



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 1, 2000

Larry Read, P.E.
Larry Read & Associates
12836-B Lonas Blvd, NE
Albuquerque, NM 87112

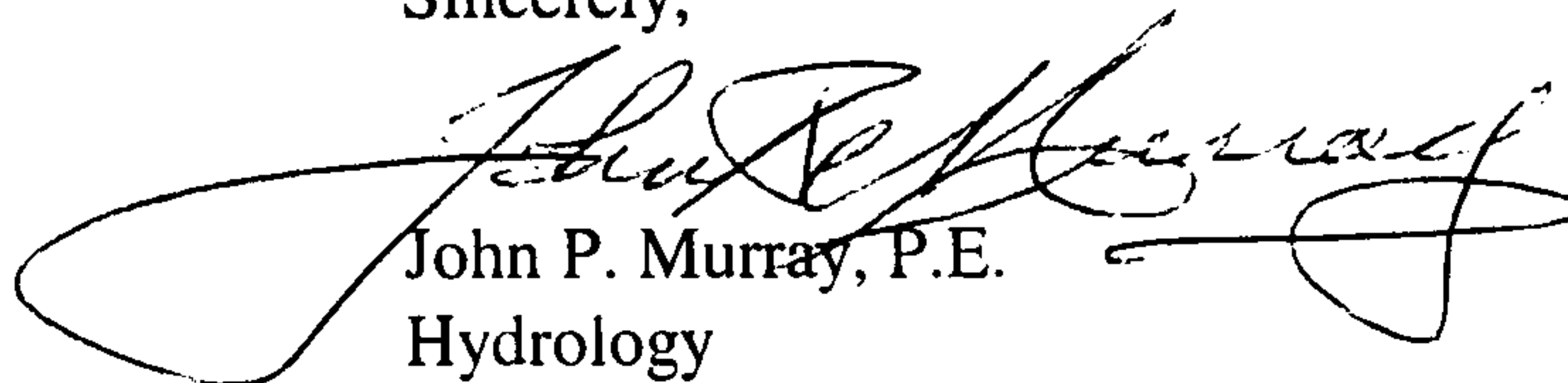
***RE: NEW MEDICAL OFFICE AT MONTANO & WHITEMAN NW (E10-D12).
ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY
APPROVAL. ENGINEER'S STAMP DATED APRIL 24, 2000.***

Dear Mr. Read:

Based on the information provided on your April 27, 2000 submittal, the above referenced project is approved for Certificate of Occupancy. A Temporary C.O. had been issued on April 14, 2000.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,


John P. Murray, P.E.
Hydrology

c: Whitney Reiersen
File



City of Albuquerque

October 14, 1999

Larry Read, P.E.
Larry Read & Associates, Civil Engineers
12836-B Lomas Blvd. NE
Albuquerque, NM 87112

RE: NEW MEDICAL OFFICE AT MONTANO & WHITEMAN NW (E10-D12). GRADING AND DRAINAGE PLAN FOR BUILDING PERMIT AND SO#19 PERMIT APPROVALS. ENGINEER'S STAMP DATED AUGUST 17, 1999 AND RESTAMPED October 14, 1999. SUPPLEMENTAL LETTER REPORT DATED OCTOBER 14, 1999.

Dear Mr. Read:

Based on the information provided on your October 14, 1999 resubmittal, the above referenced project is approved for Building Permit and SO#19 Permit.

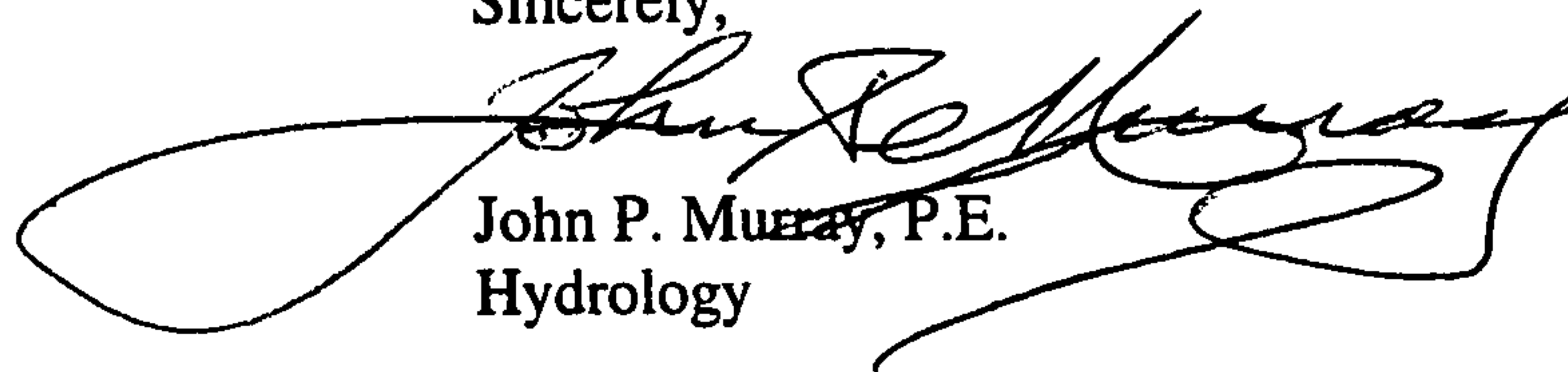
Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

A separate permit is required for construction within City right-of-way. A copy of this approval letter must be on hand when applying for the excavation permit.

