

GRADING EASEMENT AGREEMENT

THIS GRADING EASEMENT AGREEMENT ("Agreement") is entered into as of the 20th day of October 1999 by and among **21 HOUSING CORPORATION**, a Nevada corporation ("21"), **ALBUQUERQUE SOUTH PARTNERSHIP**, a New Mexico general partnership ("Alb. South"), **THUNDER DEVELOPMENT LTD. CO.**, a New Mexico limited liability company ("Thunder"), and **CURB, INC.**, a New Mexico corporation ("Curb") [Alb. South, Thunder and Curb are sometimes collectively referred to herein as the "Owners".]

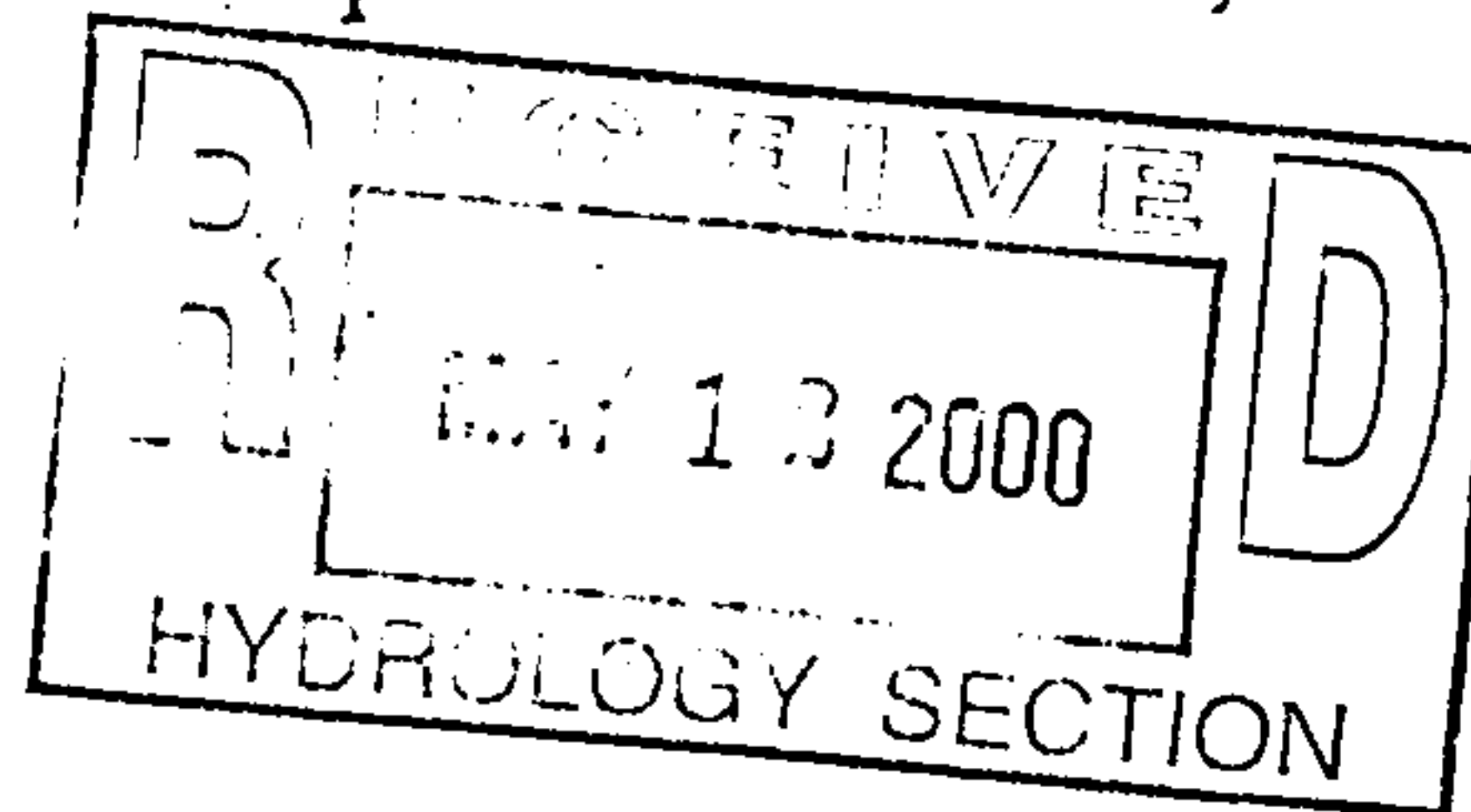
BACKGROUND INFORMATION:

A. Alb. South is the owner of the following described property (the "Alb. South Property"):

Tracts A, C and D, Albuquerque South Unit 4, as the same are shown and designated on the Bulk Plat of Albuquerque South Unit, Unit 4, Tracts A, B, C & D, recorded in the Bernalillo County, New Mexico real estate records on October 8, 1999, in Book 99-C Page 286 (the "Bulk Plat")

B. Alb. South is also the owner of the unplatted remaining portion of parcel 12, located south of Tracts A, B, C & D, and shown on Exhibit "A" attached hereto (the "Unplatted Tract").

C. Thunder owns Tract B, and has contracted to purchase Tracts A, C and D from Alb. South.



- 1 -



D. Tracts A, B, C & D, as depicted in the Bulk Plat, are sometimes referred to individually herein as Tract A, Tract B, Tract C and Tract D, and collectively referred to as the Properties.

E. 21 has entered into an agreement to assume Thunder's right to purchase Tract A from Alb. South, and has a contract to purchase Tract B from Thunder.

F. Curb has entered into an agreement with Thunder to assume Thunder's right to purchase Tract C and Tract D from Alb. South (the "Curb Tracts").

G. In connection with the approval of the Bulk Plat a grading plan was prepared for the Properties by Mark Goodwin & Associates (the "Existing Grading Plan").

H. The Owners and 21 anticipate that the Existing Grading Plan for Tract B, which contemplates the import of fill material from the Curb Tracts and the Unplatted Tract will be modified, and as a result of the revised grading plan, Tract B will require the importation of less fill material. The parties desire to accommodate the transfer of material from the Curb Tracts and the Unplatted Tract to Tract B.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, the parties agree as follows:

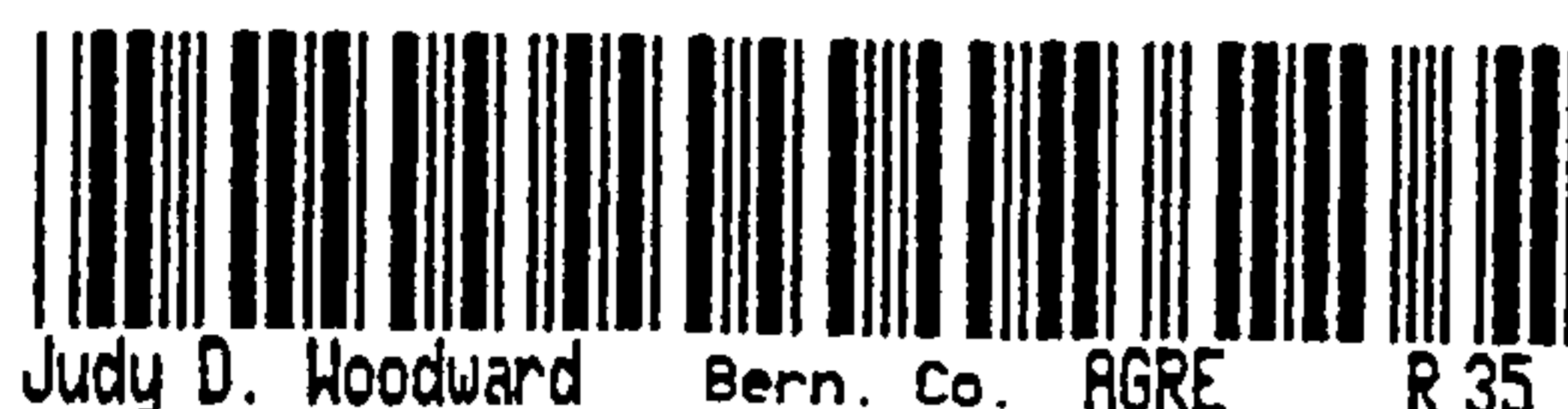
1. The Owners and 21 agree to retain Mark Goodwin & Associates ("Goodwin") to prepare a revised grading plan (the "Revised Grading Plan"). The Revised Grading Plan shall "balance" the material on the Properties if it is reasonably practicable to do so and if it can be done without creating inordinate expense to them. The cost of the preparation of



