

CITY OF ALBUQUERQUE



May 19, 2008

Brigitte Fuller, P.E.
Wilson & Company, Inc.
4900 Lang Ave NE
Rio Rancho, NM 87124

**Re: La Cuentista Unit III Drainage Report and Grading Plan
Engineer's Stamp dated 4-18-08 (D10/D002A)**

Dear Mr. Salazar,

Based upon the information provided in your submittal received 4-25-08, the above referenced plan is approved for Preliminary Plat action by the DRB and Work Order. Once that board approves the Grading Plan, please submit a mylar copy for signature in order to obtain a Rough Grading Permit.

Inlets are required on Willowleaf PL to prevent runoff from leaving the street where Willowleaf PL meets Woodbine Rd.

If you have any questions, you can contact me at 924-3695.

Sincerely,

Curtis A. Cherne, P.E.
Senior Engineer, Planning Dept.
Development and Building Services

C: file
Brad Bingham

Drainage Report

for

LA CUENTISTA SUBDIVISION – Unit III

**A Supplement to the
Drainage Report for La Cuentista Subdivision
Dated November 2003**

**&
Drainage Report for La Cuentista Subdivision
Unit II
Dated January 2007**

Prepared by:

**Wilson & Company, Inc.
4900 Lang Ave NE
Albuquerque, New Mexico 87109
(505) 348-4191**

**April 2008
WCI File No: 0760002100**

Drainage Report

for

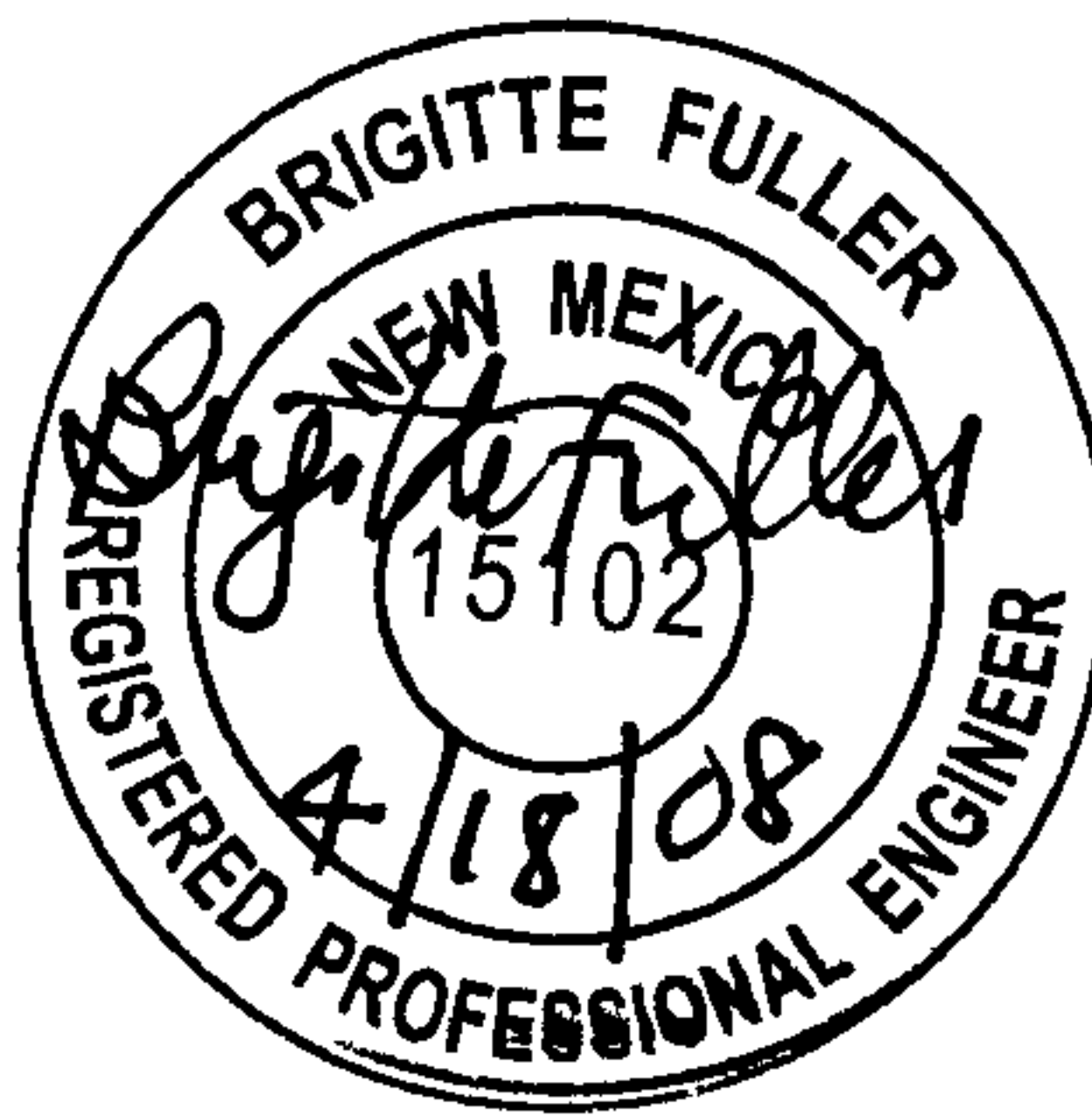
LA CUENTISTA SUBDIVISION – Unit III

**A Supplement to the
Drainage Report for La Cuentista Subdivision
Dated November 2003**

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**Drainage Report for La Cuentista Subdivision – Unit II
Dated January 2007**

Prepared by:



**Brigitte Fuller, PE
NM #15102**

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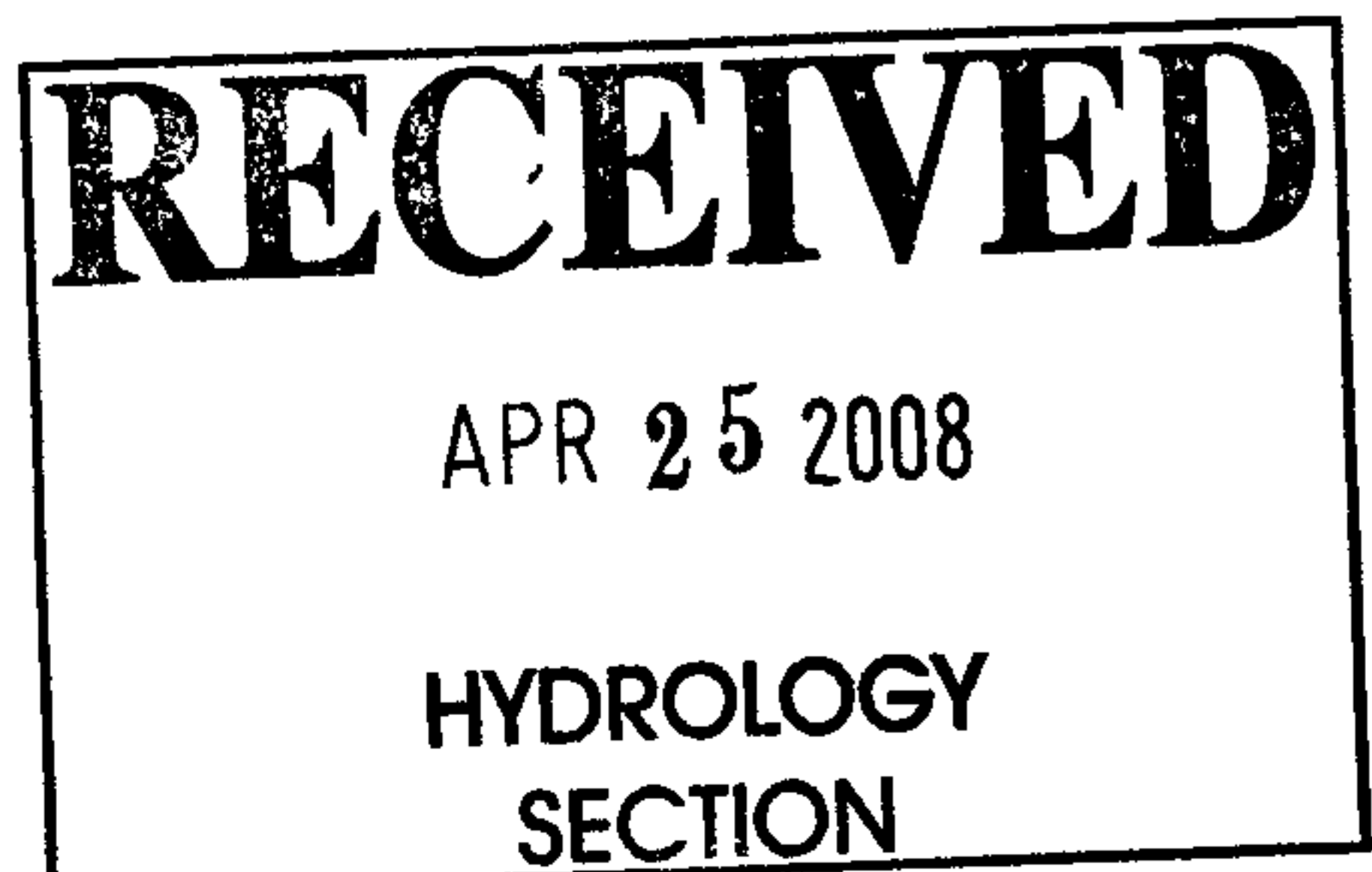


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Summary

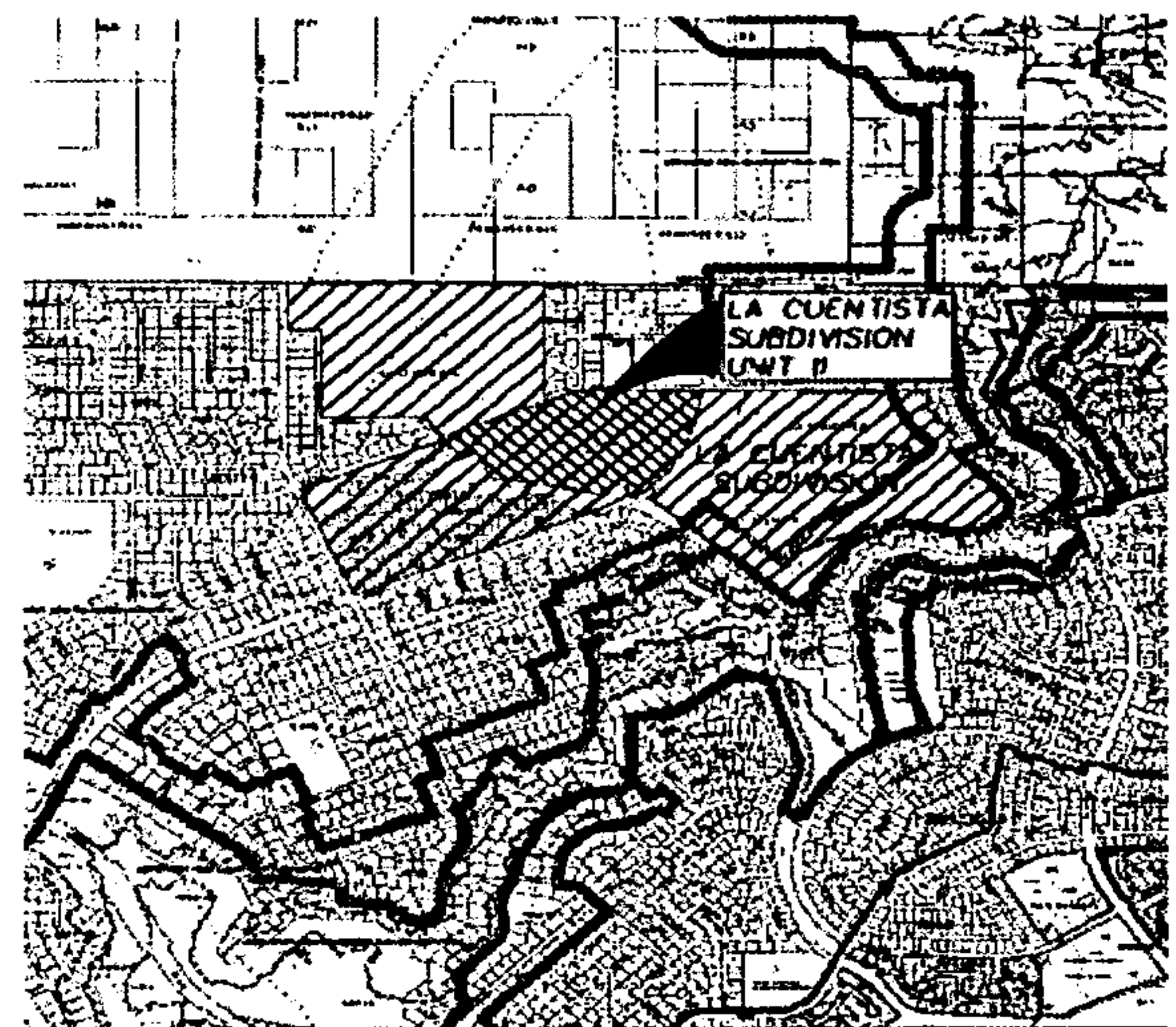
La Cuentista Subdivision - Unit III (Unit III), a residential development, is identified as Tract D and is the third of five bulk land tracts which collectively comprise La Cuentista Subdivision. The 21.628 acres of Unit III are approximately 10.8% of the total La Cuentista Subdivision. The approved "Drainage Report for La Cuentista Subdivision" dated November 2003 by Wilson & Company, Inc., provides site and existing conditions information and the approved "Drainage Report for La Cuentista Subdivision-Unit II" dated January 2007 by Wilson & Company, Inc., provides supplemental changes to the original "Drainage Report for La Cuentista Subdivision."

Drainage

Proposed Conditions.

Unit III is a portion of Basin 214 as seen on the revised La Cuentista Subdivision - Proposed Conditions Drainage Basin Map (Plate 2) found in the approved Drainage Report for La Cuentista Subdivision Unit II dated January 2007 and included herein as Plate 2. This basin is designated to ultimately discharge into the Mariposa Channel. The proposed Pond 8, located on Tract E, east of Tract D and to be constructed as part of Unit III development, will discharge an allowable 106 cfs through the Petroglyph National Monument and into the Mariposa Channel.

As noted in the approved "Drainage Report for La Cuentista Subdivision Unit II", developed flows from Basin 301 and 302 are collected in Pond 6 to be located north of Rosa Parks Road, with 117 cfs then routed through Basin 214 into Pond 8. The 117 cfs includes flows from Tierra Buena Estates, located north of Basin 214.



