | 4.20 | 98.00 |
| | | | | I-12 | 24 inch | | | 101.90 | 96.10 | 0.021429 | 33.11 | |
| P-7 | 4.20 | 0.00 | 4.20 | I-8 | Circular | 98.00 | 97.60 | 100.60 | 98.91 | 0.003511 | 4.20 | 116.00 |
| | | | | I-9 | 18 inch | | | 101.80 | 98.49 | 0.003448 | 6.17 | |
| P-8 | 1.80 | 4.20 | 6.00 | I-9 | Circular | 97.40 | 96.70 | 101.80 | 98.37 | 0.002829 | 6.00 | 221.00 |
| | | | | I-10 | 24 inch | | | 101.80 | 97.82 | 0.003167 | 12.73 | |
| P-9 | 1.20 | 6.00 | 7.20 | I-10 | Circular | 96.50 | 96.00 | 101.80 | 97.72 | 0.002130 | 7.20 | 230.00 |
| | | | | I-11 | 24 inch | | | 101.40 | 97.23 | 0.002174 | 10.55 | |
| P-10 | 2.60 | 7.20 | 9.80 | I-11 | Circular | 95.80 | 95.30 | 101.40 | 97.12 | 0.002118 | 9.80 | 273.00 |
| | | | | I-7 | 30 inch | | | 103.60 | 96.46 | 0.001832 | 17.55 | |
| P-2 | 0.40 | 0.00 | 0.40 | I-3 | Circular | 97.80 | 97.00 | 101.20 | 98.07 | 0.002504 | 0.40 | 217.00 |
| | | | | I-2 | 15 inch | | | 101.20 | 97.58 | 0.003687 | 3.92 | |
| P-1 | 1.10 | 0.00 | 1.10 | I-1 | Circular | 98.60 | 97.00 | 101.10 | 99.04 | 0.003809 | 1.10 | 400.00 |
| | | | | I-2 | 15 inch | | | 101.20 | 97.58 | 0.004000 | 4.09 | |
| P-3 | 1.10 | 1.50 | 2.60 | I-2 | Circular | 96.80 | 96.40 | 101.20 | 97.51 | 0.002963 | 2.60 | 132.00 |
| | | | | I-4 | 18 inch | | | 103.40 | 97.12 | 0.003030 | 5.78 | |
| P-4 | 2.30 | 2.60 | 4.90 | I-4 | Circular | 96.20 | 96.00 | 103.40 | 96.98 | 0.005545 | 4.90 | 35.00 |
| | | | | I-5 | 24 inch | | | 103.40 | 96.73 | 0.005714 | 17.10 | |
| P-5 | 1.90 | 4.90 | 6.80 | I-5 | Circular | 95.50 | 95.20 | 103.40 | 96.59 | 0.000941 | 6.80 | 131.00 |
| | | | | I-6 | 36 inch | | | 104.20 | 96.52 | 0.002290 | 31.92 | |
| P-6 | 0.00 | 6.80 | 6.80 | I-6 | Circular | 95.00 | 94.80 | 104.20 | 96.49 | 0.000358 | 6.80 | 127.00 |
| | | | | I-7 | 36 inch | | | 103.60 | 96.46 | 0.001575 | 26.47 | |
| P-11 | 0.40 | 16.60 | 17.00 | I-7 | Circular | 94.60 | 94.20 | 103.60 | 96.37 | 0.000990 | 17.00 | 297.00 |
| | | | | I-12 | 42 inch | | | 101.90 | 96.10 | 0.001347 | 36.92 | |
| P-16 | 7.90 | 24.40 | 32.30 | I-12 | Circular | 94.00 | 93.80 | 101.90 | 95.76 | 0.003592 | 32.30 | 41.00 |
| | | | | I-17 | 42 inch | | | 101.90 | 95.80 | 0.004878 | 70.27 | |
| P-17 | 2.80 | 32.30 | 35.10 | I-17 | Circular | 93.60 | 90.00 | 101.90 | 95.44 | 0.020588 | 35.10 | 161.00 |
| | | | | Outlet | 42 inch | | | 96.00 | 92.50 | 0.022360 | 150.44 | |







Inlet: I-14
 Rim: 101.30 ft
 Sump: 97.10 ft

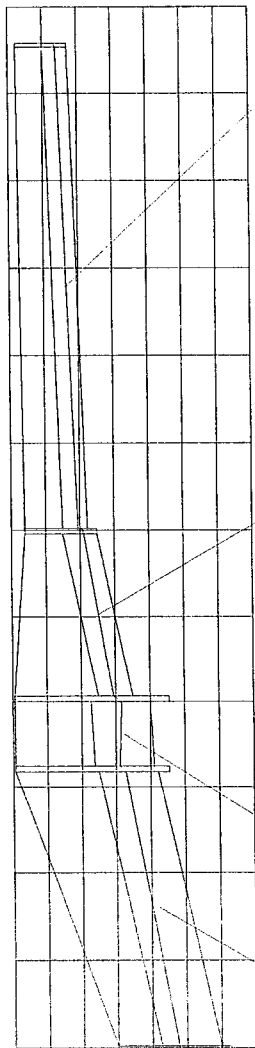
Inlet: I-17
 Rim: 101.90 ft
 Sump: 92.92 ft

Inlet: I-13
 Rim: 101.60 ft
 Sump: 98.60 ft

Inlet: I-12
 Rim: 101.90 ft
 Sump: 92.96 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 89.50 ft

102.00
 100.00
 98.00
 96.00
 94.00
 92.00
 88.00



Elevation ft

0+00+50+00+50+00+50+00+50+00+50+00+50+00

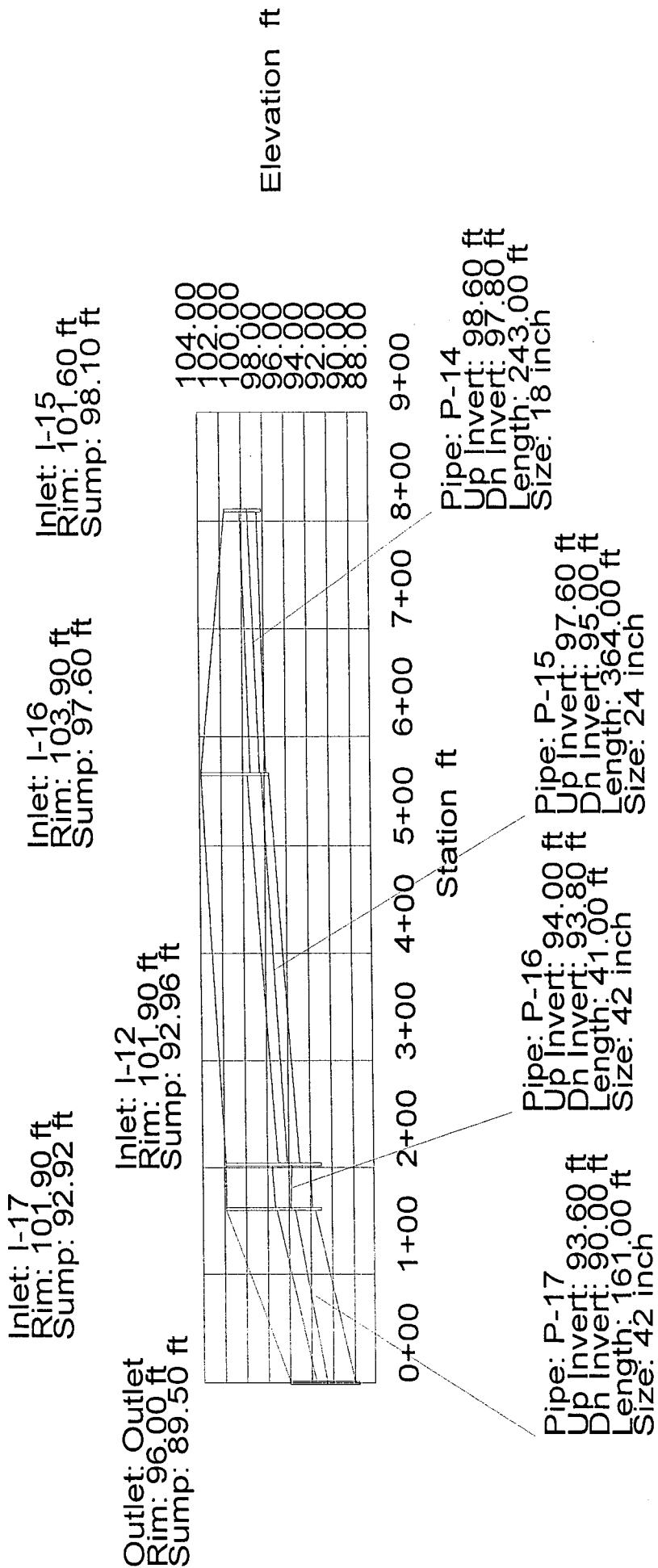
Station ft

Pipe: P-16
 Up Invert: 94.00 ft
 Dn Invert: 93.80 ft
 Length: 41.00 ft
 Size: 42 inch

Pipe: P-17
 Up Invert: 93.60 ft
 Dn Invert: 90.00 ft
 Length: 161.00 ft
 Size: 42 inch

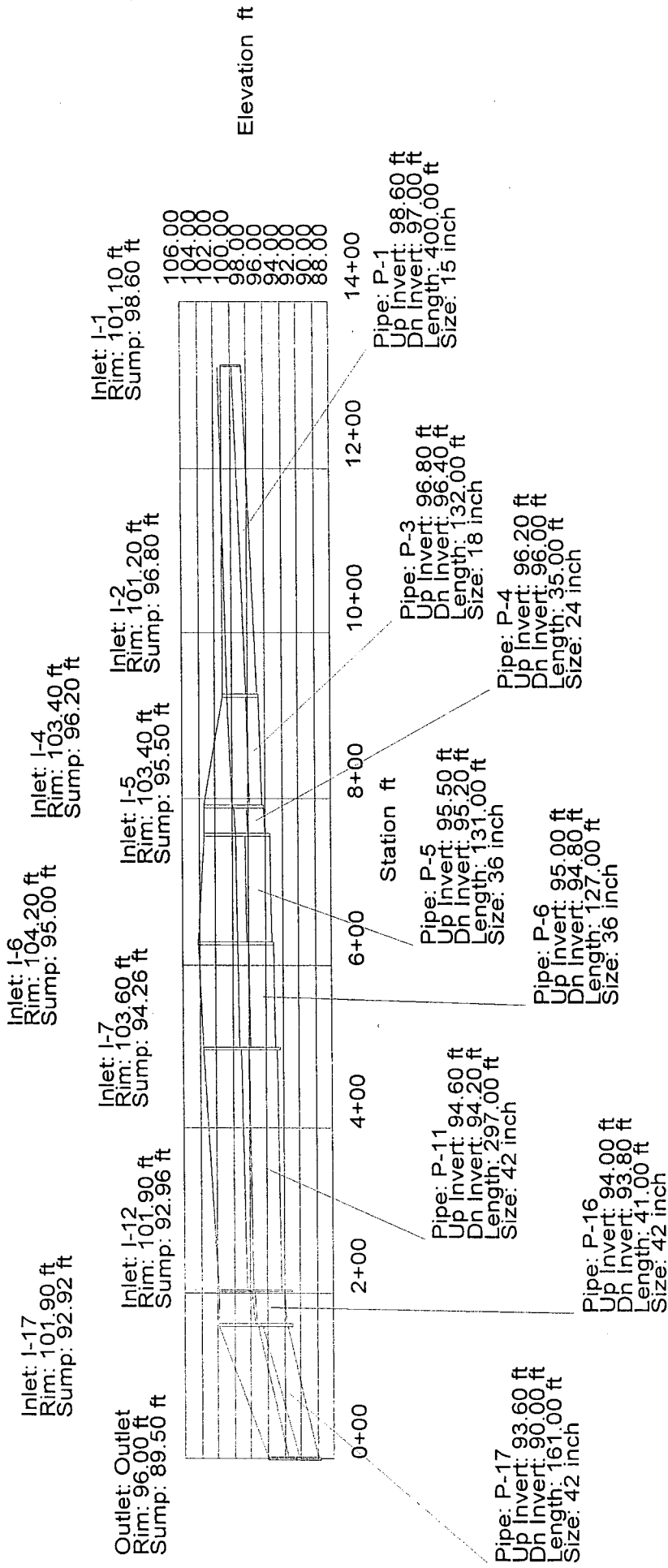
Pipe: P-12
 Up Invert: 98.60 ft
 Dn Invert: 97.60 ft
 Length: 278.00 ft
 Size: 18 inch

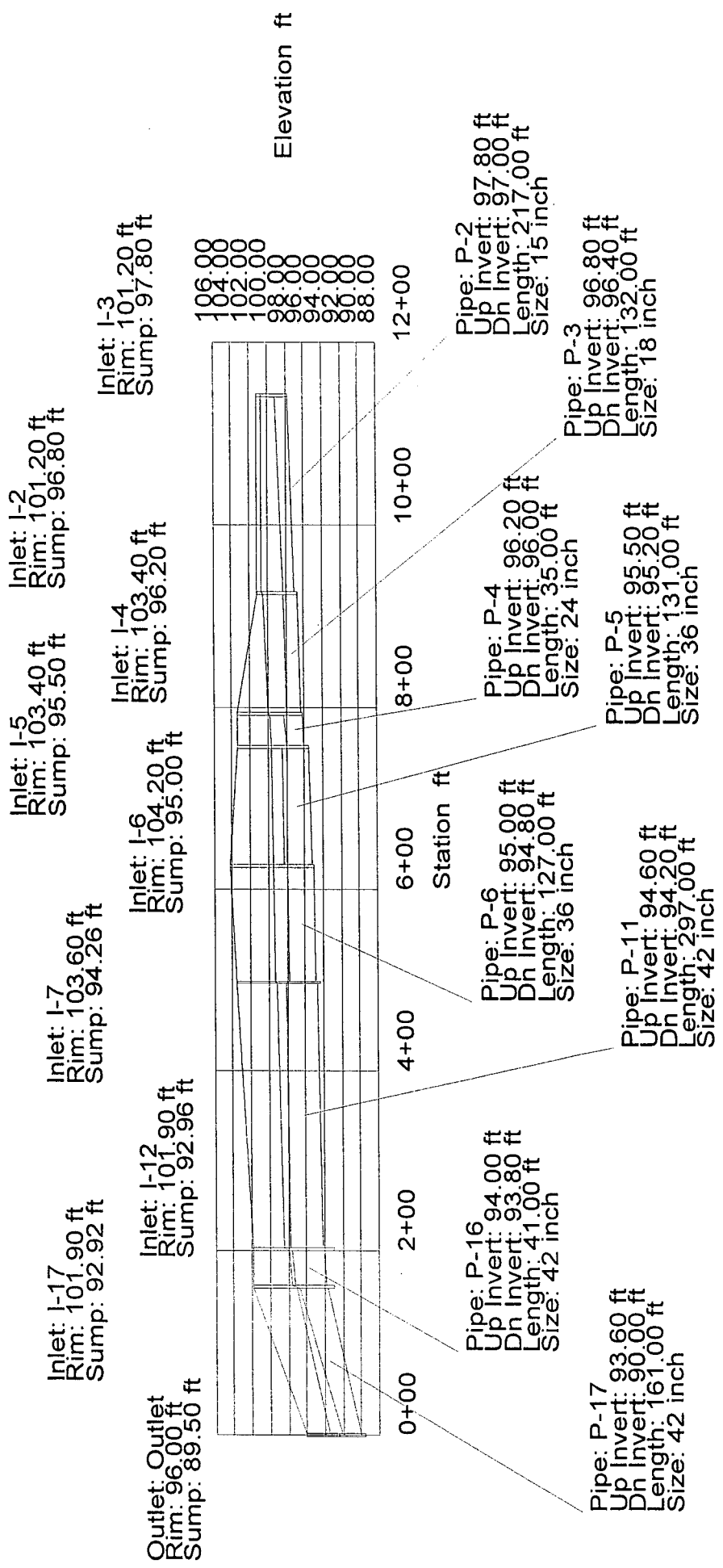
Pipe: P-13
 Up Invert: 97.10 ft
 Dn Invert: 95.00 ft
 Length: 98.00 ft
 Size: 24 inch

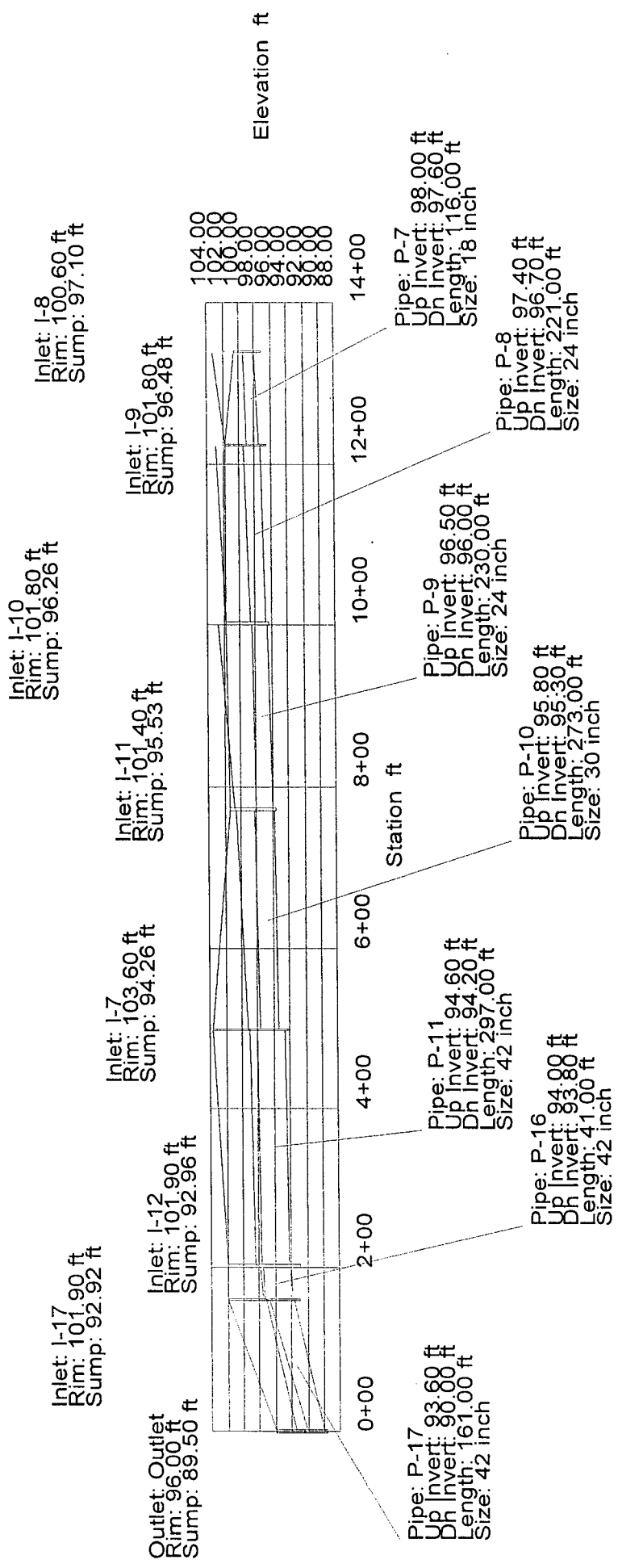


System Report

| 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-14 | 8.90 | 0.00 | 8.90 | I-15 | Circular | 98.60 | 97.80 | 101.60 | 100.86 | 0.007046 | 8.90 | 243.00 |
| P-15 | 0.00 | 8.90 | 8.90 | I-16 | 18 inch | 97.60 | 95.00 | 103.90 | 99.03 | 0.003292 | 6.03 | 364.00 |
| P-12 | 7.40 | 0.00 | 7.40 | I-13 | Circular | 98.60 | 97.60 | 101.90 | 98.46 | 0.001595 | 8.90 | 278.00 |
| P-13 | 4.40 | 7.40 | 11.80 | I-14 | 24 inch | 97.10 | 95.00 | 101.60 | 100.17 | 0.007143 | 19.12 | 98.00 |
| P-7 | 11.90 | 0.00 | 11.90 | I-8 | Circular | 98.00 | 97.60 | 101.30 | 98.77 | 0.004628 | 7.40 | 116.00 |
| P-8 | 4.90 | 11.90 | 16.80 | I-9 | 18 inch | 97.40 | 96.70 | 101.80 | 101.80 | 0.003597 | 6.30 | 221.00 |
| P-9 | 3.50 | 16.80 | 20.30 | I-10 | Circular | 96.50 | 96.00 | 101.80 | 103.02 | 0.002702 | 11.80 | 98.00 |
| P-10 | 7.40 | 20.30 | 27.70 | I-11 | 24 inch | 95.80 | 95.30 | 101.80 | 103.29 | 0.021429 | 33.11 | 116.00 |
| P-2 | 1.00 | 0.00 | 1.00 | I-7 | Circular | 97.80 | 97.00 | 101.40 | 101.80 | 0.012835 | 11.90 | 273.00 |
| P-1 | 3.00 | 0.00 | 3.00 | I-2 | 30 inch | 98.60 | 97.00 | 101.40 | 100.80 | 0.003448 | 6.17 | 400.00 |
| P-3 | 3.00 | 4.00 | 7.00 | I-2 | Circular | 96.80 | 96.40 | 101.20 | 100.55 | 0.005516 | 16.80 | 132.00 |
| P-4 | 6.40 | 7.00 | 13.40 | I-4 | 15 inch | 96.20 | 96.00 | 101.20 | 99.31 | 0.004561 | 7.00 | 35.00 |
| P-5 | 5.40 | 13.40 | 18.80 | I-5 | Circular | 95.50 | 95.20 | 103.40 | 100.65 | 0.003030 | 5.78 | 131.00 |
| P-6 | 0.00 | 18.80 | 18.80 | I-6 | 24 inch | 95.00 | 94.80 | 103.40 | 100.60 | 0.003509 | 13.40 | 127.00 |
| P-11 | 1.00 | 46.50 | 47.50 | I-7 | Circular | 94.60 | 94.20 | 104.20 | 99.41 | 0.005714 | 17.10 | 297.00 |
| P-16 | 15.00 | 68.20 | 83.20 | I-12 | 36 inch | 94.00 | 93.80 | 101.90 | 99.12 | 0.001575 | 26.47 | 41.00 |
| P-17 | 15.00 | 83.20 | 98.20 | I-17 | 42 inch | 93.60 | 90.00 | 101.90 | 98.46 | 0.002229 | 47.50 | 161.00 |
| | | | | Outlet | Circular | | | 96.00 | 97.88 | 0.001347 | 36.92 | |
| | | | | | 42 inch | | | | 97.60 | 0.006839 | 83.20 | |
| | | | | | | | | | 96.65 | 0.004878 | 70.27 | |
| | | | | | | | | | 92.16 | 0.015677 | 98.20 | |
| | | | | | | | | | | 0.022360 | 150.44 | |







Inlet: I-14
Rim: 101.30 ft
Sump: 97.10 ft

Inlet: I-17
Rim: 101.90 ft
Sump: 92.92 ft

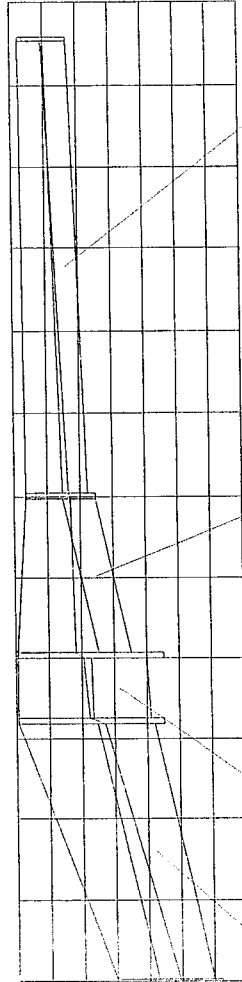
Inlet: I-13
Rim: 101.60 ft
Sump: 98.60 ft

Inlet: I-12
Rim: 101.90 ft
Sump: 92.96 ft

Outlet: Outlet
Rim: 96.00 ft
Sump: 89.50 ft

102.00
100.00
98.00
96.00
94.00
92.00
88.00

Elevation ft



0+00+50+00+50+00+50+00+50+00+50+00+50+00

Station ft

Pipe: P-16
Up Invert: 94.00 ft
Dn Invert: 93.80 ft
Length: 41.00 ft
Size: 42 inch

Pipe: P-13
Up Invert: 97.10 ft
Dn Invert: 95.00 ft
Length: 98.00 ft
Size: 24 inch

Pipe: P-12
Up Invert: 98.60 ft
Dn Invert: 97.60 ft
Length: 278.00 ft
Size: 18 inch

Pipe: P-17
Up Invert: 93.60 ft
Dn Invert: 90.00 ft
Length: 161.00 ft
Size: 42 inch

Inlet: I-15
 Rim: 101.60 ft
 Sump: 98.10 ft

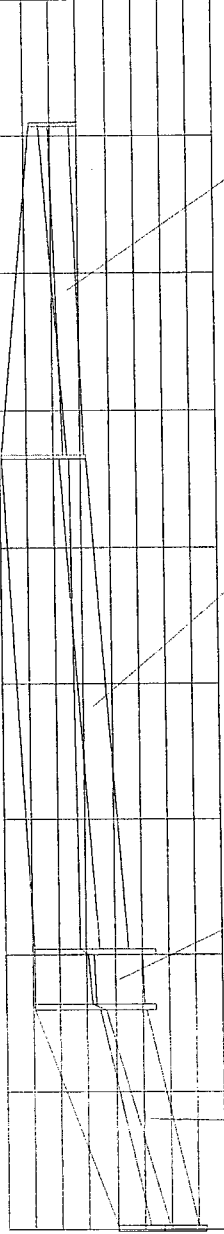
Inlet: I-16
 Rim: 103.90 ft
 Sump: 97.60 ft

Inlet: I-17
 Rim: 101.90 ft
 Sump: 92.92 ft

Inlet: I-12
 Rim: 101.90 ft
 Sump: 92.96 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 89.50 ft

104.00
 102.00
 100.00
 98.00
 96.00
 94.00
 92.00
 90.00



0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

Station ft

Elevation ft

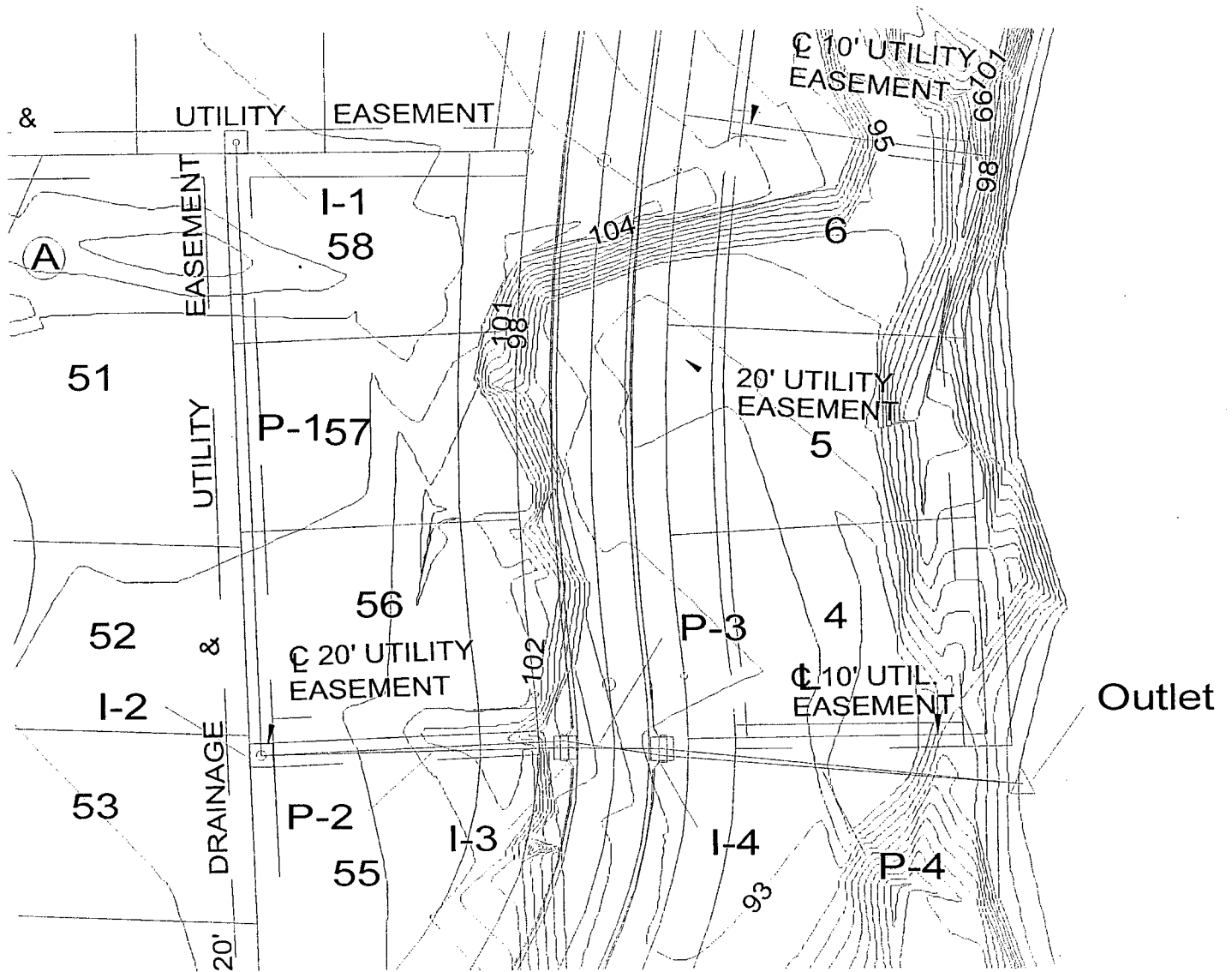
Pipe: P-14
 Up Invert: 98.60 ft
 Dn Invert: 97.80 ft
 Length: 243.00 ft
 Size: 18 inch