the Revised Grading Plan will be borne by the Owners and 21 in proportion to their actual ownership of the various tracts of land which are the subject of such plans (Tracts B, C, D and the Unplatted Tract).

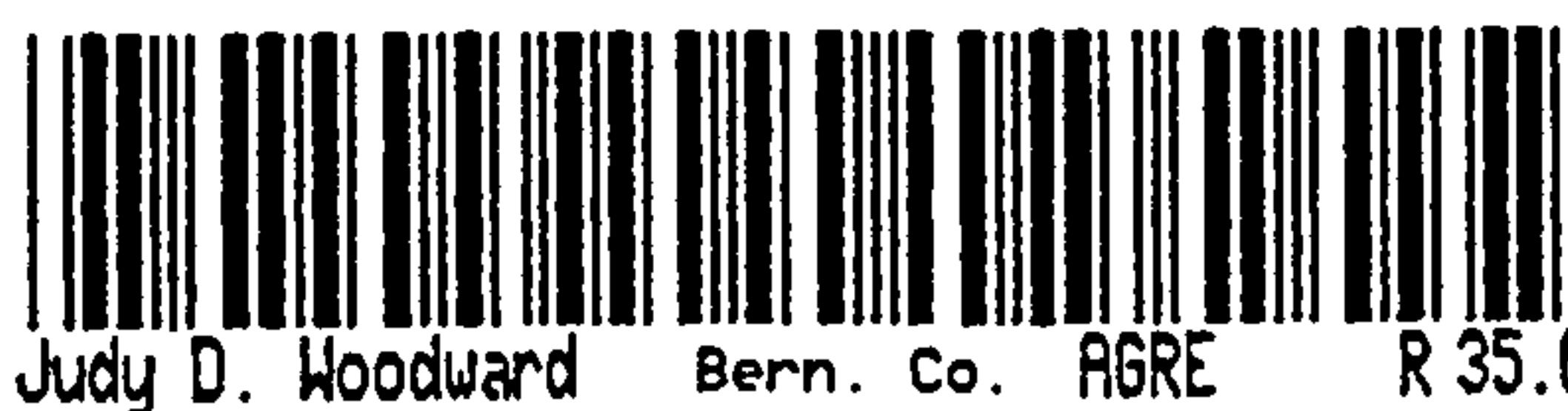
2. If the parties have not agreed upon the form and content of the Revised Grading Plan at such time as either 21 or an Owner notifies the other(s) that it is prepared to commence grading on its land within fifteen (15) days from the date of such notice, then such party may commence grading. If 21 is such party, it will be entitled, but not obligated, to remove fill from time to time from the Curb Tracts and from the Unplatted Tract in accordance with the Existing Grading Plan. If on the other hand as Owner is the first to commence grading, it will be required to remove fill from the Curb Tracts and the Unplatted Tract and deposit it on Tract B in accordance with the Existing Plan. In order to allow for the contemplated grading of the various tracts of land under this Agreement, the Owners and 21 grant each other the easements described in Section 3 below for the purpose of transferring material pursuant to the following terms:

a. In the event that 21 commences grading Tract B prior to any of the Owners grading Tract C, Tract D or the Unplatted Tract then 21 shall have the right to enter upon the Curb Tracts and the Unplatted Tract to remove fill material up to the maximum contemplated in the applicable grading plan and to export it to Tract B. 21 shall give the applicable Owner at least fifteen (15) days prior written notice prior to commencing such fill removal. The notice from 21 will go to the Owner



which holds record title to the land upon which 21 will commence its fill removal. If such notice relates to less than all of Tract C, Tract D and the Unplatted Tract, and following the delivery of such notice 21 elects to remove more fill from either of the other properties (again subject to the maximum amount contemplated in the applicable grading plan), then it will so notify the record Owner of such other property at least fifteen (15) days prior to its commencement of fill removal from such property. The Owner of the property from which 21 will remove fill will, at its expense, stake such land pursuant to the applicable grading plan and 21 shall remove the material in a manner so as to leave such land rough graded pursuant to the applicable grading plan. In the event that such Owner does not stake such land within the fifteen (15) day period, then 21 shall have the right to remove from such land, on any location on such land, up to the maximum amount of fill material identified on the applicable grading plan.

b. In the event that an Owner commences grading the Curb Tracts or the Unplatted Tract prior to 21 grading Tract B, such Owner shall give 21 fifteen (15) days prior written notice of its intention to commence such grading. 21, at its expense, shall stake Tract B pursuant to the applicable grading plan and the Owner shall deposit the imported materials on Tract B in a manner consistent with the applicable grading plan. When depositing the fill material on Tract B, such Owner shall compact the fill materials pursuant to the specifications of the applicable



grading plan and will obtain and deliver to 21 a soils report prepared by a licensed geo-technical engineer confirming that the compaction of such fill is in compliance with the applicable grading plan. In the event that 21 does not stake Tract B within the fifteen (15) day period, then the Owners shall have the right to deposit on Tract B the quantity of excess material identified on the applicable grading plan on any location on Tract B, subject again to the compaction and soils report requirements.

3. Grant of Easements

a. 21 hereby grants and conveys to the Owners an easement over, across, upon, under and through Tract B for the purpose of pedestrian and vehicle ingress and egress in connection with the importation of fill from Tracts C and D and the Unplatted Tract. This easement will only be enforceable against 21 if any one or more of the Owners who own Tracts C and D and the Unplatted Tract shall notify 21 that it will start grading of such property within fifteen (15) days thereafter, and at the time such notice is received 21 has not already commenced grading of Tract B. In that event this easement will then come into being and will be enforceable against 21 under the terms of this Agreement.

b. Each and all of the Owners hereby grant and convey to 21, for the benefit of Tract B, an easement over, across, upon, under and through Tracts C and D and the Unplatted Tract for pedestrian and vehicular ingress and egress and for the