Prior to Certificate of Occupancy approval, an Engineer's Certification per the DPM will be required.

If I can be of further assistance, please feel free to contact me at 924-3984.

Sincerely,


John P. Murray, P.E.
Hydrology

c:

WR
✓ File

DRAINAGE REPORT
for
NEW MEDICAL OFFICE
ALBUQUERQUE, NEW MEXICO

August 17, 1999

Prepared by
Larry D. Read, P.E.
Larry Read & Associates
12836-B Lomas Blvd. N.E.
Albuquerque, New Mexico 87119

DRAINAGE REPORT

for

NEW DENTIST OFFICE

ALBUQUERQUE, NEW MEXICO

August 17, 1999

LOCATION & DESCRIPTION

The proposed site, located at the southeast corner of Montano Road NW and Whiteman Drive N.W., is currently undeveloped. It includes approximately 0.48 acres that are proposed for development as a medical office. The site slopes toward the south-southeast at approximately 2.6% and has only sparse vegetation since it is driven on regularly.

The proposed improvements for this project include a new medical office building with an approximate foot print of 3,211 sf and approximately 7,060 sf of paved parking lots and sidewalks.

METHODOLOGY

The hydrology for this project was analyzed using the January 1993 revision of the City of Albuquerque Development Process Manual, Section 22.2 as follows:

The specific values used for this analysis are as follows:

-Precipitation Zone 1

-Design Storm: 100-year, 6-hour duration
p = 2.20 inches (t_c = 0.2 hours)

The AHYMO computer model of the runoff volumes and peak flow rates are included in the Appendix B for reference.

PRECIPITATION

The 100-yr 6-hr duration storm was used as the design storm for this analysis. This storm event was selected due to the proposed on-site detention ponds.

EXISTING DRAINAGE

The existing undeveloped project site discharges runoff toward the southeast corner of the site. The runoff ponds against the existing cmu fence along the south property line and slowly runs east through the adjacent parcels until it ultimately ponds near the center of the block.

The site is protected from offsite runoff by the curb and gutter sections of Montano Road on the north and Whiteman Drive on the west. The existing slope does not allow runoff onto the site from the adjacent parcels on the east. The existing cmu wall protects the site from offsite runoff from the adjacent parcels on the south.

DEVELOPED CONDITION

Since cross-lot drainage is discouraged in Albuquerque, the proposed drainage plan, included in Appendix B, proposes to divert runoff toward Whiteman Dr. instead of continuing to discharge it into the adjacent parcels to the east. Inspection of the drainage basins contributing to Whiteman Drive and the slope of the street indicates that there is no capacity available capacity for developed runoff from this site. Therefore, the proposed grading plan has proposed two on-site detention ponds to mitigate the developed runoff and discharge only undeveloped peak flow rates into the street.

FLOODPLAIN STATUS

This project, as shown on FEMA Flood Insurance Rate Map Panel 35001C0114 D, September 20, 1996, shows that this site is in a Zone X, areas of 100-year flooding with average depths of less than 1 foot or with drainage areas of less than 1 square mile.

PEAK RUNOFF QUANTITIES

The AHYMO printouts, summary sheets, and miscellaneous calculations to support these analyses are included in Appendix B of this report for reference.

SUMMARY

BASIN	CONDITION	Q ₁₀₀ (cfs)	V ₁₀₀ (cf)	Q ₁₀ (cfs)	V ₁₀ (cf)
A	On-Site Exist	0.19	218	0.13	144
B	On-Site Exist	0.44	523	0.29	345
A	On-Site New	0.52	741	0.34	489
B	On-Site New	1.24	1830	0.82	1208

Max. Discharge from Pond A - 0.18 cfs

Max. Discharge from Pond B - 0.18 cfs

Increase to Whitman Drive - 0.36 cfs (Pond A and Pond B)

Decrease to Lot O-26 - West of This Site - 0.63 cfs (Basin A and B - On-site Exist)

[illegible][illegible]