Pipe: P-15
 Up Invert: 97.60 ft
 Dn Invert: 95.00 ft
 Length: 364.00 ft
 Size: 24 inch

Pipe: P-16
 Up Invert: 94.00 ft
 Dn Invert: 93.80 ft
 Length: 41.00 ft
 Size: 42 inch

Pipe: P-17
 Up Invert: 93.60 ft
 Dn Invert: 90.00 ft
 Length: 161.00 ft
 Size: 42 inch

Appendix C
StormCad Analysis
Stormsewer System #2



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-1 | 2.60 | 0.00 | 2.60 | I-1 | Circular 18 inch | 98.10 | 97.30 | 101.10 | 98.80 | 0.003100 | 2.60 | 260.00 |
| P-2 | 1.40 | 2.60 | 4.00 | I-2 I-2 I-3 | Circular 24 inch Circular | 97.10 | 96.70 | 101.40 | 97.89 | 0.003077 | 5.83 | 130.00 |
| P-3 | 7.90 | 4.00 | 11.90 | I-3 I-4 | Circular 24 inch | 96.20 | 96.00 | 101.00 | 97.73 | 0.003077 | 12.55 | 41.00 |
| P-4 | 2.60 | 11.90 | 14.50 | I-4 Outlet | Circular 30 inch | 95.50 | 86.00 | 101.00 | 97.24 | 0.004878 | 15.80 | 155.00 |
| | | | | | | | | 95.00 | 92.50 | 0.030033 | 101.54 | |

Inlet: I-3
 Rim: 101.00 ft
 Sump: 96.20 ft

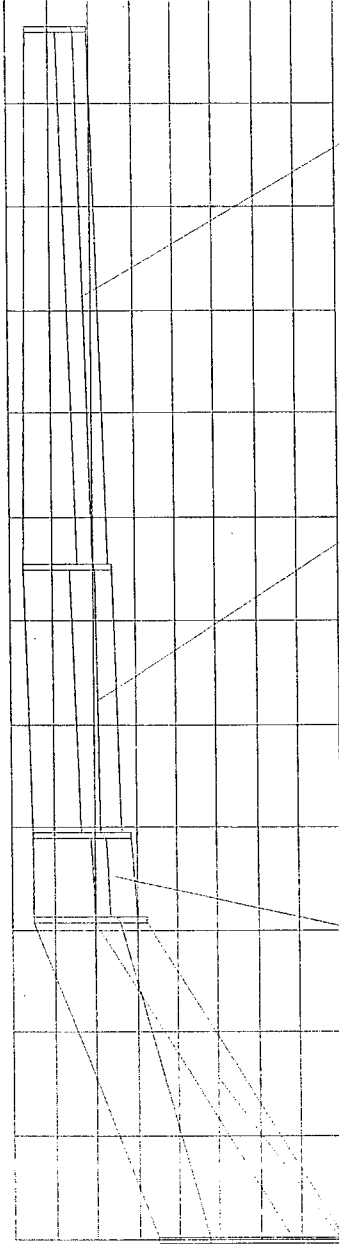
Inlet: I-1
 Rim: 101.10 ft
 Sump: 98.10 ft

Inlet: I-2
 Rim: 101.40 ft
 Sump: 97.10 ft

Inlet: I-4
 Rim: 101.00 ft
 Sump: 95.50 ft

Outlet: Outlet
 Rim: 95.00 ft
 Sump: 86.00 ft

102.00
 100.00
 98.00
 96.00
 94.00
 92.00
 90.00
 88.00
 86.00



0+00 1+00 2+00 3+00 4+00 5+00 6+00
 Station ft

Elevation ft

Pipe: P-4
 Up Invert: 95.50 ft
 Dn Invert: 86.00 ft
 Length: 155.00 ft
 Size: 30 inch

Pipe: P-3
 Up Invert: 96.20 ft
 Dn Invert: 96.00 ft
 Length: 41.00 ft
 Size: 24 inch

Pipe: P-2
 Up Invert: 97.10 ft
 Dn Invert: 96.70 ft
 Length: 130.00 ft
 Size: 24 inch

Pipe: P-1
 Up Invert: 98.10 ft
 Dn Invert: 97.30 ft
 Length: 260.00 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-1 | 7.90 | 0.00 | 7.90 | I-1 | Circular 18 inch | 98.10 | 97.30 | 101.10 | 101.43 | 0.005657 | 7.90 | 260.00 |
| P-2 | 4.00 | 7.90 | 11.90 | I-2 | Circular 24 inch | 97.10 | 96.70 | 101.40 | 99.84 | 0.002767 | 5.83 | 130.00 |
| P-3 | 15.00 | 11.90 | 26.90 | I-3 | Circular 24 inch | 96.20 | 96.00 | 101.00 | 99.48 | 0.003077 | 12.55 | 41.00 |
| P-4 | 15.00 | 26.90 | 41.90 | I-4 | Circular 30 inch | 95.50 | 86.00 | 101.00 | 98.34 | 0.004878 | 15.80 | 155.00 |
| | | | | Outlet | | | | 95.00 | 92.50 | 0.061290 | 101.54 | |

Inlet: I-3
Rim: 101.00 ft
Sump: 96.20 ft

Inlet: I-1
Rim: 101.10 ft
Sump: 98.10 ft

Inlet: I-2
Rim: 101.40 ft
Sump: 97.10 ft

Inlet: I-4
Rim: 101.00 ft
Sump: 95.50 ft

Outlet: Outlet
Rim: 95.00 ft
Sump: 86.00 ft

102.00
100.00
98.00
96.00
94.00
92.00
90.00
88.00
86.00

Elevation ft

0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00
Station ft

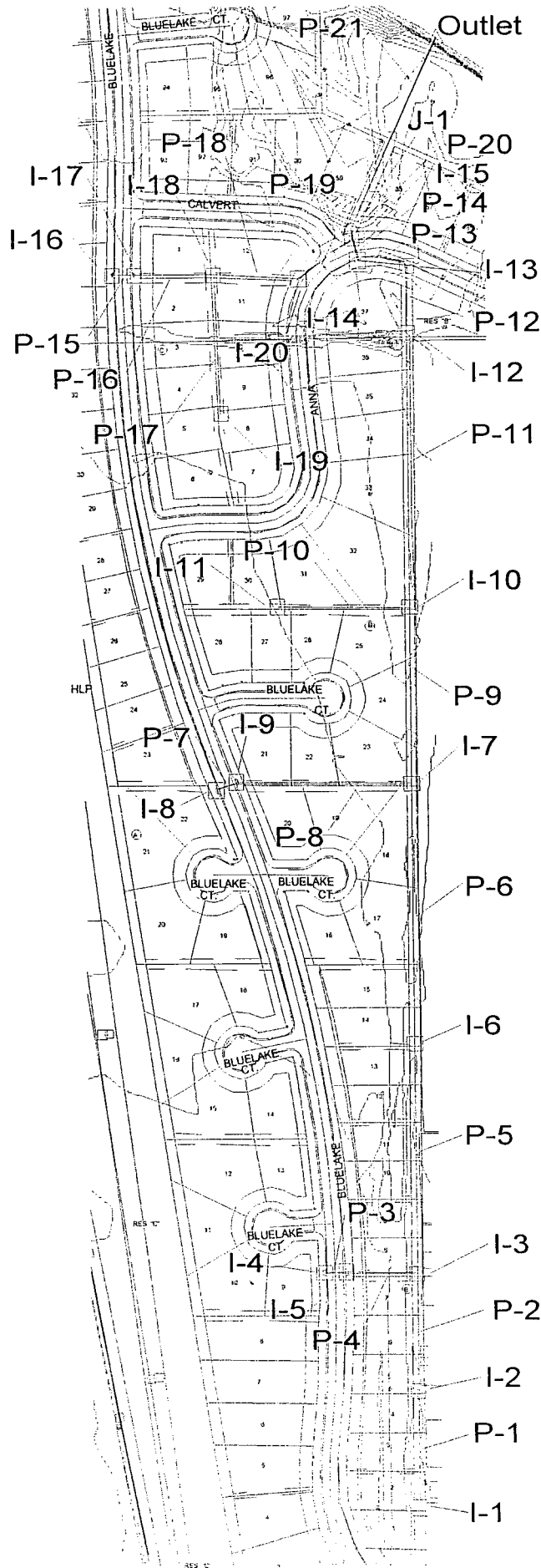
Pipe: P-4
Up Invert: 95.50 ft
Dn Invert: 86.00 ft
Length: 155.00 ft
Size: 30 inch

Pipe: P-3
Up Invert: 96.20 ft
Dn Invert: 96.00 ft
Length: 41.00 ft
Size: 24 inch

Pipe: P-2
Up Invert: 97.10 ft
Dn Invert: 96.70 ft
Length: 130.00 ft
Size: 24 inch

Pipe: P-1
Up Invert: 98.10 ft
Dn Invert: 97.30 ft
Length: 260.00 ft
Size: 18 inch

Appendix D
StormCad Analysis
Stormsewer System #3

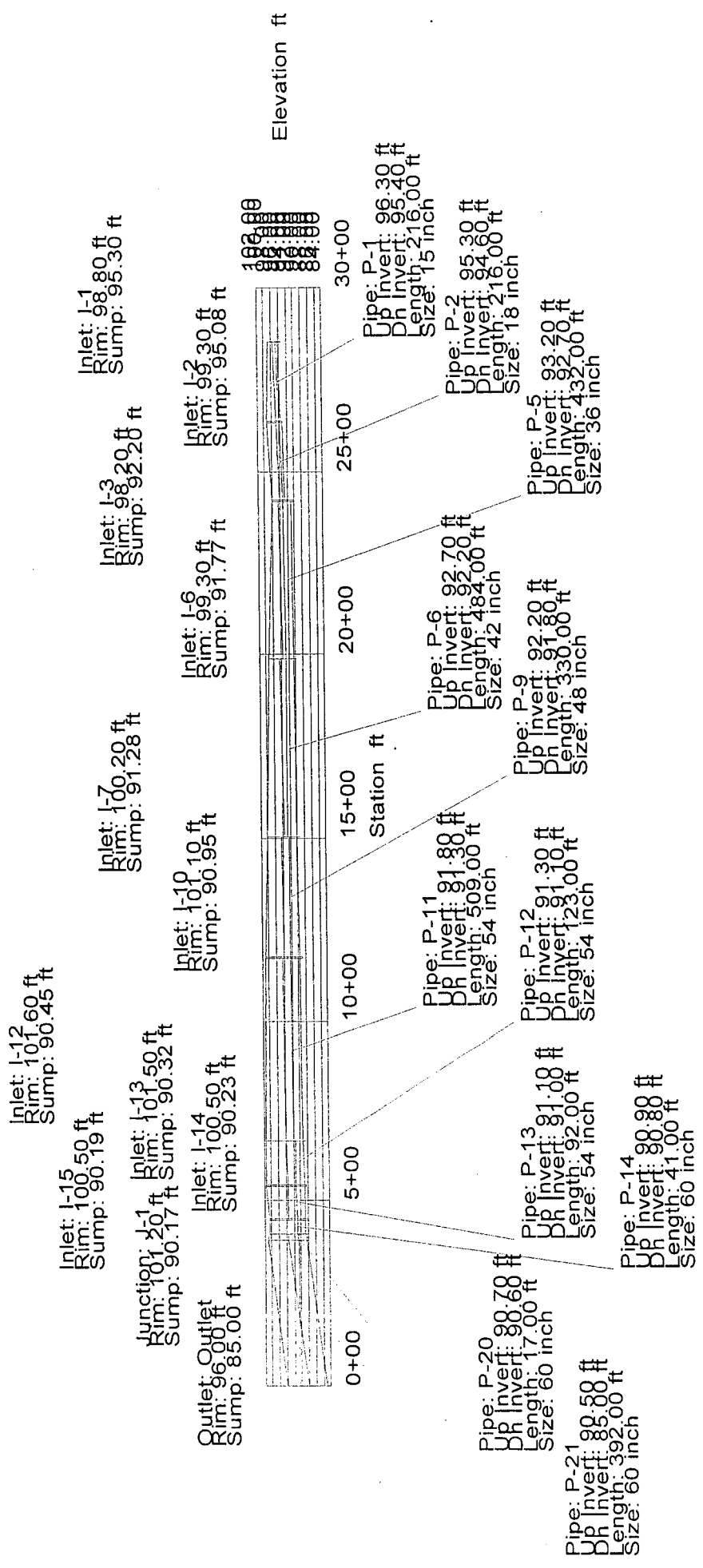


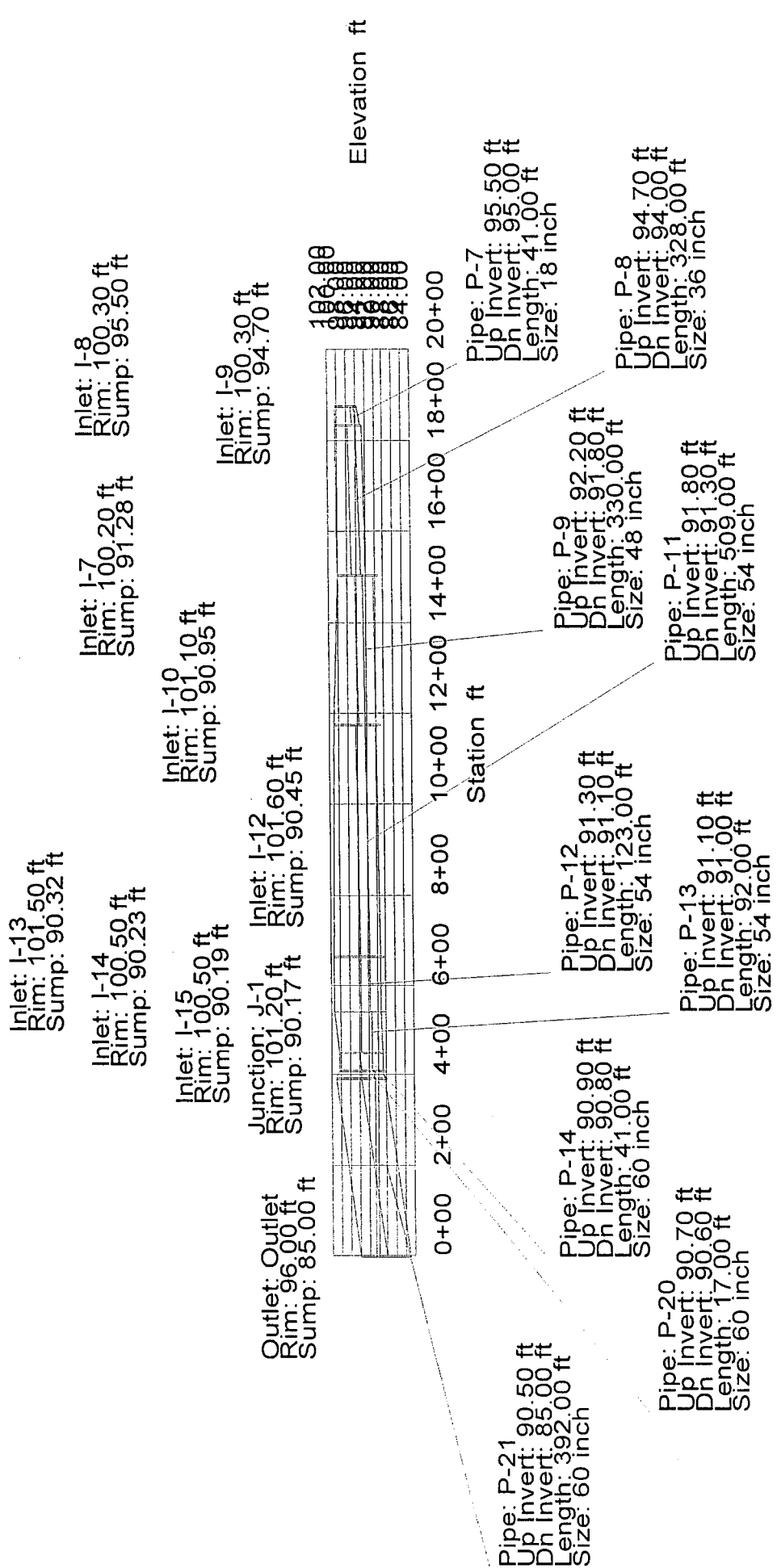
System Report

| 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-17 | 1.80 | 0.00 | 1.80 | I-19 | Circular 18 inch | 99.00 | 97.00 | 102.20 | 99.51 | 0.007753 | 1.80 | 256.00 |
| P-15 | 3.50 | 0.00 | 3.50 | I-16 | Circular 18 inch | 97.00 | 96.80 | 100.60 | 97.76 | 0.003137 | 3.50 | 41.00 |
| P-16 | 5.30 | 3.50 | 8.80 | I-17 | Circular 24 inch | 96.30 | 95.90 | 100.60 | 97.59 | 0.004878 | 8.80 | 152.00 |
| P-18 | 1.80 | 10.60 | 12.40 | I-18 | Circular 30 inch | 95.50 | 95.20 | 101.40 | 96.98 | 0.002632 | 11.60 | 161.00 |
| P-19 | 1.40 | 12.40 | 13.80 | I-20 | Circular 36 inch | 94.70 | 93.00 | 101.40 | 96.38 | 0.001863 | 17.70 | 124.00 |
| P-10 | 2.10 | 0.00 | 2.10 | I-11 | Circular 18 inch | 97.00 | 94.30 | 100.50 | 95.88 | 0.011231 | 13.80 | 247.00 |
| P-7 | 4.20 | 0.00 | 4.20 | I-8 | Circular 18 inch | 95.50 | 95.00 | 100.30 | 93.85 | 0.013710 | 78.09 | 41.00 |
| P-8 | 6.30 | 4.20 | 10.50 | I-9 | Circular 36 inch | 94.70 | 94.00 | 100.20 | 97.55 | 0.010719 | 2.10 | 328.00 |
| P-3 | 5.30 | 0.00 | 5.30 | I-4 | Circular 18 inch | 97.50 | 97.30 | 100.50 | 94.74 | 0.010931 | 10.98 | 41.00 |
| P-4 | 3.30 | 5.30 | 8.60 | I-5 | Circular 24 inch | 97.00 | 94.00 | 100.50 | 96.29 | 0.009882 | 4.20 | 132.00 |
| P-1 | 0.90 | 0.00 | 0.90 | I-1 | Circular 15 inch | 96.30 | 95.40 | 98.80 | 94.68 | 0.018982 | 8.60 | 216.00 |
| P-2 | 0.50 | 0.90 | 1.40 | I-2 | Circular 18 inch | 95.30 | 94.60 | 99.30 | 96.69 | 0.004062 | 0.90 | 216.00 |
| P-5 | 1.60 | 10.00 | 11.60 | I-3 | Circular 36 inch | 93.20 | 92.70 | 99.30 | 95.85 | 0.003284 | 4.17 | 432.00 |
| P-6 | 2.50 | 11.60 | 14.10 | I-6 | Circular 42 inch | 92.70 | 92.20 | 100.20 | 94.73 | 0.000390 | 14.10 | 330.00 |
| P-9 | 2.10 | 24.60 | 26.70 | I-7 | Circular 48 inch | 92.20 | 91.80 | 101.00 | 94.57 | 0.000834 | 26.70 | 509.00 |
| P-11 | 1.90 | 28.80 | 30.70 | I-10 | Circular 54 inch | 91.80 | 91.30 | 101.60 | 94.22 | 0.001212 | 50.01 | 123.00 |
| P-12 | 2.10 | 30.70 | 32.80 | I-12 | Circular 54 inch | 91.30 | 91.10 | 101.50 | 93.70 | 0.000982 | 61.63 | 92.00 |
| P-13 | 0.70 | 32.80 | 33.50 | I-13 | Circular 54 inch | 91.10 | 91.00 | 100.50 | 93.48 | 0.001626 | 79.29 | 41.00 |
| P-14 | 0.40 | 33.50 | 33.90 | I-14 | Circular 60 inch | 90.90 | 90.80 | 100.50 | 93.23 | 0.001189 | 33.50 | 41.00 |
| | | | | I-15 | | | | 100.50 | 93.10 | 0.000999 | 33.90 | |
| | | | | | | | | 100.50 | 93.08 | 0.002439 | 128.62 | |

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-20 | 2.80 | 47.70 | 50.50 | I-15 | Circular 60 inch | 90.70 | 90.60 | 100.50 | 92.72 | 0.002505 | 50.50 | 17.00 |
| P-21 | N/A | 50.50 | 50.50 | J-1 J-1 Outlet | Circular 60 inch | 90.50 | 85.00 | 101.20 | 92.86 92.49 92.50 | 0.005882 0.001617 0.014031 | 199.74 50.50 308.48 | 392.00 |





Inlet: I-20
 Rim: 101.40 ft
 Sump: 94.70 ft

Inlet: I-19
 Rim: 102.20 ft
 Sump: 98.95 ft

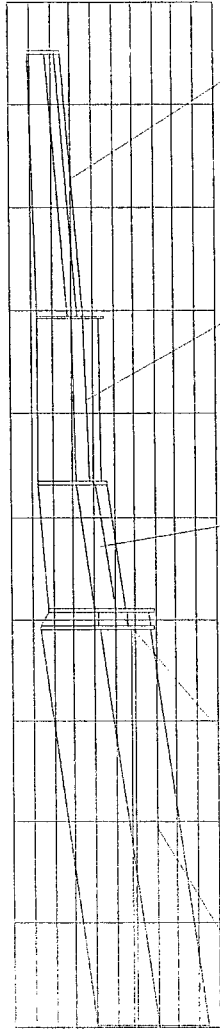
Inlet: I-15
 Rim: 100.50 ft
 Sump: 90.19 ft

Inlet: I-18
 Rim: 101.40 ft
 Sump: 94.95 ft

Junction: J-1
 Rim: 101.20 ft
 Sump: 90.17 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 85.00 ft

104.88
 102.88
 100.88
 98.88
 96.88
 94.88
 92.88
 90.88



Elevation ft

0+001+002+003+004+005+006+007+008+009+0010+00

Station ft

Pipe: P-17
 Up Invert: 99.00 ft
 Dn Invert: 97.00 ft
 Length: 256.00 ft
 Size: 18 inch

Pipe: P-20
 Up Invert: 90.70 ft
 Dn Invert: 90.60 ft
 Length: 17.00 ft
 Size: 60 inch

Pipe: P-21
 Up Invert: 90.50 ft
 Dn Invert: 85.00 ft
 Length: 392.00 ft
 Size: 60 inch

Pipe: P-18
 Up Invert: 95.50 ft
 Dn Invert: 95.20 ft
 Length: 161.00 ft
 Size: 30 inch

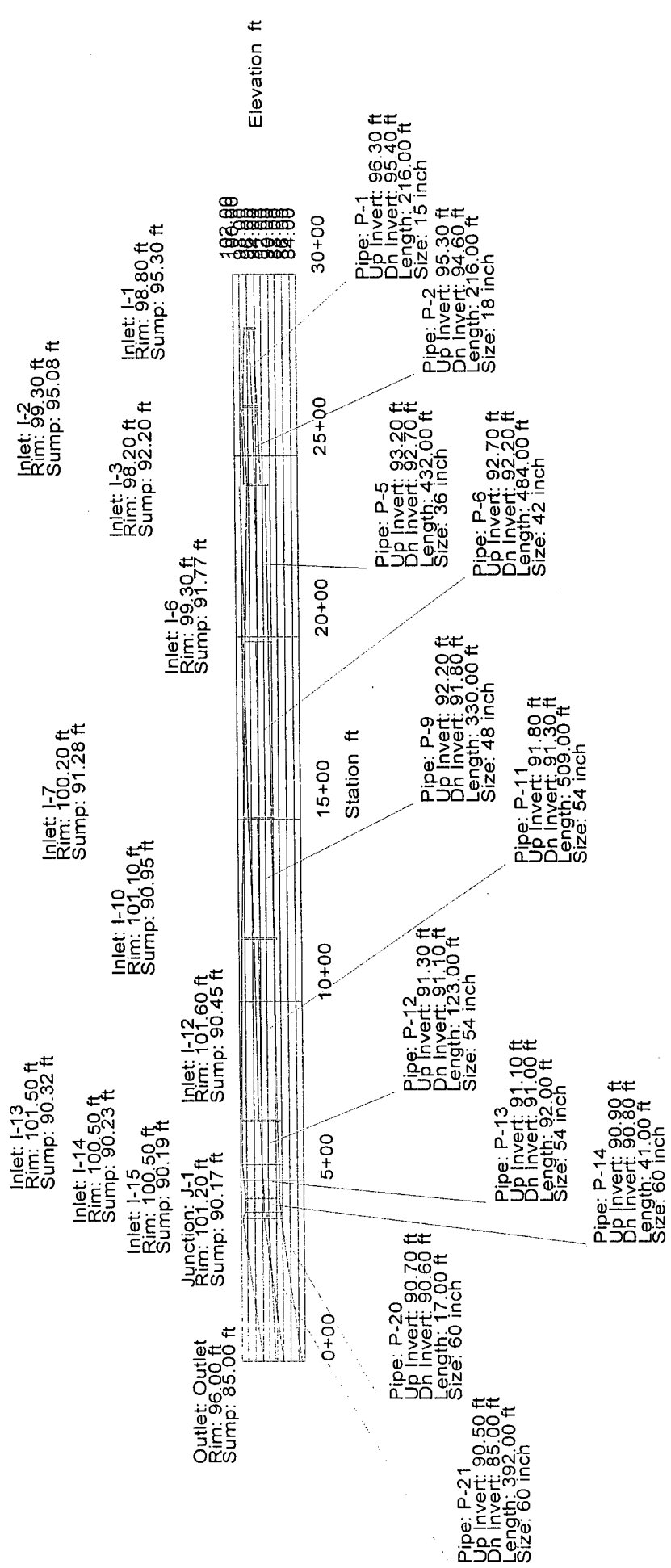
Pipe: P-19
 Up Invert: 94.70 ft
 Dn Invert: 93.00 ft
 Length: 124.00 ft
 Size: 36 inch