LOCATION MAP
ZONE ATLAS MAP NO. C-10, C-11

15 pond 6 built? drain thru 48

Unit III Proposed Improvement.

The Proposed Conditions Drainage Basin Map (Plate 2) indicates that the maximum flow from Basin 214 into Pond 8 is 176.6 cfs. For design purposes for inlets and onsite storm drains, the flows from Unit III proportionately total approximately the 63.3 cfs of the 176.6 cfs. The 63.3 cfs is further proportionately distributed within Unit III based on sub-basin areas, while the remaining flows from Basin 214 will sheet flow into Pond 8. See Appendix A for Unit III hydrology and Sub-Basin Boundary Map.

Conclusion

The development of La Cuentista Subdivision Unit III has been analyzed in this report. The project's design will adhere to the requirements of the approved Drainage Report for La Cuentista Subdivision dated November 2003 and the approved Supplemental Drainage Report dated January 2007. All developed flows in Unit III, along with flows from Basins 301 and 302 routed through Basin 214, will be conveyed to Pond 8 and discharged at a controlled rate, using an appropriate outfall structure, through the Petroglyph National Monument and into the Mariposa Channel.

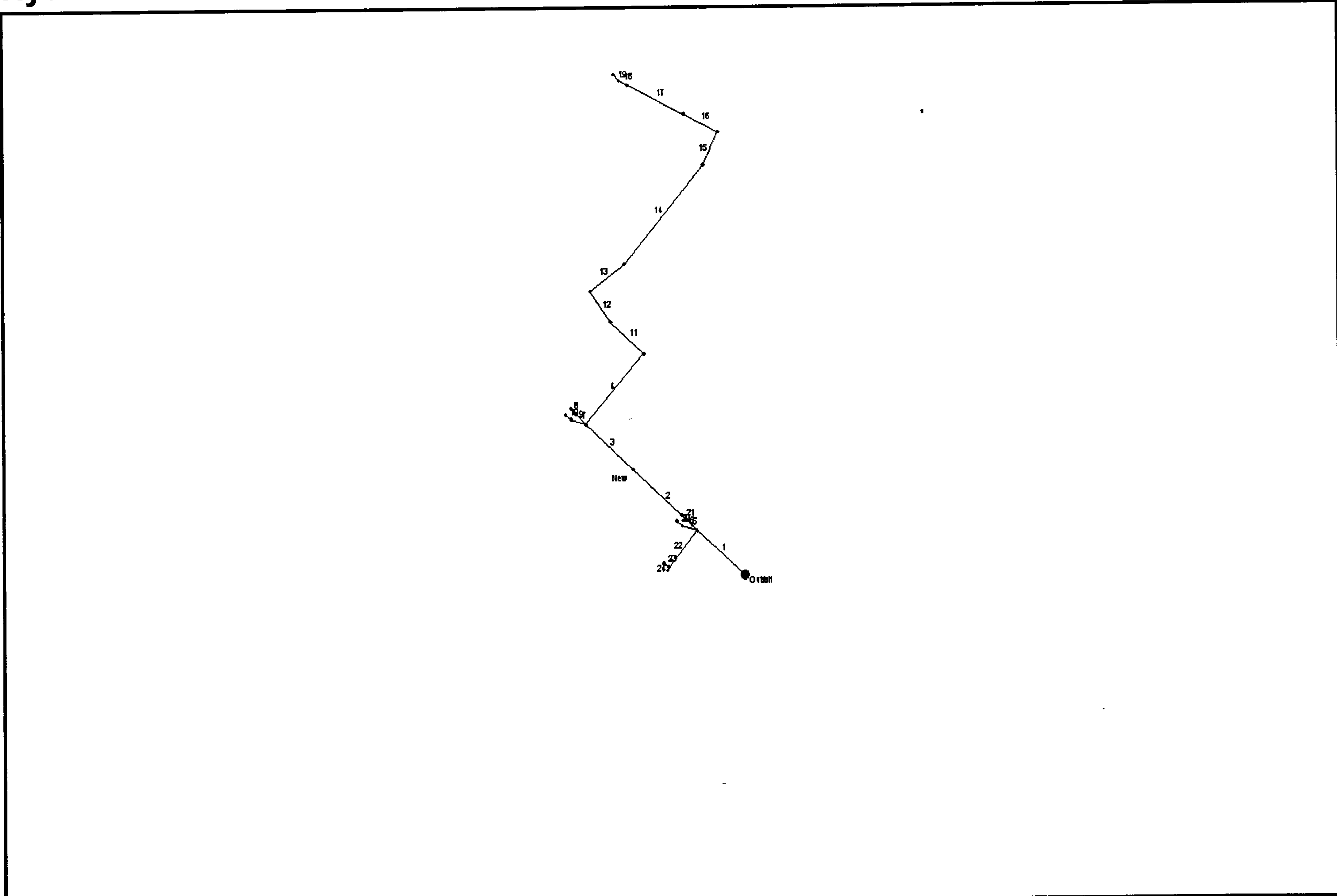
Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
1	End	235.0	-139.7	MH	0.00	0.00	0.00	0.0	5271.00	1.28	5274.00	54	Cir	0.013	1.00	5284.32	(2)
2	1	318.4	1.3	MH	0.00	0.00	0.00	0.0	5274.00	3.07	5283.76	48	Cir	0.013	0.15	5289.76	
3	2	233.7	0.0	MH	0.00	0.00	0.00	0.0	5283.76	1.95	5288.32	48	Cir	0.013	1.00	5294.32	
4	3	326.6	90.0	MH	0.00	0.00	0.00	0.0	5288.32	2.85	5297.63	48	Cir	0.013	1.00	5309.00	
5	1	53.0	4.2	MH	2.51	0.00	0.00	0.0	5274.00	12.43	5280.59	18	Cir	0.013	0.15	5284.59	
6	1	58.0	-24.3	MH	2.76	0.00	0.00	0.0	5274.00	10.57	5280.13	18	Cir	0.013	0.47	5284.13	
7	3	53.5	4.2	MH	4.84	0.00	0.00	0.0	5288.32	4.80	5290.89	24	Cir	0.013	0.15	5294.89	
8	7	26.0	-5.4	MH	8.65	0.00	0.00	0.0	5290.89	1.46	5291.27	18	Cir	0.013	1.00	5295.27	
9	3	58.5	-24.2	MH	4.84	0.00	0.00	0.0	5288.32	4.39	5290.89	24	Cir	0.013	0.45	5294.89	
10	9	26.0	23.0	MH	8.65	0.00	0.00	0.0	5290.89	1.46	5291.27	18	Cir	0.013	1.00	5295.27	
11	4	165.6	-90.0	MH	0.00	0.00	0.00	0.0	5297.63	0.81	5298.97	48	Cir	0.013	0.25	5309.00	
12	11	129.0	12.3	MH	0.00	0.00	0.00	0.0	5298.97	0.80	5300.00	48	Cir	0.013	1.00	5306.62	
13	12	160.0	90.0	MH	0.00	0.00	0.00	0.0	5300.00	3.01	5304.81	48	Cir	0.013	0.27	5314.28	
14	13	450.0	-12.9	MH	0.00	0.00	0.00	0.0	5304.81	1.20	5310.19	48	Cir	0.013	0.31	5321.21	
15	14	126.0	-15.4	MH	0.00	0.00	0.00	0.0	5310.19	0.79	5311.18	48	Cir	0.013	1.00	5325.81	
16	15	141.0	-90.0	MH	0.00	0.00	0.00	0.0	5311.18	0.80	5312.31	48	Cir	0.013	0.15	5325.35	
17	16	230.8	0.0	MH	0.00	0.00	0.00	0.0	5312.31	0.80	5314.16	48	Cir	0.013	0.15	5321.81	
18	17	35.0	0.0	MH	0.00	0.00	0.00	0.0	5314.16	0.86	5314.46	48	Cir	0.013	0.43	5321.81	
19	18	30.3	22.3	MH	117.00	0.00	0.00	0.0	5314.46	0.13	5314.50	48	Cir	0.013	1.00	5319.50	
20	6	26.0	24.3	MH	6.69	0.00	0.00	0.0	5280.13	2.15	5280.69	18	Cir	0.013	1.00	5284.69	
21	5	26.0	-4.3	MH	7.15	0.00	0.00	0.0	5280.59	2.88	5281.34	18	Cir	0.013	1.00	5284.84	
LA CUENTISTA UNIT III												Number of lines: 24				Date: 04-17-2008	

Storm Sewer Inventory Report

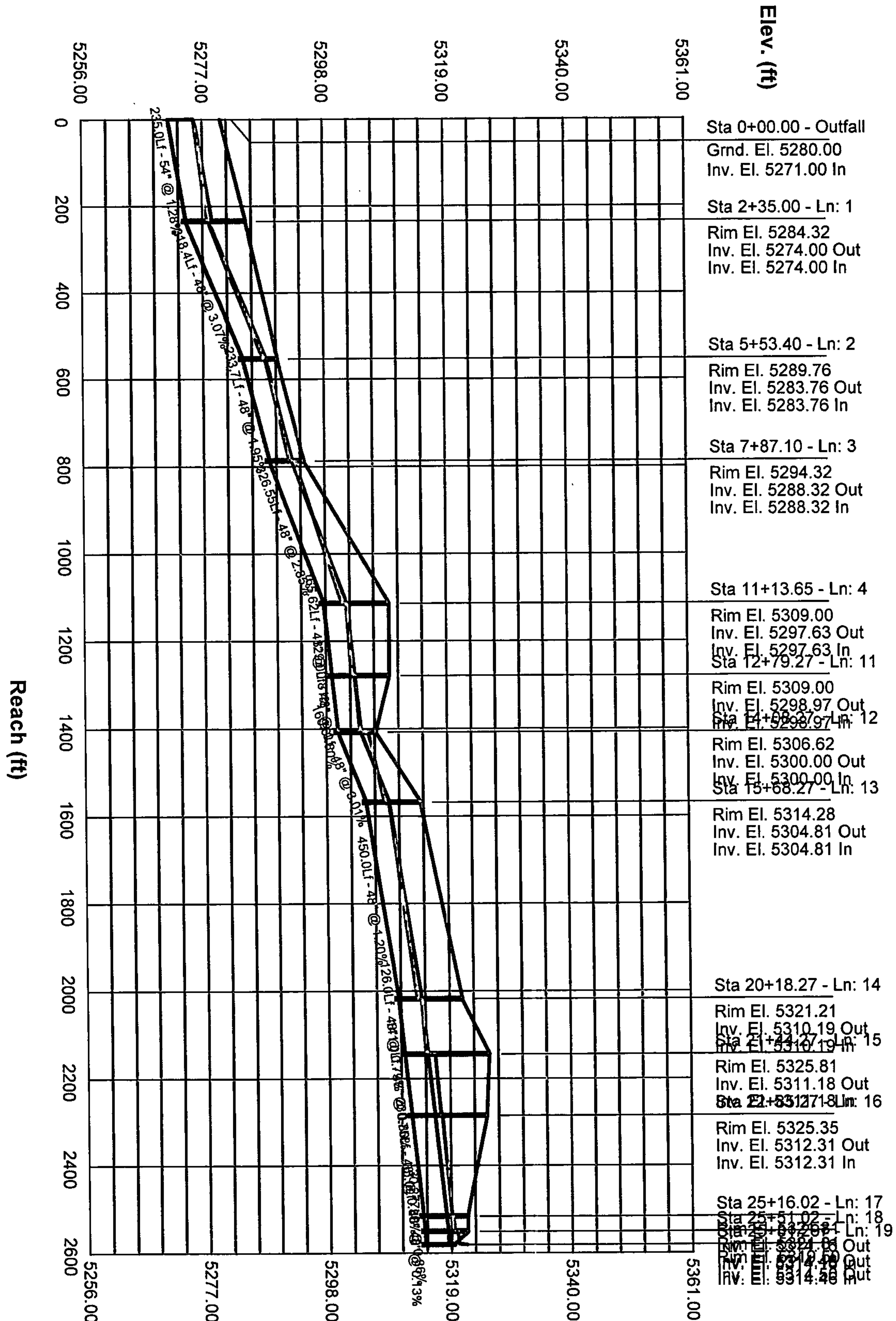
Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr line No.	Line length (ft)	Defl angle (deg)	Junc type	Known Q (cfs)	Drng area (ac)	Runoff coeff (C)	Inlet time (min)	Invert El Dn (ft)	Line slope (%)	Invert El Up (ft)	Line size (in)	Line type	N value (n)	J-loss coeff (K)	Inlet/ Rim El (ft)	
22	1	163.6	-90.0	MH	0.00	0.00	0.00	0.0	5274.00	0.89	5275.45	30	Cir	0.013	0.99	5280.64	
23	22	23.0	79.8	MH	2.05	0.00	0.00	0.0	5275.45	6.26	5276.89	18	Cir	0.013	1.00	5280.89	
24	22	14.5	-14.9	MH	3.25	0.00	0.00	0.0	5275.45	8.55	5276.69	24	Cir	0.013	1.00	5280.69	
LA CUENTISTA UNIT III												Number of lines: 24				Date: 04-17-2008	