POND DISTANCE

POND A -

$$\text{MAX DEPTH} = 0.87'$$

$$\text{DISCHARGE LINE} = 1-4''$$

$$\text{ORIFICE } Q = CA\sqrt{2gh}$$

$$A = \frac{1}{2}\pi (.166)^2 = 0.04 \text{ SF}$$

$$C = 0.66 \quad h = 0.87 - \frac{1}{2}(.33) = 0.705'$$

$$Q = (0.66)(0.04)\sqrt{2 \times 32.2 \times 0.705}$$

$$Q = 0.18 \text{ cfs} \Rightarrow Q_{100} = 0.19 \text{ cfs} \quad \text{OK}$$

POND B -

$$\text{MAX DEPTH} = 0.90'$$

$$\text{DISCHARGE LINE} = 1-4''$$

$$\text{ORIFICE } A = 0.04 \text{ SF}$$

$$h = 0.9 - \frac{1}{2}(.33) = 0.735'$$

$$Q = (0.66)(0.04)\sqrt{2 \times 32.2 \times 0.735}$$

$$= 0.18 \text{ cfs} \Rightarrow Q_{100} = 0.19 \text{ cfs} \quad \text{OK}$$

APPENDIX B

PROPOSED GRADING PLAN

ROADWAY CAPACITY - OFFSITE

ANALYSIS POINT - AP-1

LOCATED ON THE SOUTH SIDE OF BUENOS AIRES @ WHITEMAN

TOTAL AREA - WEST OF WHITEMAN - 17.5 acres DRAINAGE BASIN OF-1

- 51 RESIDENTIAL LOTS $\Rightarrow \frac{51}{17.5} = 3 \text{ d.u.'s/acre}$

LAND TREATMENTS -

D - $7 * \sqrt{(N * N) + (5 * N)} = 34\%$ (DPM 22.2) (IBC A-5)

C - 33%

B - 33%

} EVENLY DIVIDE REMAINDER

PEAK DISCHARGE ZONE - 1

$$\begin{aligned}
 Q_{100} &= .33 * 17.5 * 2.03 \text{ cfs/acre} + \\
 &\quad .33 * 17.5 * 2.87 \text{ cfs/acre} + \\
 &\quad .34 * 17.5 * 4.37 \text{ cfs/acre} \\
 &= 54 \text{ cfs}
 \end{aligned}$$

 $\frac{1}{2}$ ROADWAY CAPACITY - 40' RESIDENTIAL STREET

- MIN S = 0.49%

WATER SURFACE ELEVATION = 99.98 (100 @ ROW LINE) *

VELOCITY HEAD = 0.22' *

ENERGY GRADE 100.2 $\Rightarrow$ 0.2' ABOVE ROW LINE *CONCLUSION $\Rightarrow$ WHITEMAN RD IS OVER CAPACITY @
BUENOS AIRES - NO NEED TO CONTINUE* SEE FLOW MASTER PRINT-OUT ATTACHED
SHEET 2 of

WHITEMAN ROAD ANALYSIS POINT AP-1 Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\drdrey.fm2
Worksheet	WHITEMAN ROAD ANALYSIS POINT AP-1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope		0.004900 ft/ft		
Elevation range: 99.10 ft to 100.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	100.00	0.00	30.10	0.017
10.00	99.80			
10.01	99.10			
30.10	99.50			
Discharge	54.00	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.98	ft
Flow Area	14.44	ft ²
Wetted Perimeter	30.21	ft
Top Width	29.03	ft
Height	0.88	ft
Critical Depth	99.95	ft
Critical Slope	0.005627	ft/ft
Velocity	3.74	ft/s
Velocity Head	0.22	ft
Specific Energy	100.20	ft
Froude Number	0.94	
Flow is subcritical.		
Water elevation exceeds lowest end station by 0.48 ft.		

ANALYSIS POINT AP-2

LOCATED @ SW CORNER MONTANO & WHITERMAN

DRAINAGE BASIN OF-2 MONTANO WEST OF WHITERMAN

TOTAL AREA -

$$\text{ROW} = 105' - \frac{1}{2} \Rightarrow 52.5'$$

$$\text{PVT} = 86' - \frac{1}{2} \Rightarrow 43'$$

$$\text{SIDEWALK} = 6' - 6' \Rightarrow 780 \times 52.5 \Rightarrow .99\text{ac}$$

$$\text{PARCELS @ S ROW} = 210' \times 595 \Rightarrow 2.9\text{ac}$$

$$\text{TOTAL} = 3.84\text{ac}$$

LAND TREATMENTS

$$\text{TYPE 'D' - ROW} = \frac{(43' + 6') \times 780'}{43560} = .877\text{ac}$$

$$\text{PARCELS - 0-1 ZONING } 90\% \times 2.9\text{ac} = 2.61\text{ac}$$

$$3.8\text{ac}$$

$$\Rightarrow 98\%$$

TYPE 'C' BALANCE

$$2\%$$

PEAK RUNOFF

$$\begin{aligned} Q_{100} &= .98 \times 3.84 \times 4.37 \text{ cfs/ao} + \\ &\quad .02 \times 3.84 \times 2.87 \text{ cfs/ao} \\ &= 16.7 \text{ cfs} \end{aligned}$$

Flow Depth in Street: $S = 2.5\%$

52.5' ROW

43' PVT

$$d = .38' \quad \text{VELOCITY HEAD } .32' \quad \text{EG} = 99.84\text{oa}$$

SEE FLOWMASTER PRINTOUT SHEET 4 of

SHEET 1 OF 1

S. HALF MONTANO ANALYSIS POINT AP-2
Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\drdrey.fm2
Worksheet	SOUTH HALF MONTANO AP-2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope		0.025000 ft/ft		
Elevation range: 99.14 ft to 100.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	100.00	0.00	52.51	0.017
9.50	99.81			
9.51	99.14			
52.51	100.00			
Discharge	16.70	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.52	ft
Flow Area	3.68	ft ²
Wetted Perimeter	19.57	ft
Top Width	19.19	ft
Height	0.38	ft
Critical Depth	99.63	ft
Critical Slope	0.006917	ft/ft
Velocity	4.54	ft/s
Velocity Head	0.32	ft
Specific Energy	99.84	ft
Froude Number	1.83	
Flow is supercritical.		