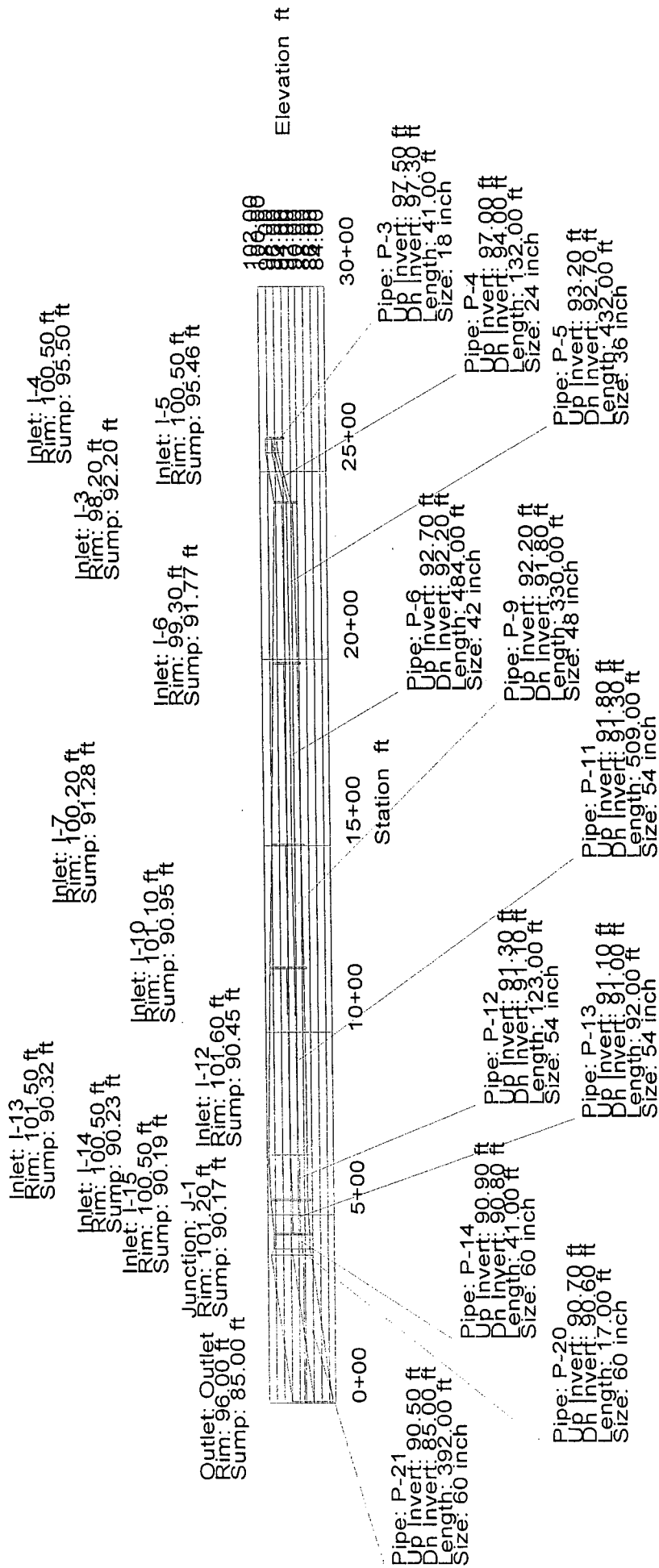
System Report

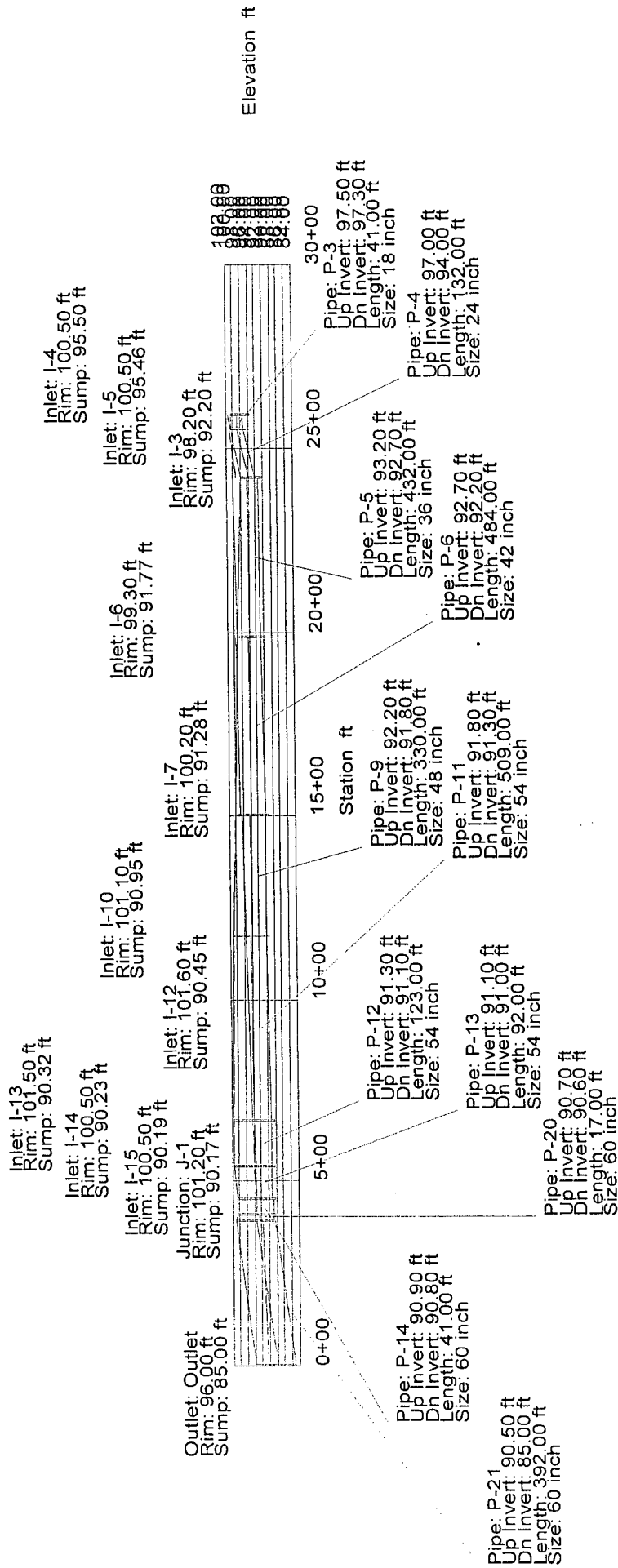
| Pipe | Additional Flow (cfs) | Total Upstream Added (cfs) | Structure Discharge (cfs) | -Node- Upstream Downstream | -Section- Shape Size | Upstream Invert Elevation (ft) | Downstream Invert Elevation (ft) | -Ground- Upstream Downstream (ft) | -HGL- Upstream Downstream (ft) | -Slope- Energy Constructed (ft/ft) | -Section- Discharge Capacity (cfs) | Length (ft) |
|------|-----------------------|----------------------------|---------------------------|----------------------------|----------------------|--------------------------------|----------------------------------|-----------------------------------|--------------------------------|------------------------------------|------------------------------------|-------------|
| P-17 | 4.90 | 0.00 | 4.90 | I-19 | Circular 18 inch | 99.00 | 97.00 | 102.20 | 99.85 | 0.004347 | 4.90 | 256.00 |
| P-15 | 9.90 | 0.00 | 9.90 | I-18 | Circular 18 inch | 97.00 | 96.80 | 100.60 | 100.96 | 0.007813 | 9.28 | 41.00 |
| P-16 | 14.80 | 9.90 | 24.70 | I-17 | Circular 18 inch | 96.30 | 95.90 | 100.60 | 100.60 | 0.008883 | 7.34 | 152.00 |
| P-18 | 4.90 | 29.60 | 34.50 | I-18 | Circular 24 inch | 95.50 | 95.20 | 101.40 | 98.97 | 0.004878 | 24.70 | 161.00 |
| P-19 | 4.00 | 34.50 | 38.50 | I-20 | Circular 30 inch | 94.70 | 93.00 | 101.40 | 97.20 | 0.011922 | 11.60 | 124.00 |
| P-10 | 5.90 | 0.00 | 5.90 | I-15 | Circular 36 inch | 97.00 | 94.30 | 100.50 | 95.24 | 0.002632 | 34.50 | 247.00 |
| P-7 | 11.90 | 0.00 | 11.90 | I-11 | Circular 18 inch | 95.50 | 95.00 | 100.40 | 98.50 | 0.006878 | 17.70 | 41.00 |
| P-8 | 17.80 | 11.90 | 29.70 | I-10 | Circular 18 inch | 94.70 | 94.00 | 101.10 | 96.72 | 0.013399 | 38.50 | 328.00 |
| P-3 | 14.80 | 0.00 | 14.80 | I-9 | Circular 36 inch | 97.50 | 97.30 | 100.30 | 99.68 | 0.013710 | 78.09 | 41.00 |
| P-4 | 9.40 | 14.80 | 24.20 | I-8 | Circular 18 inch | 97.00 | 94.00 | 100.30 | 99.55 | 0.003155 | 5.90 | 216.00 |
| P-1 | 2.50 | 0.00 | 2.50 | I-7 | Circular 24 inch | 96.30 | 95.40 | 100.20 | 99.30 | 0.010931 | 4.17 | 216.00 |
| P-2 | 1.50 | 2.50 | 4.00 | I-1 | Circular 15 inch | 95.30 | 94.60 | 98.80 | 99.62 | 0.012835 | 11.90 | 432.00 |
| P-5 | 4.40 | 28.20 | 32.60 | I-2 | Circular 18 inch | 93.20 | 92.70 | 99.30 | 99.30 | 0.012195 | 29.70 | 484.00 |
| P-6 | 6.90 | 32.60 | 39.50 | I-3 | Circular 36 inch | 92.70 | 92.20 | 100.20 | 99.64 | 0.001983 | 30.81 | 330.00 |
| P-9 | 5.90 | 69.20 | 75.10 | I-3 | Circular 42 inch | 92.20 | 91.80 | 100.20 | 98.90 | 0.002134 | 14.80 | 509.00 |
| P-11 | 5.40 | 81.00 | 86.40 | I-4 | Circular 48 inch | 91.80 | 91.30 | 101.10 | 97.72 | 0.01445 | 24.20 | 123.00 |
| P-12 | 5.90 | 86.40 | 92.30 | I-5 | Circular 48 inch | 91.30 | 91.10 | 101.60 | 97.49 | 0.022727 | 34.10 | 92.00 |
| P-13 | 2.00 | 92.30 | 94.30 | I-6 | Circular 54 inch | 90.90 | 90.80 | 101.50 | 99.30 | 0.001498 | 2.50 | 41.00 |
| P-14 | 1.00 | 94.30 | 95.30 | I-6 | Circular 54 inch | 90.90 | 90.80 | 100.50 | 99.30 | 0.004167 | 4.17 | 41.00 |
| | | | | I-7 | Circular 60 inch | | | 100.50 | 99.61 | 0.001450 | 4.00 | |
| | | | | I-7 | | | | 100.33 | 99.30 | 0.003241 | 5.98 | |
| | | | | I-7 | | | | 98.20 | 100.33 | 0.002389 | 32.60 | |
| | | | | I-10 | | | | 99.30 | 99.30 | 0.001157 | 22.69 | |
| | | | | I-10 | | | | 99.30 | 99.30 | 0.001542 | 39.50 | |
| | | | | I-12 | | | | 100.20 | 98.90 | 0.001033 | 32.34 | |
| | | | | I-12 | | | | 98.20 | 98.62 | 0.002734 | 75.10 | |
| | | | | I-12 | | | | 101.10 | 97.72 | 0.001212 | 50.01 | |
| | | | | I-12 | | | | 101.10 | 97.49 | 0.001931 | 86.40 | |
| | | | | I-13 | | | | 101.60 | 96.51 | 0.000982 | 61.63 | |
| | | | | I-13 | | | | 101.50 | 95.97 | 0.002203 | 92.30 | |
| | | | | I-13 | | | | 101.50 | 95.70 | 0.001626 | 79.29 | |
| | | | | I-14 | | | | 100.50 | 95.49 | 0.002293 | 94.30 | |
| | | | | I-14 | | | | 100.50 | 95.28 | 0.001087 | 64.83 | |
| | | | | I-14 | | | | 100.50 | 95.28 | 0.001204 | 95.30 | |
| | | | | I-15 | | | | 100.50 | 95.24 | 0.002439 | 128.62 | |

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-20 | 7.90 | 133.80 | 141.70 | I-15 | Circular 60 inch | 90.70 | 90.60 | 100.50 101.20 | 94.68 94.68 | 0.003063 0.005882 | 141.70 199.74 | 17.00 |
| P-21 | N/A | 141.70 | 141.70 | J-1 J-1 Outlet | Circular 60 inch | 90.50 | 85.00 | 101.20 96.00 | 93.91 92.50 | 0.005444 0.014031 | 141.70 308.48 | 392.00 |







Inlet: I-13
Rim: 101.50 ft
Sump: 90.32 ft

Inlet: I-14
Rim: 100.50 ft
Sump: 90.23 ft

Inlet: I-15
Rim: 100.50 ft
Sump: 90.19 ft

Junction: J-1
Rim: 101.20 ft
Sump: 90.17 ft

Outlet: Outlet
Rim: 96.00 ft
Sump: 85.00 ft

Inlet: I-7
Rim: 100.20 ft
Sump: 91.28 ft

Inlet: I-10
Rim: 101.10 ft
Sump: 90.95 ft

Inlet: I-9
Rim: 100.30 ft
Sump: 94.70 ft

Inlet: I-8
Rim: 100.30 ft
Sump: 95.50 ft

100.00
99.00
98.00
97.00
96.00
95.00
94.00
93.00
92.00
91.00
90.00

Elevation ft

0+00 2+00 4+00 6+00 8+00 10+00 12+00 14+00 16+00 18+00 20+00

Station ft

Pipe: P-20
Up Invert: 90.70 ft
Dn Invert: 90.60 ft
Length: 17.00 ft
Size: 60 inch

Pipe: P-21
Up Invert: 90.50 ft
Dn Invert: 85.00 ft
Length: 392.00 ft
Size: 60 inch

Pipe: P-13
Up Invert: 91.10 ft
Dn Invert: 92.00 ft
Length: 54 inch
Size: 54 inch

Pipe: P-14
Up Invert: 90.90 ft
Dn Invert: 90.80 ft
Length: 41.00 ft
Size: 60 inch

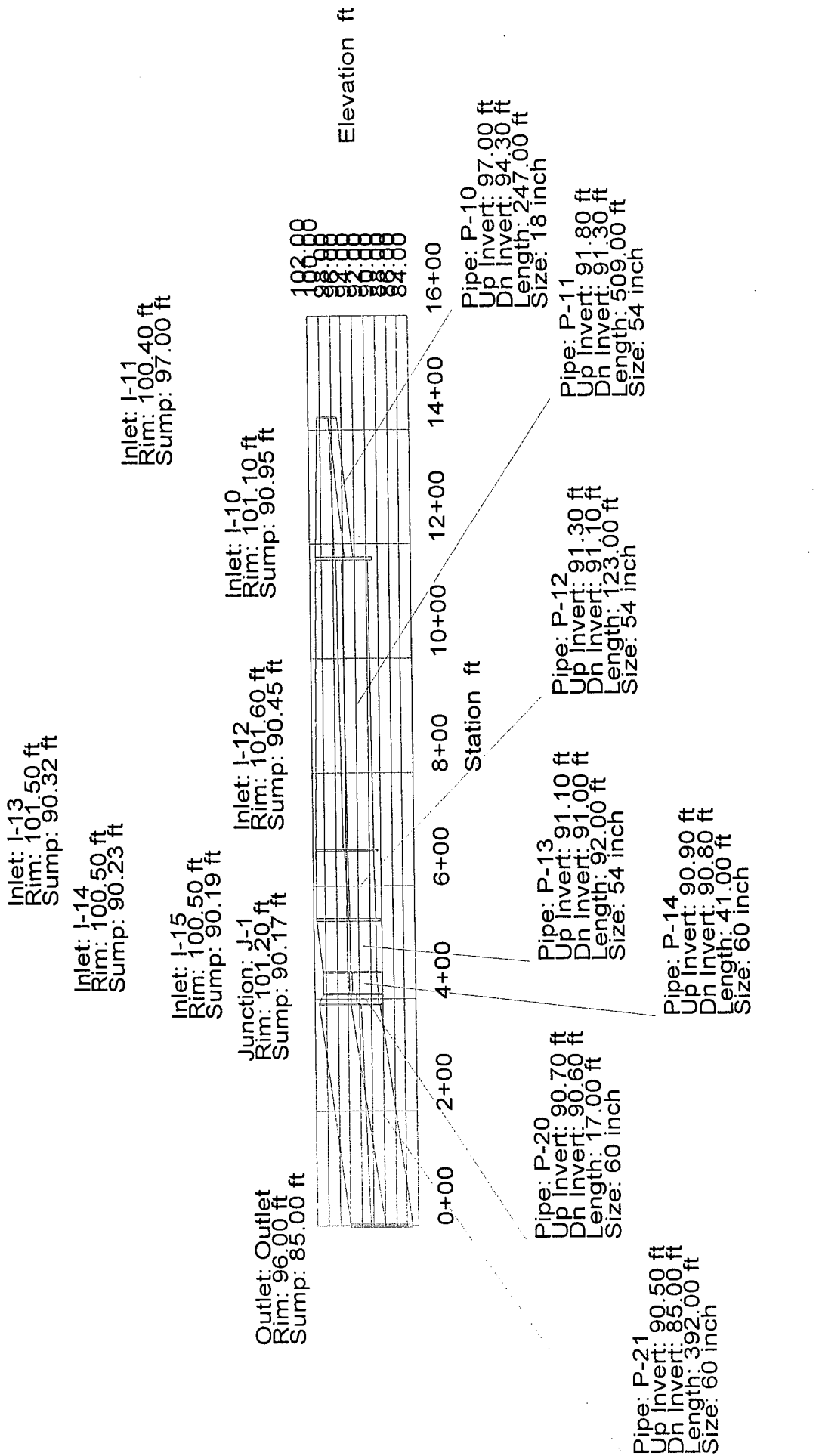
Pipe: P-12
Up Invert: 91.30 ft
Dn Invert: 91.10 ft
Length: 123.00 ft
Size: 54 inch

Pipe: P-9
Up Invert: 92.20 ft
Dn Invert: 91.80 ft
Length: 330.00 ft
Size: 48 inch

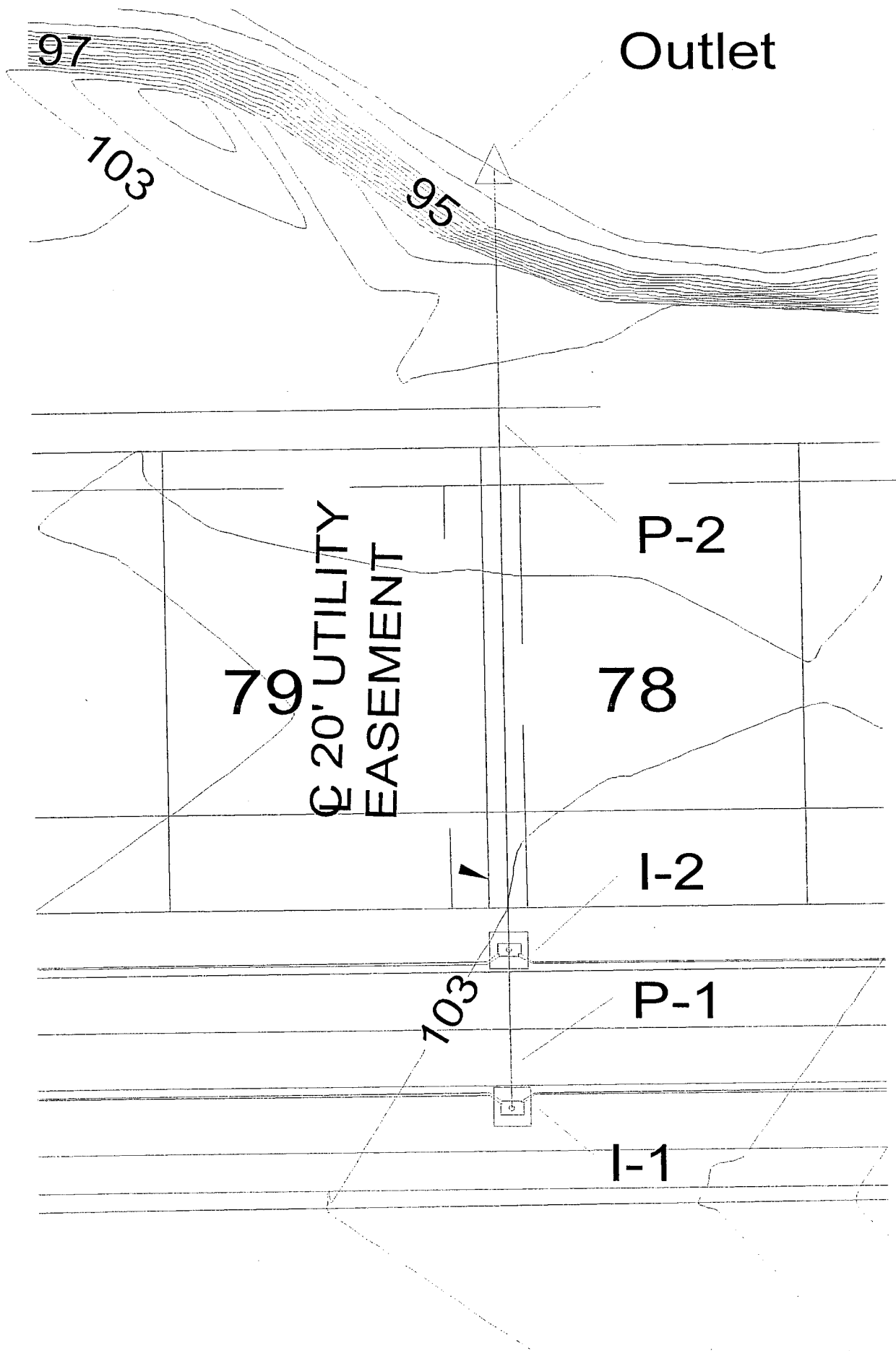
Pipe: P-11
Up Invert: 91.80 ft
Dn Invert: 91.30 ft
Length: 509.00 ft
Size: 54 inch

Pipe: P-7
Up Invert: 95.50 ft
Dn Invert: 95.00 ft
Length: 41.00 ft
Size: 18 inch

Pipe: P-8
Up Invert: 94.70 ft
Dn Invert: 94.00 ft
Length: 328.00 ft
Size: 36 inch



Appendix E
StormCad Analysis
Stormsewer System #4



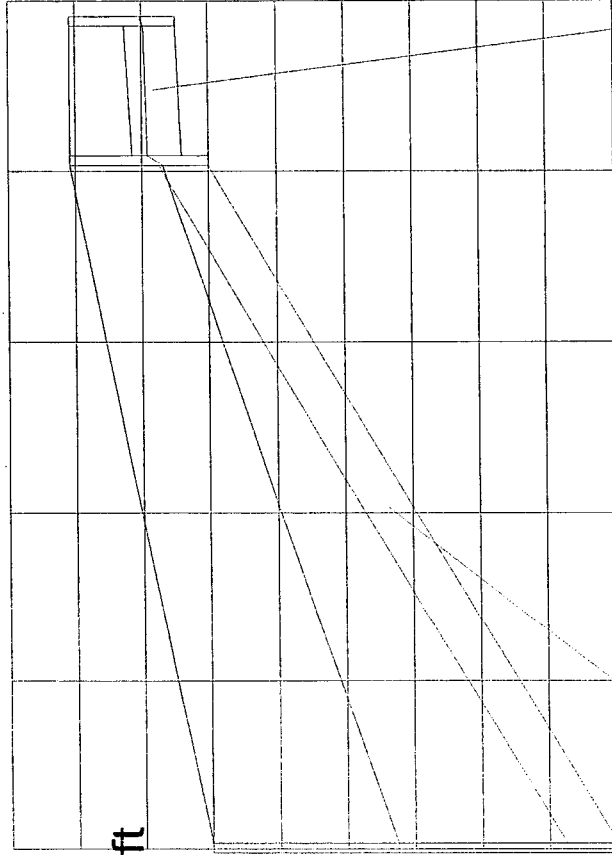
System Report

| 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-1 | 4.90 | 0.00 | 4.90 | I-1 | Circular 18 inch | 99.00 | 98.80 | 102.20 | 99.94 | 0.003710 | 4.90 | 41.00 |
| P-2 | 8.40 | 4.90 | 13.30 | I-2 I-2 Outlet | Circular 18 inch | 98.00 | 86.00 | 102.20 98.00 | 99.85 99.36 92.50 | 0.004878 0.034232 0.059113 | 7.34 13.30 25.54 | 203.00 |

Inlet: I-1
 Rim: 102.20 ft
 Sump: 99.00 ft

Inlet: I-2
 Rim: 102.20 ft
 Sump: 98.00 ft

104.00
 102.00
 100.00
 98.00
 96.00
 94.00
 92.00
 90.00
 88.00
 86.00



Outlet: Outlet
 Rim: 98.00 ft
 Sump: 86.00 ft

Elevation ft

0+00 0+50 1+00 1+50 2+00 2+50
 Station ft

Pipe: P-1
 Up Invert: 99.00 ft
 Dn Invert: 98.80 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-2
 Up Invert: 98.00 ft
 Dn Invert: 86.00 ft
 Length: 203.00 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-1 | 1.80 | 0.00 | 1.80 | I-1 | Circular 18 inch | 99.00 | 98.80 | 102.20 102.20 | 99.51 99.31 | 0.004878 0.004878 | 1.80 7.34 | 41.00 |
| P-2 | 3.00 | 1.80 | 4.80 | I-2 Outlet | Circular 18 inch | 98.00 | 86.00 | 102.20 98.00 | 98.84 92.50 | 0.032368 0.059113 | 4.80 25.54 | 203.00 |

Inlet: I-1
 Rim: 102.20 ft
 Sump: 99.00 ft

Inlet: I-2
 Rim: 102.20 ft
 Sump: 98.00 ft

104.00

Outlet: Outlet
 Rim: 98.00 ft
 Sump: 86.00 ft

102.00

100.00

98.00

Pipe: P-1
 Up Invert: 99.00 ft
 Dn Invert: 98.80 ft
 Length: 20.00 ft
 Size: 18 inch

90.00

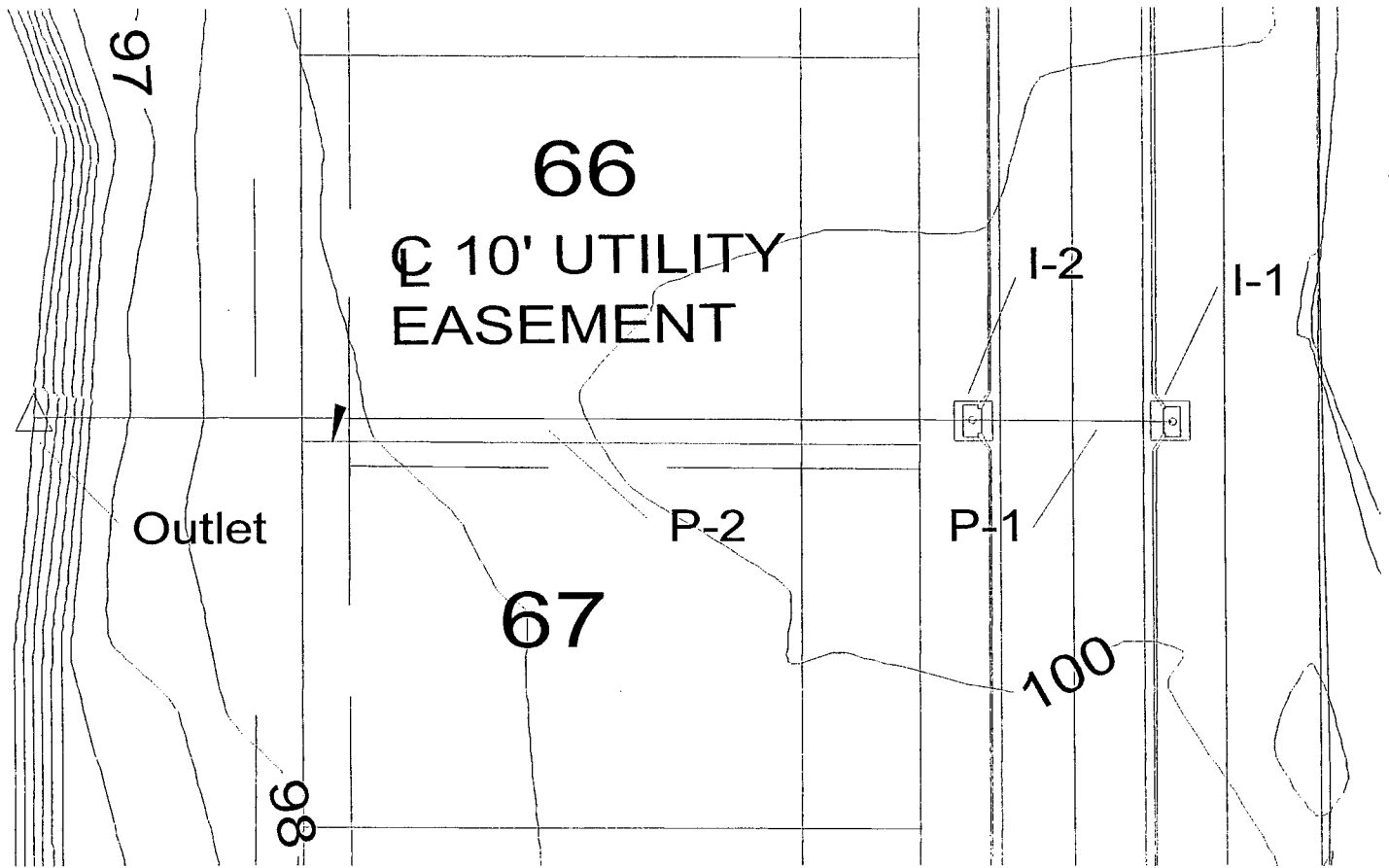
88.00

86.00

0+00 0+50 1+00 1+50 2+00 2+50
 Station ft

Pipe: P-2
 Up Invert: 98.00 ft
 Dn Invert: 86.00 ft
 Length: 203.00 ft
 Size: 18 inch