Hydraflow Plan View

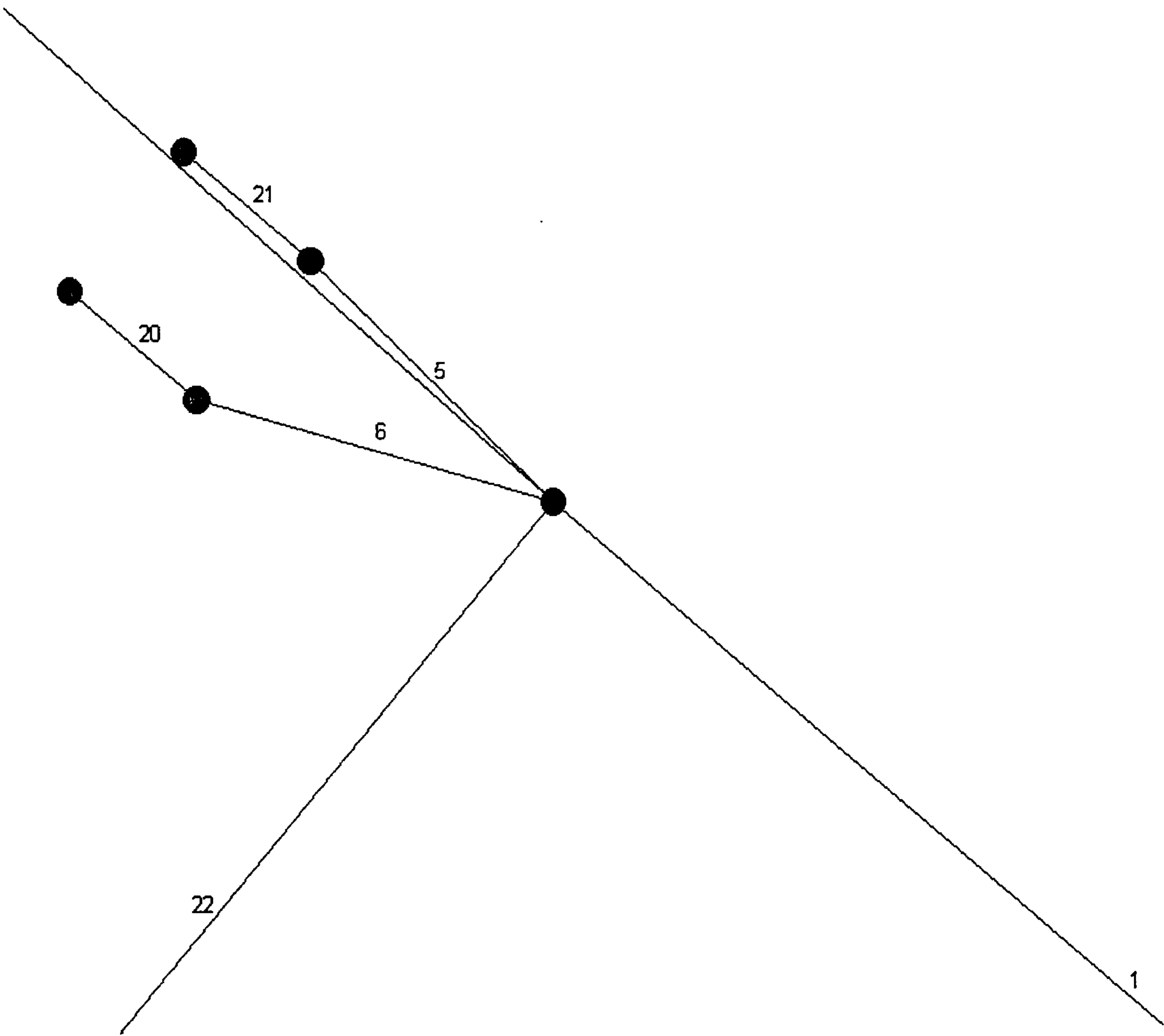


Storm Sewer Profile

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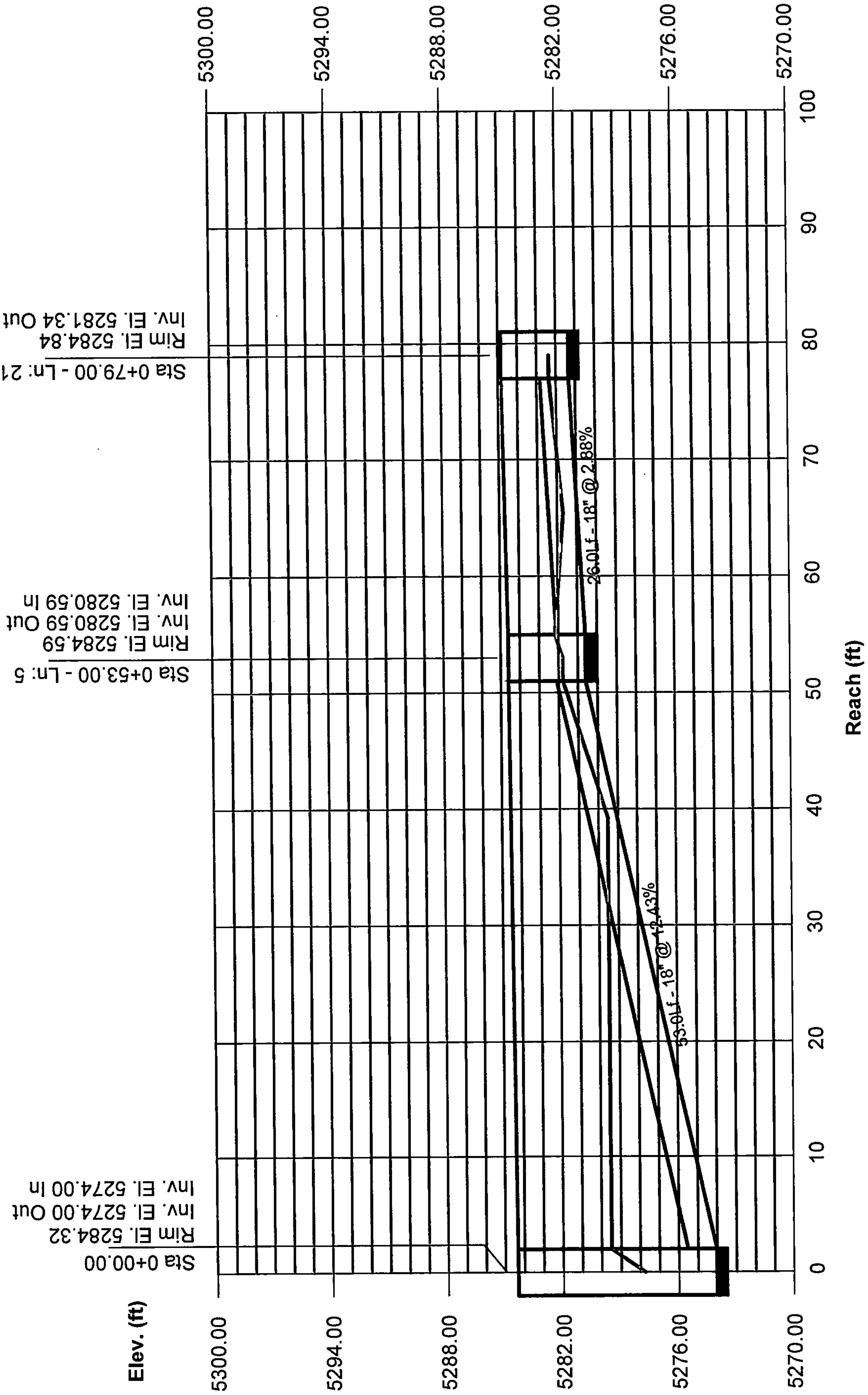
Hydraflow Plan View



LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008
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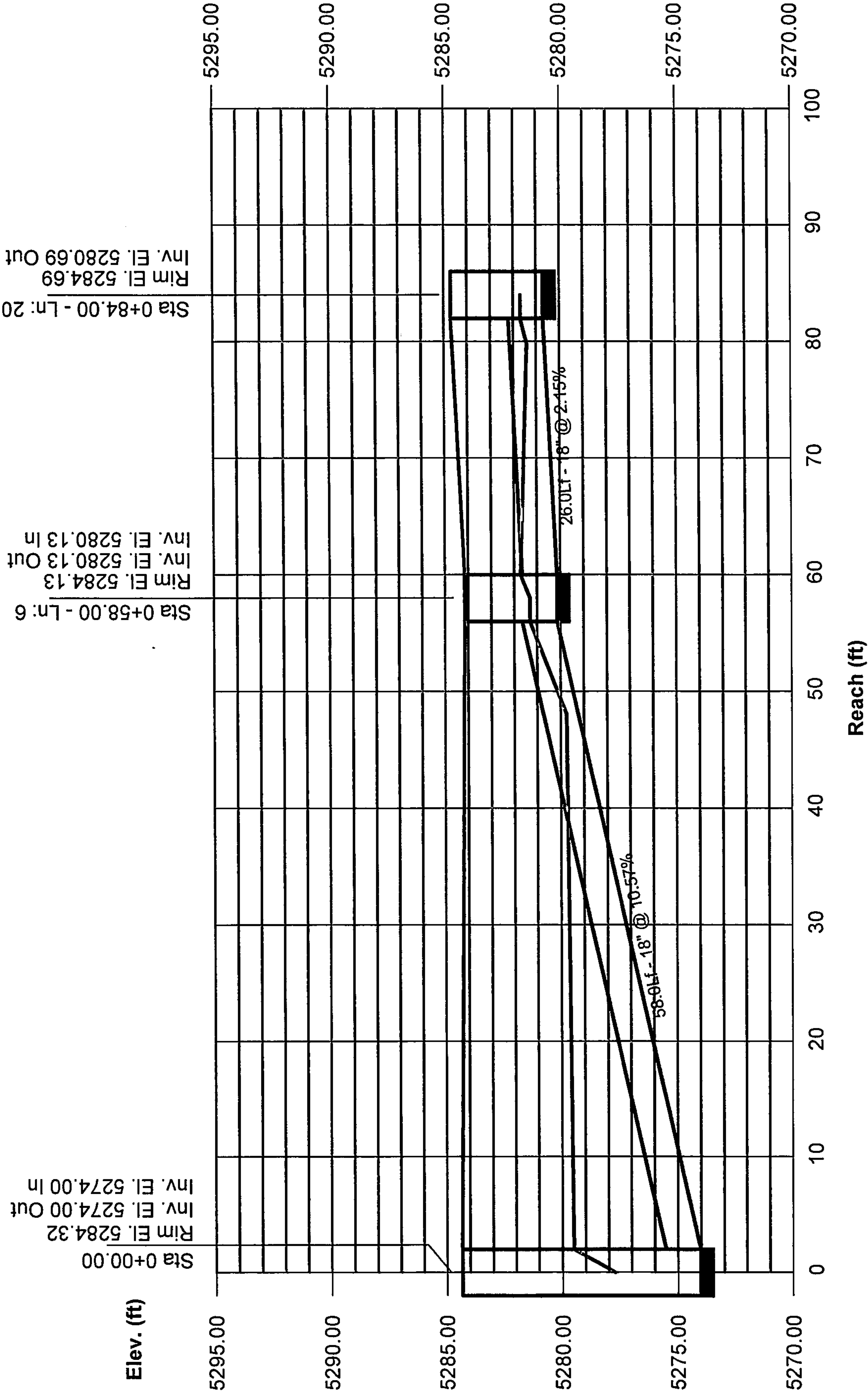
Storm Sewer Profile

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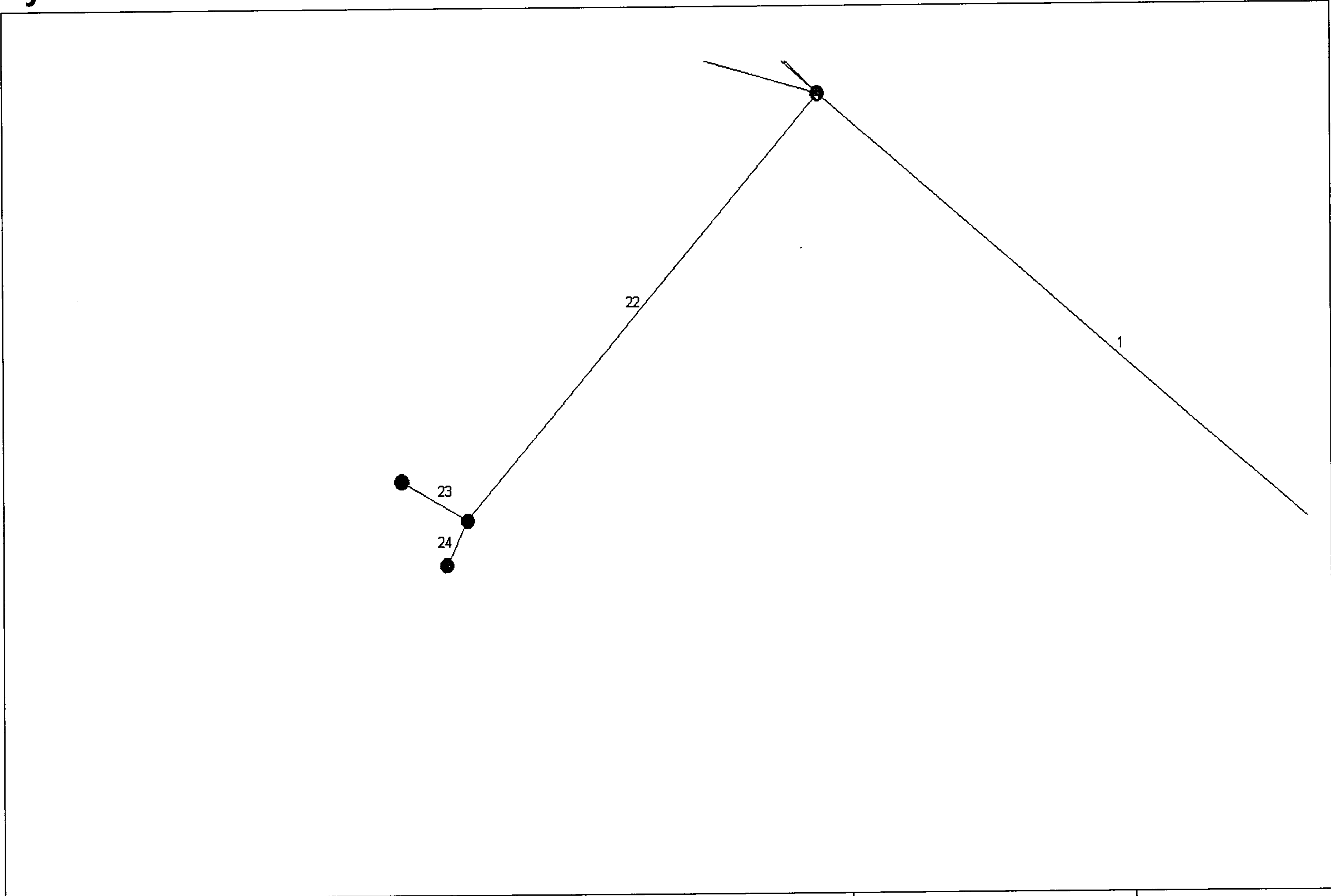