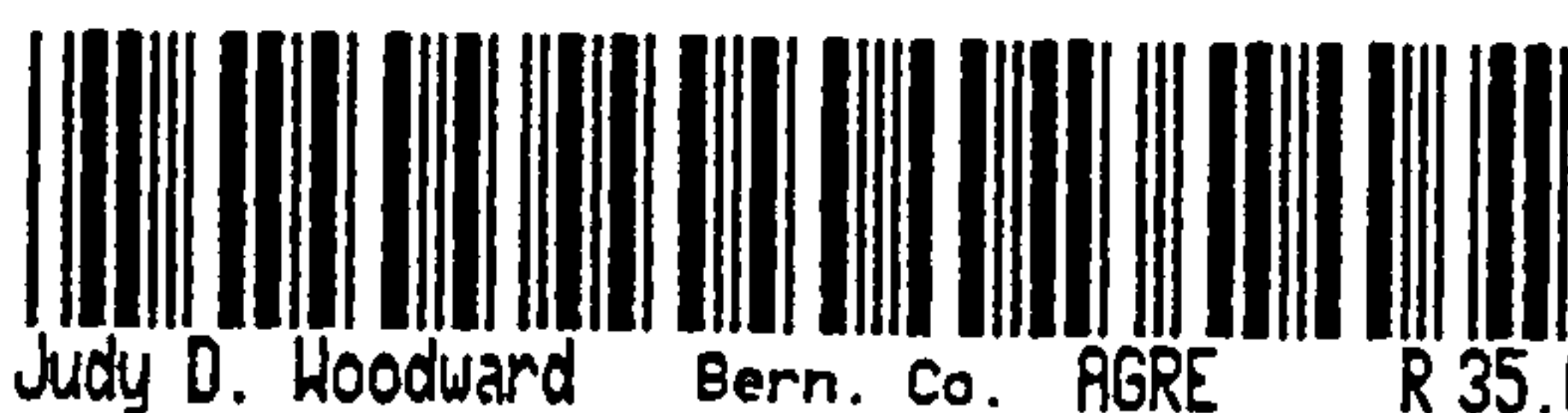
purpose of grading, excavation and removal of fill material from such property onto Tract B.

c. The foregoing easements are easements appurtenant, running with the land.

4. Liens. The Owners and 21 agree to keep one another's properties free of any lien and/or claim resulting from work performed on the other's property pursuant to this Agreement. The Owners and 21 (each an "Indemnitor") agree to indemnify one another and hold one another harmless from all claims and liabilities resulting from the entry by the Indemnitor on the other's property pursuant to this Agreement. To the extent applicable, if at all, all indemnifications contained in this Agreement are subject to and limited by the provisions of Sec. 56-7-1 of the New Mexico Statutes. Each party shall be entitled to post notices of non-responsibility for mechanics/materialmen's liens on their properties for work performed by others pursuant to §56-7-1 N.M.S.A., 1978 Comp., in conjunction with the matters covered by this Agreement.

5. Erosion Control. Following the completion of the removal of the material from the Curb Tracts and the Unplatted Tract, the Owner shall be responsible for all erosion control on the Curb Tracts and the Unplatted Tract. Following the deposit of the material on Tract B, 21 shall be responsible for all erosion control on the Tract B.

6. Release. Following completion of the grading, the Owners agree to execute a release of this Agreement.



7. Contractors and Insurance. All contractors performing the grading shall be duly licensed for such task by the State of New Mexico. All contractors entering upon the lands subject to this Agreement shall have at least \$1,000,000.00 in general liability insurance plus automobile liability insurance and workers compensation insurance in appropriate amounts and such insurance shall name the owner of the property being graded as a co-insured. Prior to beginning any work a certificate of insurance from each contractor performing work must be delivered to the appropriate party, in a form reasonably acceptable to such party. All such insurance policies must provide that they are not subject to cancellation without at least ten (10) days prior written notice to all named insureds. All insurance policies shall be from an insurance company reasonably acceptable to the additional insured.

8. Governing Laws. Except as otherwise specifically provided herein, this Agreement shall be governed by, construed and enforced in accordance with the law of the state of New Mexico.

9. Notices. All notices with respect to this agreeer. g and shall be delivered personally, or sent postage prepared by United S nail, return receipt requested, to the addresses set forth below or suc s hereafter specified in writing by one party to the other:

21 Housing Corporation
Building B
6700 Jefferson, NE
Albuquerque, New Mexico 87109

Thunder Development Ltd. Co.
c/o Tom Joseph



Albuquerque South Partnership
c/o Joe Werntz, Esq.
Moses, Dunn, Farmer & Tuthill
P. O. Box 27047
Albuquerque, New Mexico 87125

Curb, Inc.
Attn: Charles A. Haegelin
6301 Indian School Road, NE
Suite 208
Albuquerque, NM 87110

10. Entire Agreement. This Agreement contains the entire agreement between the parties hereto with respect to grading. No variations, modifications, supplements, waivers or changes herein or hereof shall be binding upon any party hereto unless set forth in a document duly executed by or on behalf of such party.

11. Severability. If any provision of this Agreement or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this Agreement and the application of such provision to other persons or circumstances shall not be affected thereby and such provisions shall be enforced to the greatest extent permitted by the law.

12. Attorneys Fees. In the event any action is instituted by any party for the purpose of enforcing or interpreting any provision of this Agreement, the prevailing party in such action shall be entitled to its reasonable attorney's fees and costs.

13. Binding Agreement. This Agreement shall inure to the benefit of and be binding upon the undersigned parties and their respective successors and assigns.

14. Authority. Each individual signing for each of the parties hereto warrants and represents that he/she is an authorized agent of such party, on whose behalf he/she is executing this Agreement, and is authorized to execute the same.



15. Further Assurances. Each party agrees to execute such other and further instruments and documents as may be necessary or proper in order to complete the transactions contemplated by this Agreement.

16. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, and said counterparts shall constitute but one and the same instrument which may sufficiently be evidenced by one counterpart.