Appendix F
StormCad Analysis
Stormsewer System #5



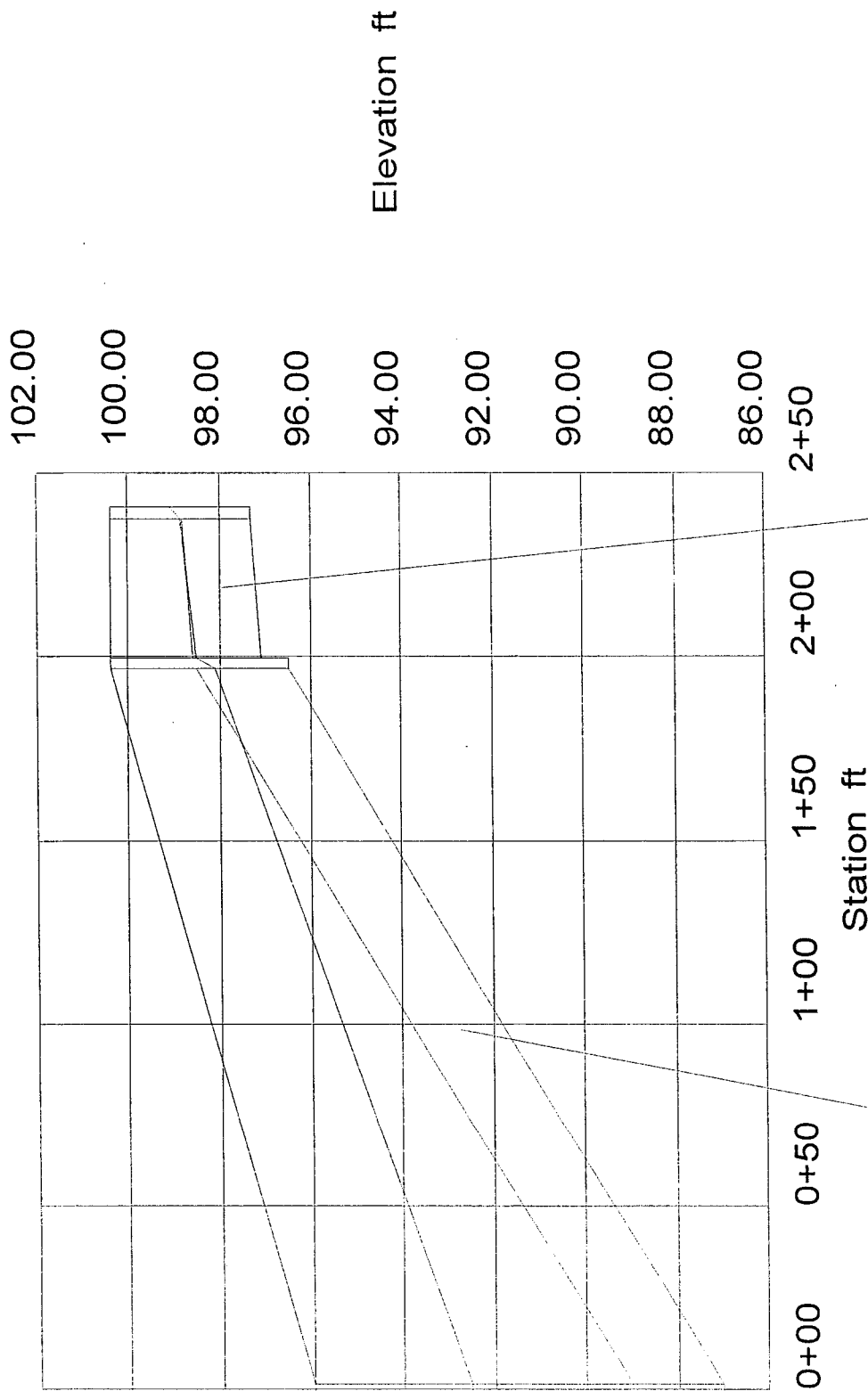
System Report

| 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-1 | 9.40 | 0.00 | 9.40 | I-1 | Circular | 97.30 | 97.10 | 100.40 | 98.84 | 0.007474 | 9.40 | 41.00 |
| P-2 | 10.40 | 9.40 | 19.80 | I-2 I-2 Outlet | 18 inch Circular 24 inch | 96.50 | 87.00 | 100.40 96.00 | 98.52 98.10 92.50 | 0.004878 0.029404 0.047980 | 7.34 19.80 49.55 | 198.00 |

Inlet: I-1
 Rim: 100.40 ft
 Sump: 97.30 ft

Inlet: I-2
 Rim: 100.40 ft
 Sump: 96.50 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 87.00 ft



Pipe: P-1
 Up Invert: 97.30 ft
 Dn Invert: 97.10 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-2
 Up Invert: 96.50 ft
 Dn Invert: 87.00 ft
 Length: 198.00 ft
 Size: 24 inch

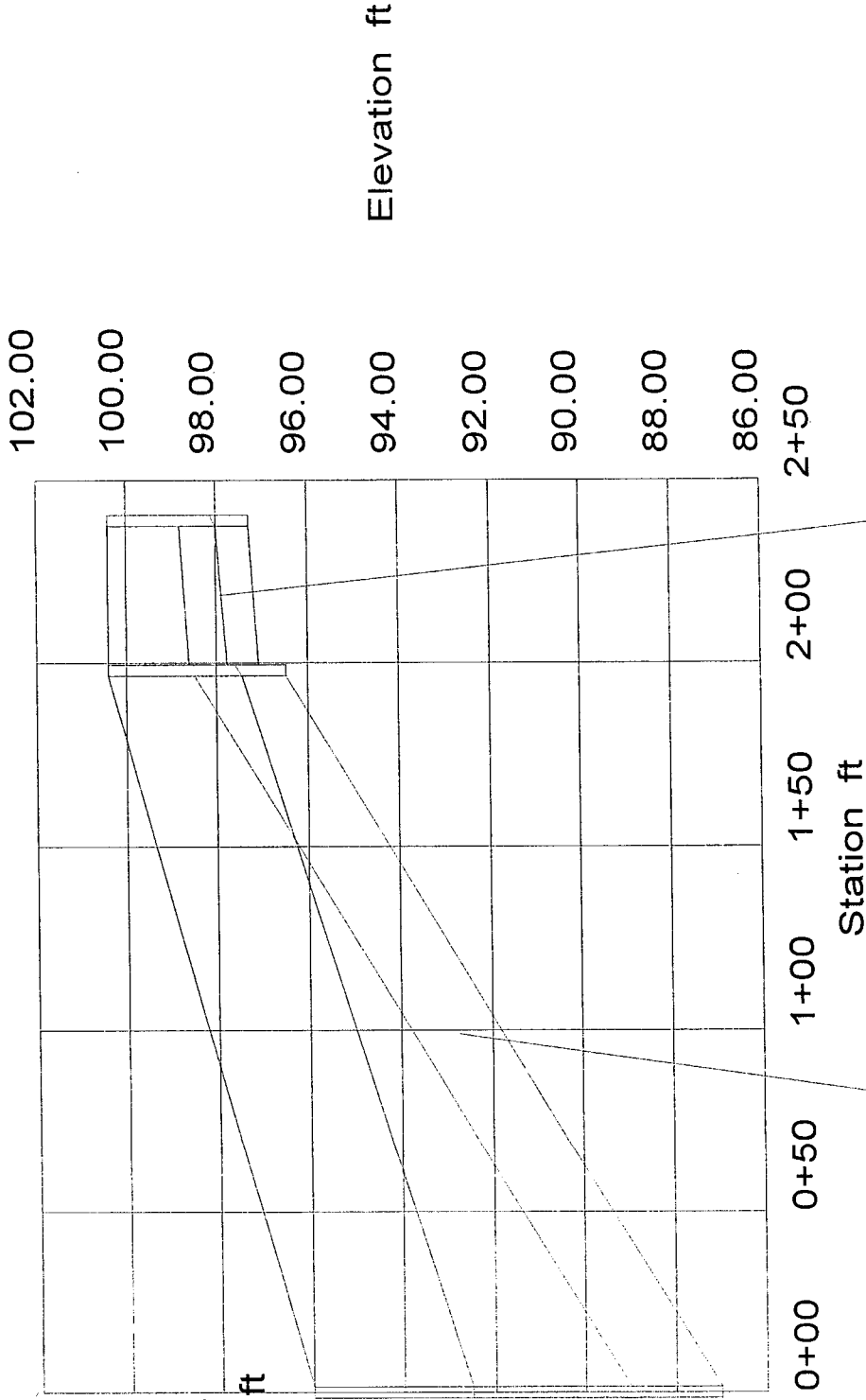
System Report

| 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-1 | 3.30 | 0.00 | 3.30 | I-1 | Circular 18 inch | 97.30 | 97.10 | 100.40 | 98.01 | 0.004889 | 3.30 | 41.00 |
| P-2 | 3.70 | 3.30 | 7.00 | I-2 I-2 Outlet | Circular 24 inch | 96.50 | 87.00 | 100.40 96.00 | 97.79 97.44 92.50 | 0.004878 0.026387 0.047980 | 7.34 7.00 49.55 | 198.00 |

Inlet: I-1
 Rim: 100.40 ft
 Sump: 97.30 ft

Inlet: I-2
 Rim: 100.40 ft
 Sump: 96.50 ft

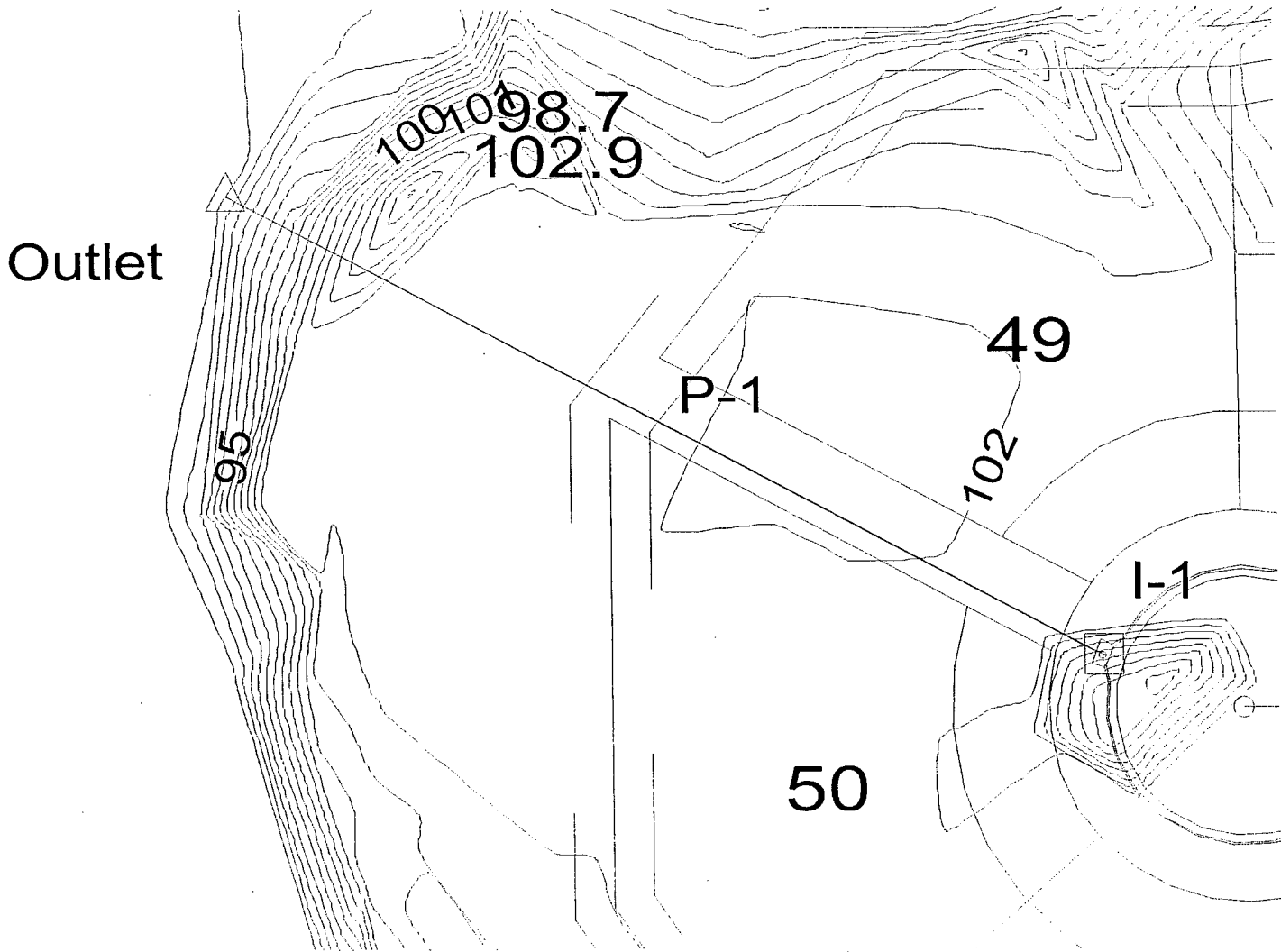
Outlet: Outlet
 Rim: 96.00 ft
 Sump: 87.00 ft



Pipe: P-1
 Up Invert: 97.30 ft
 Dn Invert: 97.10 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-2
 Up Invert: 96.50 ft
 Dn Invert: 87.00 ft
 Length: 198.00 ft
 Size: 24 inch

Appendix G
StormCad Analysis
Stormsewer System #6

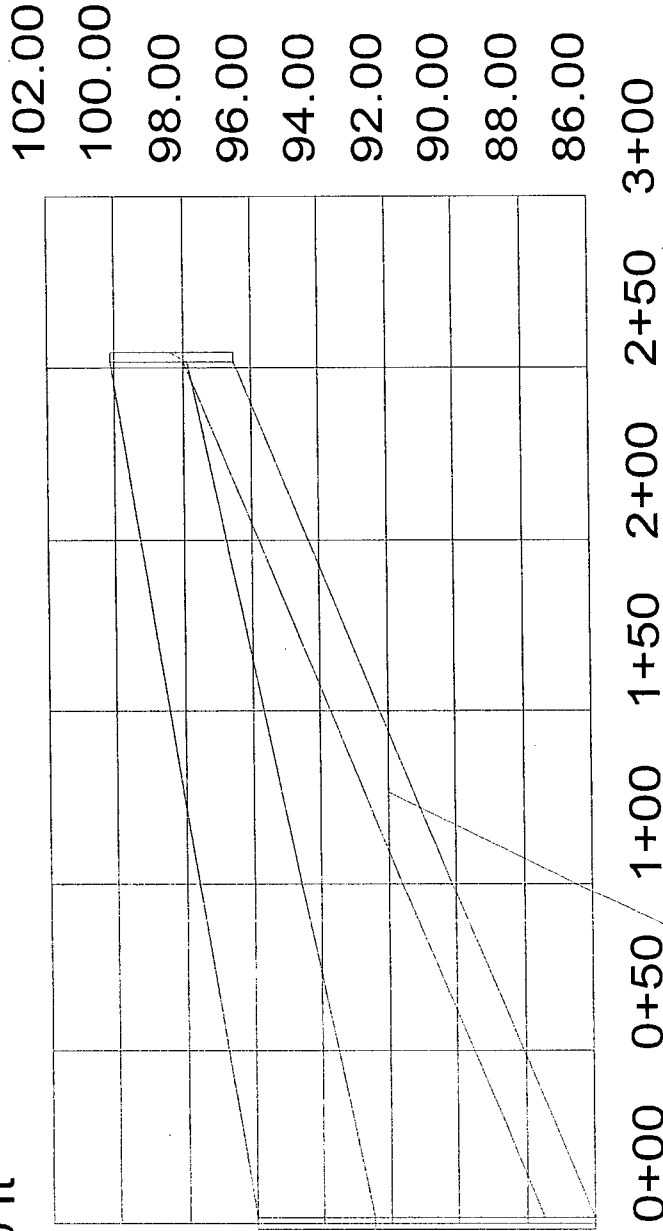


System Report

| 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-1 | 13.80 | 0.00 | 13.80 | I-1 Outlet | Circular 18 inch | 96.50 | 86.00 | 100.10 96.00 | 97.88 92.50 | 0.021562 0.041502 | 13.80 21.40 | 253.00 |

Inlet: I-1
 Rim: 100.10 ft
 Sump: 96.50 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 86.00 ft



Pipe: P-1
 Up Invert: 96.50 ft
 Dn Invert: 86.00 ft
 Length: 253.00 ft
 Size: 18 inch

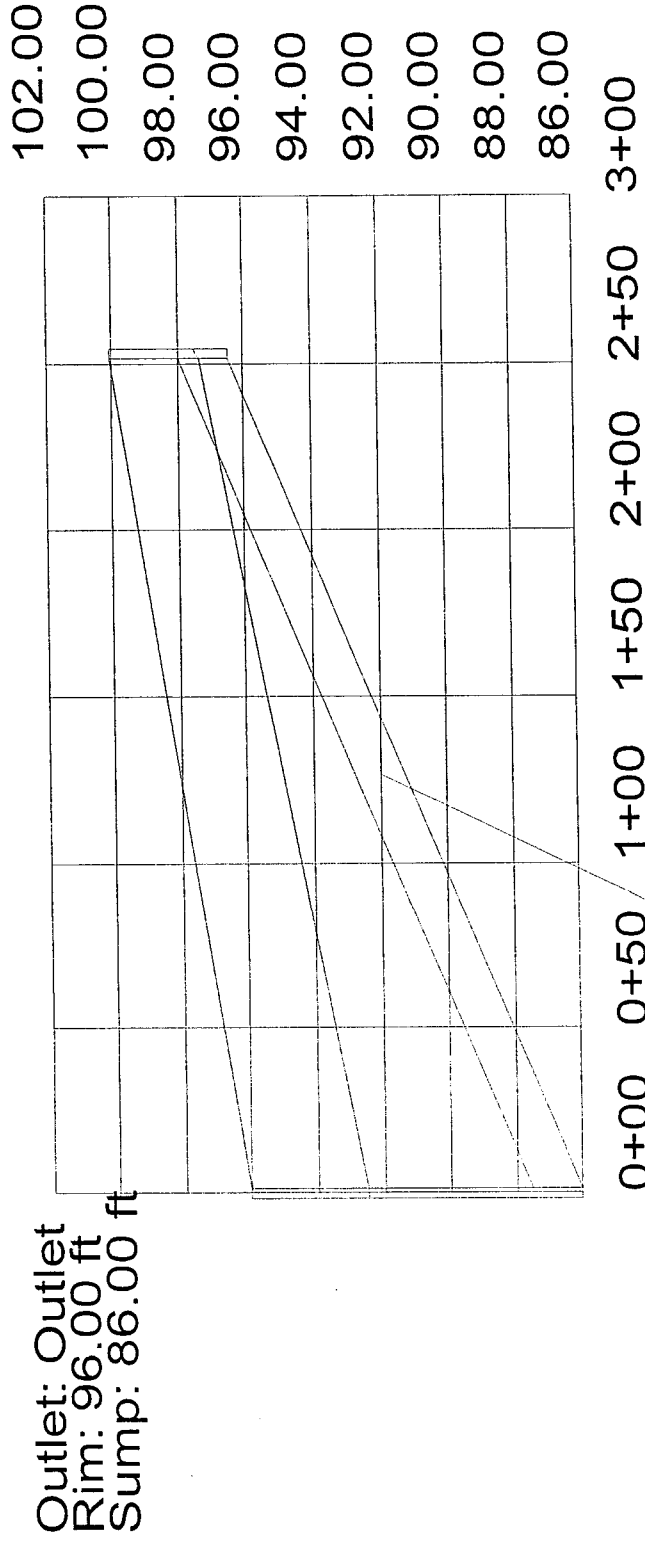
Elevation ft

Station ft

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-1 | 4.90 | 0.00 | 4.90 | I-1 Outlet | Circular 18 inch | 96.50 | 86.00 | 100.10 96.00 | 97.35 92.50 | 0.020079 0.041502 | 4.90 21.40 | 253.00 |

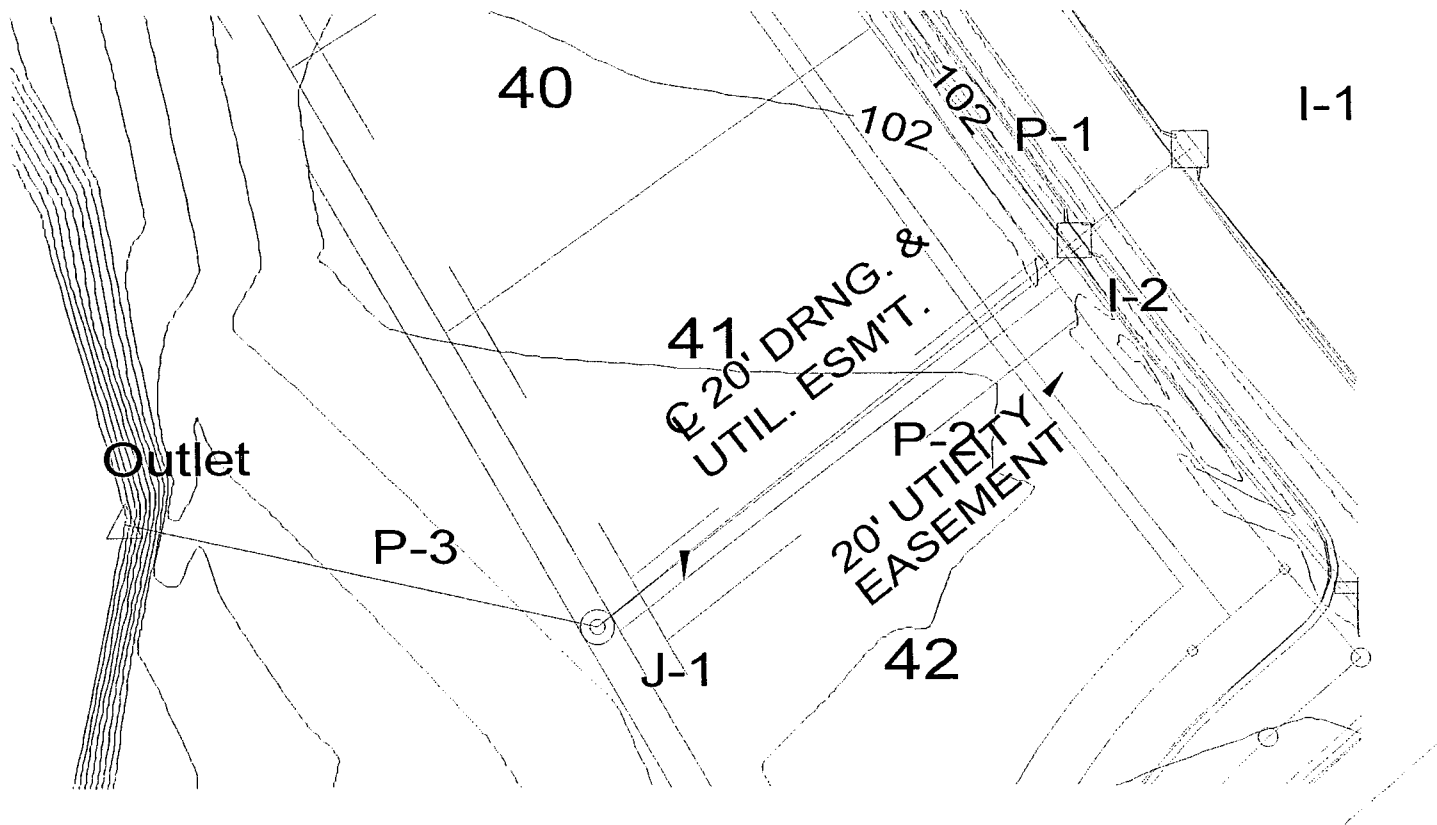
Inlet: I-1
 Rim: 100.10 ft
 Sump: 96.50 ft



Outlet: Outlet
 Rim: 96.00 ft
 Sump: 86.00 ft

Pipe: P-1
 Up Invert: 96.50 ft
 Dn Invert: 86.00 ft
 Length: 253.00 ft
 Size: 18 inch

Appendix H
StormCad Analysis
Stormsewer System #7



System Report

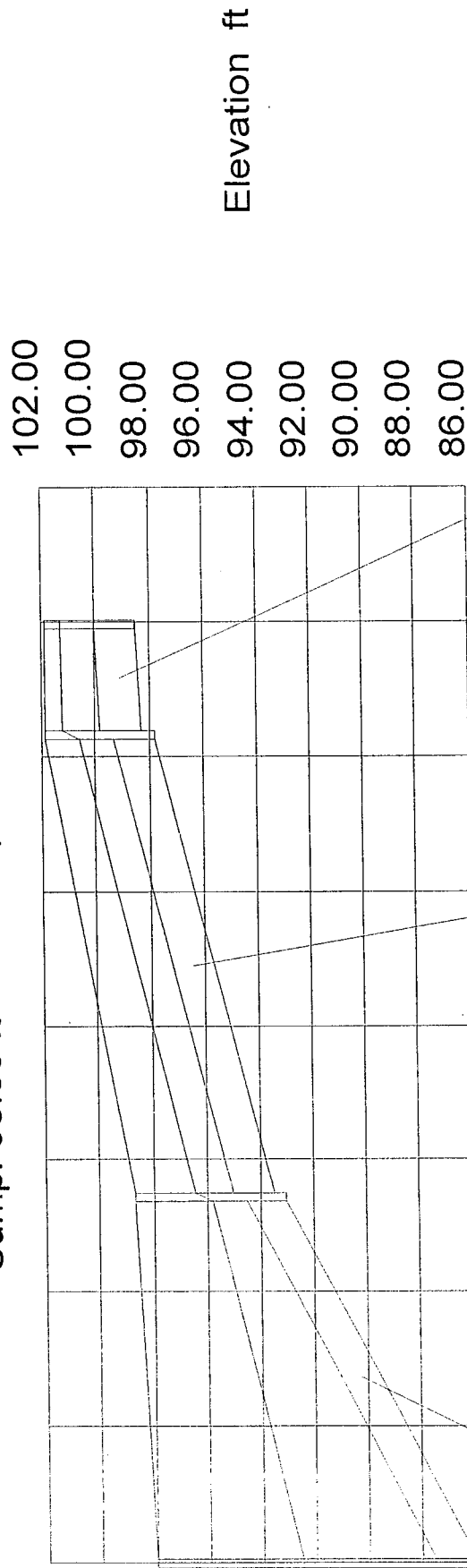
| Pipe | Additional Flow (cfs) | Total Upstream Added (cfs) | Structure Discharge (cfs) | -Node- Upstream Downstream | -Section- Shape Size | Upstream Invert Elevation (ft) | Downstream Invert Elevation (ft) | -Ground- Upstream Downstream (ft) | -HGL- Upstream Downstream (ft) | -Slope- Energy Constructed (ft/ft) | -Section- Discharge Capacity (cfs) | Length (ft) |
|------|-----------------------|----------------------------|---------------------------|----------------------------|----------------------|--------------------------------|----------------------------------|-----------------------------------|--------------------------------|------------------------------------|------------------------------------|-------------|
| P-1 | 3.50 | 0.00 | 3.50 | I-1 | Circular 18 inch | 98.50 | 98.30 | 101.90 | 101.28 | 0.001110 | 3.50 | 41.00 |
| P-2 | 12.80 | 3.50 | 16.30 | I-2 J-1 | Circular 18 inch | 97.80 | 93.50 | 101.90 98.70 | 100.58 96.44 | 0.024082 0.025000 | 7.34 16.30 | 172.00 |
| P-3 | N/A | 16.30 | 16.30 | J-1 Outlet | Circular 18 inch | 93.00 | 86.00 | 98.70 98.00 | 95.78 92.50 | 0.024082 0.051471 | 16.30 23.83 | 136.00 |