INTERCEPTION OF TYPE 'A' ON MONTANO @ SW CORNER

$$Q_{100} = 16.7 \text{ cfs}$$

$$S = 2.5\%$$

$$d = 0.38'$$

$$Q_i = 5.2 \text{ cfs}$$

$$DPI = 22.2$$

BYPASS FLOW GOES SOUTH IN THE WEST 1/2 OF WHITTENAN

$$Q_{BPS} = 16.7 \text{ cfs} - 5.2 \text{ cfs} = 11.5 \text{ cfs} - \text{SEE SHEET 10}$$

ANALYSIS POINT AP-3 SE CORNER OF MONTANO & WHITTENAN

DRAINAGE BASIN OF-3 MONTANO EAST OF WHITTENAN

TOTAL AREA - ROADWAY ONLY (PARCELS ON SOUTH SIDE OF MONTANO 2-4' BELOW FC ON MONTANO)

$$52.5' \times 1636' = 1.97 \text{ ac}$$

LAND TREATMENTS -

$$"D" - \frac{(43' \text{ PAVT} + 6' \text{ SER}) \times 1636'}{43560} = 1.84 \text{ ac} - 93\%$$

$$"C" - \text{DRAINAGE } 7\% = 0.13 \text{ ac}$$

PEAK RUNOFF -

$$Q_{100} = 1.84 \times 4.37 \text{ cfs/ac} +$$

$$0.13 \times 2.87 \text{ cfs/ac} =$$

$$= 8.4 \text{ cfs}$$

FLOW DEPTH IN STREET -

$$S = 1.9\%$$

52.5' - ROW

43' PAVT

$$d = 99.44 - 99.14 = 0.30' *$$

$$\text{Velocity Head} = .23' *$$

$$EG = 99.44 + .23 = 99.67' < 99.33' \text{ BELOW TOP OF CURB}$$

* SEE FLOW MASTER PRINTOUT
SHEET 7 OF 7

INTERCEPTION OF TREE DOUBLE 'C' ON MONTANO
@ SE CORNER

$$Q_{100} = 8.4 \text{ cfs}$$

$$d = 0.50'$$

$$S = 1.99\%$$

$$Q_i = 3.1 \text{ cfs} \quad \text{DPM 22.2}$$

BYPASS FLOW GOES SOUTH ON WHITMAN IN
EAST SIDE OF STREET.

$$Q_{BPS} = 8.4 - 3.1 = 5.3 \text{ cfs} \quad \text{SEE SHEET 10}$$

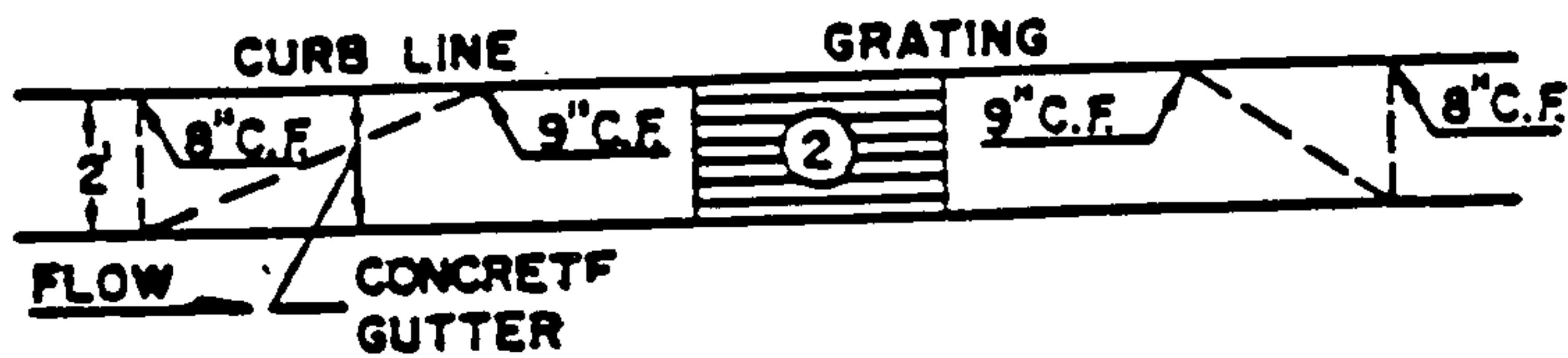
S. HALF MONTANO ANALYSIS POINT AP-3
Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\drdrey.fm2
Worksheet	SOUTH HALF MONTANO AP-2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