21 HOUSING CORPORATION, a Nevada corporation

By: Raymond G. Smerge
Raymond G. Smerge
Its: Secretary

ALBUQUERQUE SOUTH PARTNERSHIP, a New Mexico general partnership

By: _____

THUNDER DEVELOPMENT LTD., CO., a New Mexico limited liability company

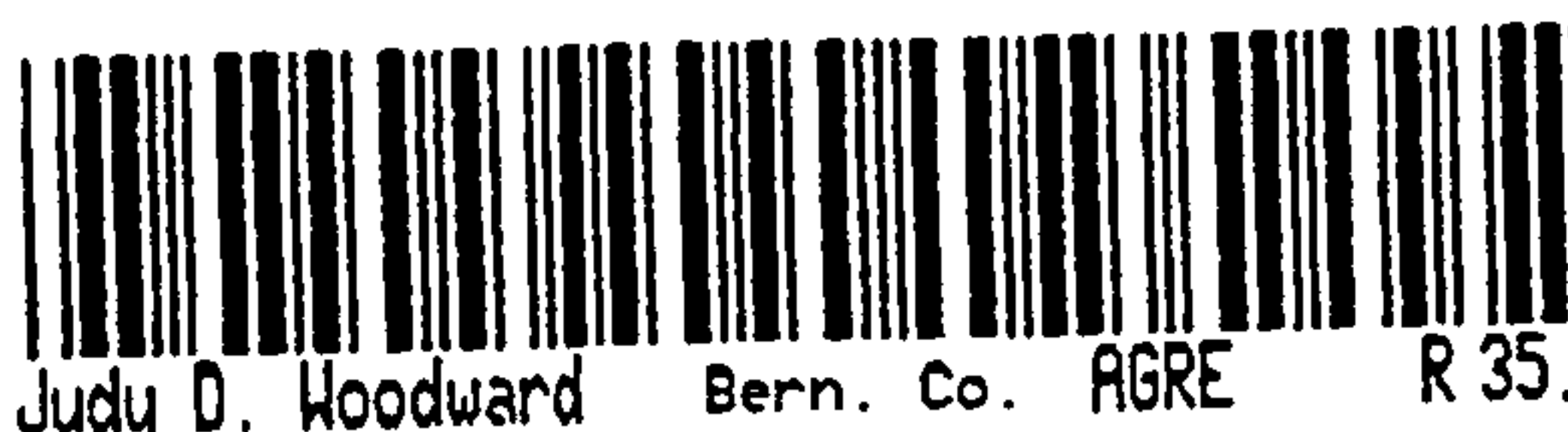
By: _____

Its: _____

CURB, INC., a New Mexico corporation

By: _____

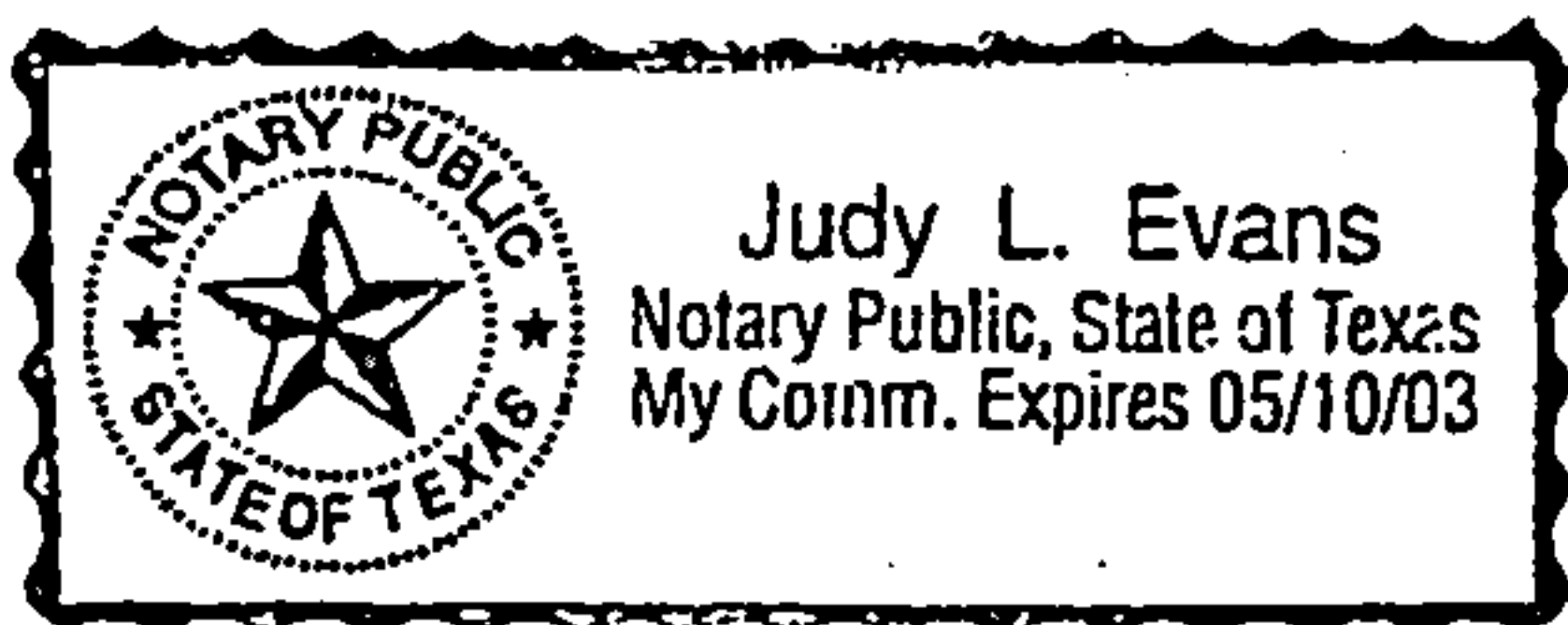
Its: _____



STATE OF TEXAS }
COUNTY OF DALLAS }

On October 20, 1999, before me, Judy L. Evans, a Notary Public in and for said County and State, personally appeared Raymond G. Smerge, Secretary of 21 HOUSING CORPORATION, a Nevada corporation, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.



Judy L. Evans
Notary Public



Judy D. Woodward

Bern. Co.

AGRE

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15. Further Assurances. Each party agrees to execute such other and further instruments and documents as may be necessary or proper in order to complete the transactions contemplated by this Agreement.

16. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, and said counterparts shall constitute but one and the same instrument which may sufficiently be evidenced by one counterpart.

21 HOUSING CORPORATION, a Nevada corporation

By: _____
Raymond G. Smerge
Its: Secretary

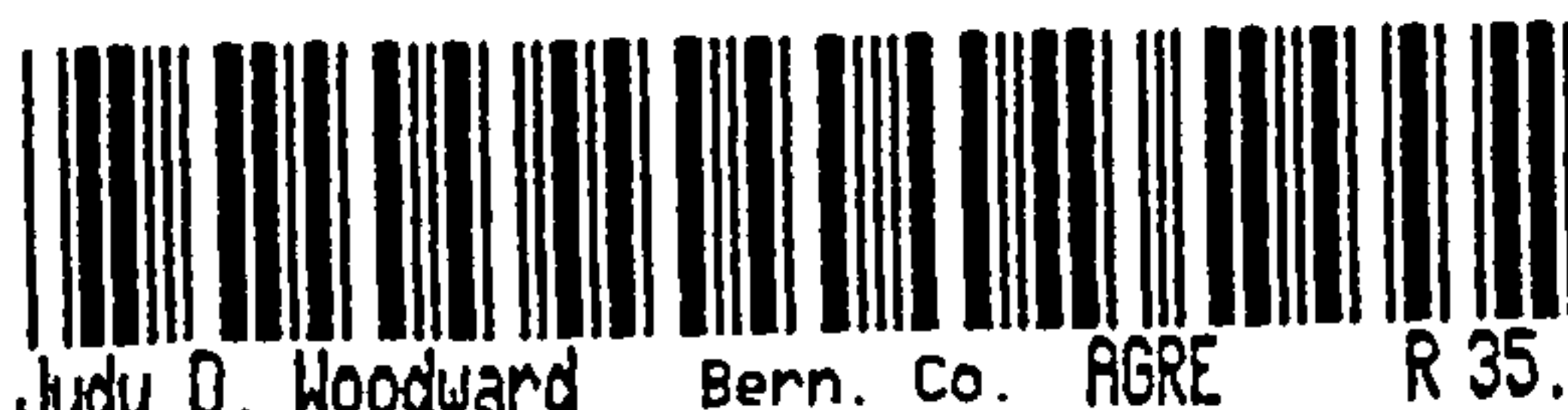
ALBUQUERQUE SOUTH PARTNERSHIP, a
New Mexico general partnership
ALJAY, INC., co-managing partner
By: Joseph L. Wendt
Its President

THUNDER DEVELOPMENT LTD., CO., a
New Mexico limited liability company

By: _____
Its: _____

CURB, INC., a New Mexico corporation

By: Charles A. Heggli
Its: President



STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me on Oct 20, 1999, by ARTAY, INC by Joseph L. Weitz of Albuquerque South Partnership, a New Mexico general partnership.