Inlet: I-1
 Rim: 101.90 ft
 Sump: 98.50 ft

Outlet: Outlet
 Rim: 98.00 ft
 Sump: 86.00 ft

Junction: J-1
 Rim: 98.70 ft
 Sump: 93.00 ft

Inlet: I-2
 Rim: 101.90 ft
 Sump: 97.80 ft



Pipe: P-1
 Up Invert: 98.50 ft
 Dn Invert: 98.30 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-2
 Up Invert: 97.80 ft
 Dn Invert: 93.50 ft
 Length: 172.00 ft
 Size: 18 inch

Pipe: P-3
 Up Invert: 93.00 ft
 Dn Invert: 86.00 ft
 Length: 136.00 ft
 Size: 18 inch

System Report

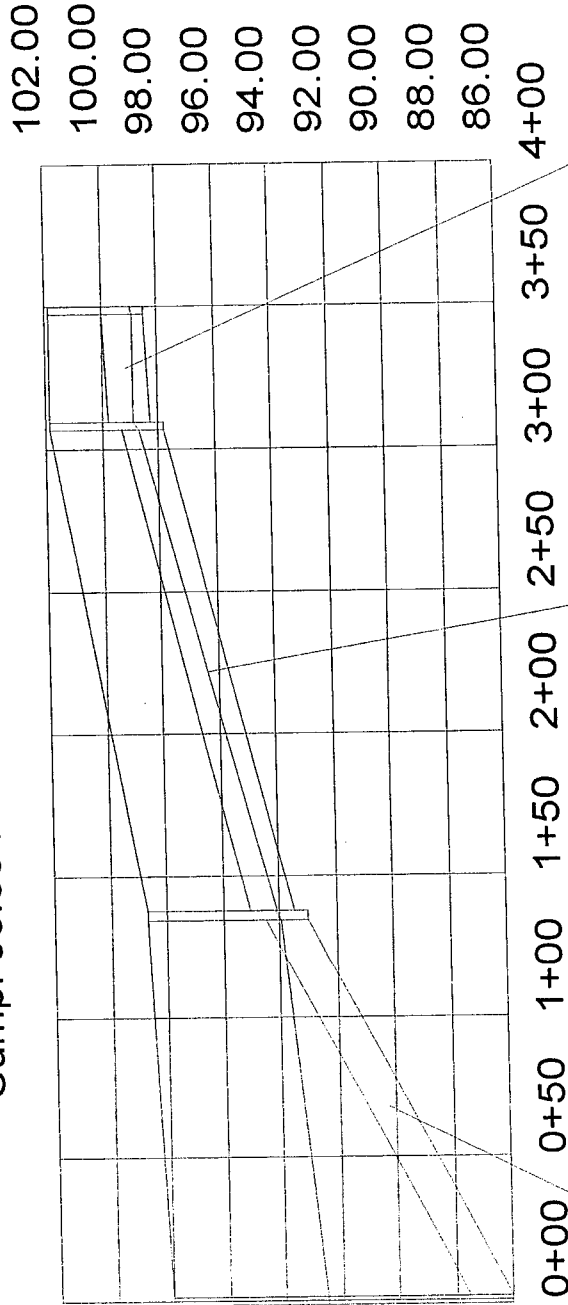
| Pipe | Additional Flow (cfs) | Total Upstream Added (cfs) | Structure Discharge (cfs) | -Node- Upstream Downstream | -Section- Shape Size | Upstream Invert Elevation (ft) | Downstream Invert Elevation (ft) | -Ground- Upstream Downstream (ft) | -HGL- Upstream Downstream (ft) | -Slope- Energy Constructed (ft/ft) | -Section- Discharge Capacity (cfs) | Length (ft) |
|------|-----------------------|----------------------------|---------------------------|----------------------------|----------------------|--------------------------------|----------------------------------|-----------------------------------|--------------------------------|------------------------------------|------------------------------------|-------------|
| P-1 | 1.20 | 0.00 | 1.20 | I-1 | Circular 18 inch | 98.50 | 98.30 | 101.90 | 98.93 | 0.002075 | 1.20 | 41.00 |
| P-2 | 4.60 | 1.20 | 5.80 | I-2 | Circular 18 inch | 97.80 | 93.50 | 101.90 | 98.73 | 0.022523 | 5.80 | 172.00 |
| P-3 | N/A | 5.80 | 5.80 | J-1 | Circular 18 inch | 93.00 | 86.00 | 98.70 | 94.11 | 0.025000 | 16.61 | 136.00 |
| | | | | J-1 | Circular 18 inch | | | 98.70 | 93.93 | 0.012186 | 5.80 | |
| | | | | Outlet | | | | 98.00 | 92.50 | 0.051471 | 23.83 | |

Inlet: I-1
 Rim: 101.90 ft
 Sump: 98.50 ft

Inlet: I-2
 Rim: 101.90 ft
 Sump: 97.80 ft

Junction: J-1
 Rim: 98.70 ft
 Sump: 93.00 ft

Outlet: Outlet
 Rim: 98.00 ft
 Sump: 86.00 ft

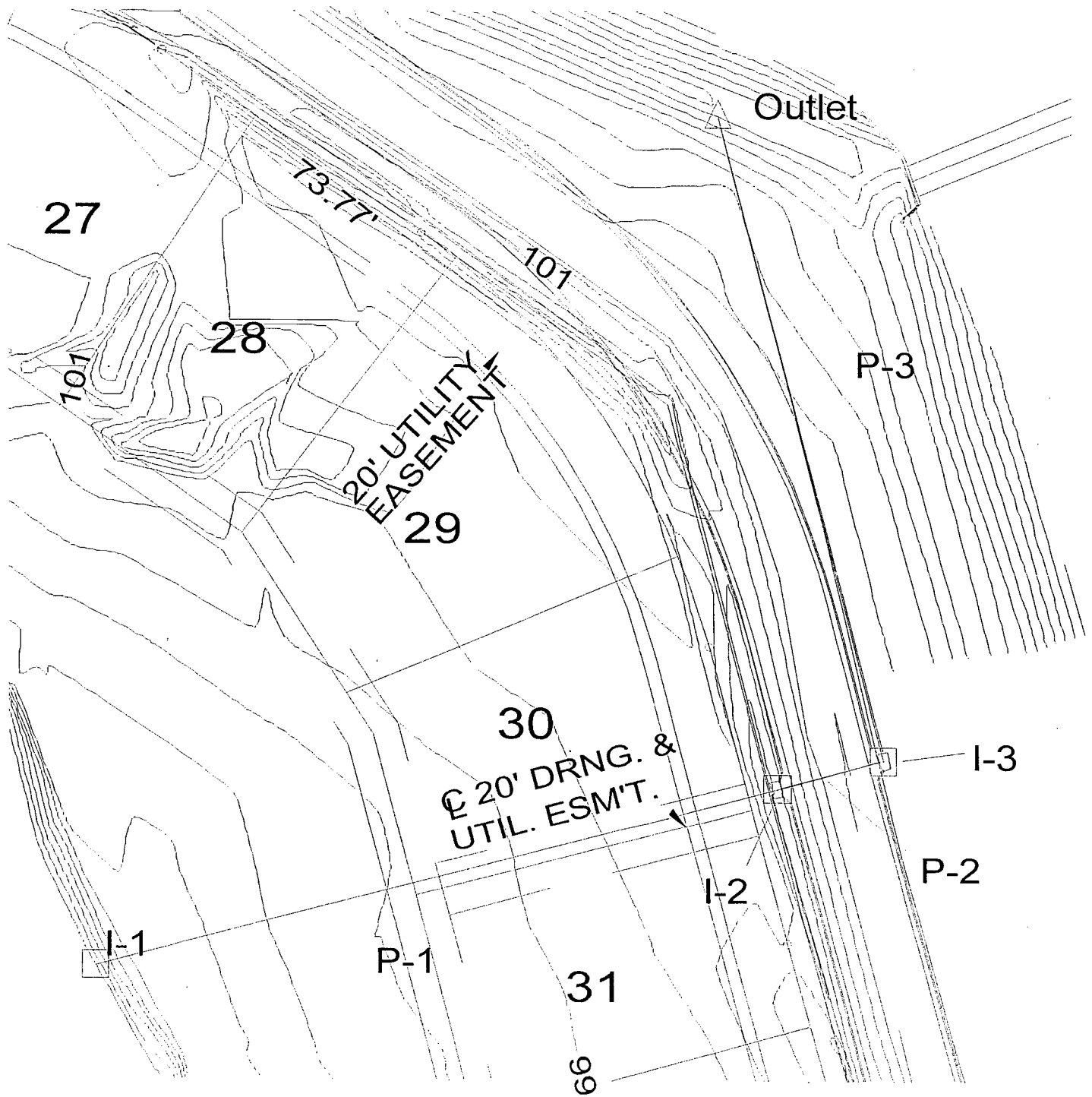


Pipe: P-1
 Up Invert: 98.50 ft
 Dn Invert: 98.30 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-2
 Up Invert: 97.80 ft
 Dn Invert: 93.50 ft
 Length: 172.00 ft
 Size: 18 inch

Pipe: P-3
 Up Invert: 93.00 ft
 Dn Invert: 86.00 ft
 Length: 136.00 ft
 Size: 18 inch

Appendix I
StormCad Analysis
Stormsewer System #8



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-1 | 5.00 | 0.00 | 5.00 | I-1 | Circular 15 inch | 96.40 | 95.40 | 99.00 102.30 | 100.05 98.47 | 0.005992 0.003788 | 5.00 3.98 | 264.00 |
| P-2 | 6.40 | 5.00 | 11.40 | I-2 I-3 | Circular 18 inch | 95.30 | 95.10 | 102.30 102.30 | 98.14 97.66 | 0.011779 0.004878 | 11.40 7.34 | 41.00 |
| P-3 | 3.00 | 11.40 | 14.40 | I-3 Outlet | Circular 24 inch | 95.00 | 94.50 | 102.30 100.00 | 97.50 96.50 | 0.004052 0.002033 | 14.40 10.20 | 246.00 |

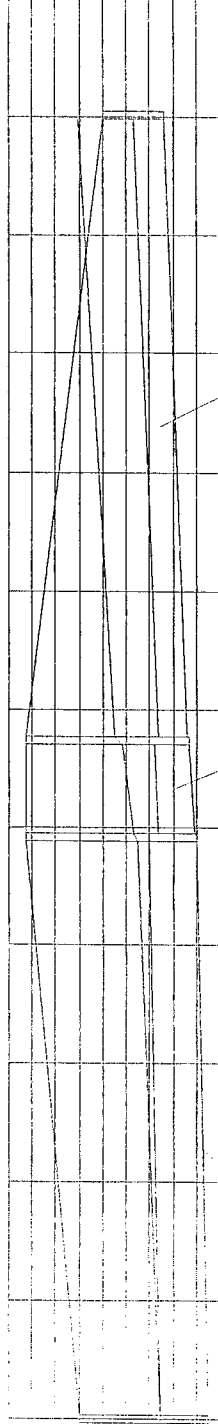
Inlet: I-2
 Rim: 102.30 ft
 Sump: 95.30 ft

Inlet: I-3
 Rim: 102.30 ft
 Sump: 95.00 ft

Inlet: I-1
 Rim: 99.00 ft
 Sump: 96.40 ft

Outlet: Outlet
 Rim: 100.00 ft
 Sump: 94.50 ft

103.00
 102.00
 101.00
 100.00
 99.00
 98.00
 97.00
 96.00
 95.00
 94.00



Elevation ft

0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00

Station ft

Pipe: P-3
 Up Invert: 95.00 ft
 Dn Invert: 94.50 ft
 Length: 246.00 ft
 Size: 24 inch

Pipe: P-2
 Up Invert: 95.30 ft
 Dn Invert: 95.10 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-1
 Up Invert: 96.40 ft
 Dn Invert: 95.40 ft
 Length: 264.00 ft
 Size: 15 inch

System Report

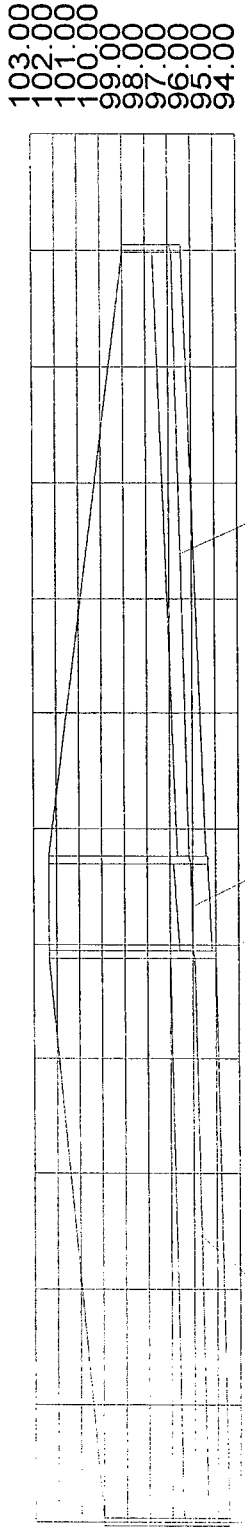
| Pipe | Additional Flow (cfs) | Total Upstream Added (cfs) | Structure Discharge (cfs) | -Node- Upstream Downstream | -Section- Shape Size | Upstream Invert Elevation (ft) | Downstream Invert Elevation (ft) | -Ground- Upstream Downstream (ft) | -HGL- Upstream Downstream (ft) | -Slope- Energy Constructed (ft/ft) | -Section- Discharge Capacity (cfs) | Length (ft) |
|------|-----------------------|----------------------------|---------------------------|----------------------------|----------------------|--------------------------------|----------------------------------|-----------------------------------|--------------------------------|------------------------------------|------------------------------------|-------------|
| P-1 | 1.10 | 0.00 | 1.10 | I-1 | Circular | 96.40 | 95.40 | 99.00 | 96.85 | 0.002933 | 1.10 | 264.00 |
| P-2 | 2.30 | 1.10 | 3.40 | I-2 | 15 inch Circular | 95.30 | 95.10 | 102.30 | 96.16 | 0.003788 | 3.98 | 41.00 |
| P-3 | 1.10 | 3.40 | 4.50 | I-3 | 18 inch Circular | 95.00 | 94.50 | 102.30 | 96.01 | 0.004878 | 7.34 | 246.00 |
| | | | | I-3 | 24 inch Circular | | | 102.30 | 95.93 | 0.002033 | 4.50 | |
| | | | | Outlet | | | | 100.00 | 95.43 | 0.002033 | 10.20 | |

Inlet: I-2
 Rim: 102.30 ft
 Sump: 95.30 ft

Inlet: I-1
 Rim: 99.00 ft
 Sump: 96.40 ft

Inlet: I-3
 Rim: 102.30 ft
 Sump: 95.00 ft

Outlet: Outlet
 Rim: 100.00 ft
 Sump: 94.50 ft



0+00 0+50 1+00 1+50 2+00 2+50 3+00 3+50 4+00 4+50 5+00 5+50 6+00

Station ft

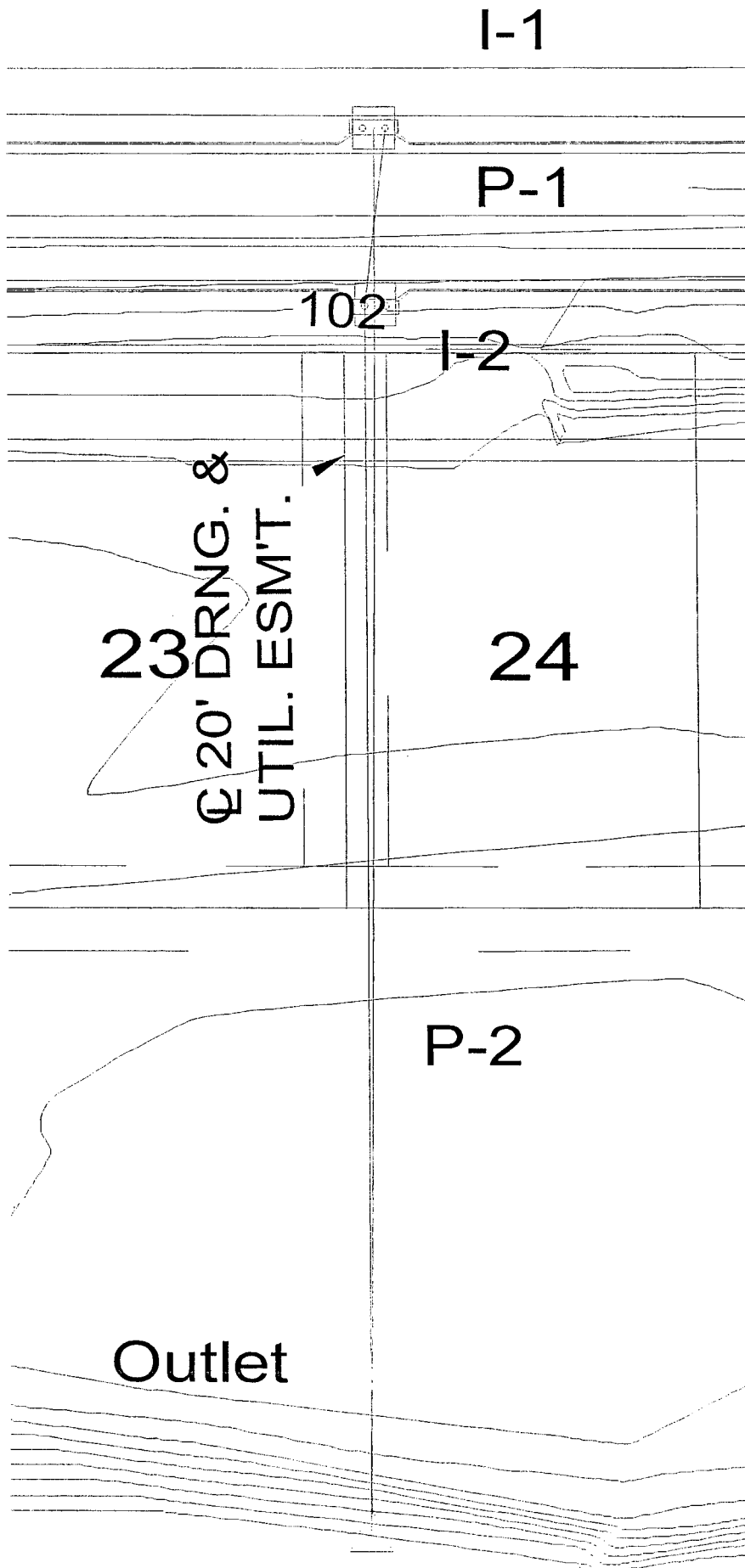
Elevation ft

Pipe: P-3
 Up Invert: 95.00 ft
 Dn Invert: 94.50 ft
 Length: 246.00 ft
 Size: 24 inch

Pipe: P-2
 Up Invert: 95.30 ft
 Dn Invert: 95.10 ft
 Length: 41.00 ft
 Size: 18 inch

Pipe: P-1
 Up Invert: 96.40 ft
 Dn Invert: 95.40 ft
 Length: 264.00 ft
 Size: 15 inch

Appendix J
StormCad Analysis
Stormsewer System #9



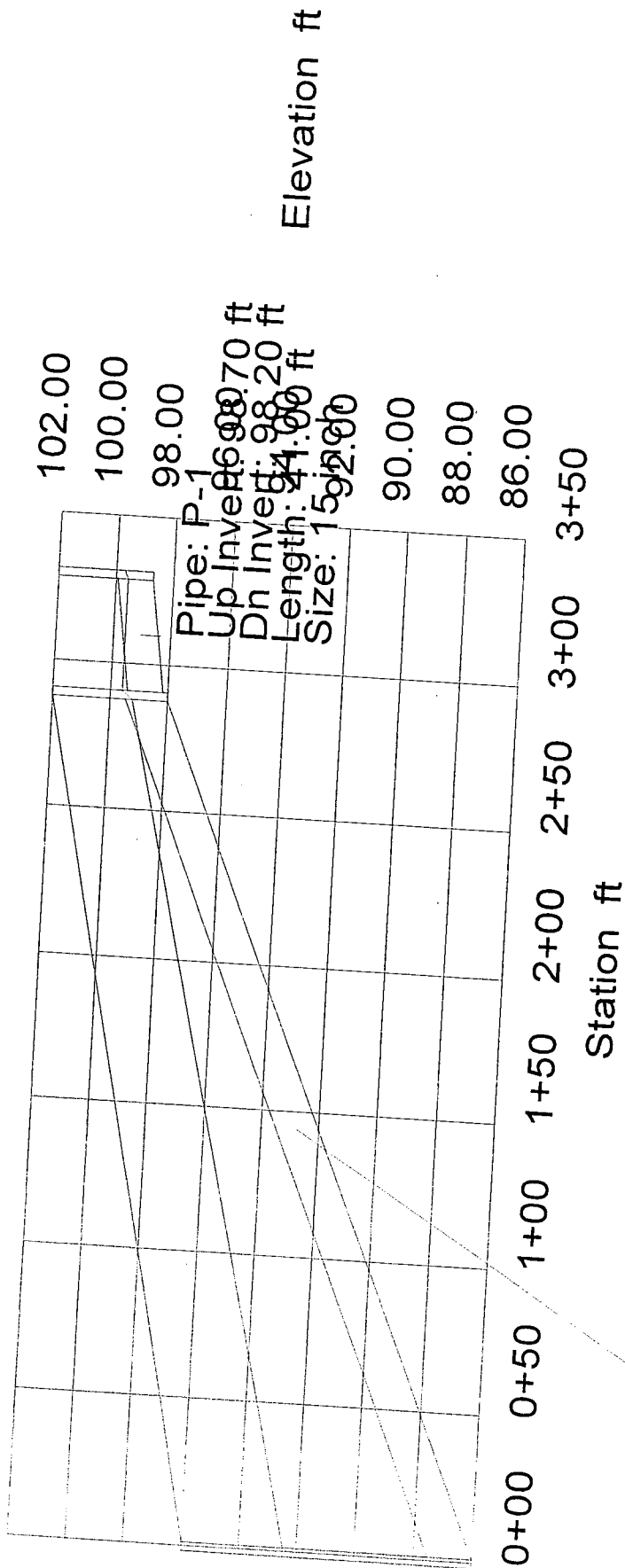
System Report

| 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-1 | 3.50 | 0.00 | 3.50 | I-1 | Circular 15 inch | 98.70 | 98.20 | 102.00 | 99.63 | 0.002889 | 3.50 | 41.00 |
| P-2 | 6.90 | 3.50 | 10.40 | I-2 I-2 Outlet | Circular 18 inch | 98.00 | 86.00 | 102.00 96.00 | 99.58 99.24 92.50 | 0.012195 0.023842 0.041522 | 7.13 10.40 21.40 | 289.00 |

Inlet: I-1
 Rim: 102.00 ft
 Sump: 98.70 ft

Inlet: I-2
 Rim: 102.00 ft
 Sump: 98.00 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 86.00 ft



Pipe: P-2
 Up Invert: 98.00 ft
 Dn Invert: 86.00 ft
 Length: 289.00 ft
 Size: 18 inch

| Node | Inlet (cfs) | 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-1 | 1.20 | 1.20 | I-1 | Circular 15 inch | 98.70 | 98.20 | 102.00 | 99.13 | 0.008861 | 1.20 | 41.00 |
| P-2 | 2.50 | 3.70 | I-2 I-2 | Circular 18 inch | 98.00 | 86.00 | 102.00 96.00 | 98.88 98.73 92.50 | 0.012195 0.022332 0.041522 | 7.13 3.70 21.40 | 289.00 |
| | | | Outlet | | | | | | | | |

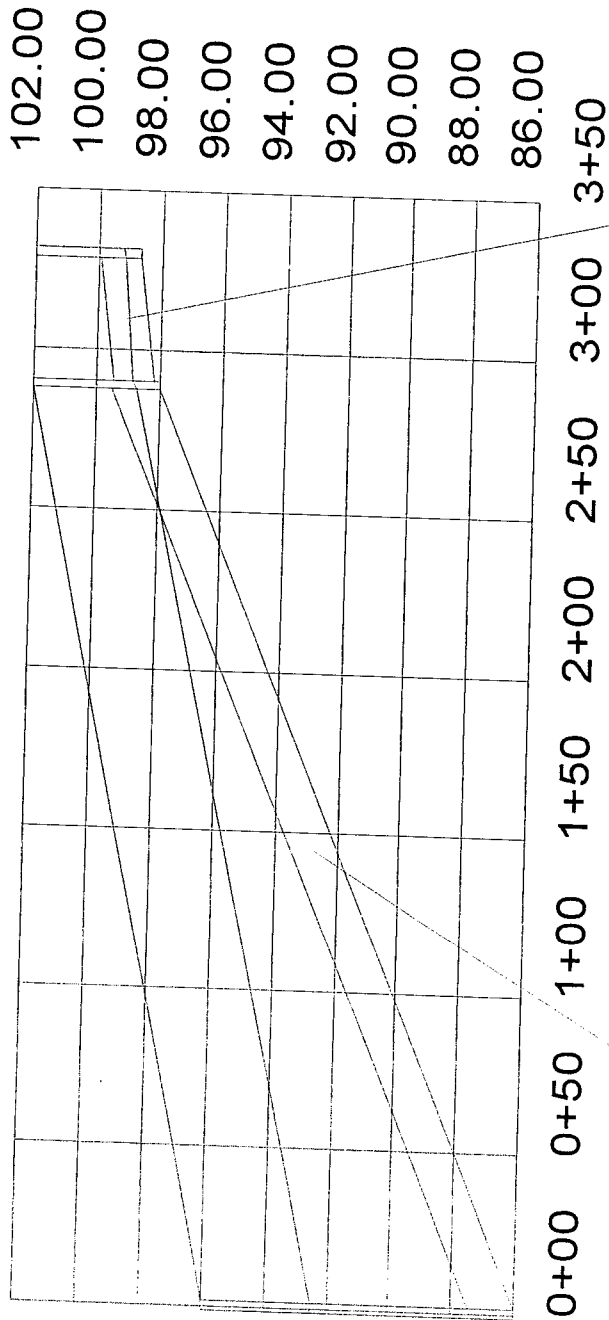
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 1:11:05 AM

© Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666
 Baughman Company, P.A.
 Project Engineer: Baughman Company, P.A.