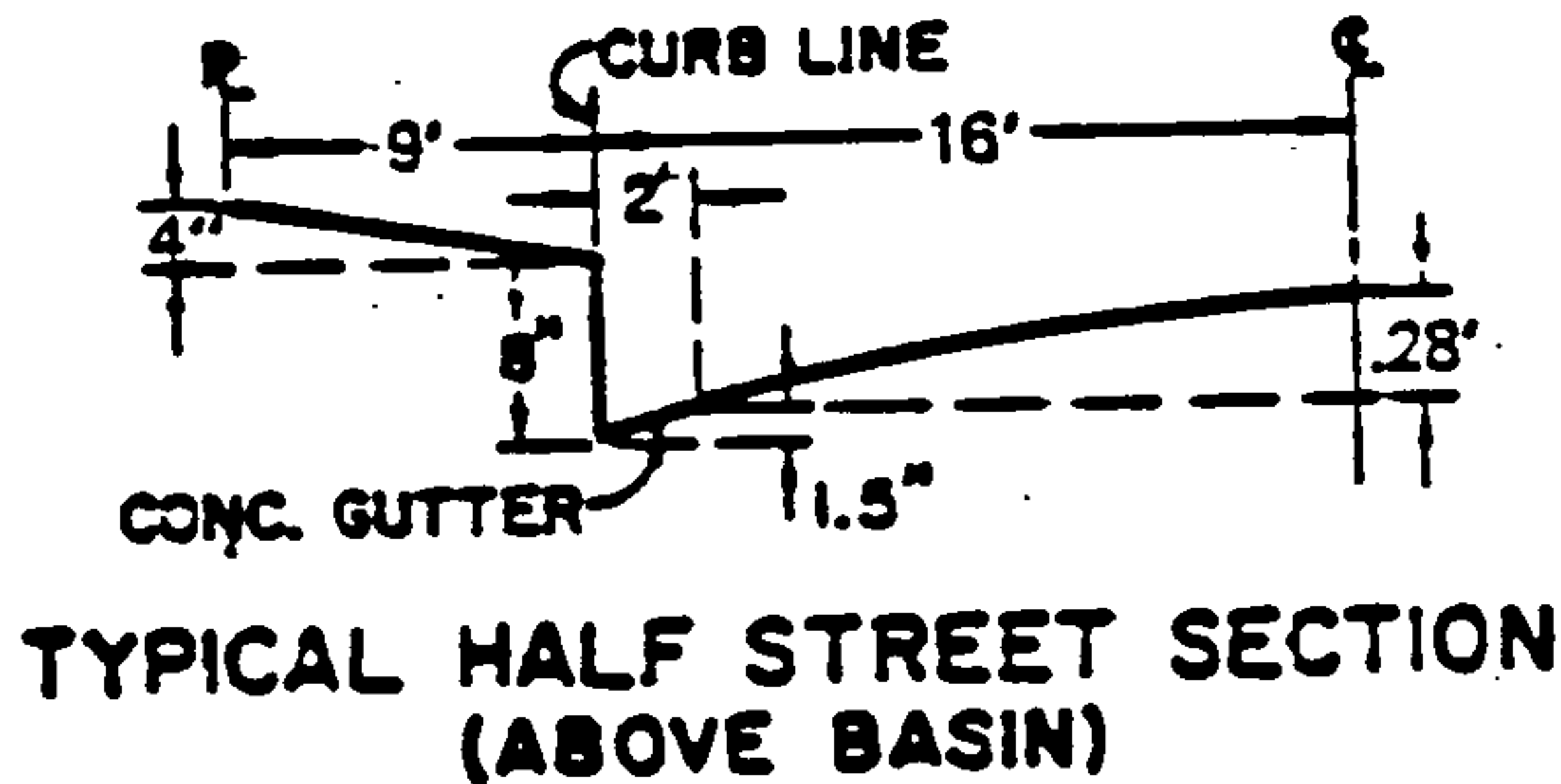
Input Data				
Channel Slope		0.025000 ft/ft		
Elevation range: 99.14 ft to 100.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	100.00	0.00	52.51	0.017
9.50	99.81			
9.51	99.14			
52.51	100.00			
Discharge	8.40	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.44	ft
Flow Area	2.20	ft ²
Wetted Perimeter	15.12	ft
Top Width	14.83	ft
Height	0.30	ft
Critical Depth	99.51	ft
Critical Slope	0.007581	ft/ft
Velocity	3.82	ft/s
Velocity Head	0.23	ft
Specific Energy	99.66	ft
Froude Number	1.75	
Flow is supercritical.		