Robert J. Schaefer
Notary Public



My Commission Expires:
OFFICIAL SEAL
ROBERT J. SCHAEFER
NOTARY PUBLIC - NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires 3/28/2002

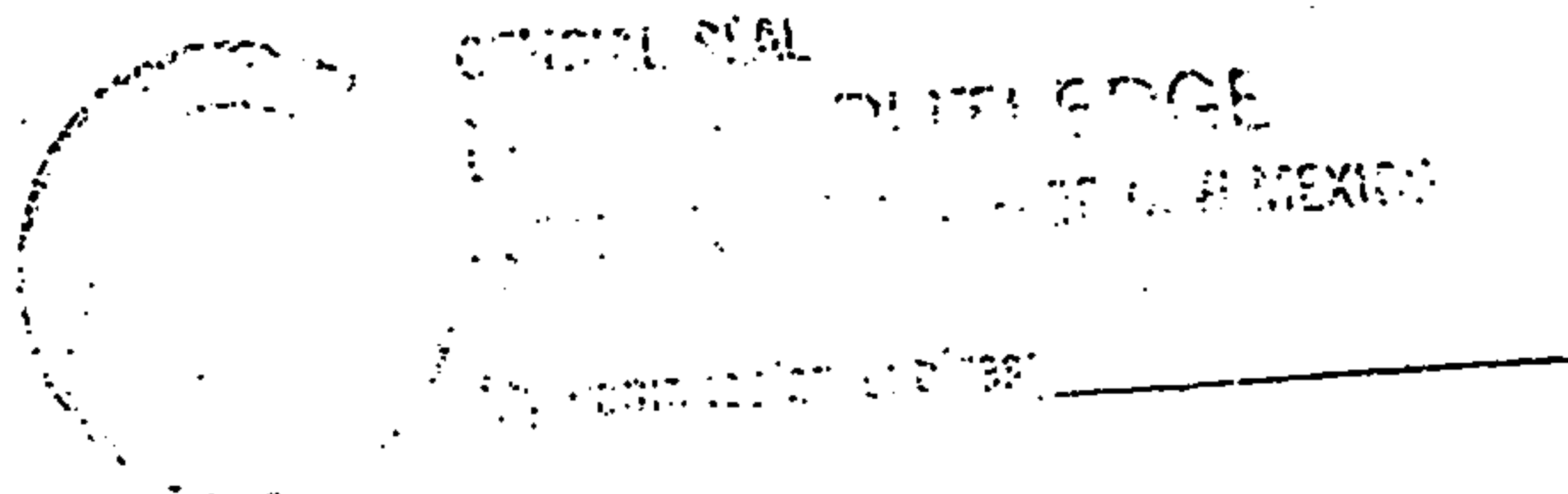
STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me on October 21, 1999, by Thomas Joseph, manager of Thunder Development, Ltd., Co., a New Mexico limited liability company.

Doreen R. Kelly
Notary Public

My Commission Expires:

4-5-03



Judy D. Woodward

Bern. Co. AGRE

R 35.00

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STATE OF NEW MEXICO)
)ss.
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me on Oct 20, 1999, by Charles A. Haegelin, President of Curb, Inc., a New Mexico corporation.


Notary Public

My Commission Expires:



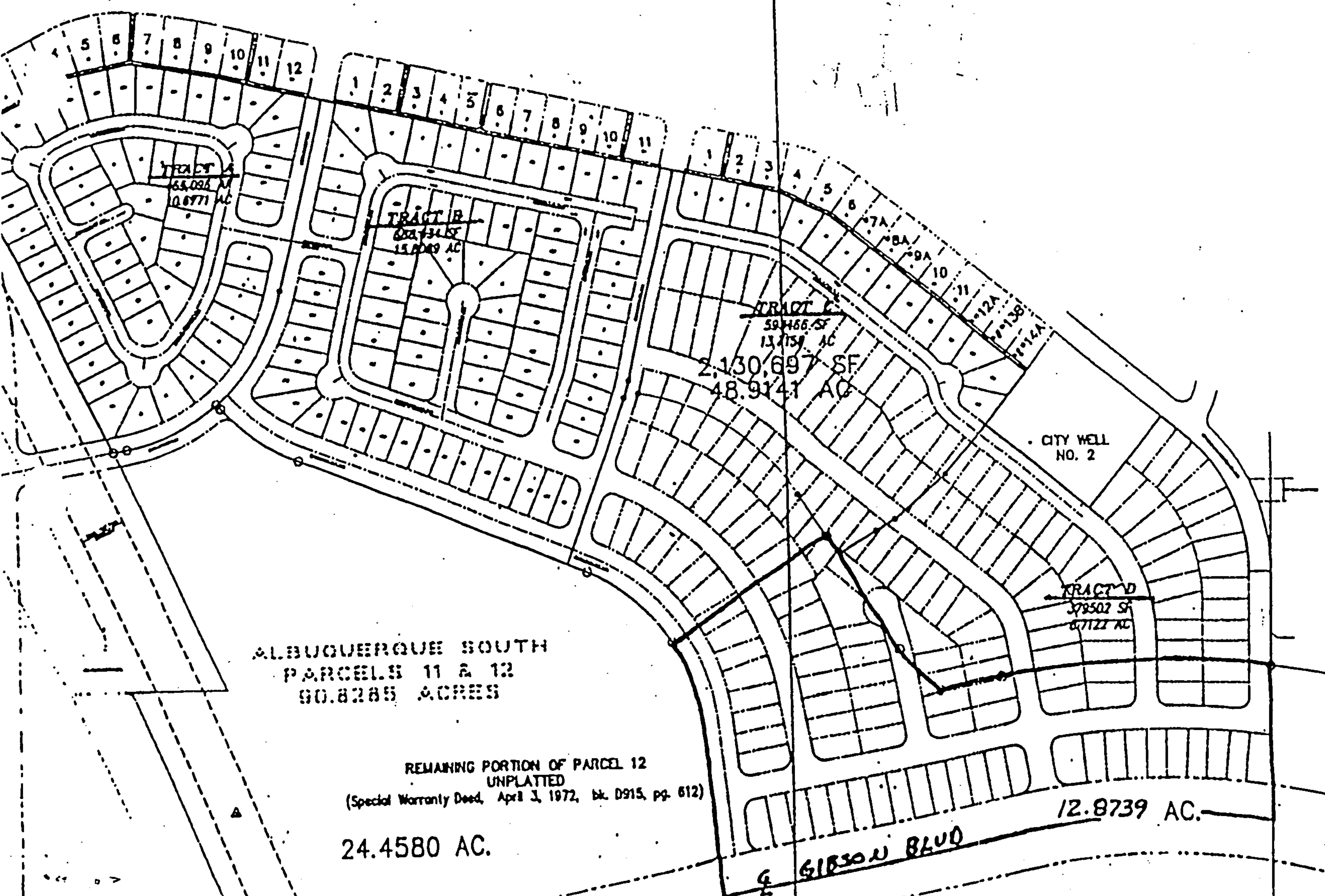
OFFICIAL SEAL
ROBERT J. SCHAEFER
NOTARY PUBLIC - NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires 5/28/2002