Storm Sewer Profile

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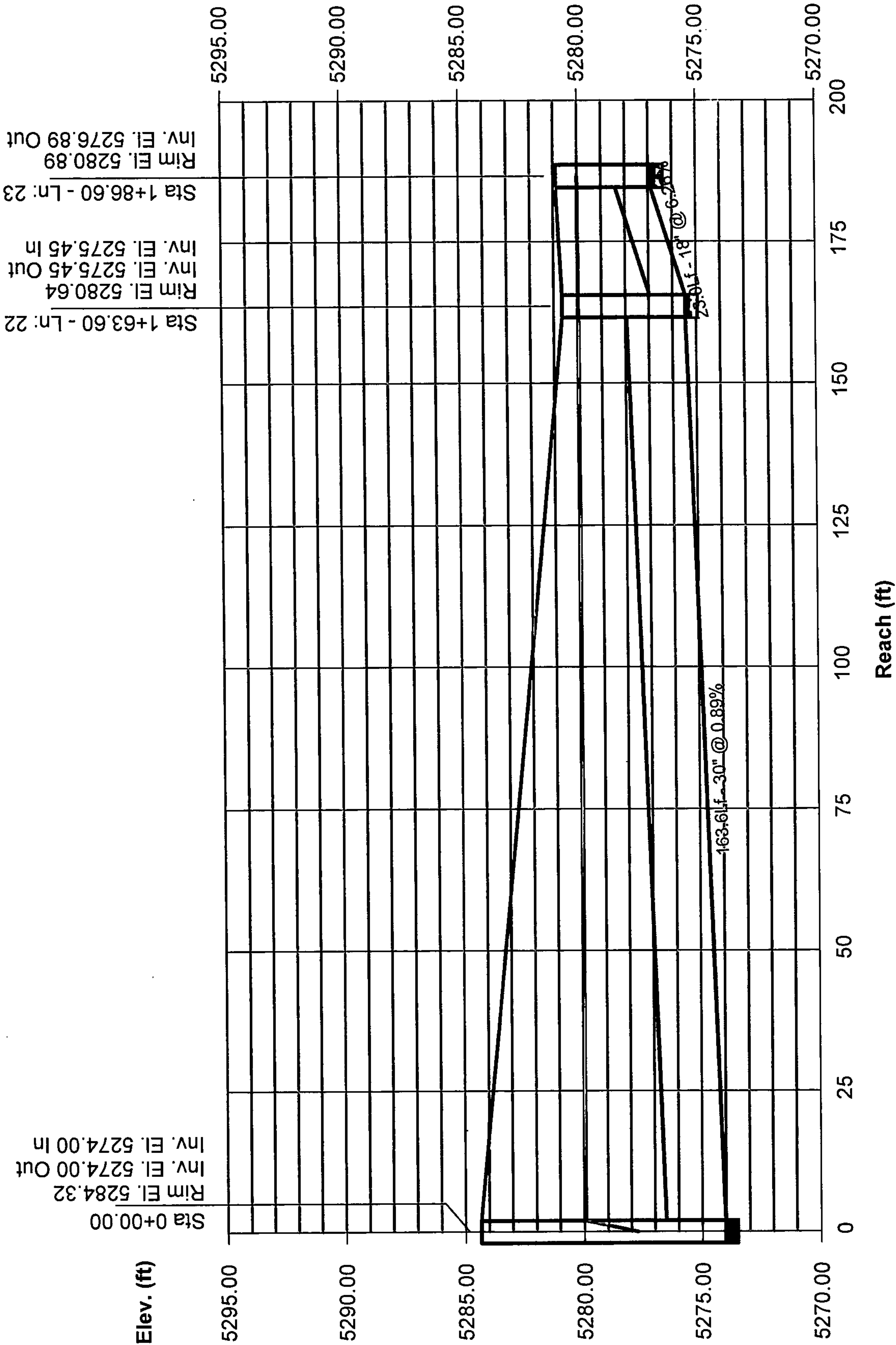
Hydraflow Plan View



LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008
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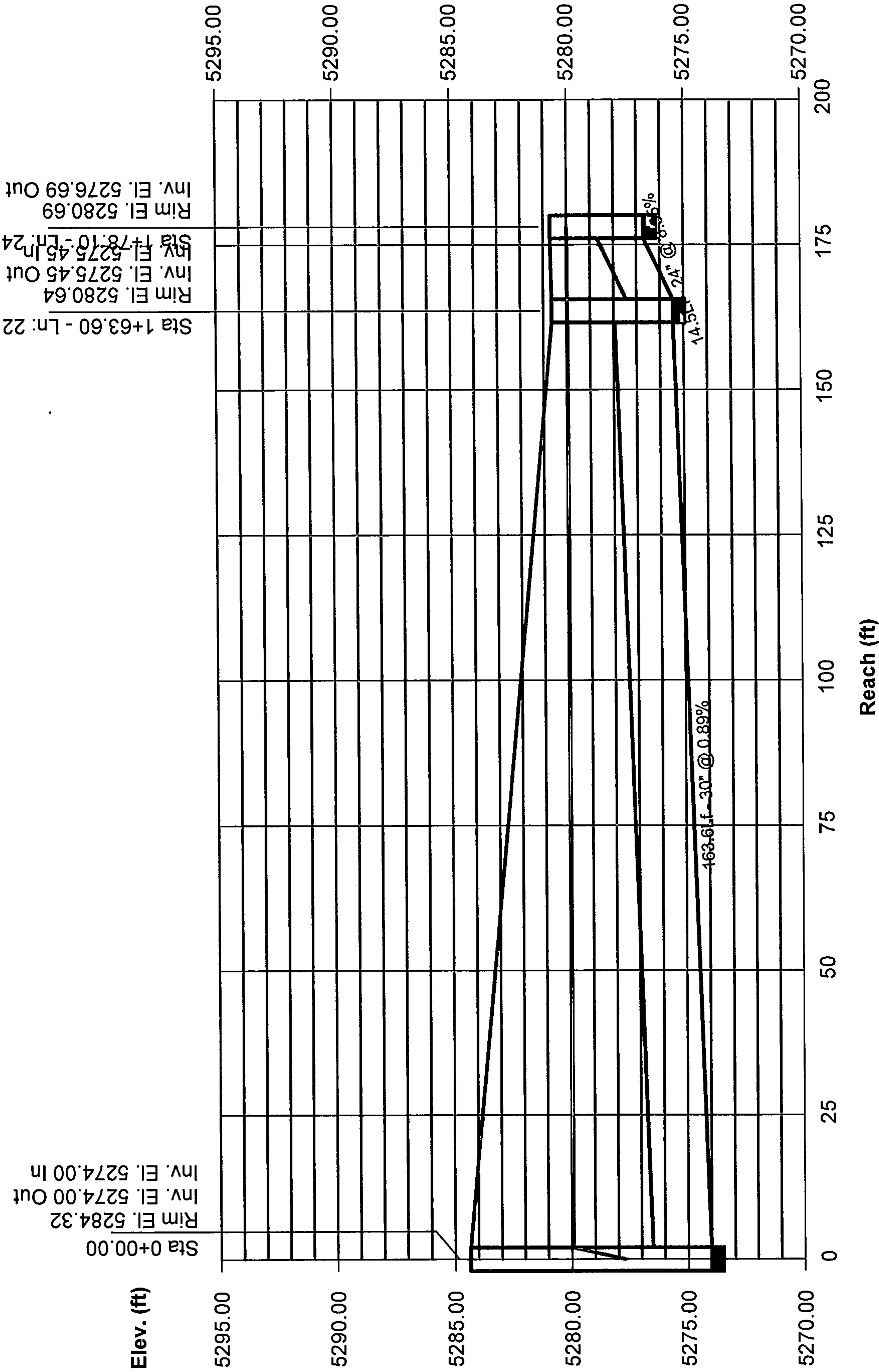
Storm Sewer Profile

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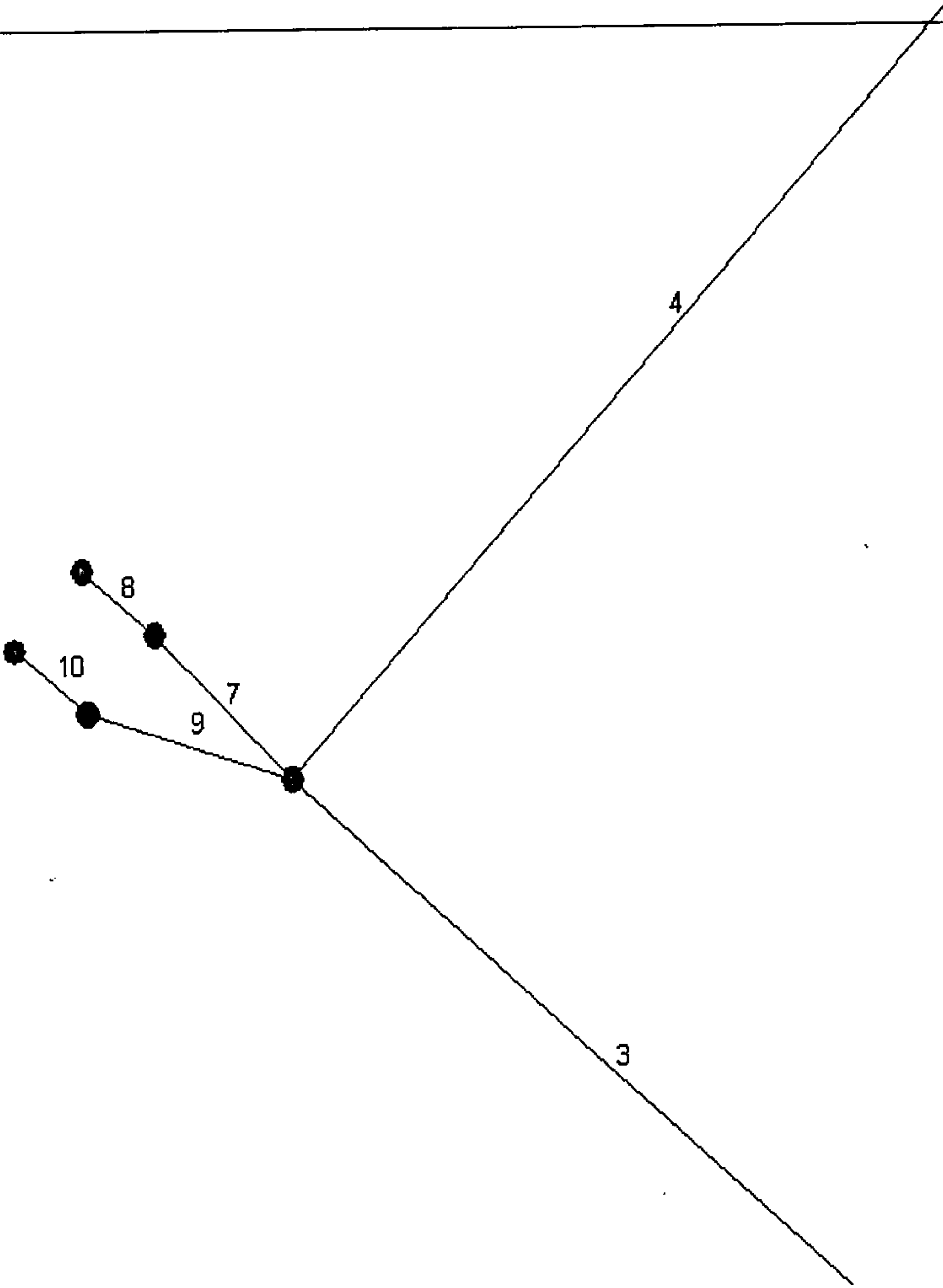


Storm Sewer Profile

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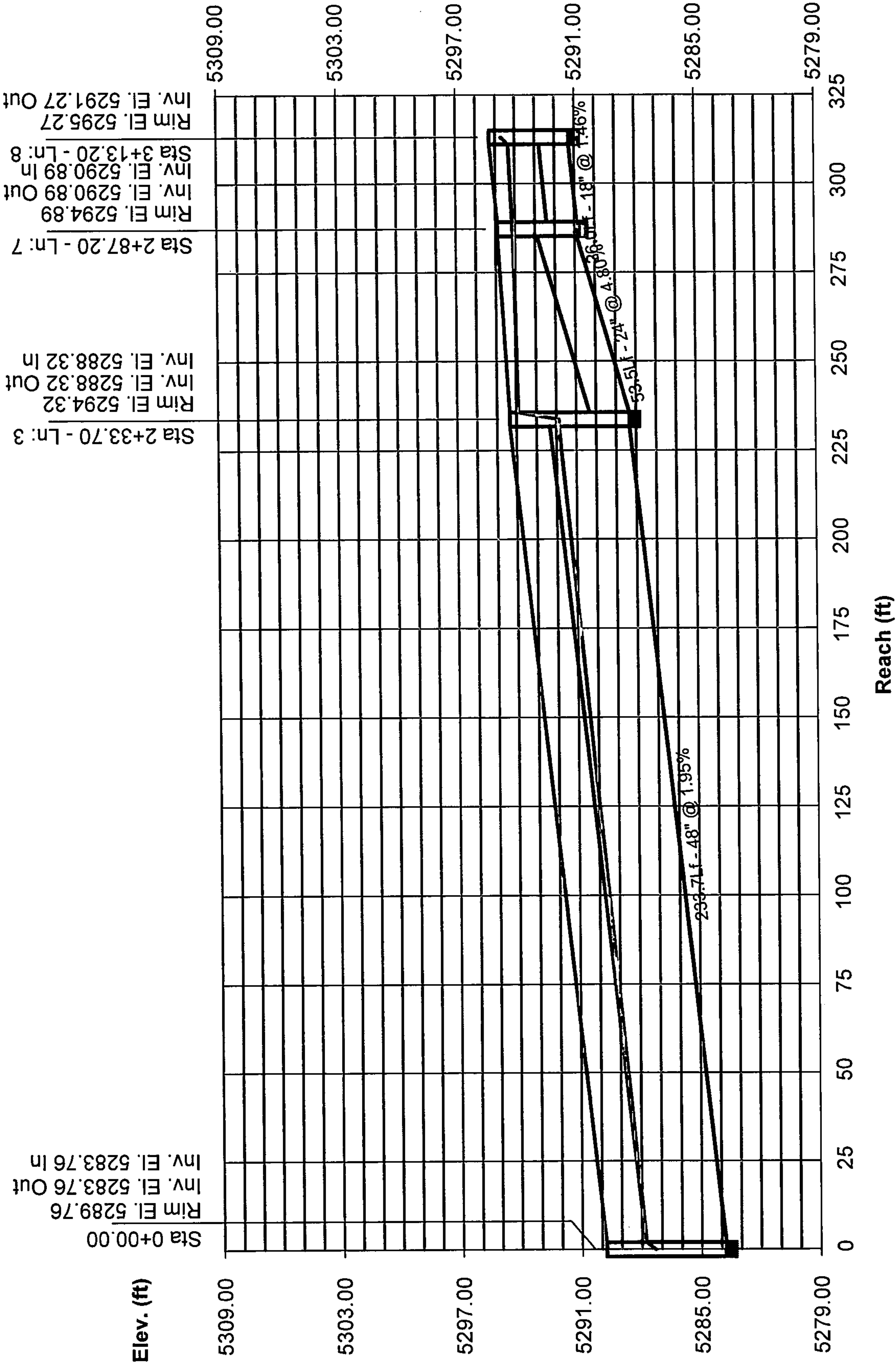
Hydraflow Plan View