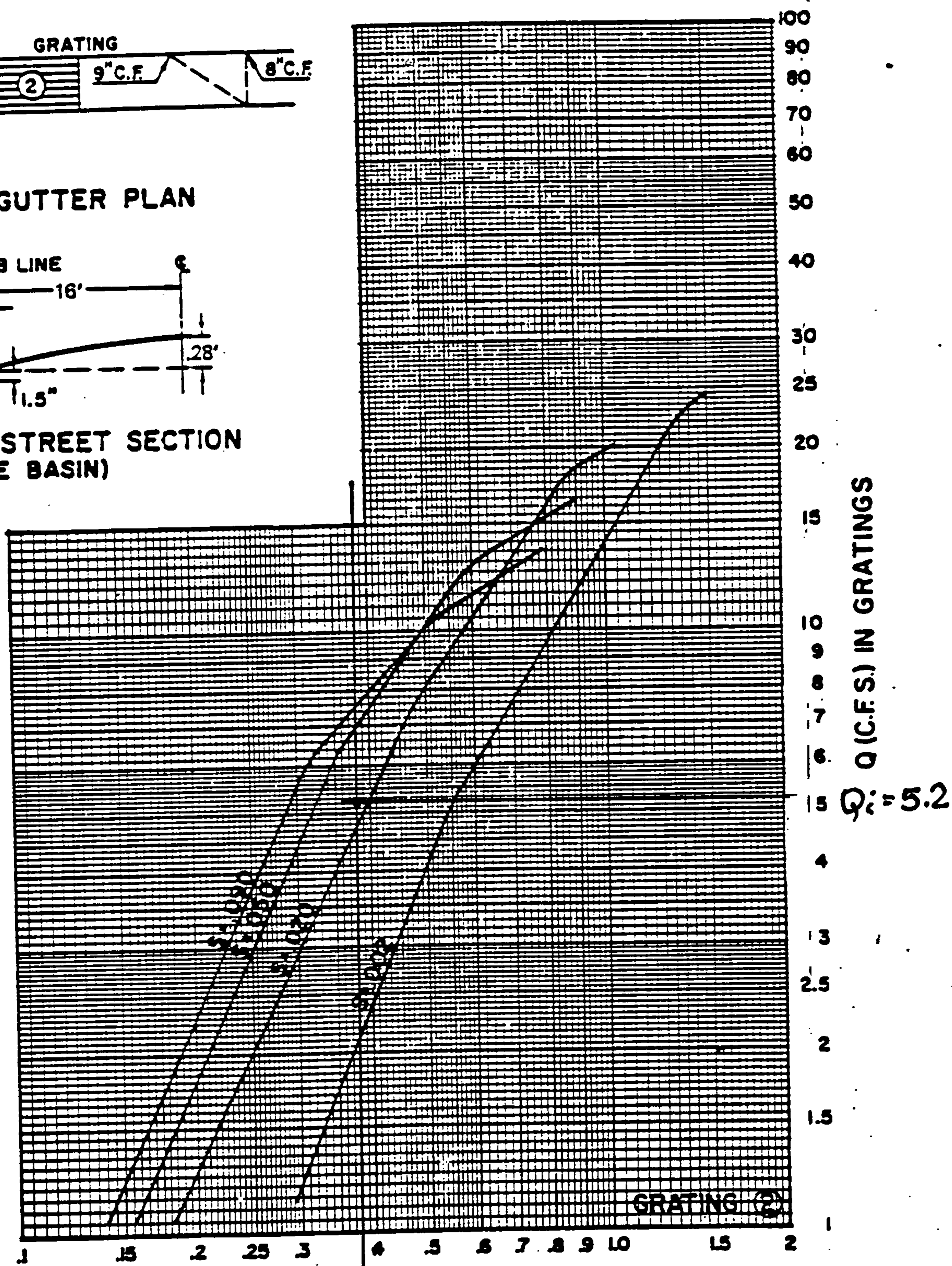
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