Inlet: I-1
 Rim: 102.00 ft
 Sump: 98.70 ft

Inlet: I-2
 Rim: 102.00 ft
 Sump: 98.00 ft

Outlet: Outlet
 Rim: 96.00 ft
 Sump: 86.00 ft

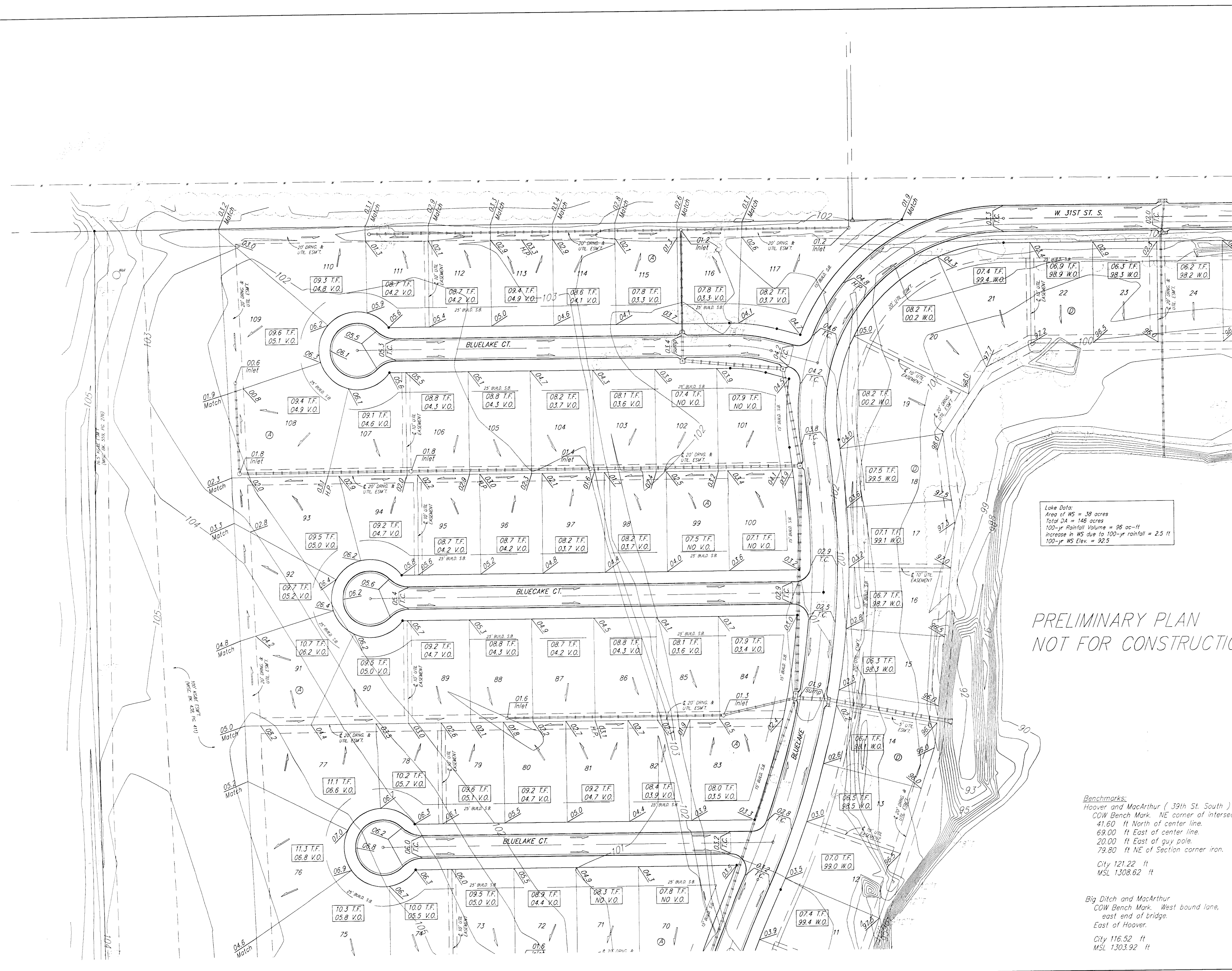


Pipe: P-1
 Up Invert: 98.70 ft
 Dn Invert: 98.20 ft
 Length: 41.00 ft
 Size: 15 inch

Pipe: P-2
 Up Invert: 98.00 ft
 Dn Invert: 86.00 ft
 Length: 289.00 ft
 Size: 18 inch

Elevation ft

Station ft



Lake Data:
 Area of WS = 38 acres
 Total DA = 146 acres
 100-yr Rainfall Volume = 96 ac-ft
 increase in WS due to 100-yr rainfall = 2.5 ft
 100-yr WS Elev. = 92.5

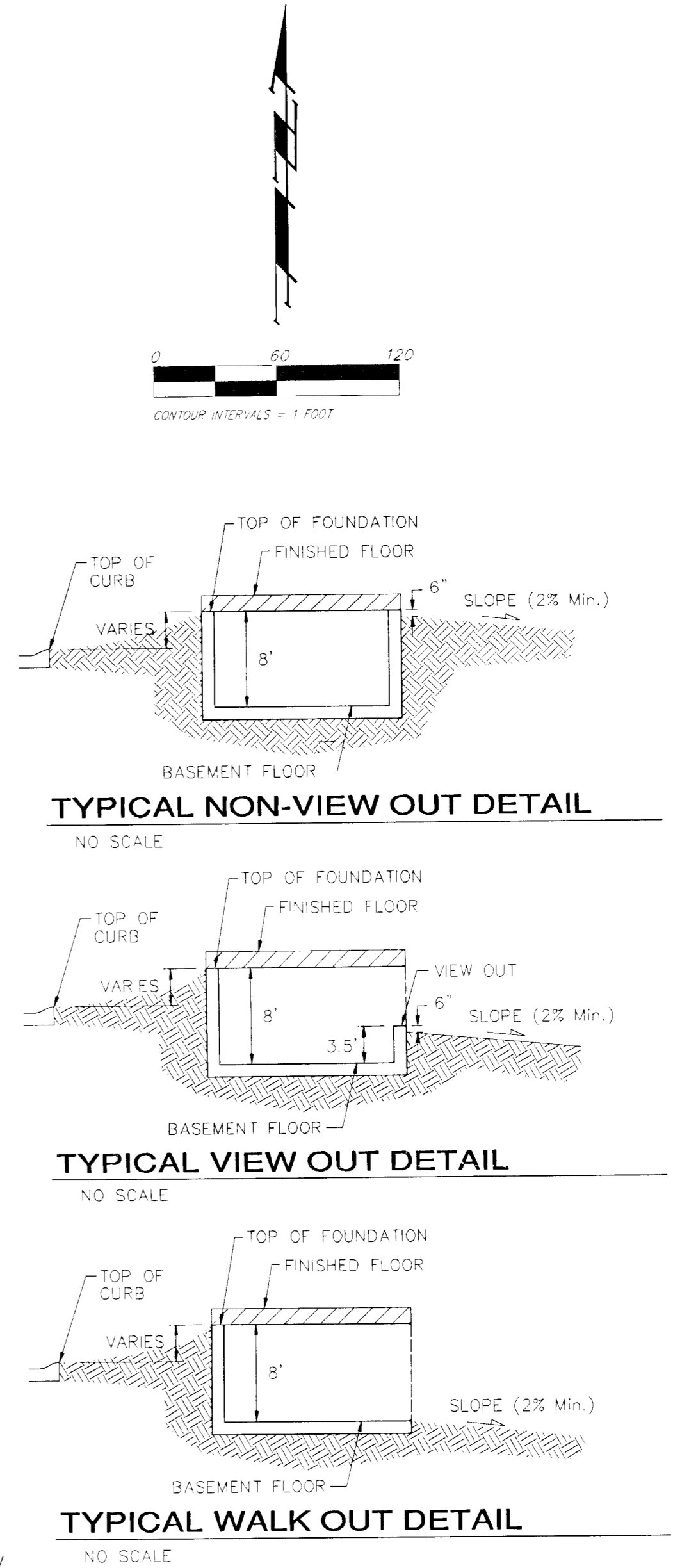
PRELIMINARY PLAN
 NOT FOR CONSTRUCTION

Benchmarks:
 Hoover and MacArthur (39th St. South)
 COW Bench Mark. NE corner of intersection.
 41.60 ft North of center line.
 69.00 ft East of center line.
 20.00 ft East of guy pole.
 79.80 ft NE of Section corner iron.

City 121.22 ft
 MSL 1308.62 ft

Big Ditch and MacArthur
 COW Bench Mark. West bound lane,
 east end of bridge.
 East of Hoover.

City 116.52 ft
 MSL 1303.92 ft



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.

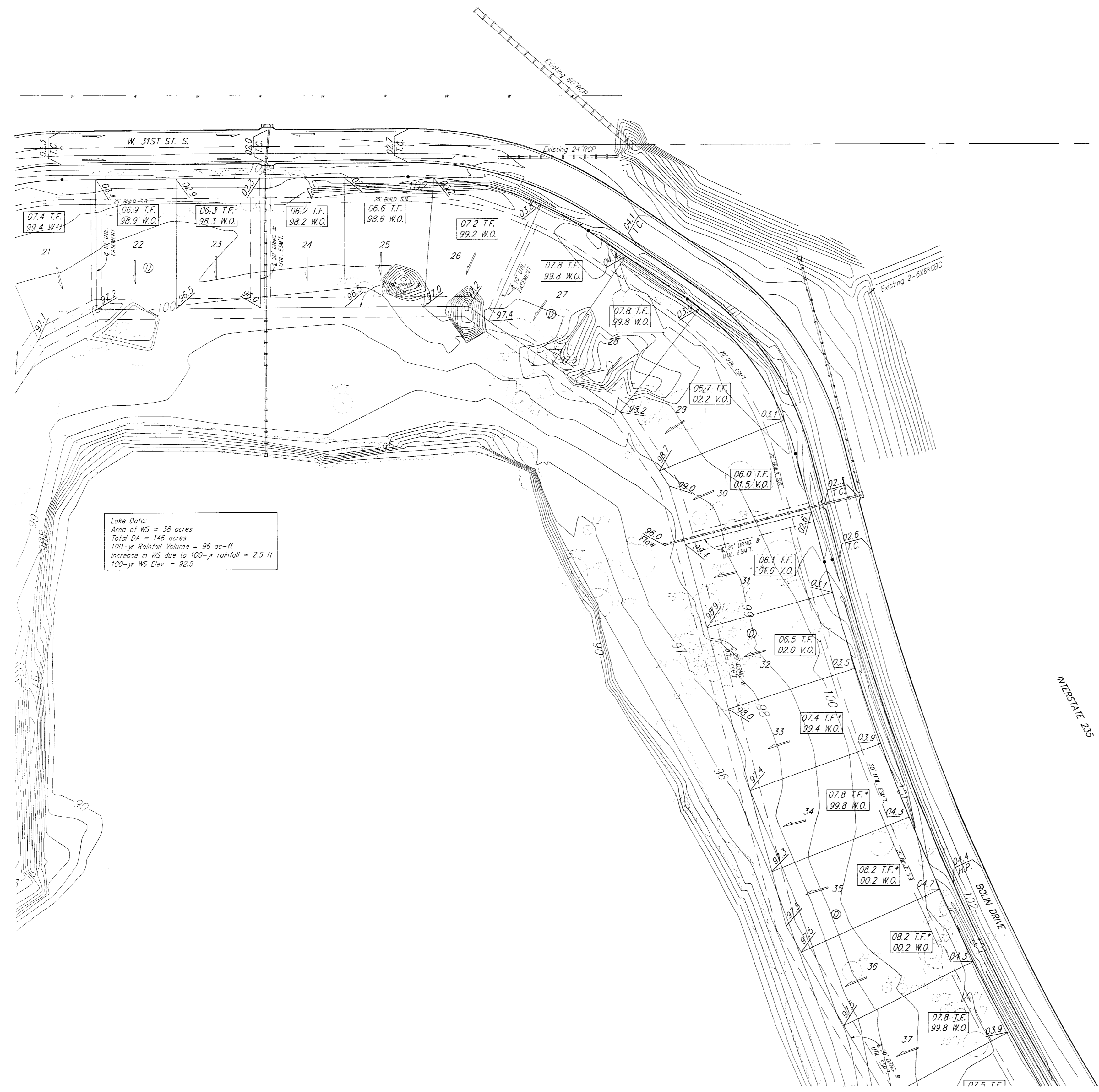
Lot dimensions have been omitted on this plan, refer to the recorded plat for this information.
 Lots depicted as XX.X T.F.* indicates that Deep footings or Foundations are required. The deep footing requirement may be waived if the contractor can provide proof that the area has been compacted to a minimum of 95% of optimum density.

BLUE LAKE ADDITION
GRADING PLAN
 WICHITA, KANSAS

BAUGHMAN COMPANY P.A.
 ENGINEERING, SURVEYING, & PLANNING
 316-262-7271 • 318 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER: _____ SHEET: **1** OF **9**

| | | | | |
|-------------|------------|-----------|---------------|--------------|
| DESIGN: BLG | DRAWN: BLG | APPROVED: | DATE: 5-03-04 | SCALE: noted |
|-------------|------------|-----------|---------------|--------------|

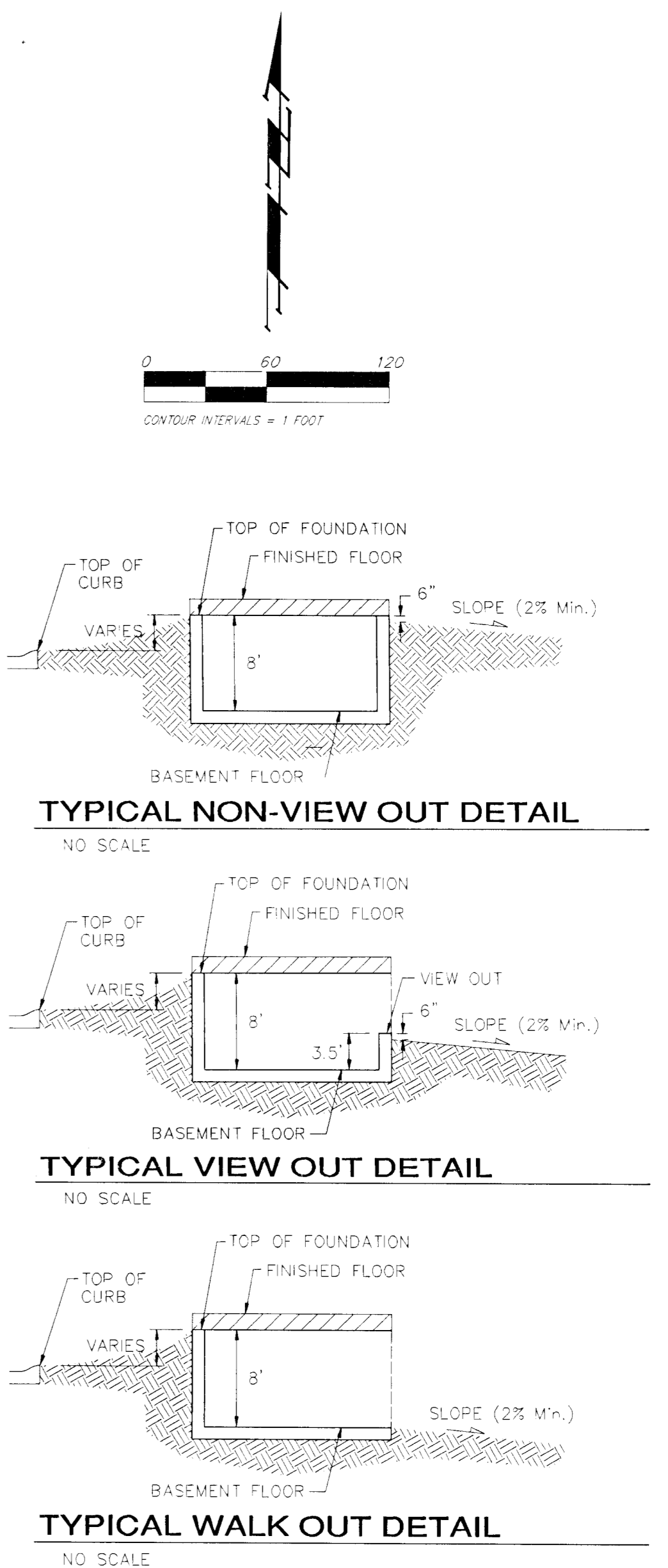


Lake Data:
 Area of WS = 39 acres
 Total DA = 146 acres
 100-yr Rainfall Volume = 96 ac-ft
 Increase in WS due to 100-yr rainfall = 2.5 ft
 100-yr WS Elev = 92.5

PRELIMINARY PLAN
 NOT FOR CONSTRUCTION

Benchmarks:
 Hoover and MacArthur (.39th St. South)
 COW Bench Mark, NE corner of intersection.
 41.60 ft North of center line.
 69.00 ft East of center line.
 20.00 ft East of guy pole.
 79.80 ft NE of Section corner iron.
 City 121.22 ft
 MSL 1308.62 ft

Big Ditch and MacArthur
 COW Bench Mark, West bound lane,
 east end of bridge.
 East of Hoover.
 City 116.52 ft
 MSL 1303.92 ft



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 omitted on this plan, refer to the recorded plat for this information.

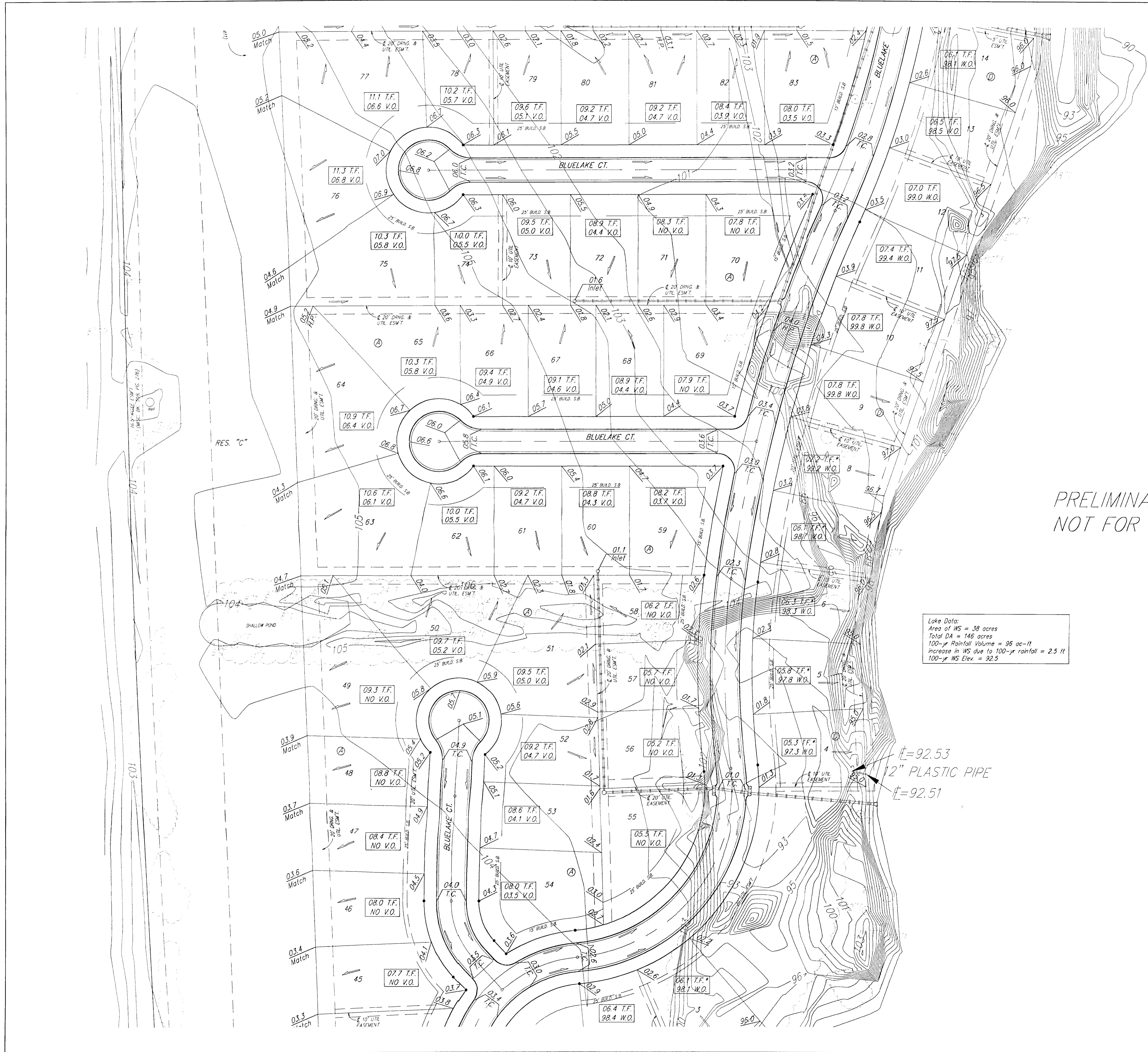
Lots depicted as XX.X T.F.* indicates that Deep footings or Foundations are required. The deep footing requirement may be waived if the contractor can provide proof that the area has been compacted to a minimum of 95% of optimum density.

BLUE LAKE ADDITION
GRADING PLAN
 WICHITA, KANSAS

BAUGHMAN COMPANY P.A.
 ENGINEERING, SURVEYING, & PLANNING
 316-262-7271 • 318 ELLIS • WICHITA, KANSAS 67211

| | | | |
|-------------------|--------------|----------|-----------------|
| DESIGN BLG | DRAWN BLG | APPROVED | DATE 5-03-04 |
| PROJECT NUMBER | | | SCALE noted |
| SHEET 2 | | | OF 9 |

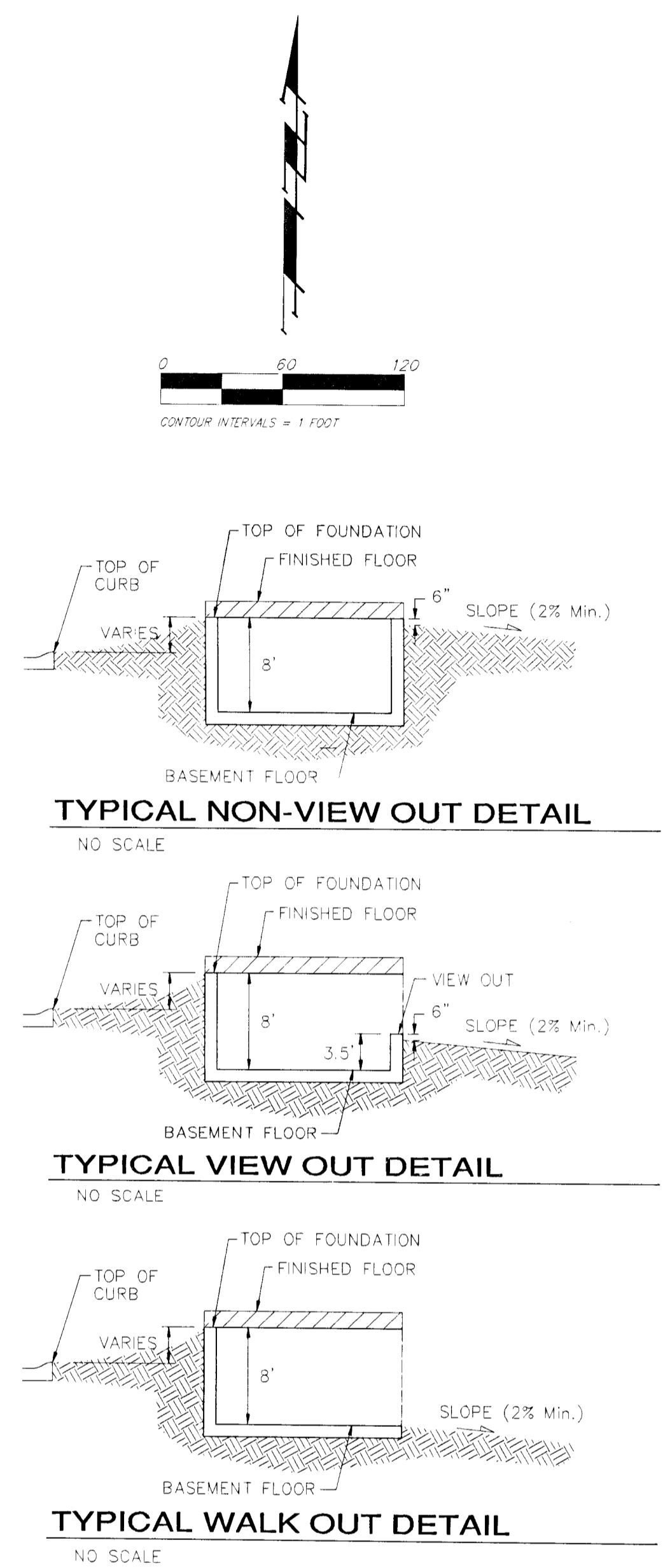
pre_grade.dwg



PRELIMINARY PLAN
NOT FOR CONSTRUCTION

Lake Data:
Area of WS = 38 acres
Total DA = 146 acres
100-yr Rainfall Volume = 95 ac-ft
Increase in WS due to 100-yr rainfall = 2.5 ft
100-yr NG Elev. = 92.5

RESERVE "A"



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 XXX V.O. Elevations for Walk-Outs are shown as XX.X W.O.
Lot dimensions have been omitted on this plan, refer to the recorded plat for this information.

Lots depicted as XX.X T.F.* indicates that Deep footings or Foundations are required. The deep footing requirement may be waived if the contractor can provide proof that the area has been compacted to a minimum of 95% of optimum density.

Benchmarks:
Hoover and MacArthur (39th St. South)
COW Bench Mark. NE corner of intersection.
41.60 ft North of center line.
69.00 ft East of center line.
20.00 ft East of guy pole.
79.80 ft NE of Section corner iron.
City 121.22 ft
MSL 1308.62 ft
Big Ditch and MacArthur
COW Bench Mark. West bound lane, east end of bridge.
East of Hoover.
City 116.52 ft
MSL 1303.92 ft

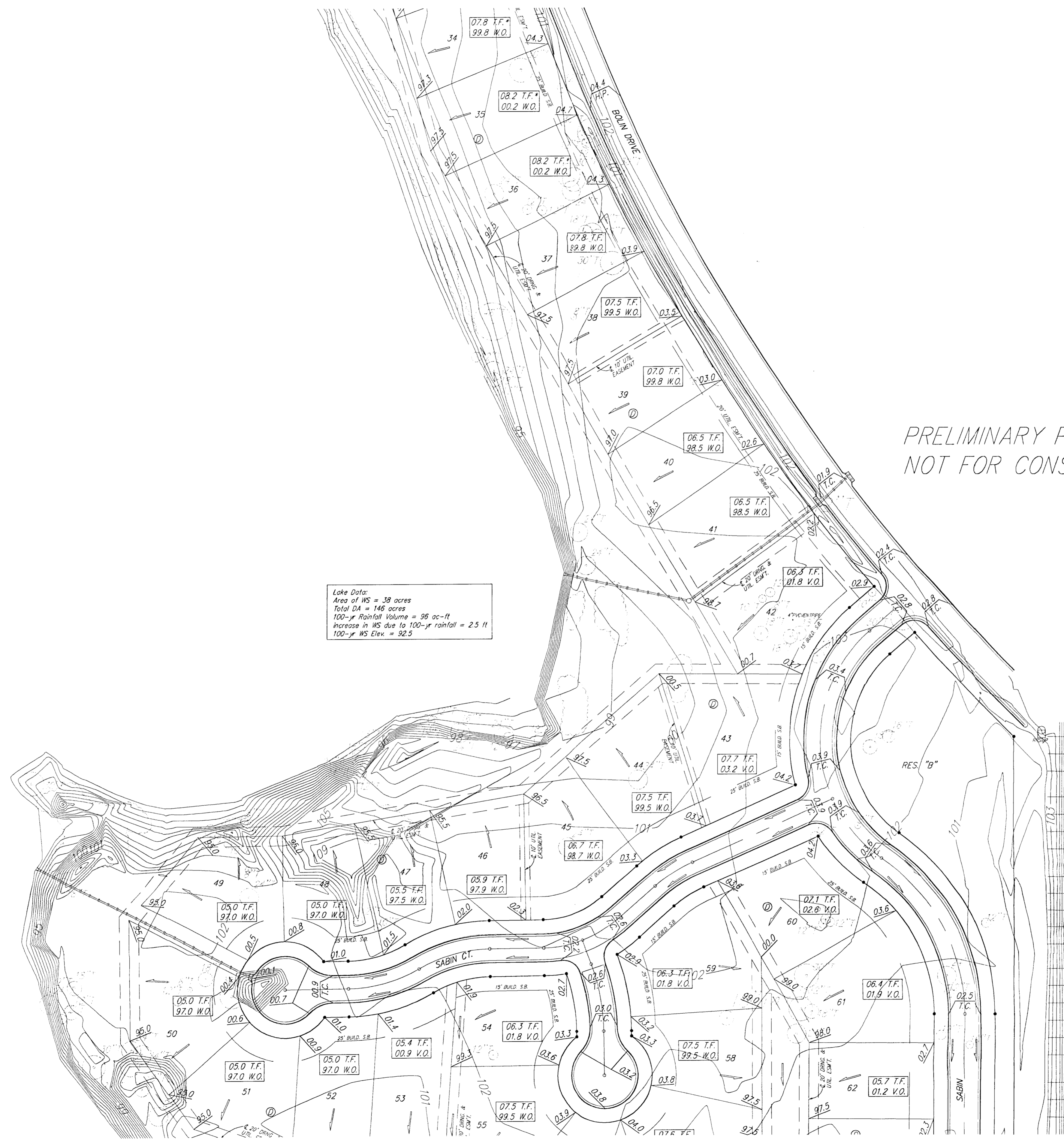
BLUE LAKE ADDITION
GRADING PLAN
WICHITA, KANSAS

BAUGHMAN COMPANY P.A.
ENGINEERING, SURVEYING, & PLANNING
316-282-7271 • 315 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER: _____ SHEET: **3** OF **9**