LA CUENTISTA UNIT III	No. Lines: 24	04-17-2008
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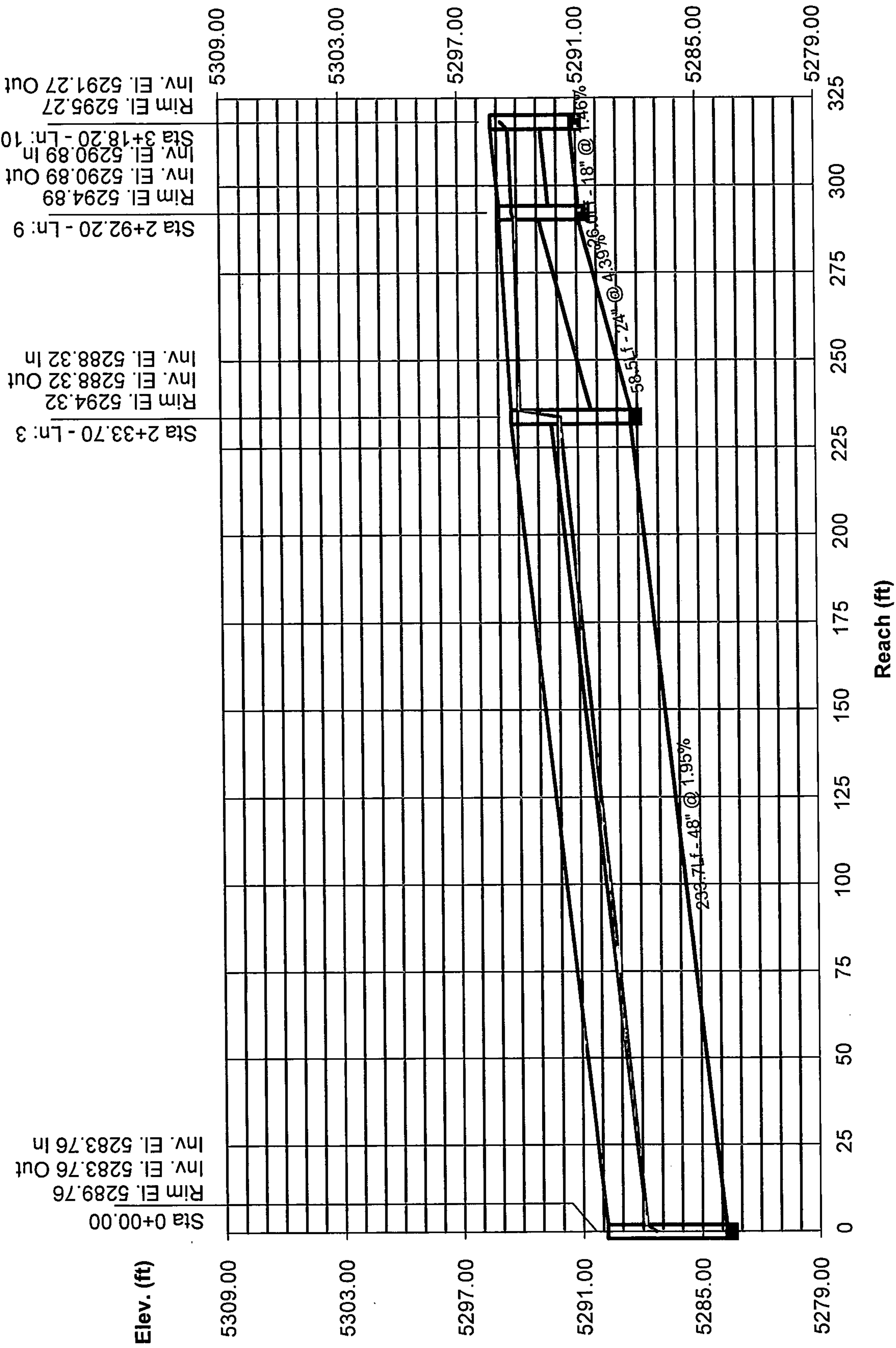
Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



Storm Sewer Profile

Proj. file: LC-Unit_III_117CFS_04_15.stm



Project Description

Friction Method

Manning Formula

Solve For

Normal Depth

Input Data

Channel Slope

0.00700 ft/ft

Discharge

11.54 ft³/s

Section Definitions

Station (ft)

Elevation (ft)

0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station

Ending Station

Roughness Coefficient:

(0+00, 0.67)

(0+30, 0.67)

0.019

Results

Normal Depth

0.36 ft

Elevation Range

0.00 to 0.67

Flow Area

5.53 ft²

Wetted Perimeter

30.75 ft

Top Width

30.18 ft

Normal Depth

0.36 ft

Critical Depth

0.34 ft

Critical Slope

0.00980 ft/ft

Velocity

2.09 ft/s

Velocity Head

0.07 ft

Specific Energy

0.43 ft

Worksheet for Firethorn Dr

Results

Froude Number 0.86
Flow Type Subcritical

GVF Input Data

Downstream Depth 0.00 ft
Length 0.00 ft
Number Of Steps 0

GVF Output Data

Upstream Depth 0.00 ft
Profile Description
Profile Headloss 0.00 ft
Downstream Velocity Infinity ft/s
Upstream Velocity Infinity ft/s
Normal Depth 0.36 ft
Critical Depth 0.34 ft
Channel Slope 0.00700 ft/ft
Critical Slope 0.00980 ft/ft

Project Description

Friction Method

Manning Formula

Solve For

Normal Depth

Input Data

Channel Slope

0.00700 ft/ft

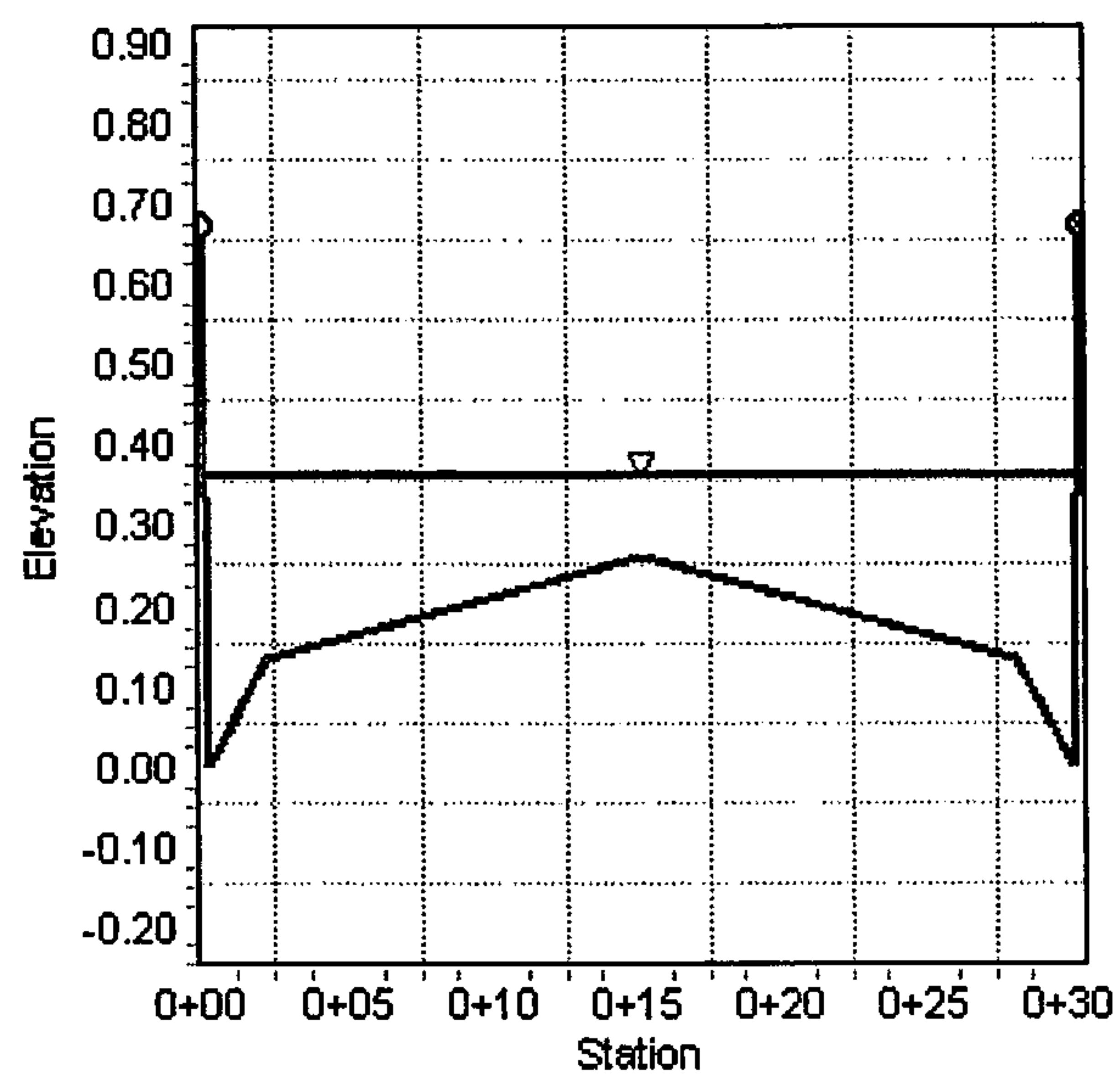
Normal Depth

0.36 ft

Discharge

11.54 ft³/s

Cross Section Image



Worksheet for Maidenhair PI

Results

Froude Number	0.89
Flow Type	Subcritical

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.40	ft
Critical Depth	0.39	ft
Channel Slope	0.00700	ft/ft
Critical Slope	0.00907	ft/ft

Cross Section for Maidenhair PI

Project Description

Friction Method

Manning Formula

Solve For

Normal Depth

Input Data

Channel Slope

0.00700 ft/ft

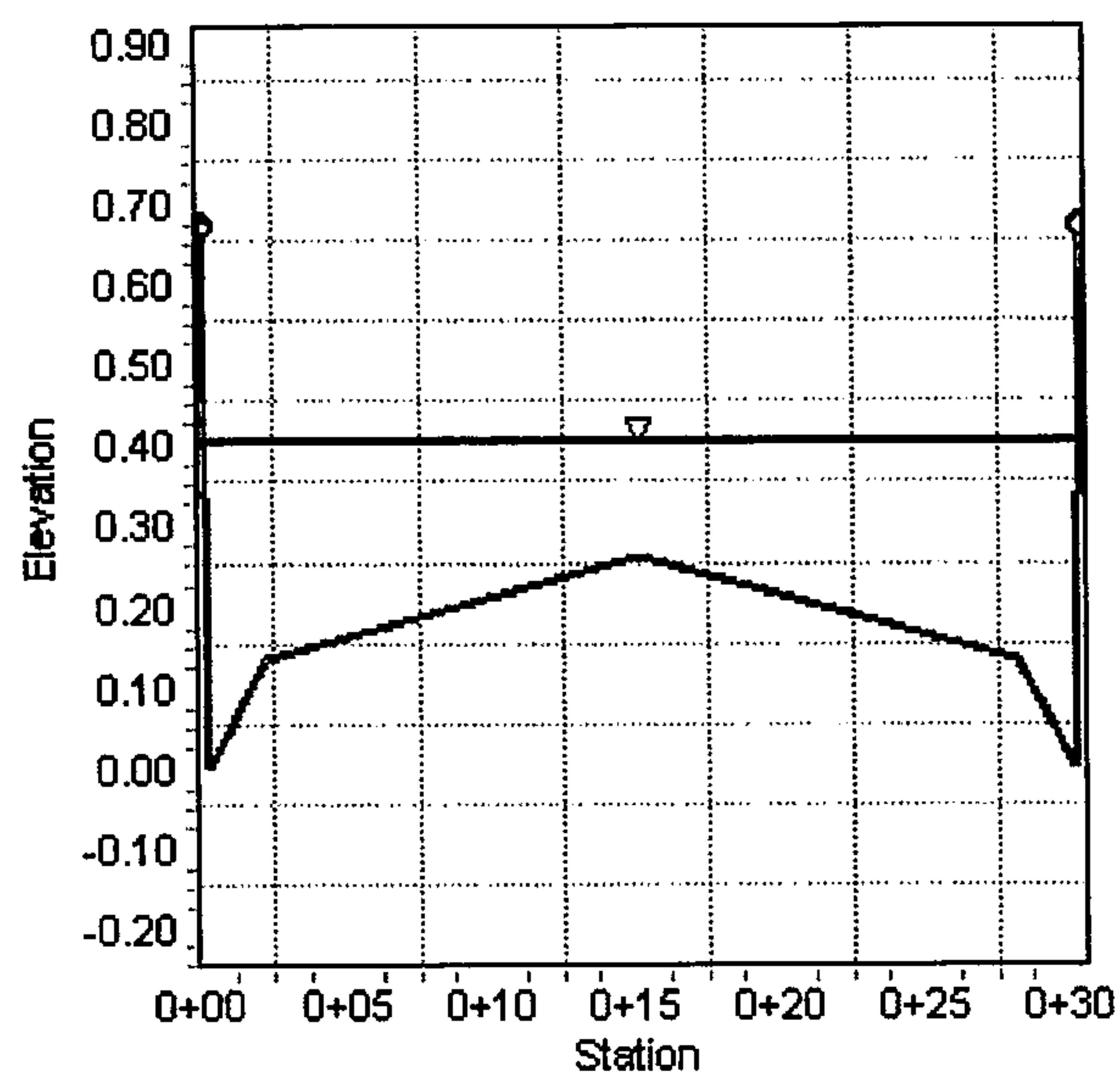
Normal Depth

0.40 ft

Discharge

16.63 ft³/s

Cross Section Image



Project Description

Friction Method

Manning Formula

Solve For

Normal Depth

Input Data

Channel Slope

0.00700 ft/ft

Discharge

11.48 ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth		0.36	ft
Elevation Range	0.00 to 0.67		
Flow Area		5.51	ft²
Wetted Perimeter		30.75	ft
Top Width		30.18	ft
Normal Depth		0.36	ft
Critical Depth		0.34	ft
Critical Slope		0.00982	ft/ft
Velocity		2.08	ft/s
Velocity Head		0.07	ft
Specific Energy		0.43	ft

Worksheet for Meadowsweet PI

Results

Froude Number	0.86
Flow Type	Subcritical

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.34	ft
Channel Slope	0.00700	ft/ft
Critical Slope	0.00982	ft/ft