ANALYSIS POINT

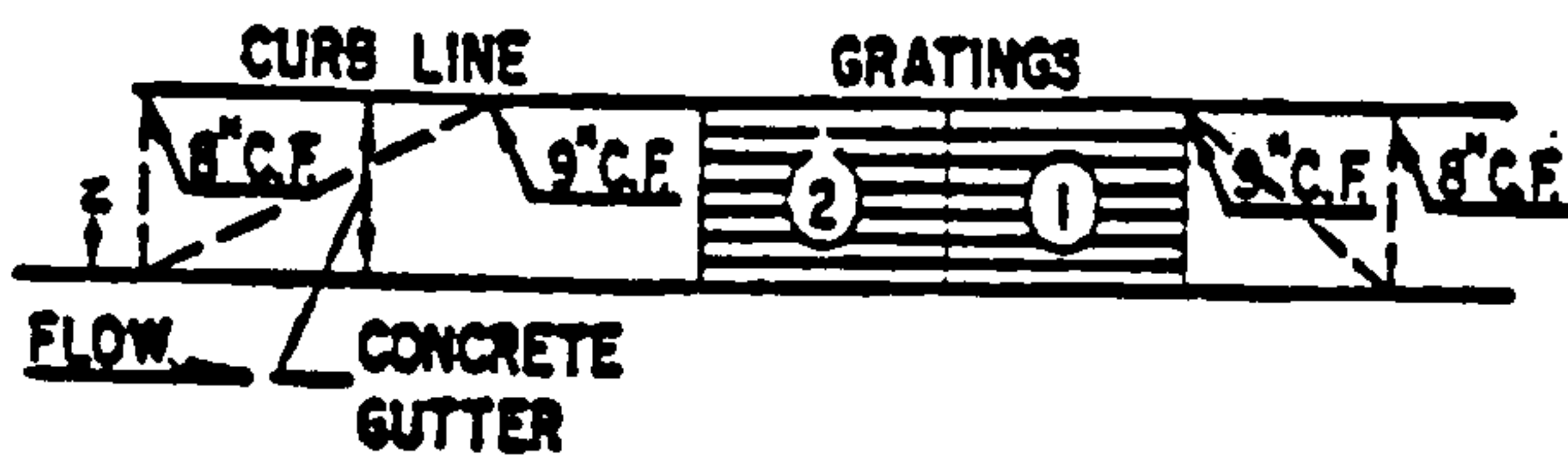
AP-2

$Q_{max} = 16.7 cfs$

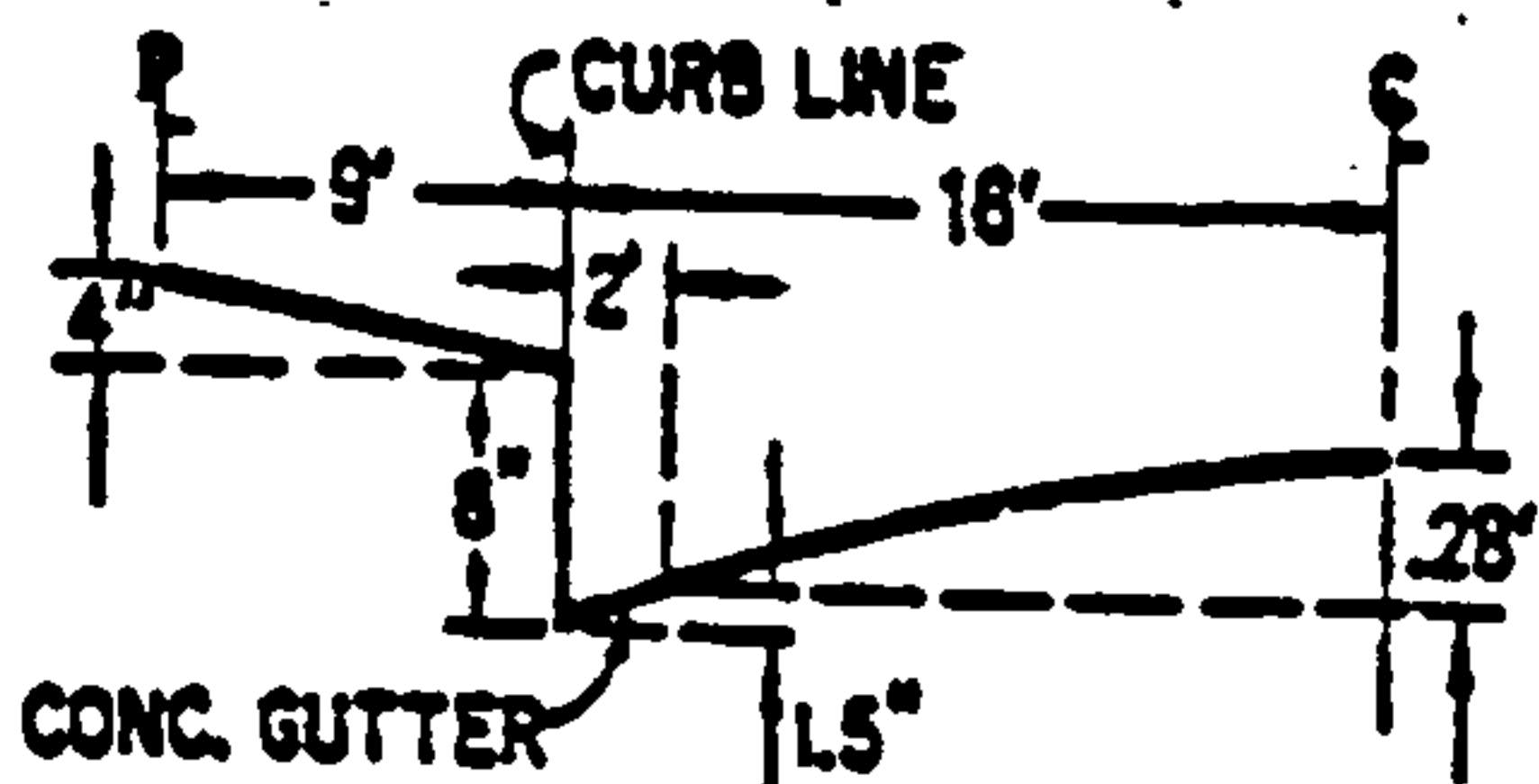
$S = 2.5\%$

PLATE 223 D-5

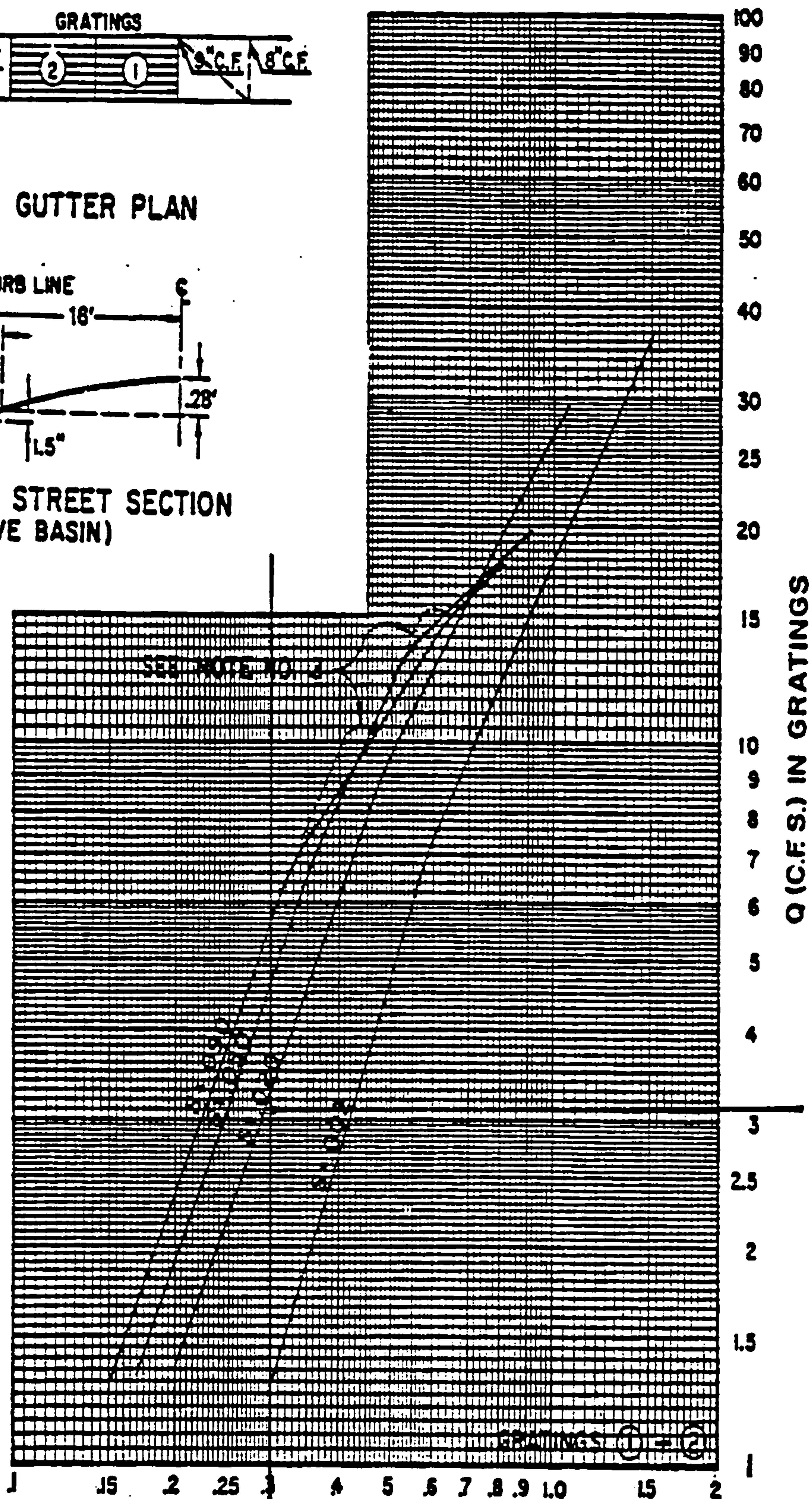
GRATING CAPACITIES FOR TYPE DOUBLE "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION (ABOVE BASIN)



D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

PLATE 22.3 D-6

$d = 0.3'$

$Q_{100} = 8.4 \text{ cfs}$

$S = 1.990$

ANALYSIS POINT

AP-3

CHECK WHELAN STREET CAPACITY

BYPASS FLOW FROM AP-3 = 5.3 cfs → SHEET 6

$$Q_{100} = \frac{(20' \text{ PAVT} + 4' \text{ SW}) * 223' * 4.37 \text{ cfs/ac}}{43560} +$$

$$\frac{(30' \text{ ROW} - 24' \text{ PAVT (SW)}) * 223' * 2.87 \text{ cfs/ac}}{43560}$$

$$= 0.63 \text{ cfs}$$

$$\text{TOTAL FLOW} = 5.3 \text{ cfs (BYPASS FROM AP-3)} +$$

$$0.63 \text{ cfs (GENERATED IN ROW ALONG SITE FRONT)}$$

$$0.36 \text{ cfs (DISCHARGE POUNDS A \& B)}$$

$$= 6.3 \text{ cfs}$$