DESIGN: BLG DRAWN: BLG APPROVED: _____ DATE: 5-03-04 SCALE: noted

pre_grade.dwg



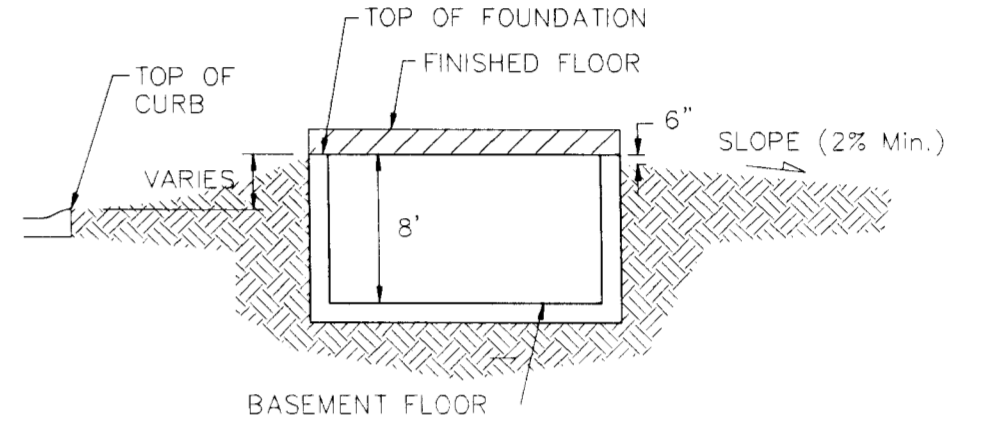
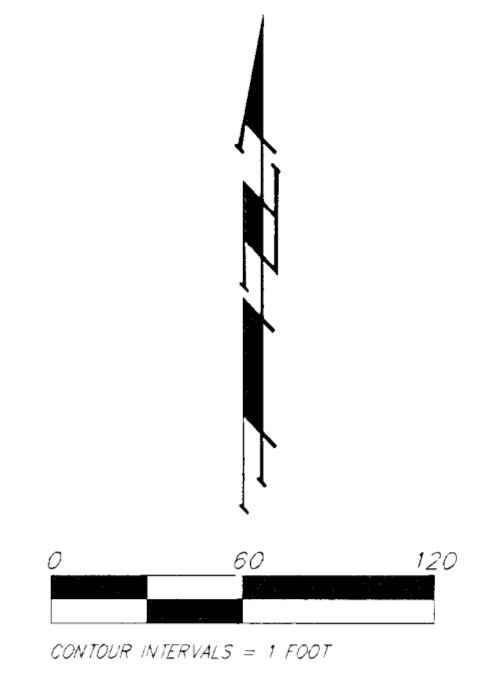
RESERVE "A"

PRELIMINARY PLAN
NOT FOR CONSTRUCTION

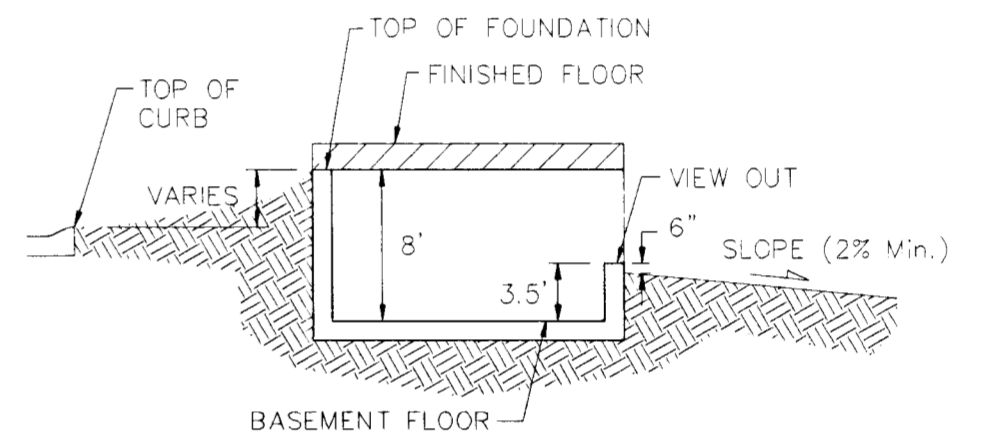
Lake Data:
Area of WS = 38 acres
Total DA = 146 acres
100-yr Rainfall Volume = 98 ac-ft
Increase in WS due to 100-yr rainfall = 2.5 ft
100-yr WS Elev. = 92.5

Benchmarks:
Hoover and MacArthur (39th St. South)
COW Bench Mark. NE corner of intersection.
41.60 ft North of center line.
69.00 ft East of center line.
20.00 ft East of guy pole.
79.80 ft NE of Section corner iron.
City 121.22 ft
MSL 1308.62 ft

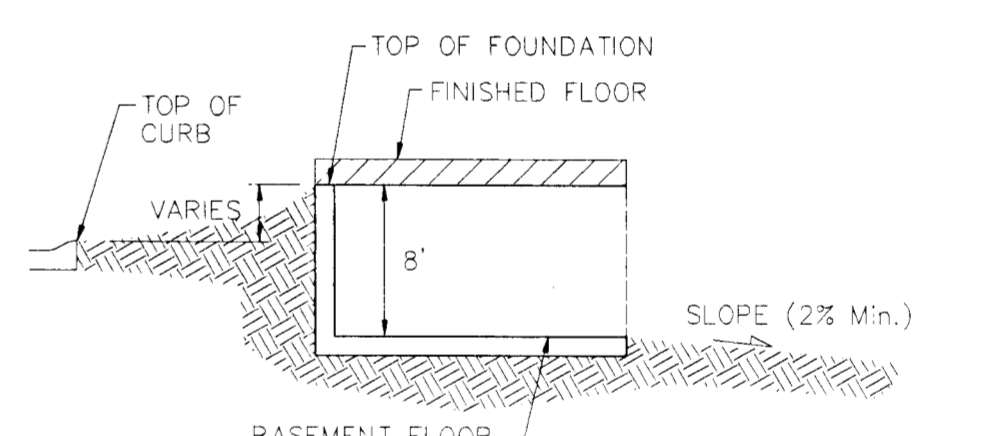
Big Ditch and MacArthur
COW Bench Mark. West bound lane,
east end of bridge.
East of Hoover.
City 116.52 ft
MSL 1303.92 ft



TYPICAL NON-VIEW OUT DETAIL



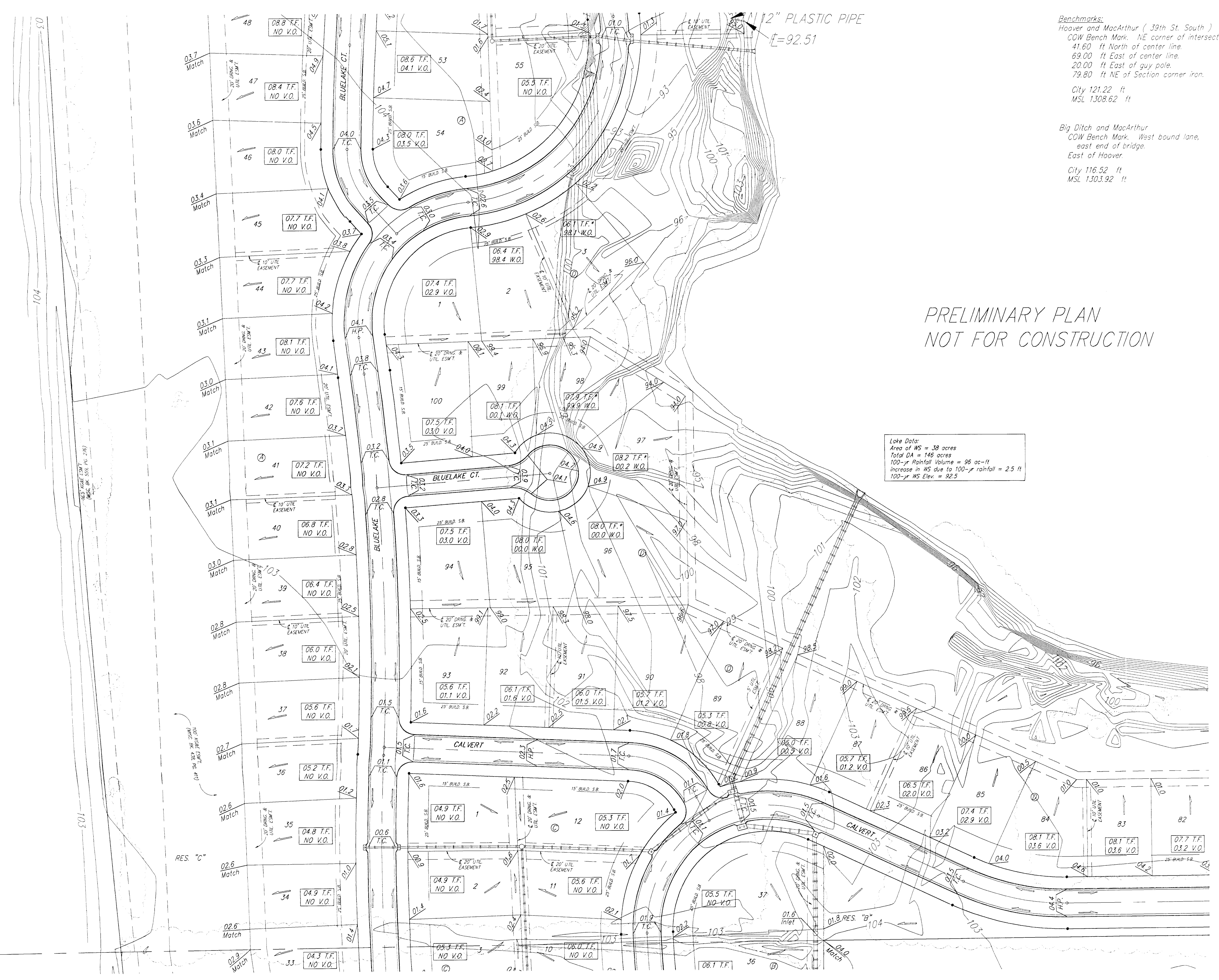
TYPICAL VIEW OUT DETAIL



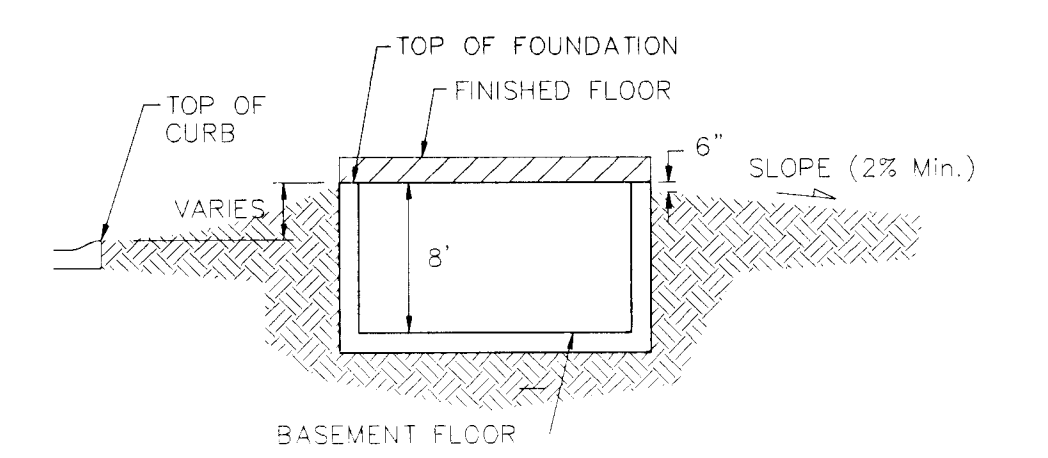
TYPICAL WALK OUT DETAIL

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 XXX V.O. Elevations for Walk-Outs are shown as XXX W.O.
Lot dimensions have been omitted on this plan, refer to the recorded plat for this information.
Lots depicted as XXX T.F.* indicates that Deep footings or Foundations are required. The deep footing requirement may be waived if the contractor can provide proof that the area has been compacted to a minimum of 95% of optimum density.

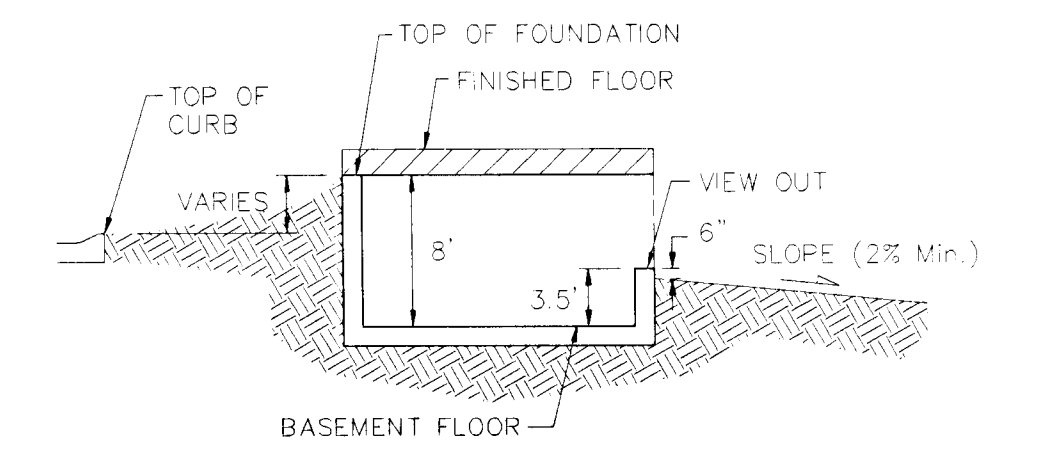
| | | | |
|--|--------|----------|----------|
| BLUE LAKE ADDITION | | | |
| GRADING PLAN | | | |
| WICHITA, KANSAS | | | |
| BAUGHMAN COMPANY P.A. | | | |
| ENGINEERING, SURVEYING, & PLANNING | | | |
| 318-262-7271 • 315 ELLIS • WICHITA, KANSAS 67211 | | | |
| PROJECT NUMBER | | | SHEET |
| | | | 4 |
| DESIGN | DRAWN | APPROVED | DATE |
| B.L.G. | B.L.G. | | 5-03-04 |
| SCALE | | noted | |
| | | 9 | |



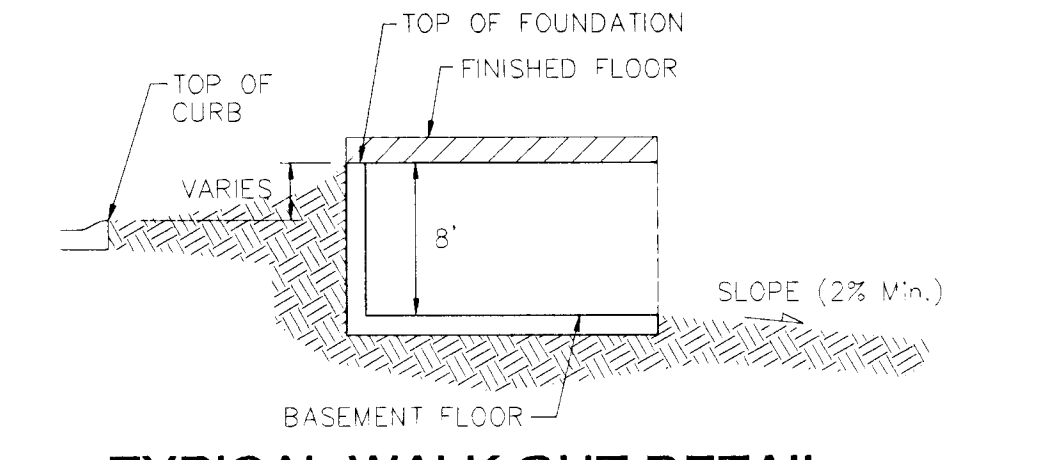
PRELIMINARY PLAN
NOT FOR CONSTRUCTION



TYPICAL NON-VIEW OUT DETAIL
NO SCALE



TYPICAL VIEW OUT DETAIL
NO SCALE



TYPICAL WALK OUT DETAIL
NO SCALE

NOTES:
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**BLUE LAKE ADDITION
GRADING PLAN**
WICHITA, KANSAS

BAUGHMAN COMPANY P.A.
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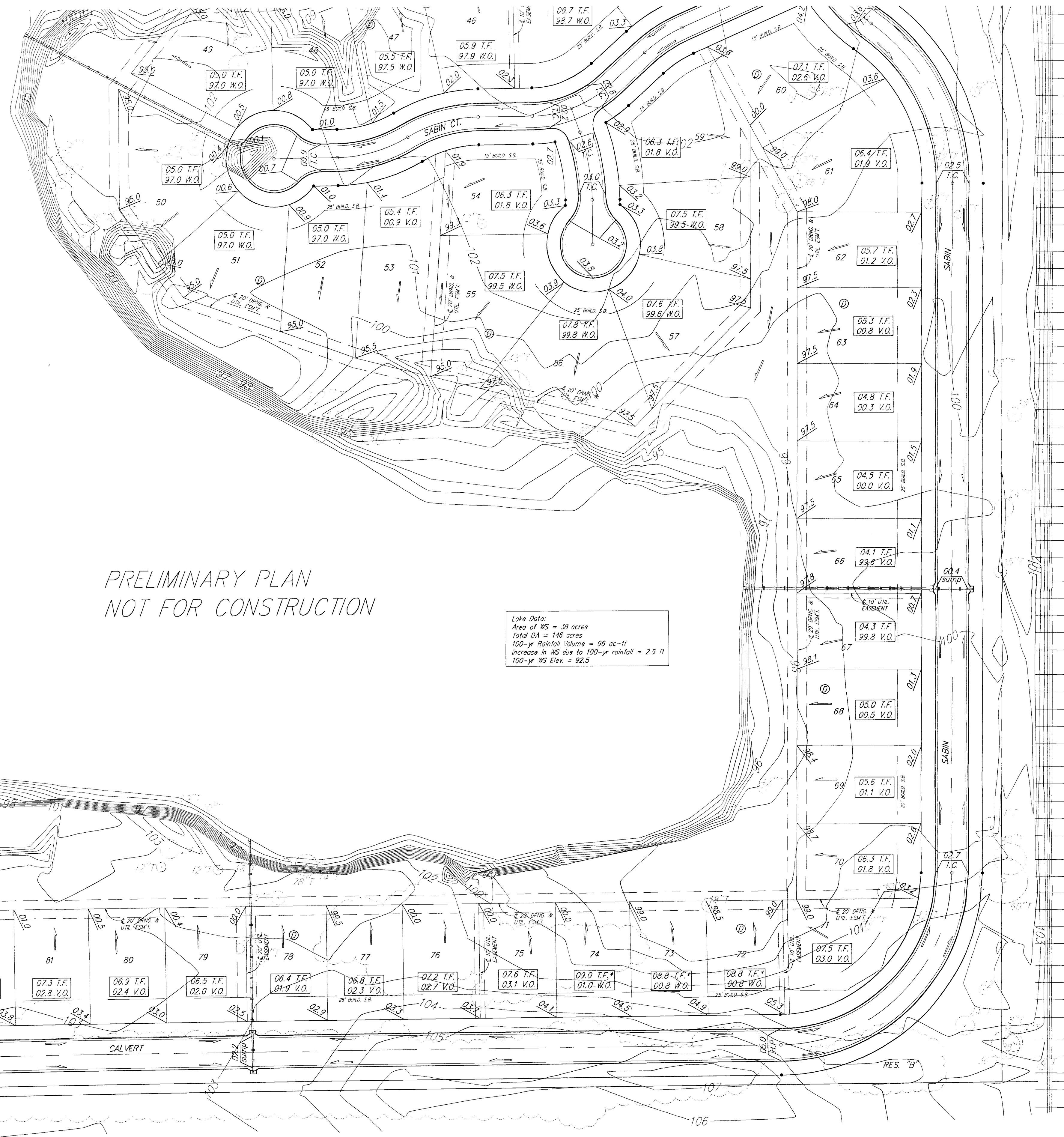
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| DESIGN BLG | DRAWN BLG | APPROVED | DATE 5-03-04 | SCALE noted | PROJECT NUMBER | SHEET 5 |
| | | | | | | OF 9 |

pro. grading, inc.

Benchmarks:
 Hoover and MacArthur (39th St. South)
 COW Bench Mark, NE corner of intersection.
 41.00 ft North of center line.
 69.00 ft East of center line.
 20.00 ft East of guy pole.
 79.80 ft NE of Section corner iron.
 City 121.22 ft
 MSL 1308.62 ft

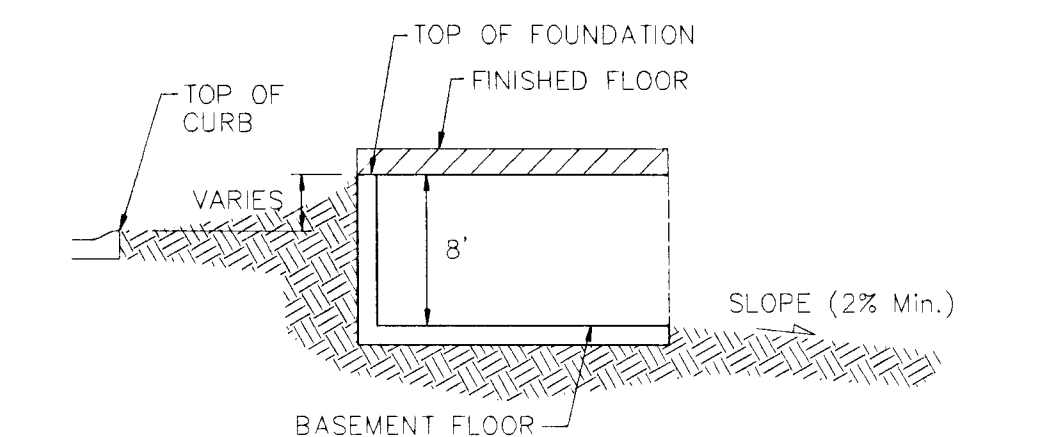
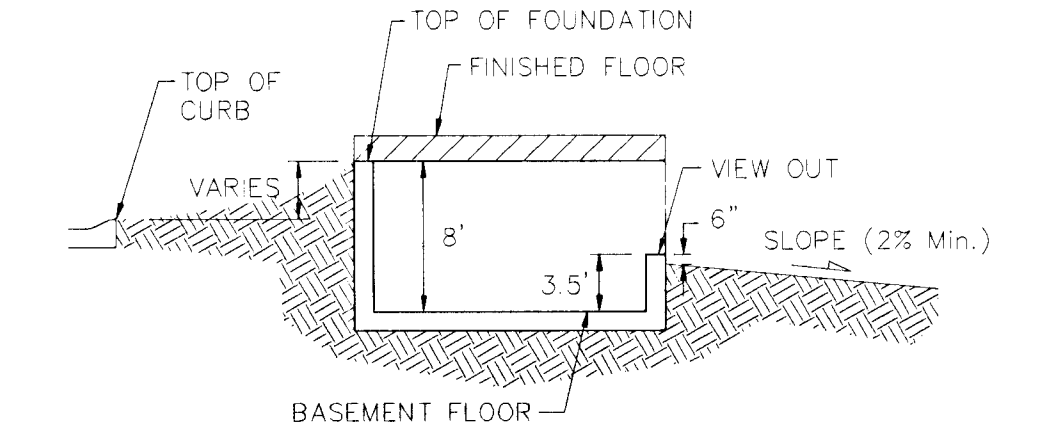
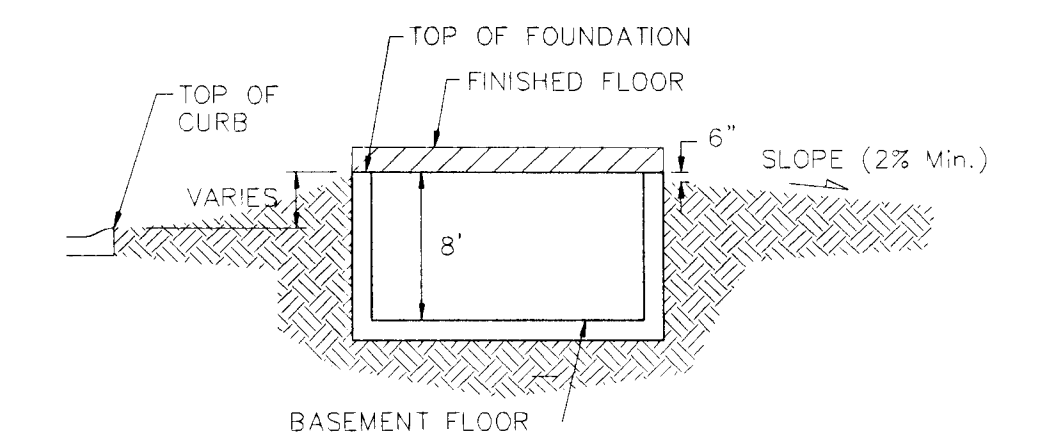
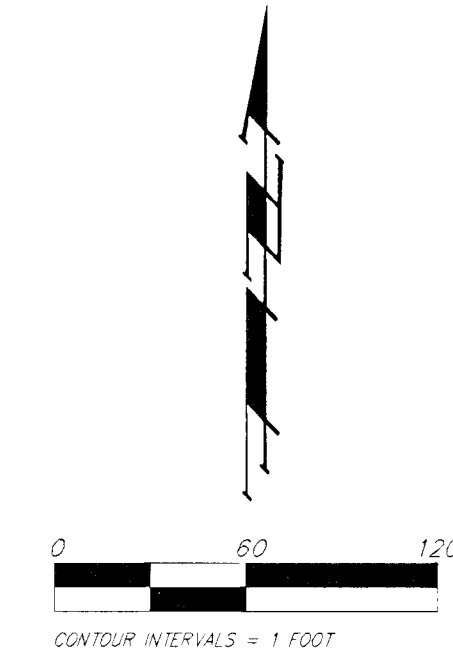
Big Ditch and MacArthur
 COW Bench Mark, West bound lane,
 east end of bridge.
 East of Hoover.
 City 116.52 ft
 MSL 1303.92 ft

notes
 res
 area = 96 ac-ft
 to 100-yr rainfall = 2.5 ft
 92.5



PRELIMINARY PLAN
 NOT FOR CONSTRUCTION

Lake Data:
 Area of WS = 38 acres
 Total DA = 148 acres
 100-yr Rainfall Volume = 96 ac-ft
 Increase in WS due to 100-yr rainfall = 2.5 ft
 100-yr WS Elev. = 92.5