Cross Section for Meadowsweet Pl

Project Description

Friction Method

Manning Formula

Solve For

Normal Depth

Input Data

Channel Slope

0.00700 ft/ft

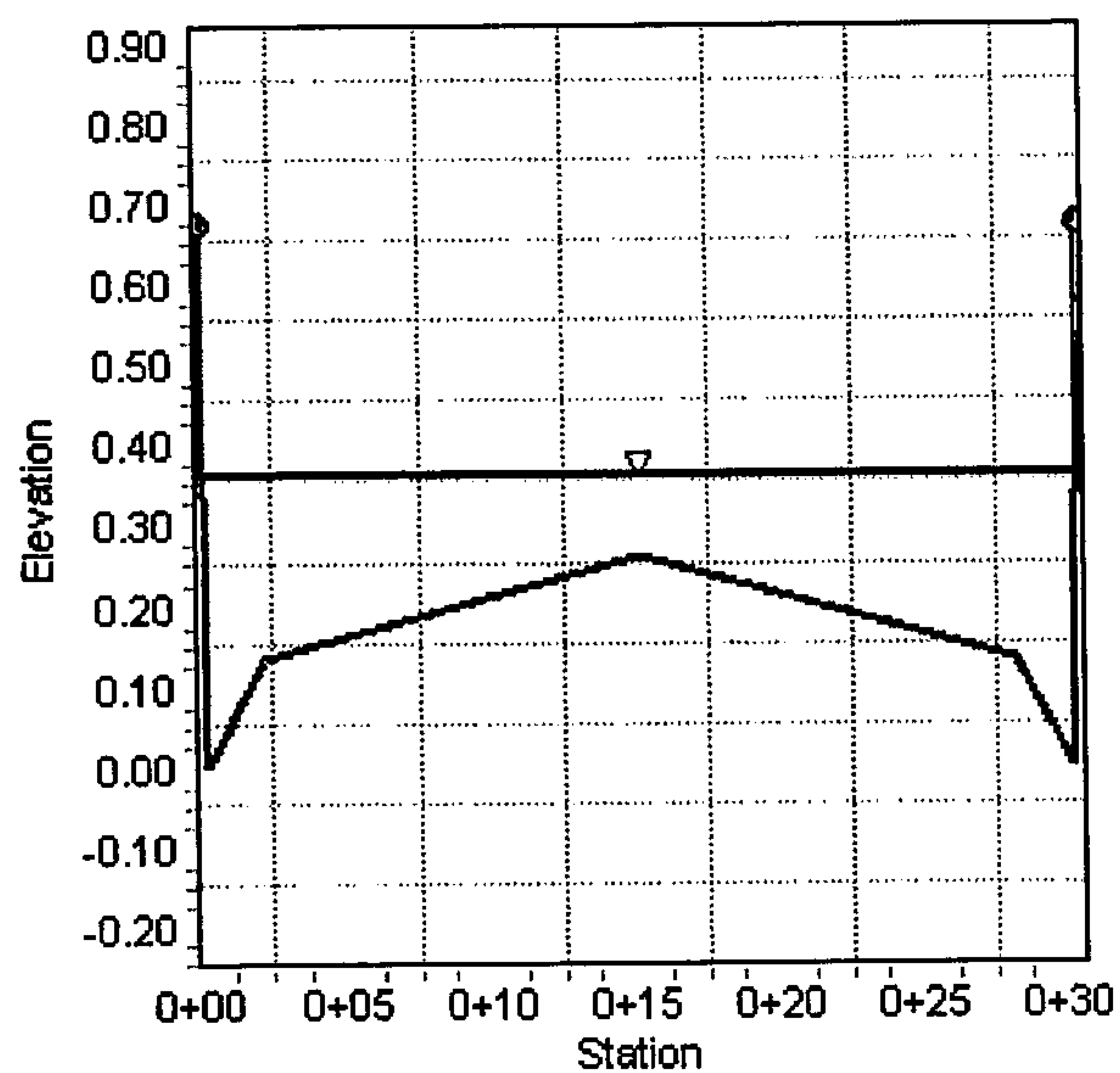
Normal Depth

0.36 ft

Discharge

11.48 ft³/s

Cross Section Image



Worksheet for Privet Court

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.03000 ft/ft
Discharge 16.63 ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth 0.32 ft
Elevation Range 0.00 to 0.67
Flow Area 4.44 ft²
Wetted Perimeter 30.67 ft
Top Width 30.16 ft
Normal Depth 0.32 ft
Critical Depth 0.39 ft
Critical Slope 0.00907 ft/ft
Velocity 3.74 ft/s
Velocity Head 0.22 ft
Specific Energy 0.54 ft

Worksheet for Privet Court

Results

Froude Number 1.72

Flow Type Supercritical

GVF Input Data

Downstream Depth 0.00 ft

Length 0.00 ft

Number Of Steps 0

GVF Output Data

Upstream Depth 0.00 ft

Profile Description

Profile Headloss 0.00 ft

Downstream Velocity Infinity ft/s

Upstream Velocity Infinity ft/s

Normal Depth 0.32 ft

Critical Depth 0.39 ft

Channel Slope 0.03000 ft/ft

Critical Slope 0.00907 ft/ft

Cross Section for Privet Court

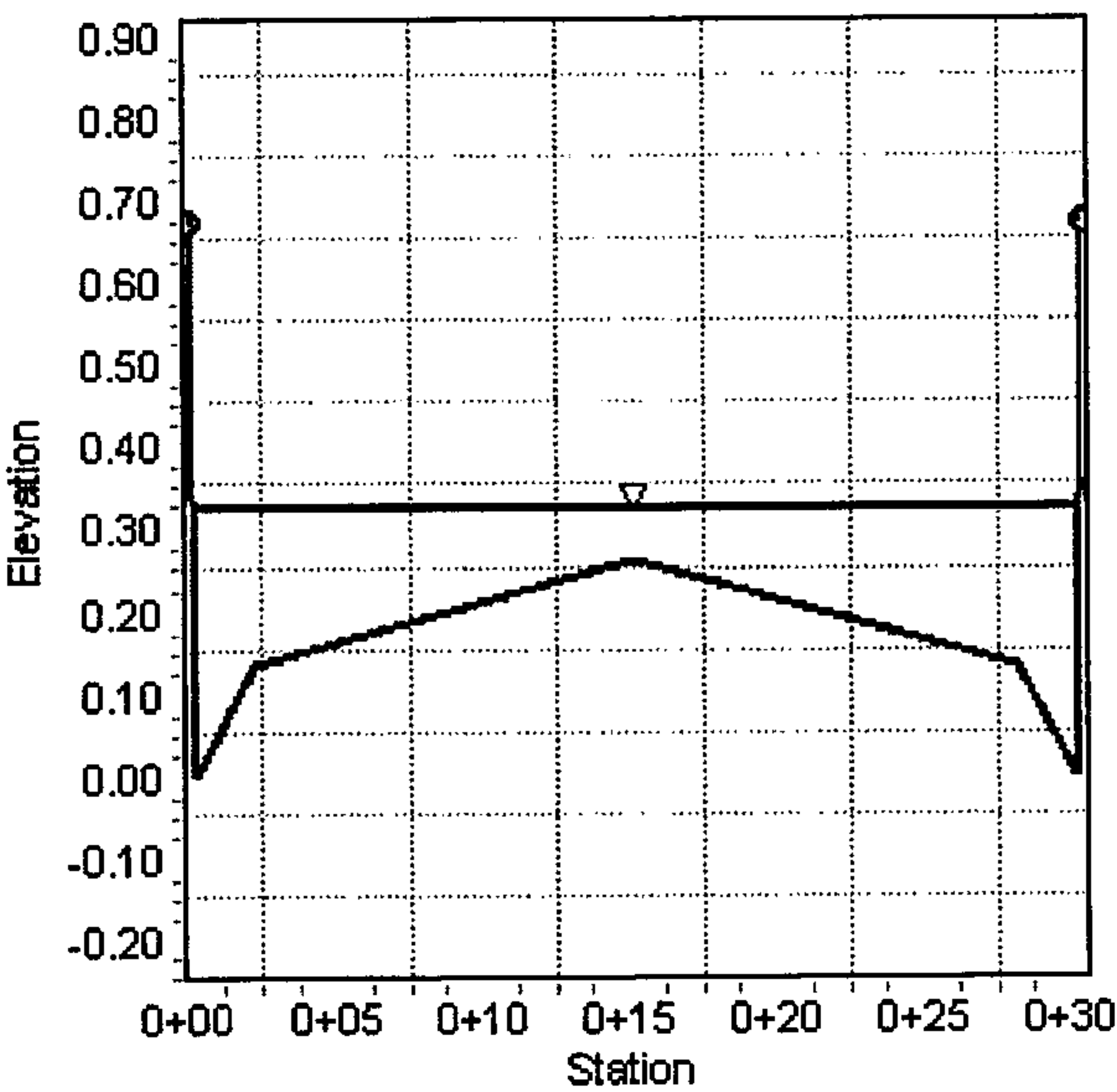
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope	0.03000	ft/ft
Normal Depth	0.32	ft
Discharge	16.63	ft ³ /s

Cross Section Image



Worksheet for Willowleaf PI

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00800 ft/ft
Discharge 23.83 ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth 0.45 ft
Elevation Range 0.00 to 0.67
Flow Area 8.23 ft²
Wetted Perimeter 30.93 ft
Top Width 30.22 ft
Normal Depth 0.45 ft
Critical Depth 0.44 ft
Critical Slope 0.00841 ft/ft
Velocity 2.90 ft/s
Velocity Head 0.13 ft
Specific Energy 0.58 ft

Worksheet for Willowleaf PI

Results

Froude Number 0.98

Flow Type Subcritical

GVF Input Data

Downstream Depth 0.00 ft

Length 0.00 ft

Number Of Steps 0

GVF Output Data

Upstream Depth 0.00 ft

Profile Description

Profile Headloss 0.00 ft

Downstream Velocity Infinity ft/s

Upstream Velocity Infinity ft/s

Normal Depth 0.45 ft

Critical Depth 0.44 ft

Channel Slope 0.00800 ft/ft

Critical Slope 0.00841 ft/ft

Cross Section for Willowleaf PI

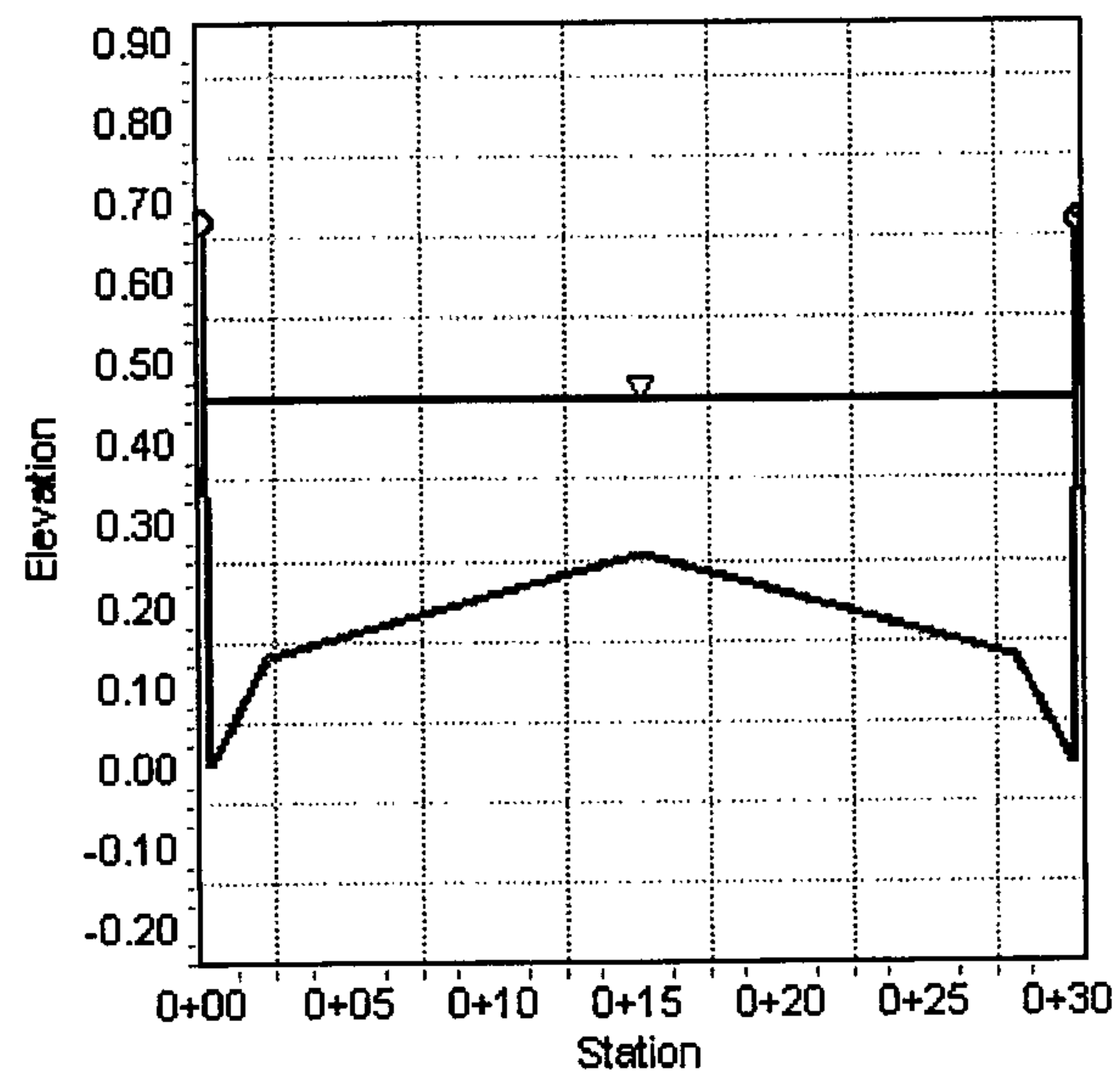
Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Normal Depth	0.45	ft
Discharge	23.83	ft ³ /s

Cross Section Image



Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00800	ft/ft
Discharge	16.63	ft ³ /s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.67
0+00	0.00
0+02	0.13
0+15	0.26
0+28	0.13
0+30	0.00
0+30	0.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.67)	(0+30, 0.67)	0.019

Results

Normal Depth	0.39	ft
Elevation Range	0.00 to 0.67	
Flow Area	6.62	ft²
Wetted Perimeter	30.82	ft
Top Width	30.20	ft
Normal Depth	0.39	ft
Critical Depth	0.39	ft
Critical Slope	0.00907	ft/ft
Velocity	2.51	ft/s
Velocity Head	0.10	ft
Specific Energy	0.49	ft