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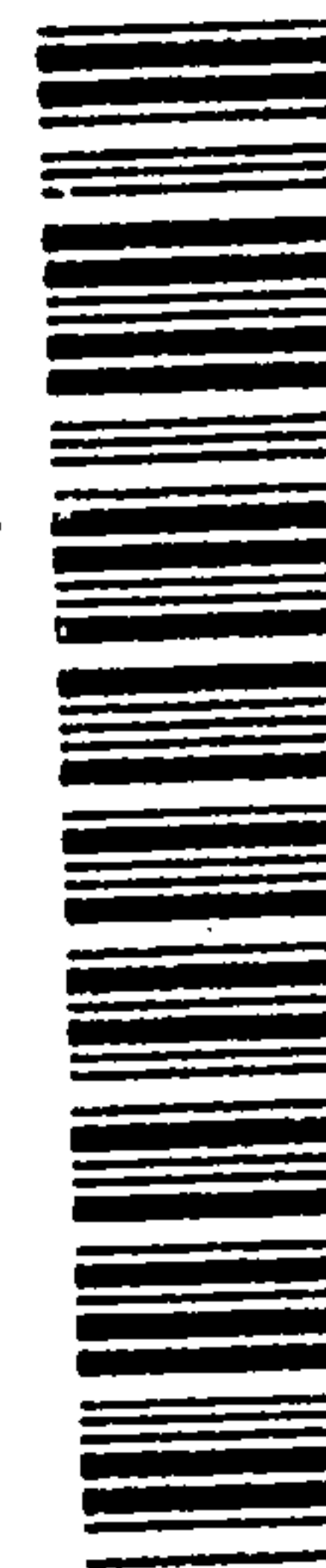


Judy D. Woodward Bern. Co. AGRE R 35.00

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Judy D. Woodward Bern. Co. AGRE R 35.88

EXHIBIT "A"



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 14, 2001

(Revised)

Gregory J. Krenik, P.E.
Mark Goodwin & Assoc.
P.O. Box 90606
Albuquerque, New Mexico 87199

**RE: Grading and Drainage Certification
Submitted for Release of Financial Guaranty
El Rancho Grande I Units 1, 2, & 3 (M-9/D19)
Engineer's Certification Stamp Dated 5/22/2001**

Dear Mr. Krenik:

Based upon the information provided in your submittal dated March 8, 2001 for the Engineers Certification of El Rancho Grande I Units 1, 2, & 3, and also based upon your submittal dated May 22, 2001, for the Grading Certification for the pond re-evaluation, the above referenced project is adequate to satisfy the Grading and Drainage Certification requirements for release of financial guaranty.

If you have any questions, please call me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Public Works Department

C: Arlene Portillo, PWD – #645681, #645682, and #645683
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: El Rancho Grande, Units 1 & 2 1/3 ZONE ATLAS#: M-9 / D019
 DRB#: _____ EPC# _____ WORKORDER#: _____
 LEGAL DESCRIPTION: Tracts C & D, ABQ South, Unit 4, TRACT E, ABQ SOUTH, UNIT 1 AND PARCE 4, EL RANCHO
 CITY ADDRESS: GRANDE I

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Curb, Inc.	CONTACT:	Chuck Haegelin
ADDRESS:	6301 Indian School Road NE	PHONE:	881-9190
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CONTACTOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL
☒ ENGINEER'S CERTIFICATION *FOR POND RE-EVALUATION*
☐ OTHER
☐ EASEMENT VACATION

PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED

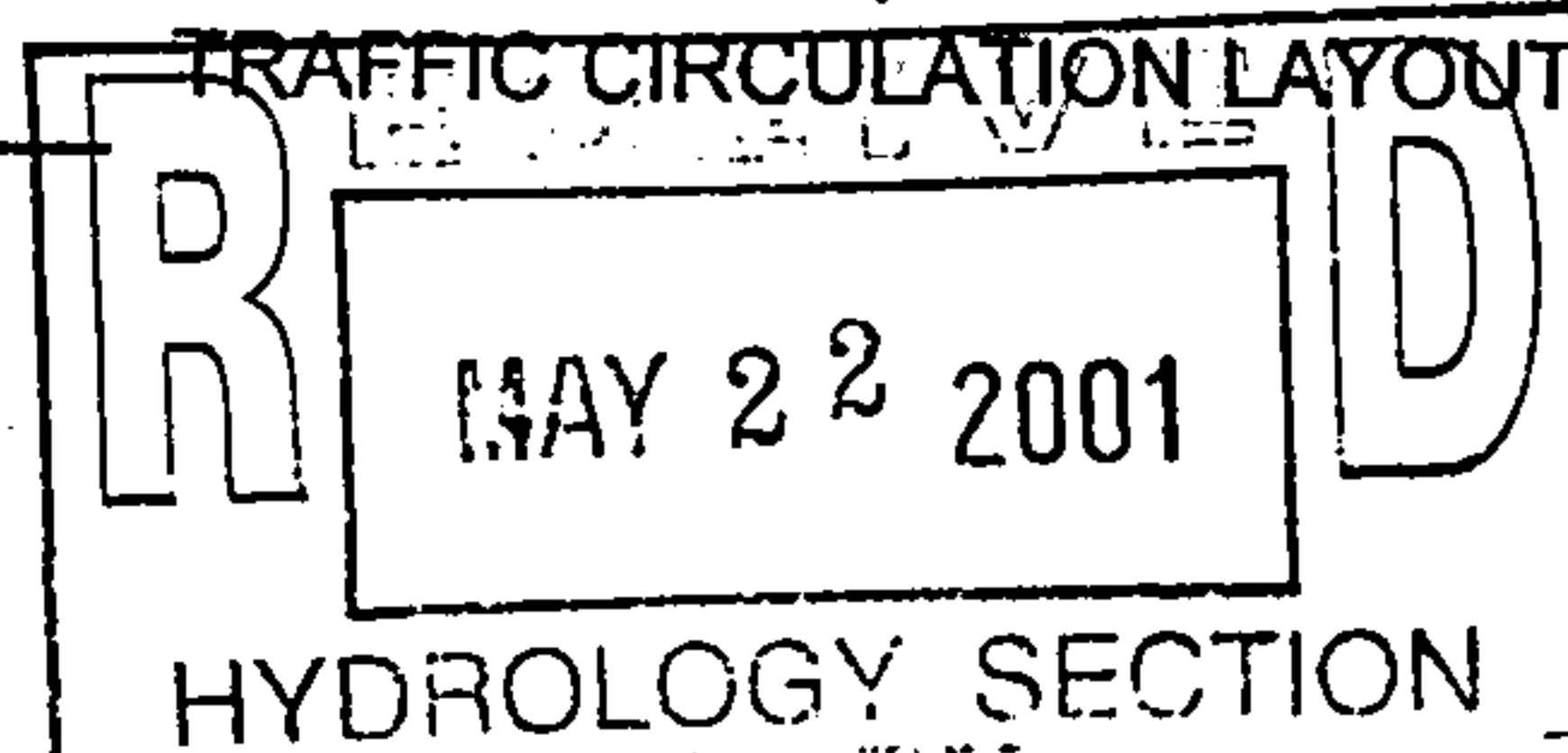
CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER - *GRADING CERTIFICATION FOR POND RE-EVALUATION*
☒ RELEASE OF FINANCIAL GUARANTY *IF THERE IS ONE*