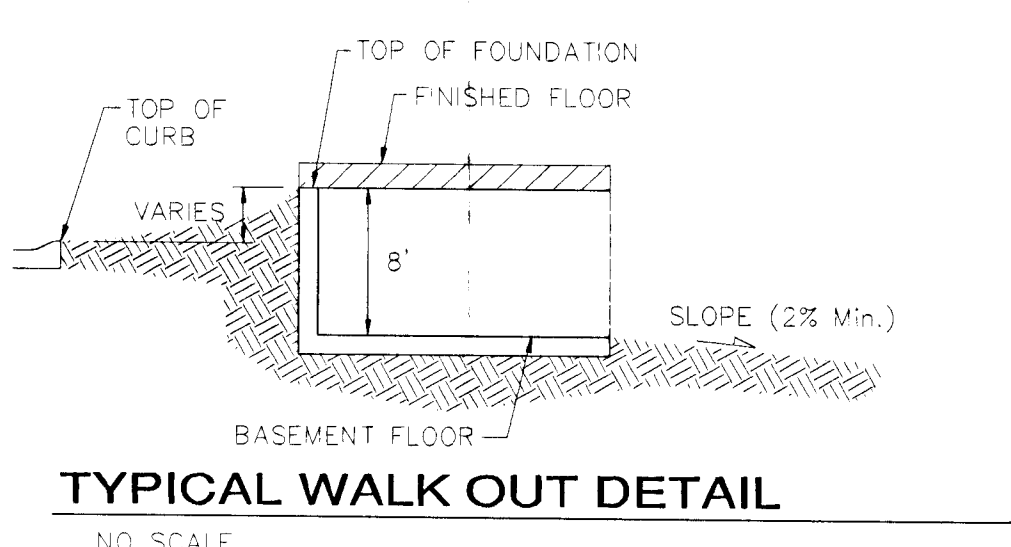
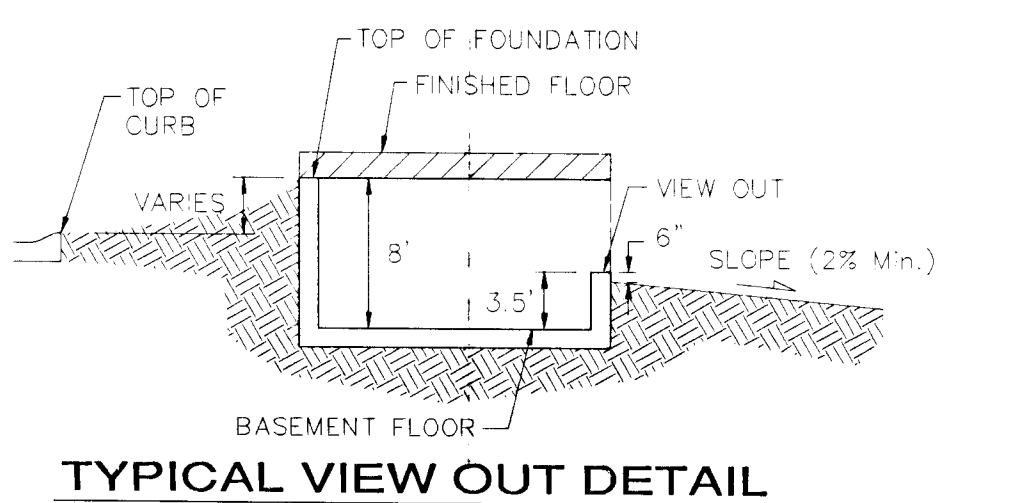
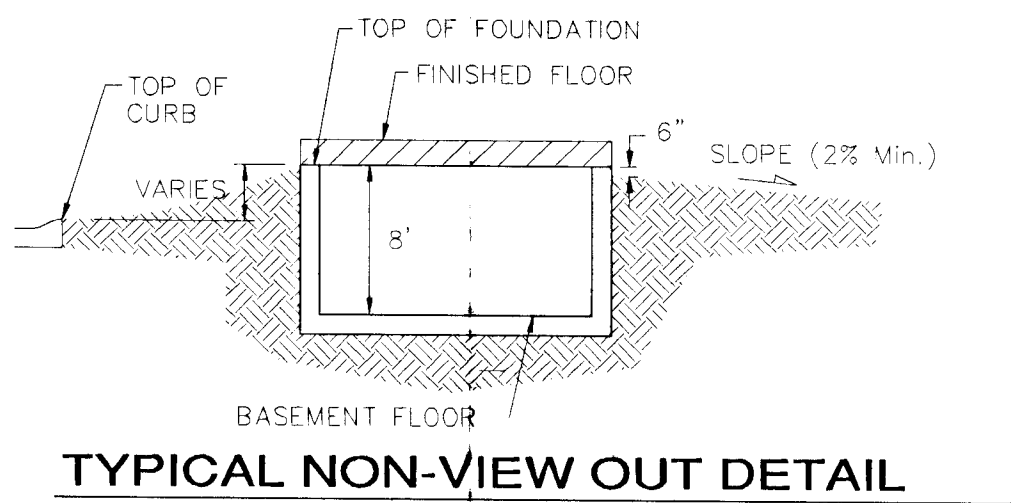
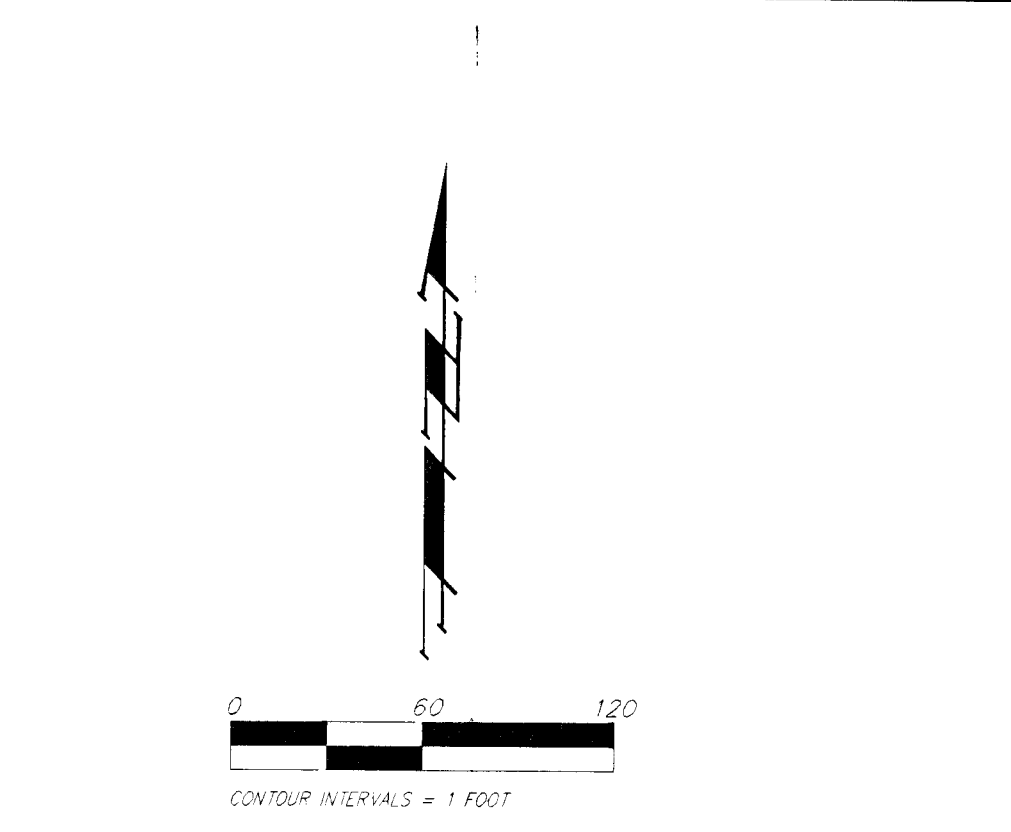
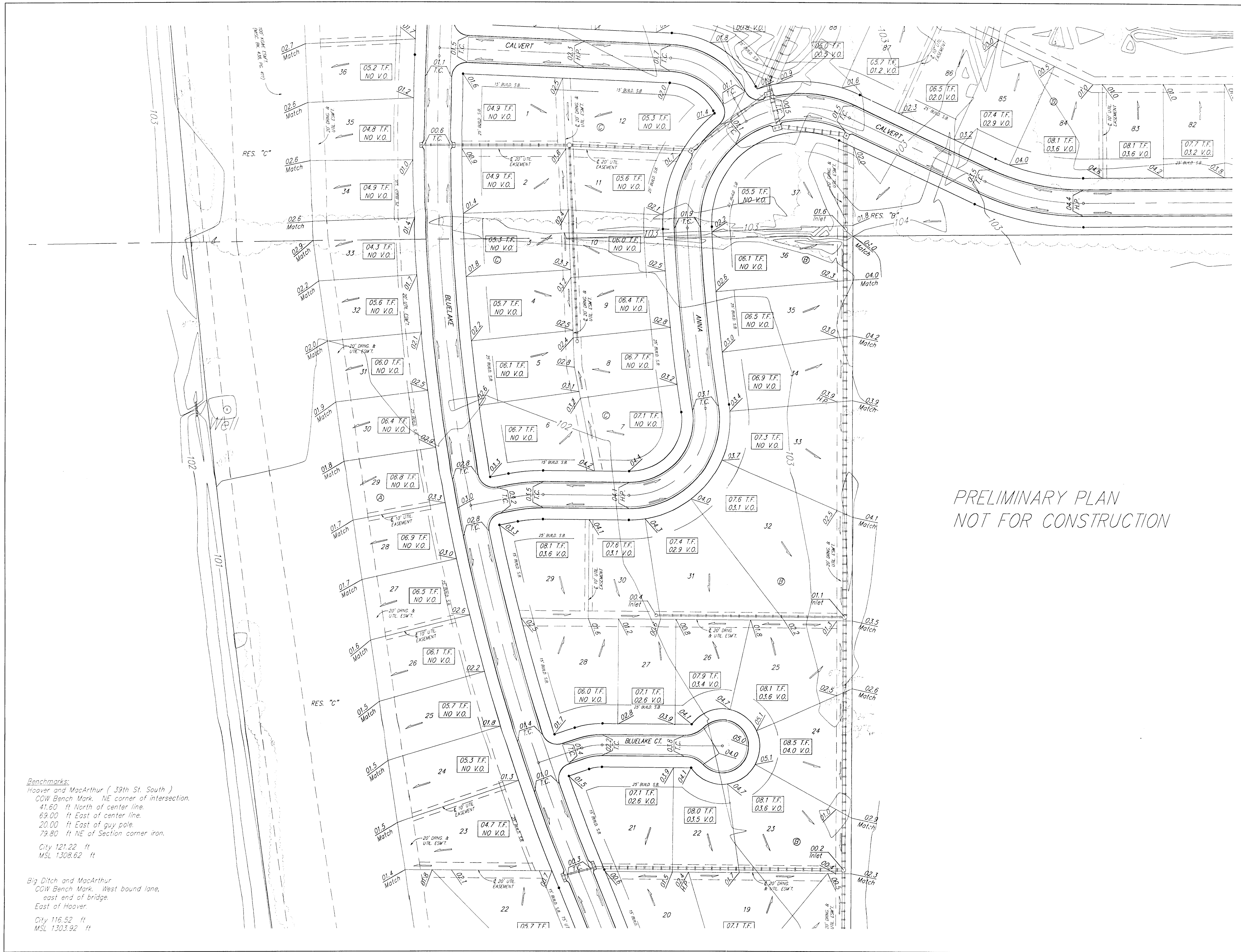
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 WICHITA, KANSAS

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|--------|-----|-------|--|----------|--|---------|-------|-------|--|----------------|--|-------|------|
| DESIGN | | DRAWN | | APPROVED | | DATE | | SCALE | | PROJECT NUMBER | | SHEET | |
| BLG | BLG | | | | | 5-03-04 | noted | | | | | 6 | OF 9 |

pre_grade.dwg



NOTES:
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PRELIMINARY PLAN
NOT FOR CONSTRUCTION

Benchmarks:
Hoover and MacArthur (39th St. South)
CGW Bench Mark. NE corner of intersection.
41.60 ft North of center line.
69.00 ft East of center line.
20.00 ft East of guy pole.
79.80 ft NE of Section corner iron.
City 121.22 ft
MSL 1308.62 ft

Big Ditch and MacArthur
CGW Bench Mark. West bound lane,
east end of bridge.
East of Hoover
City 116.52 ft
MSL 1303.92 ft

BLUE LAKE ADDITION
GRADING PLAN
WICHITA, KANSAS

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PROJECT NUMBER _____ SHEET **7** OF **9**

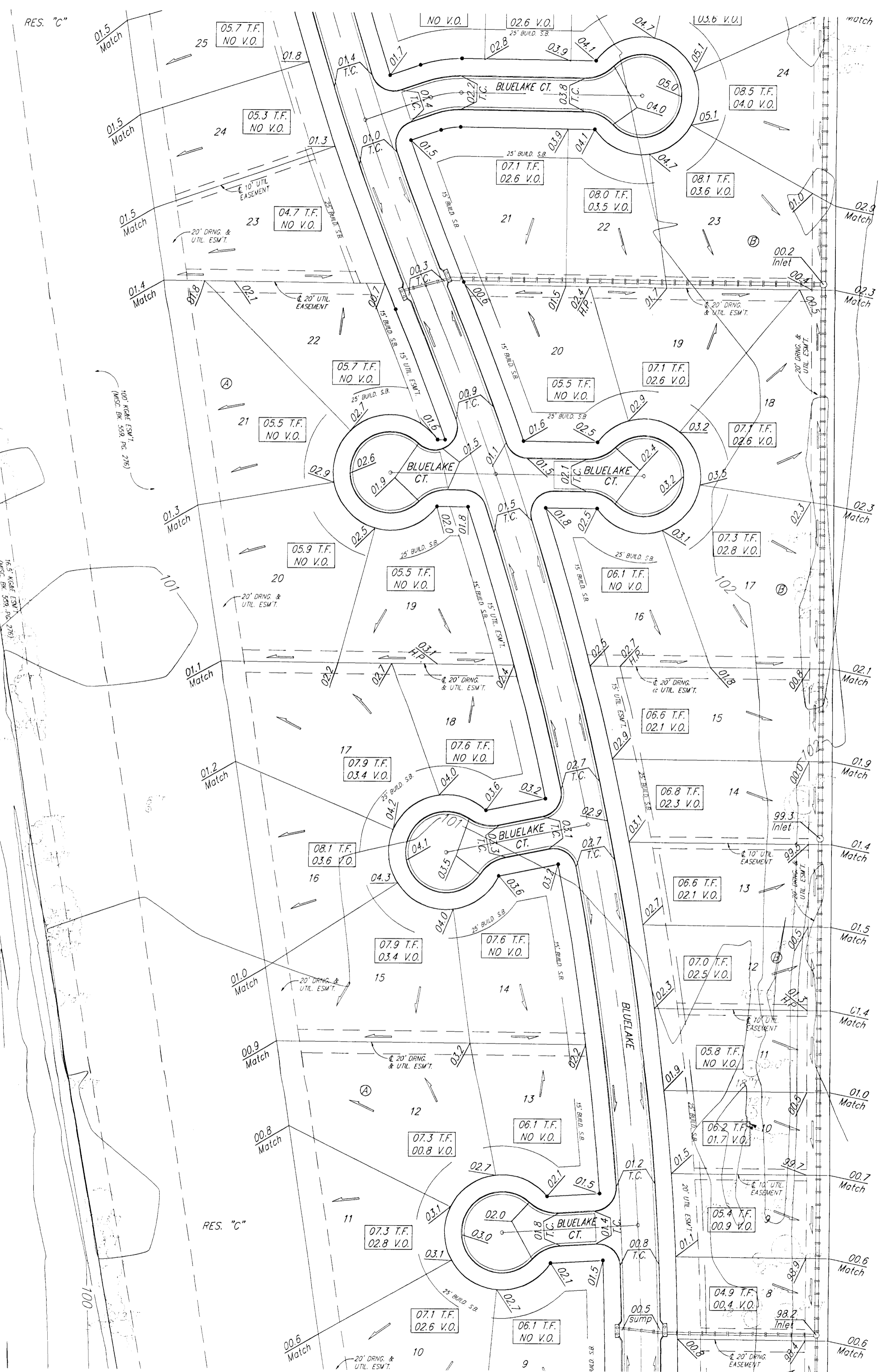
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| DESIGN | DRAWN | APPROVED | DATE | SCALE |
| BLG | BLG | | 5-03-04 | noted |

Pre-Grade Only

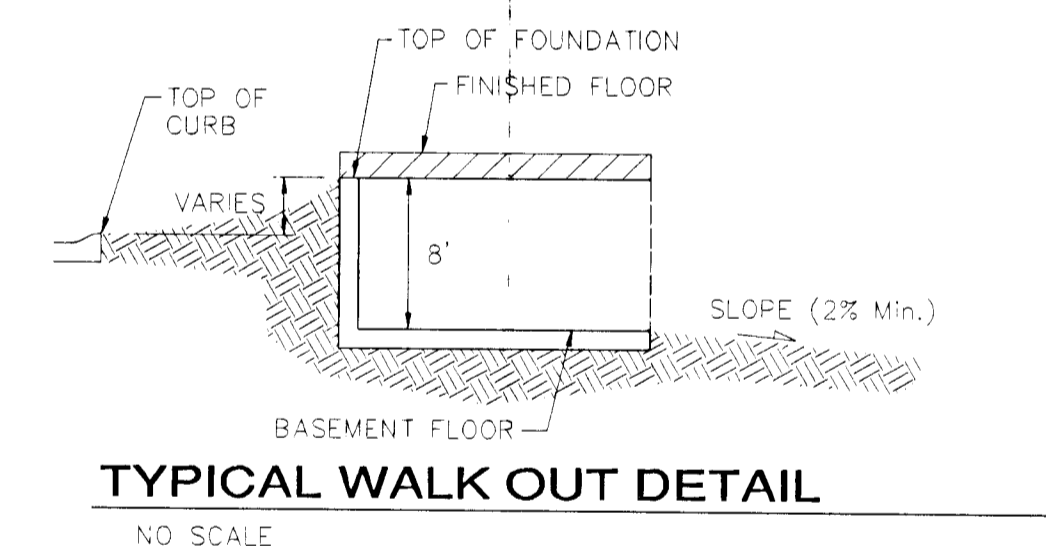
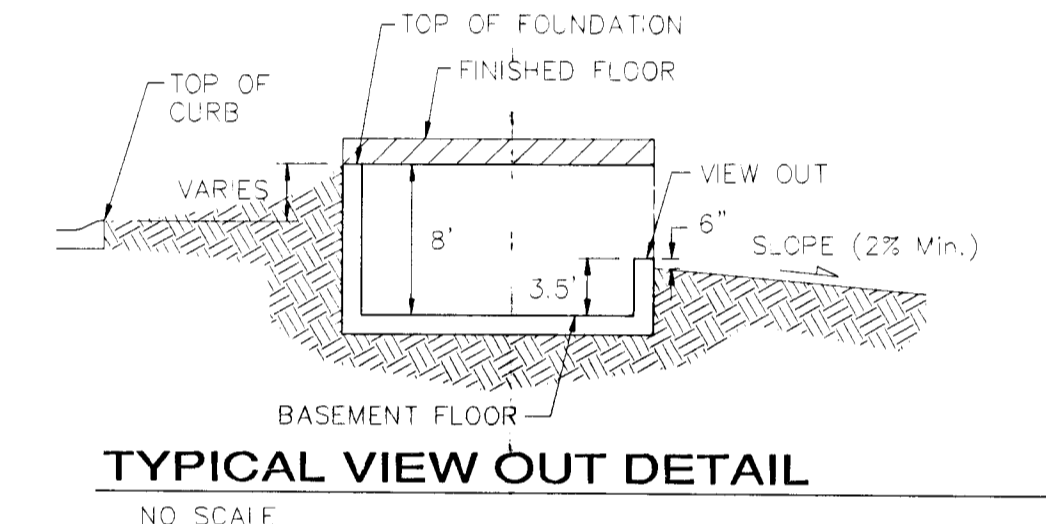
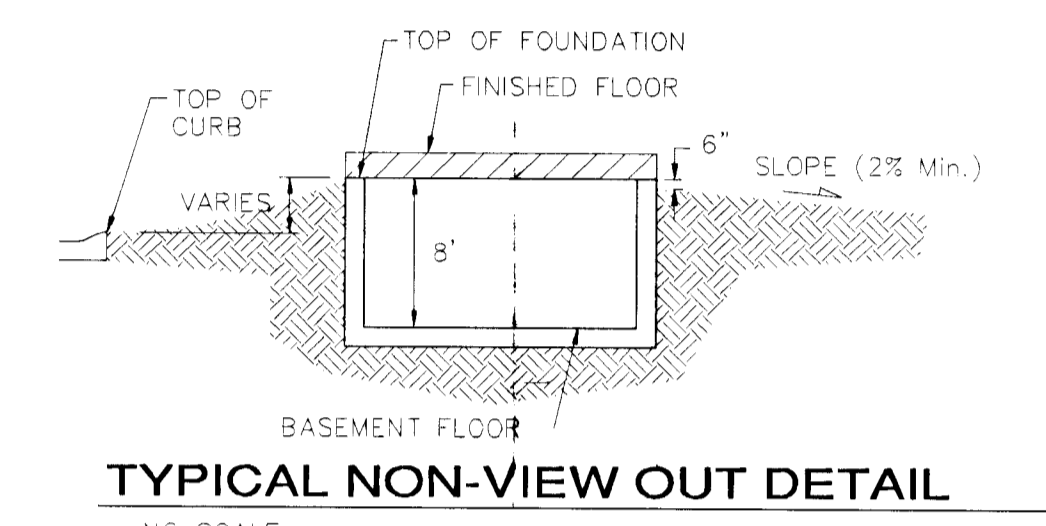
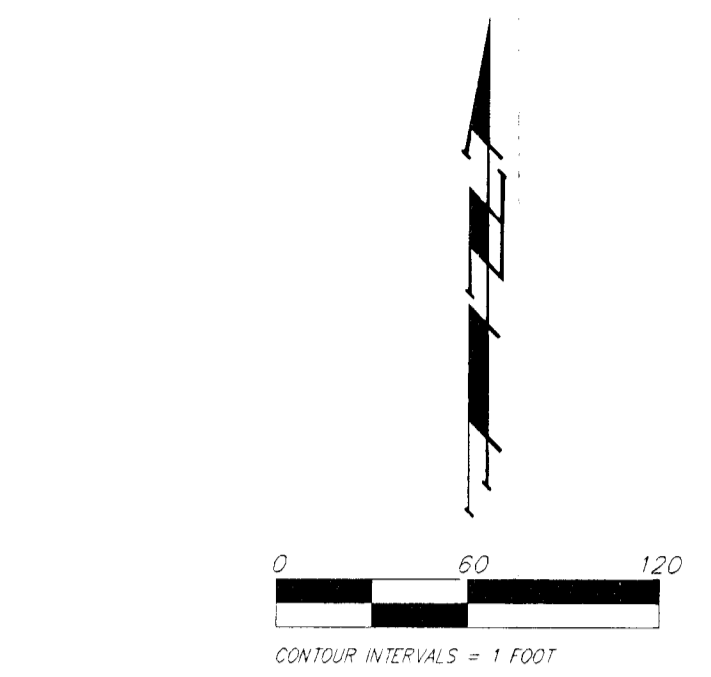
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 City 121.22 ft
 MSL 1308.62 ft

Big Ditch and MacArthur
 C&W Bench Mark, West bound lane,
 east end of bridge.
 East of Hoover.
 City 116.52 ft
 MSL 1303.92 ft

CONSKIN FLOODWAY
 CONDEMNATION CASE A-30410



PRELIMINARY PLAN
 NOT FOR CONSTRUCTION



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BLUE LAKE ADDITION
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 WICHITA, KANSAS

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PROJECT NUMBER: _____ SHEET: **8**
 OF: **9**

| | | | | |
|-------------|------------|-----------|---------------|--------------|
| DESIGN: BLG | DRAWN: BLG | APPROVED: | DATE: 5-03-04 | SCALE: noted |
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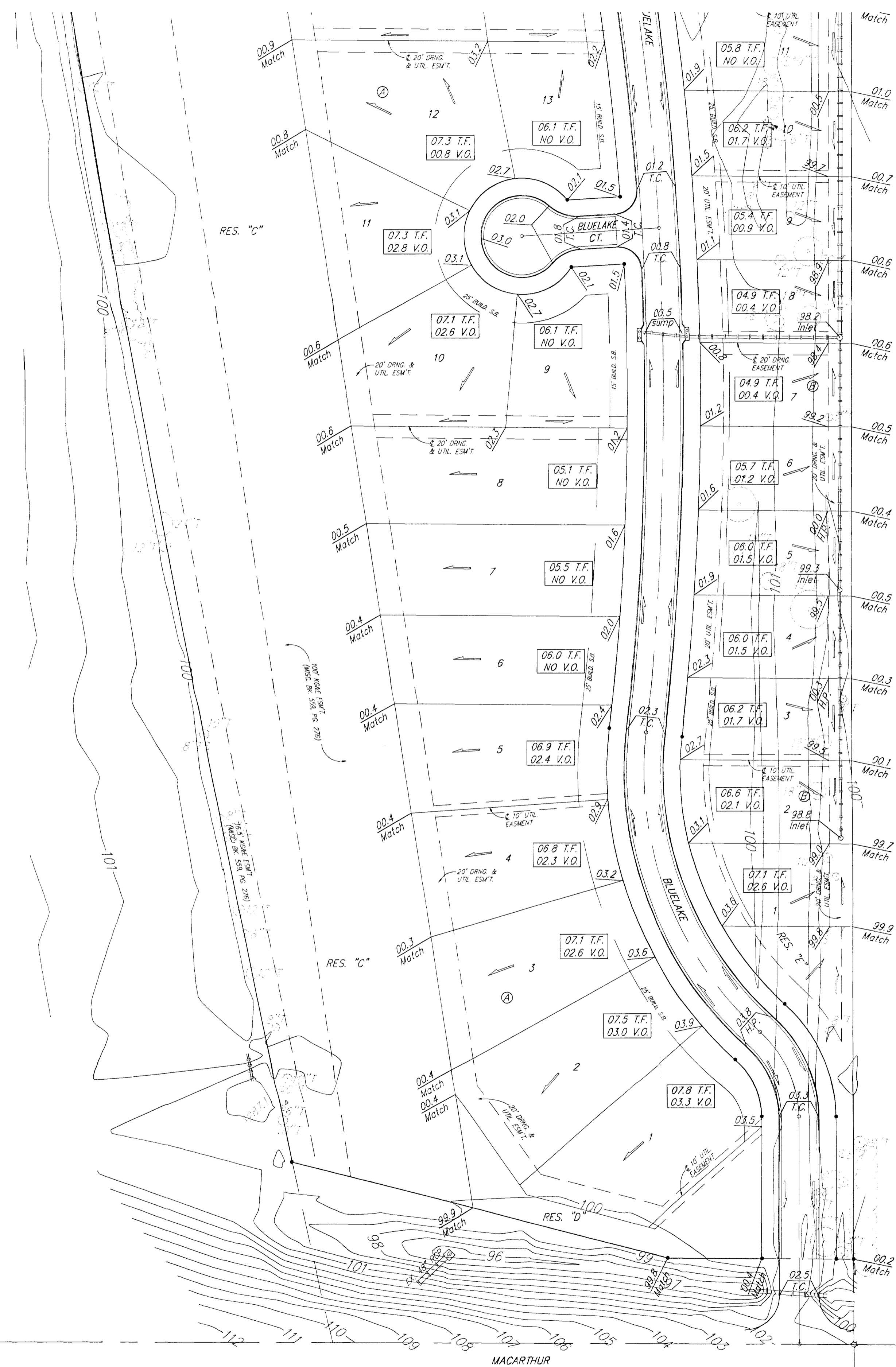
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Benchmarks:
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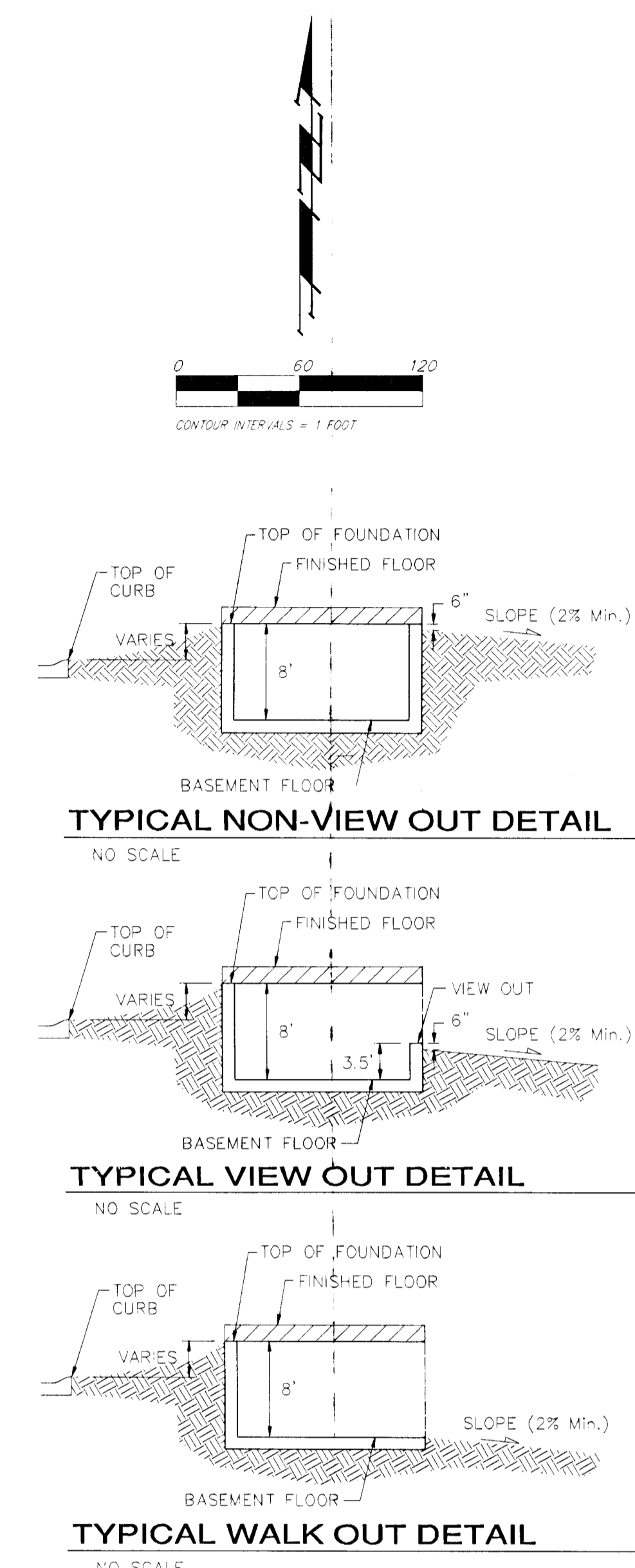
City 121.22 ft
 MSL 1308.62 ft

Big Ditch and MacArthur
 CDW Bench Mark, West bound lane,
 east end of bridge.
 East of Hoover.
 City 116.52 ft
 MSL 1303.92 ft

COWSKIN FLOODWAY
 CONDEMNATION CASE A-30410



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| PROJECT NUMBER | | | | SHEET |
| DESIGN | DRAWN | APPROVED | DATE | SCALE |
| BLG | BLG | BLG | 5-03-04 | noted |

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