$$d = 0.26' (< 0.87 \text{ AXIAL TO ROW - OK}) *$$

$$EG = 0.49' (< 0.87 \text{ AXIAL TO ROW - OK}) *$$

* SEE FLOWMASTER PRINTOUT SHEET 1)

EAST SIDE WHITEMAN RD. AT S. PROP. CORNE

Worksheet for Irregular Channel

Project Description	
Project File	c:\haestad\fmw\drdrey.fm2
Worksheet	EAST SIDE WHITEMAN RD AT S. PROP CORNER
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Water Elevation

Input Data				
Channel Slope	0.031000 ft/ft			
Elevation range: 99.13 ft to 100.00 ft.				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	100.00	0.00	30.01	0.017
10.00	99.80			
10.01	99.13			
30.01	99.53			
Discharge	6.30	cfs		

Results		
Wtd. Mannings Coefficient	0.017	
Water Surface Elevation	99.39	ft
Flow Area	1.63	ft ²
Wetted Perimeter	13.04	ft
Top Width	12.79	ft
Height	0.26	ft
Critical Depth	99.46	ft
Critical Slope	0.007879	ft/ft
Velocity	3.85	ft/s
Velocity Head	0.23	ft
Specific Energy	99.62	ft
Froude Number	1.90	
Flow is supercritical.		