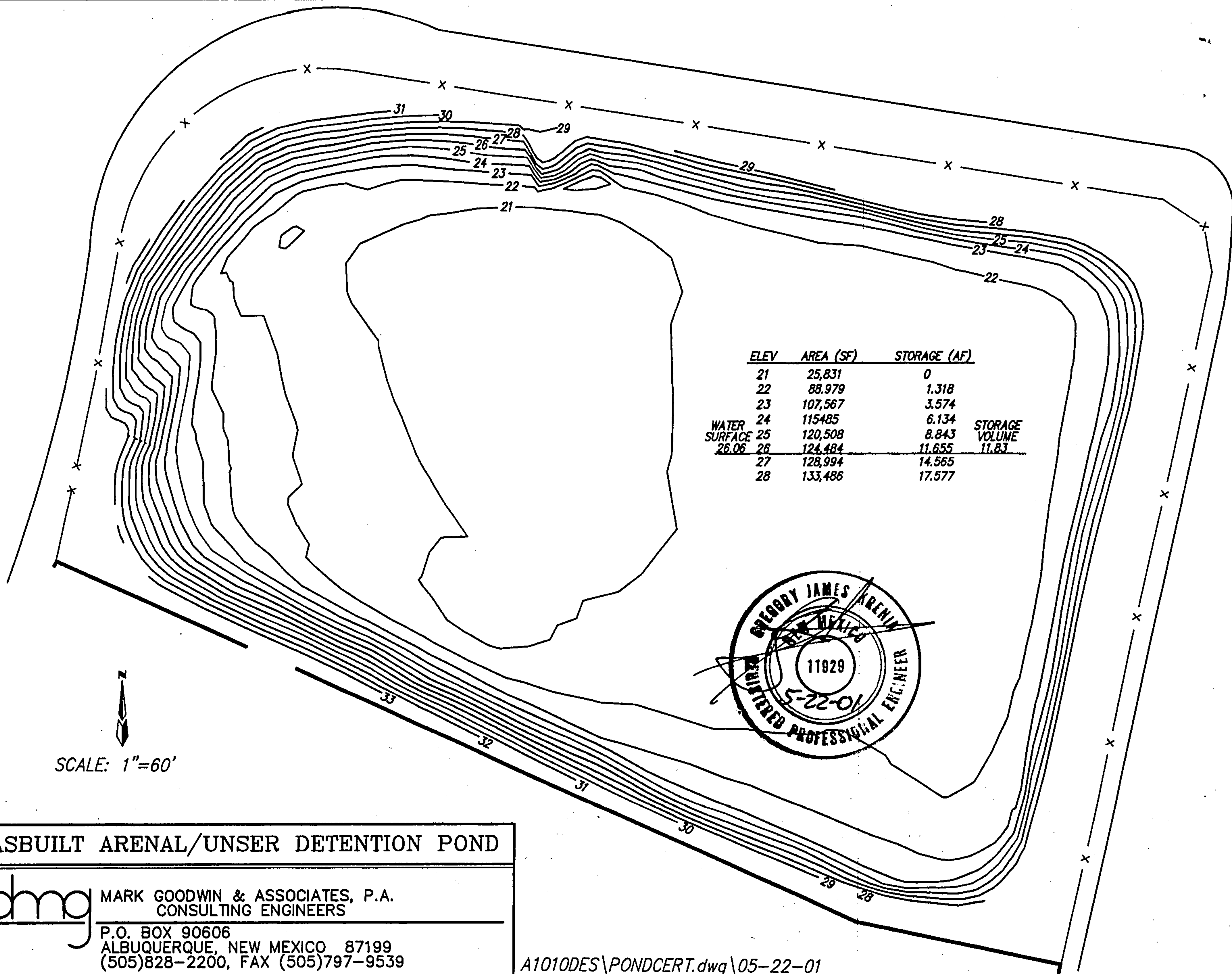
DATE SUBMITTED: 5-23-01

BY: _____

Gregory J. Krenik PE

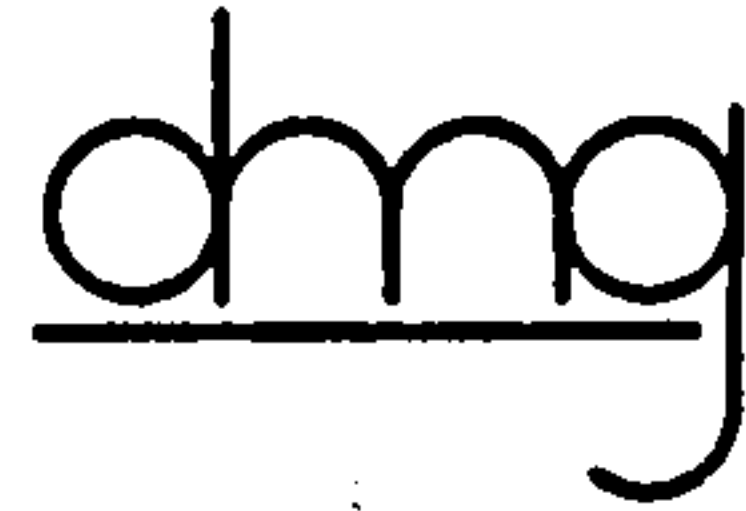


ALREADY RELEASED!



	ELEV	AREA (SF)	STORAGE (AF)	
	21	25,831	0	
	22	88,979	1.318	
	23	107,567	3.574	
	24	115,485	6.134	
WATER	25	120,508	8.843	STORAGE
SURFACE	26	124,484	11.655	VOLUME
26.06	27	128,994	14.565	
	28	133,486	17.577	

ASBUILT ARENAL/UNSER DETENTION POND



MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

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City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 5, 2000

Gregory J. Krenik, P.E.
Mark Goodwin & Associates, PA
P. O. Box 90606
Albuquerque, New Mexico 87199

RE: Drainage Report Re-Evaluating the Arenal/Unser Detention Pond for El Rancho Grande I Subdivision, and Desert Springs Subdivision, Unit Three, (M10/D8), Engineer's Stamp Dated 5/12/00.

Dear Mr. Krenik:

Based on the information provided with the submittal of May 12, 2000, the above referenced Report is approved.

Since the final improvements for the Arenal/Unser detention pond are required by the Infrastructure List for Desert Springs Subdivision Unit 4, your revised configuration for the pond is acceptable for the change order to the Work Order plans.

Since the final volume of the Arenal/Unser pond is over 10 acre-feet, approval from the State Engineer's Office for the pond is also required. Please provide me with a copy of the state's approval letter for my files.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Bo K. Johnson, P.E., Curb Inc.
File

Report filed w/ MASTER PLAN M10/D10



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 7, 2001

Gregory J. Krenik, PE
Mark Goodwin & Associates
P.O. 90606
Albuquerque, NM 87199

**Re: Backyard ponds on Lot 9, Block 1 and Lot 26, Block 3, El Rancho 1, Unit 2
Engineer's Certification dated 10-19-01 (M9/D19)**

Dear Mr. Krenik,

Based upon the information provided in your submittal dated 10-10-01, your certification is approved in order to place backyard ponds on the above referenced lots.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

October 19, 2001

Mr. Brad Bingham, PE
Senior Engineer, Hydrology Division
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: El Rancho Grande I, Unit 2 - Required Backyard Ponds

Dear Mr. Bingham:

The owner of the referenced project wishes to have backyard ponds on two (2) lots; Lot 9-P1, Block 1 and Lot 26-P1, Block 3. Also known as 1600 North Canyon Road SW and 1700 Desert Ridge Road SW.

The pads were finished higher than designed and we do not want the backyard run off to cross the property line. The houses will gutter runoff from the roof to the front of the house. Only the backyards will drain to the ponds.