Worksheet for Woodbine Rd

Results

Froude Number 0.95

Flow Type Subcritical

GVF Input Data

Downstream Depth 0.00 ft

Length 0.00 ft

Number Of Steps 0

GVF Output Data

Upstream Depth 0.00 ft

Profile Description

Profile Headloss 0.00 ft

Downstream Velocity Infinity ft/s

Upstream Velocity Infinity ft/s

Normal Depth 0.39 ft

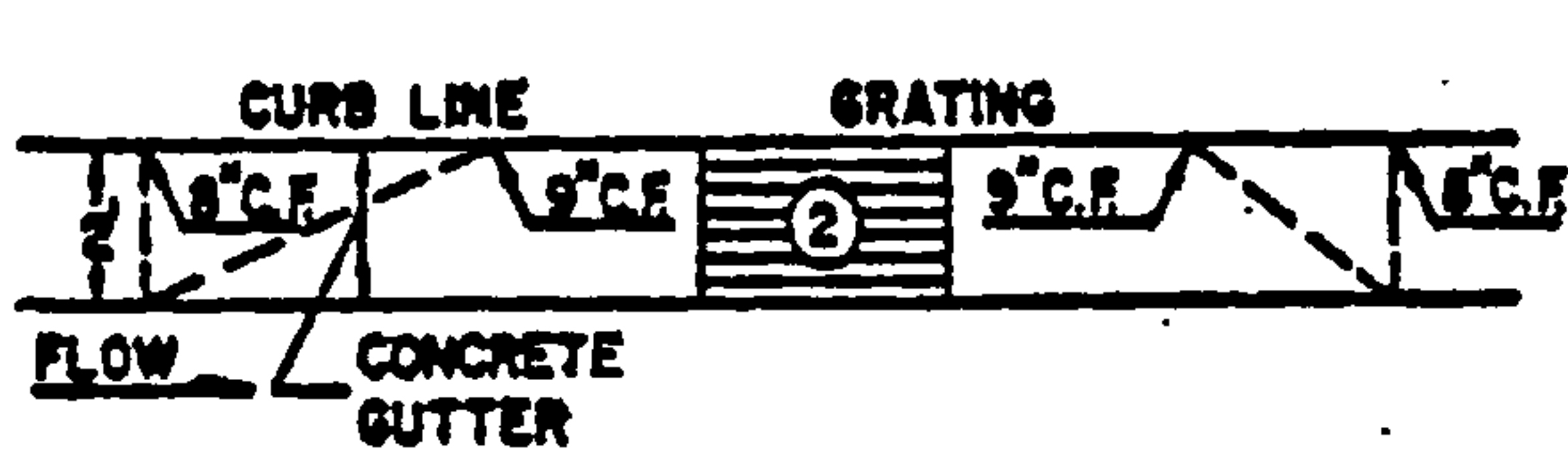
Critical Depth 0.39 ft

Channel Slope 0.00800 ft/ft

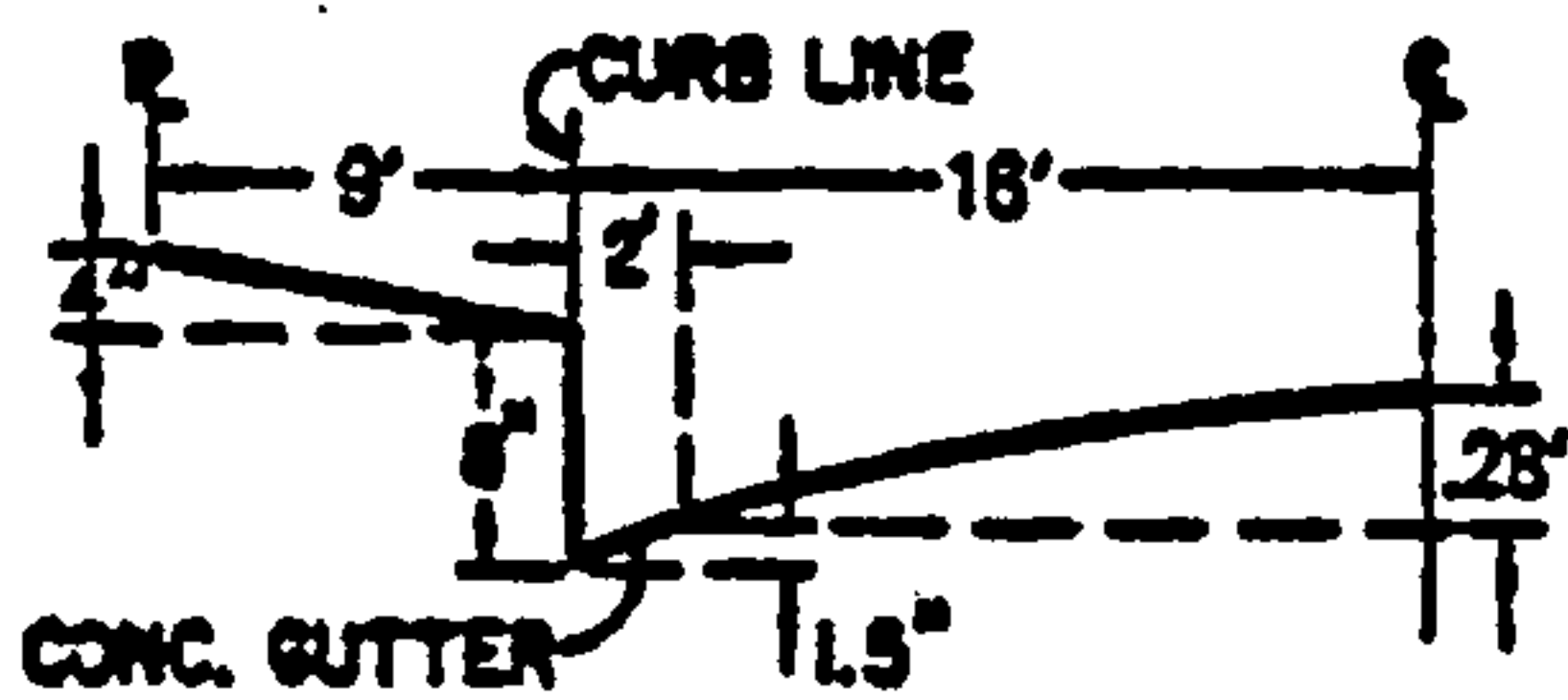
Critical Slope 0.00907 ft/ft

Chapter 22 - Drainage, Flood Control and Erosion Control

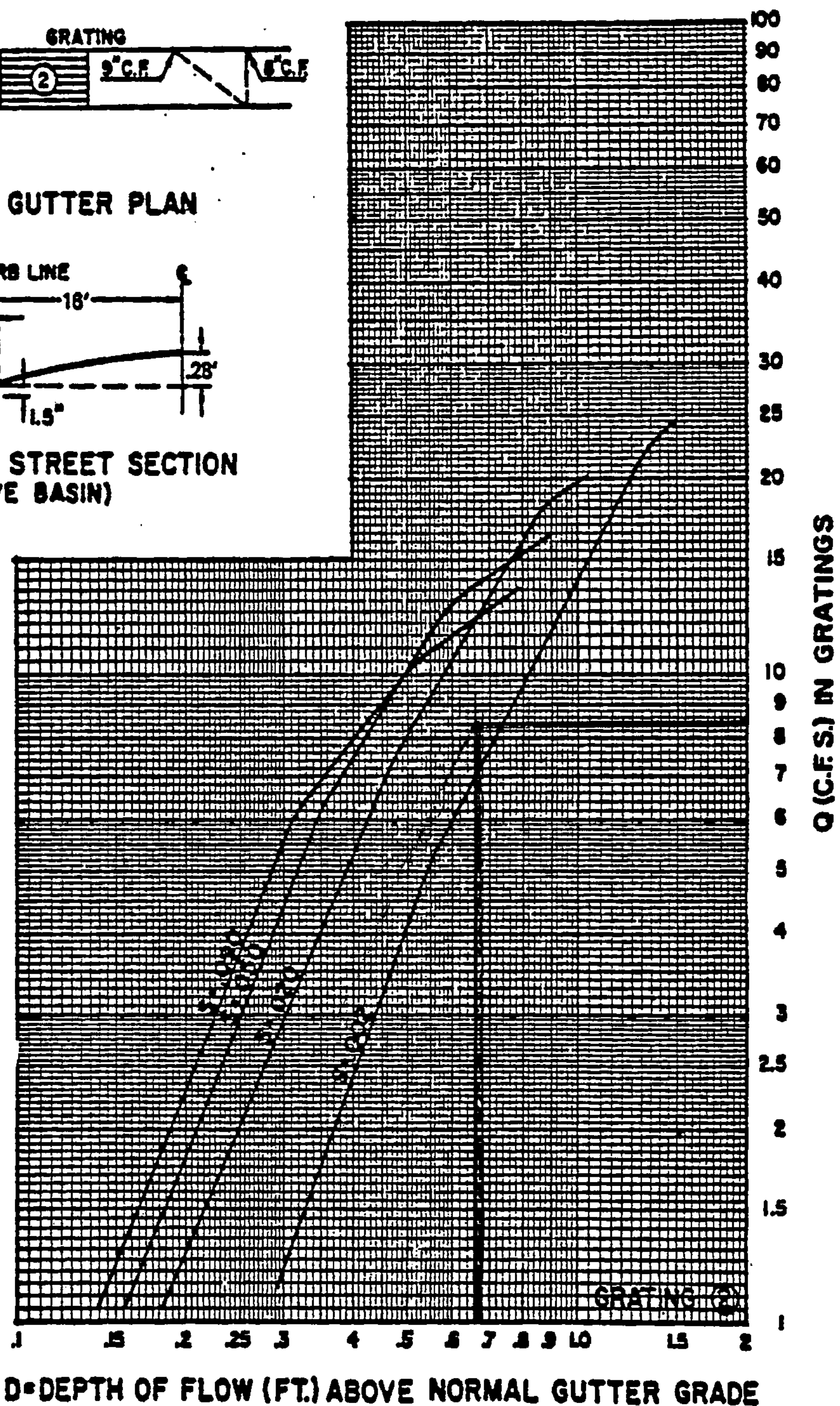
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



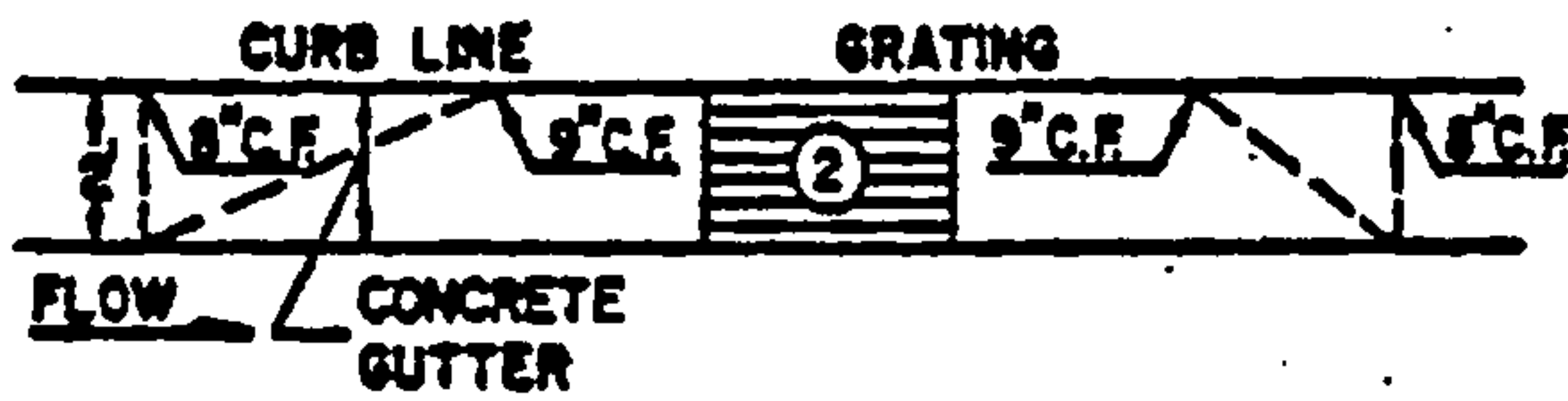
MEADOWSWEET / WOODBINE $S = .8\%$

$$FLOW = \frac{1}{2} \times 16.63 = 8.31$$

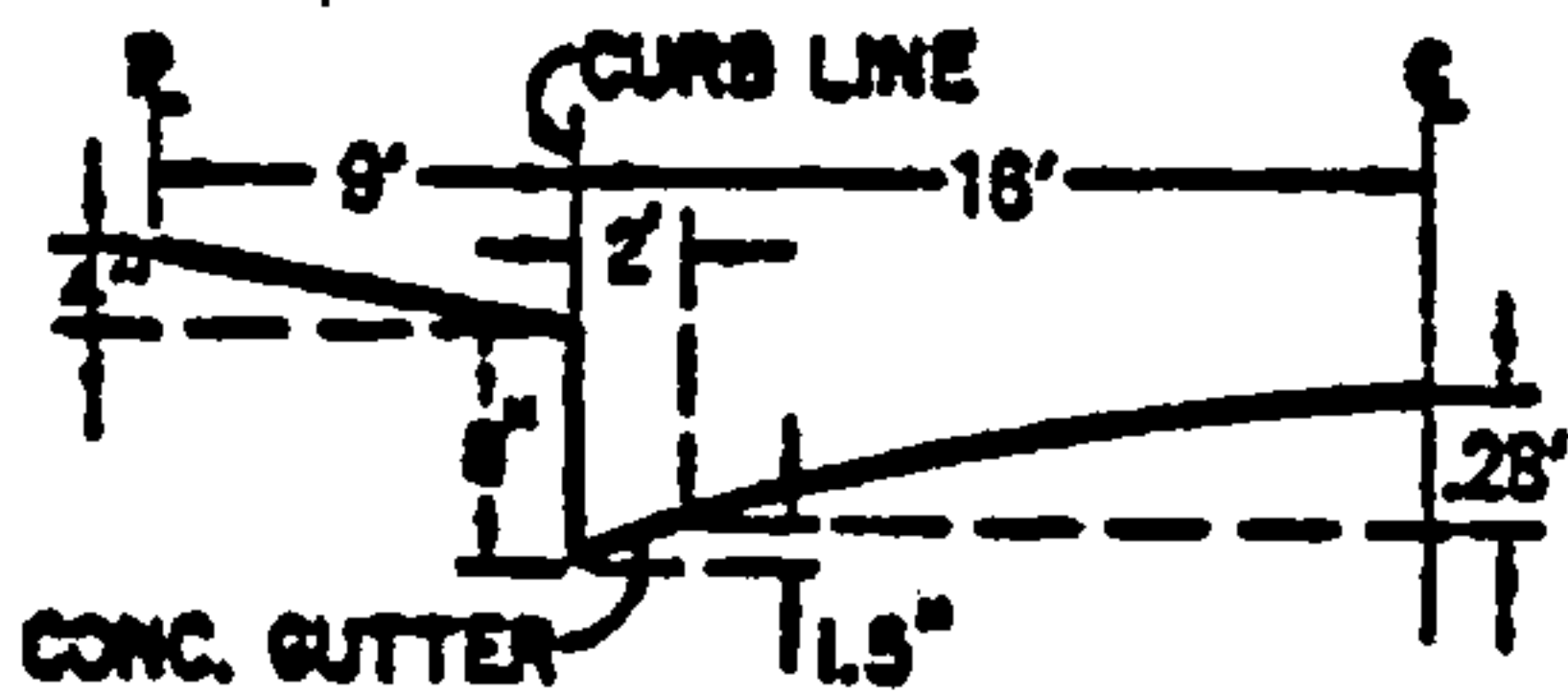
USE 1 - A EACH SIDE

Chapter 22 - Drainage, Flood Control and Erosion Control

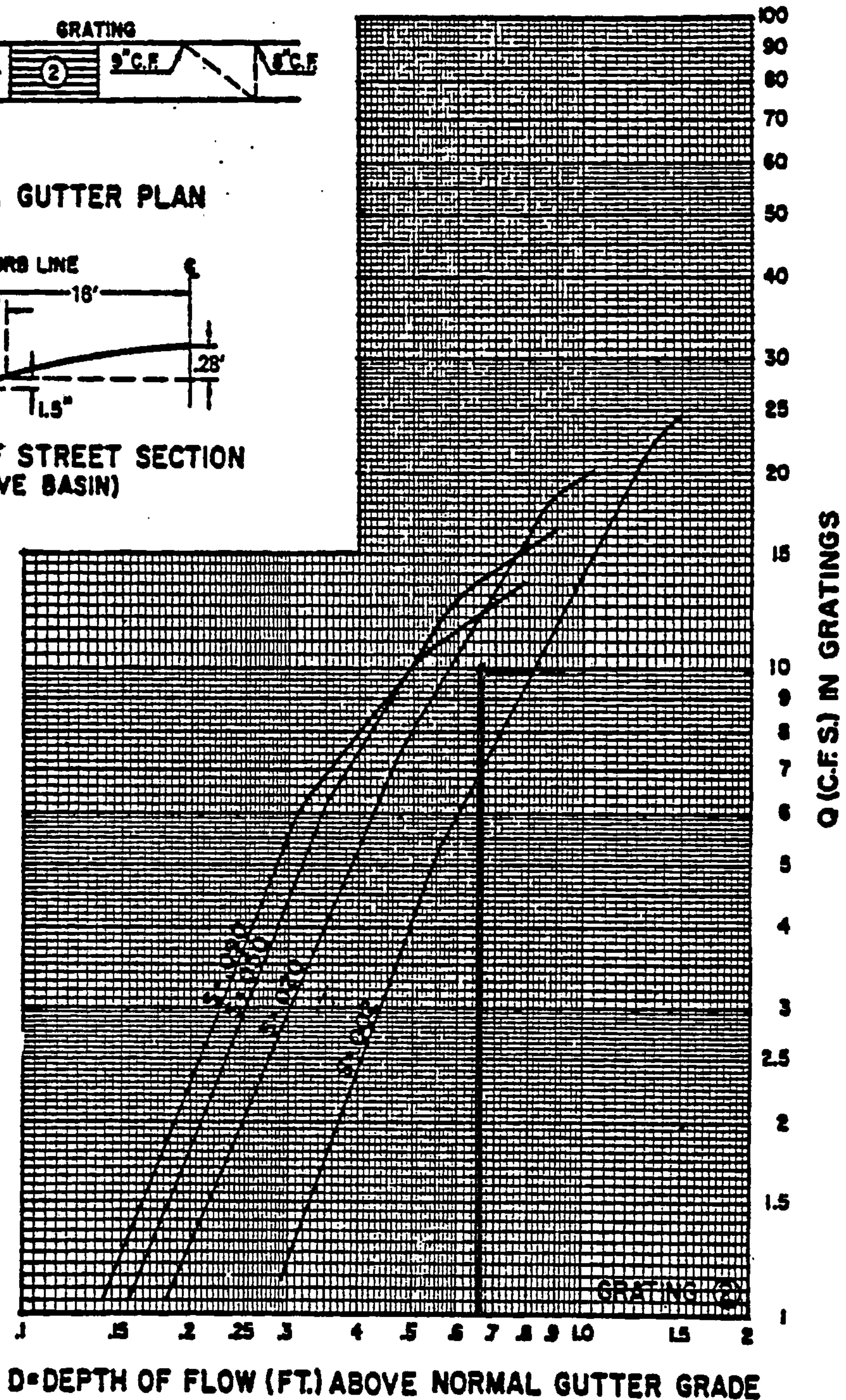
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



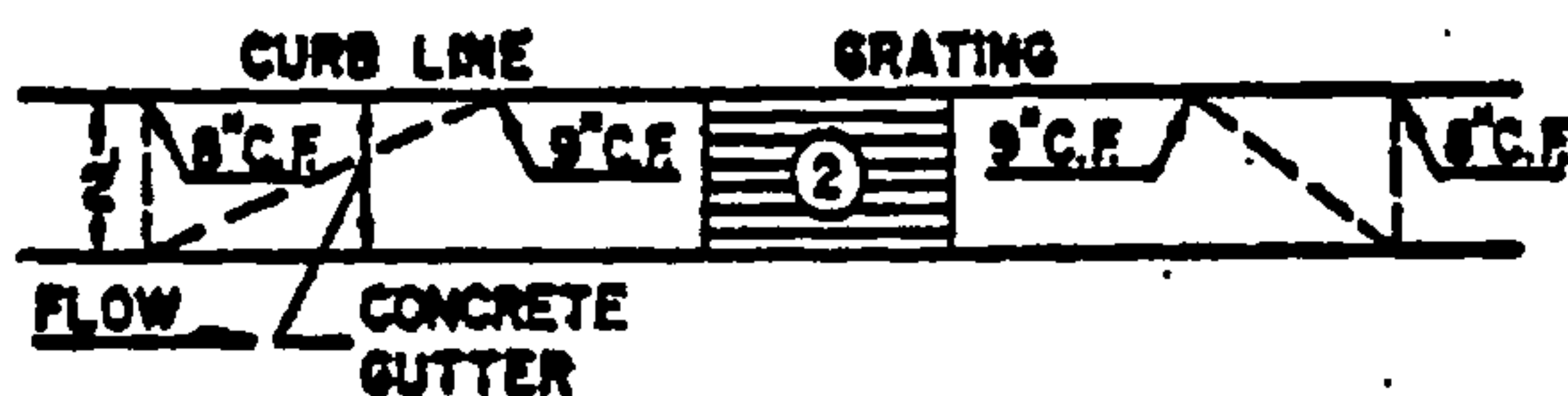
MAIDENHAIR / WOODBINE $S = 1.2\%$

$$FLOW = \frac{1}{2} \times 23.83 = 11.92$$

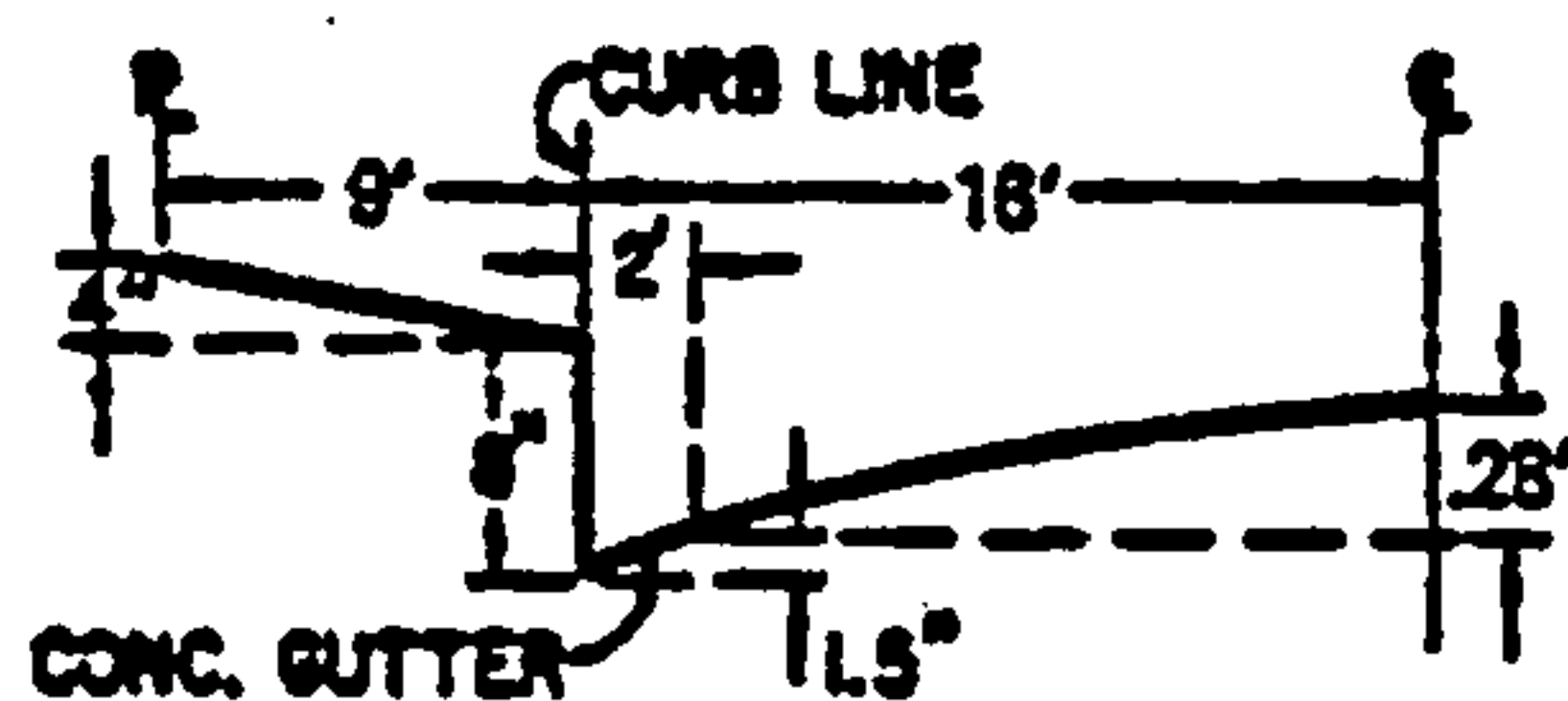
USE 1 - A & 1 - C EACH SIDE

Chapter 22 - Drainage, Flood Control and Erosion Control

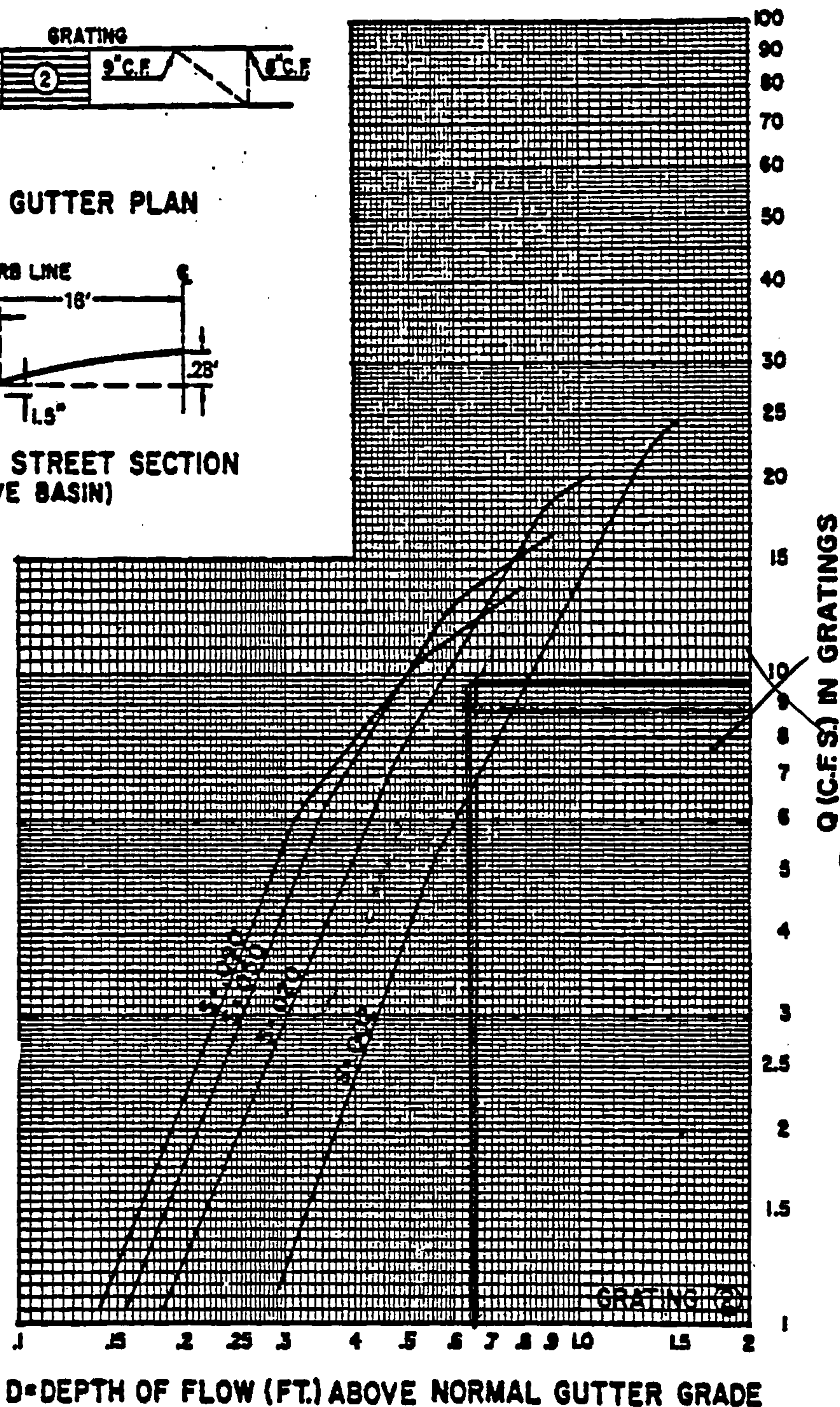
GRATING CAPACITIES FOR TYPE 'A' , 'C' and 'D'



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



SUMP +
2nd wing
on "A" will
provide
adequate
drainage

SUMP - MEADOW SWEET PLACE

1.34 LT
S = .7 RT

FLOW = 11.48 LT
11.54 RT