Using the information from the El Rancho Grande I, Units 1, 2 & 3 Drainage Report:

Total area of Units 1 & 2 = 35.0387 AC
Pad & Drive area = 11.0193 AC
Row area = 69.480 AC
This leaves 17.0714 AC of TYPE B Land Treatment

Total Q per lot = 35.2 / cfs / 179 lot = 0.1967 cfs / lot
Area of TYPICAL backyard = 30' x 45' = 1.350sf = 0.031 AC
Runoff to be ponded in backyards

- percentage per lot of backyard is of Type B per lot = .0954 AC
- % = 0.031 / 0.0954 = 0.325 = 32.52%

Total V per lot = 0.9688 ac-ft / 179 lots = 0.0054 ac-ft / lot = 235.76 cf / lot

V per backyard = 235.76 (0.325) = 76.62 cf / lot

Use two 100yr - 6hr storms for total pond volume

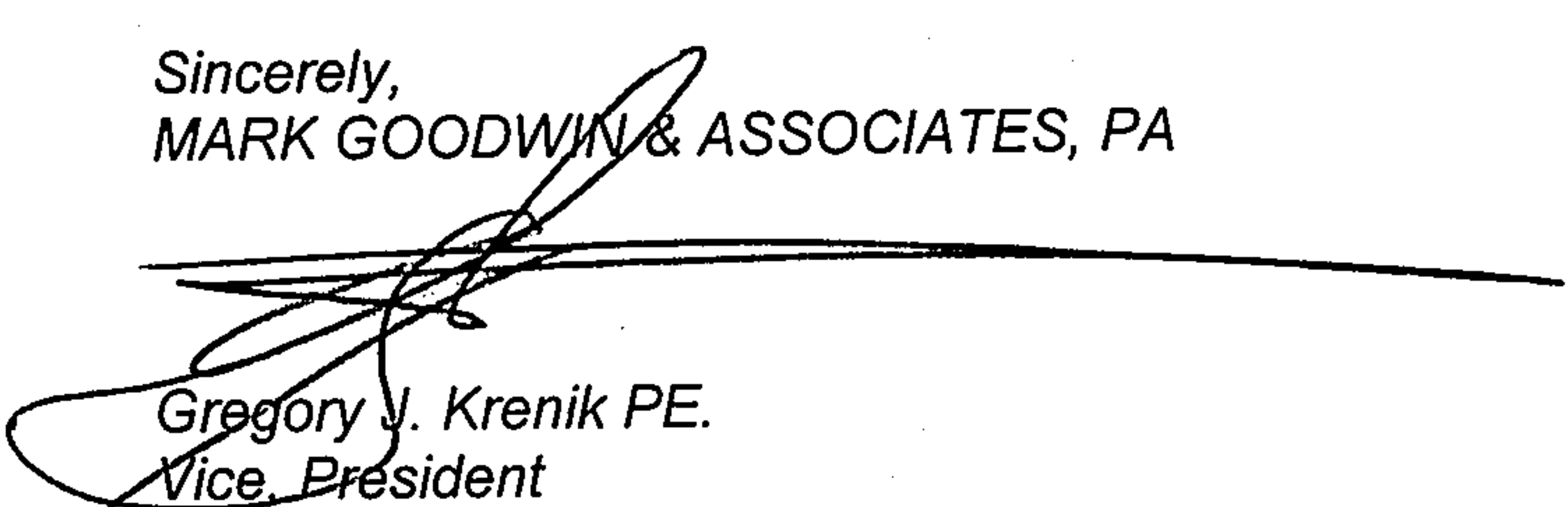
$$V = 2(76.62) \\ = 153.24cf$$

Used 8" deep pond, 10' wide & 23' long
Total volume provided = 154.10 cf

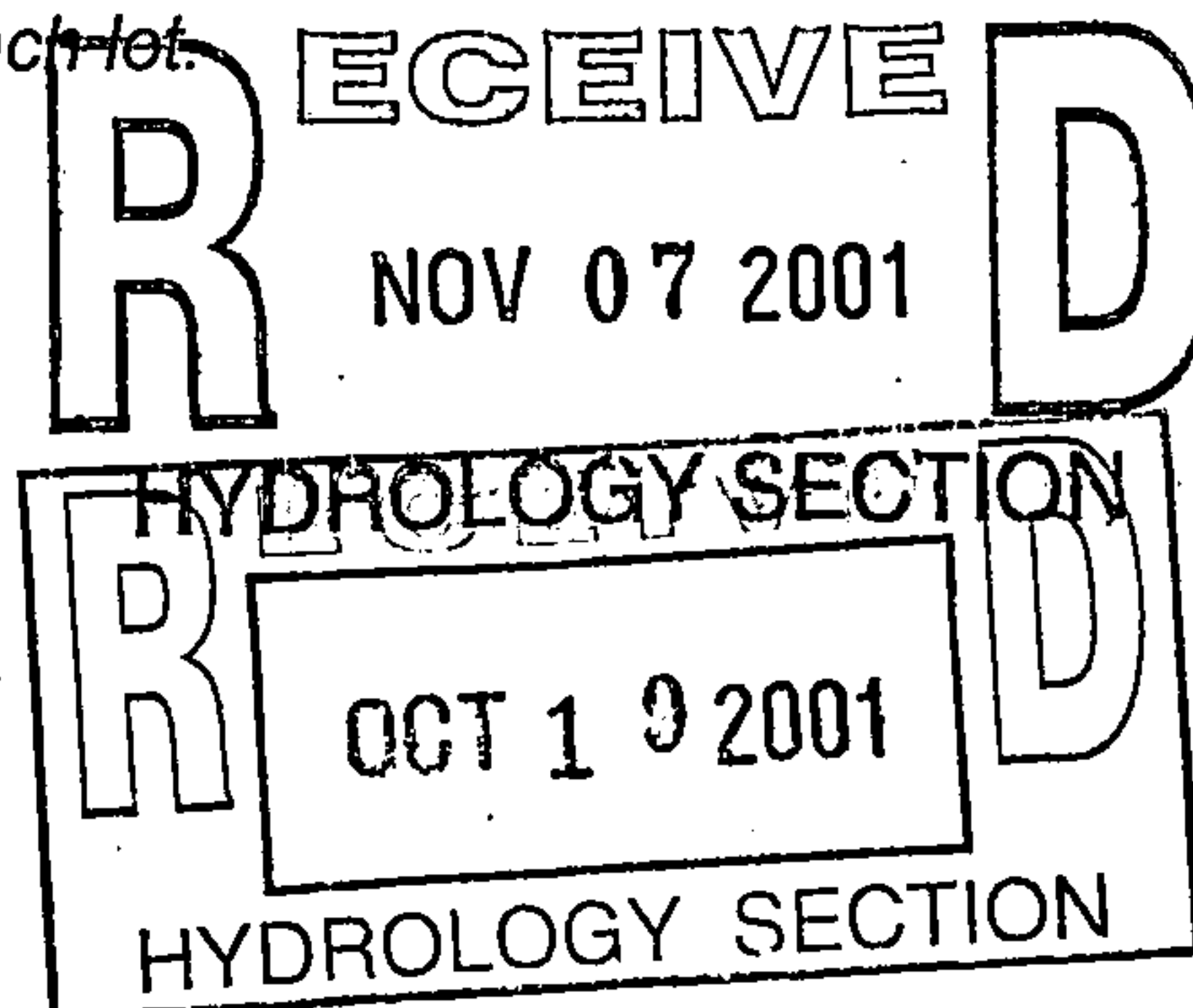
See attached plan calculations for pond locations on each lot.

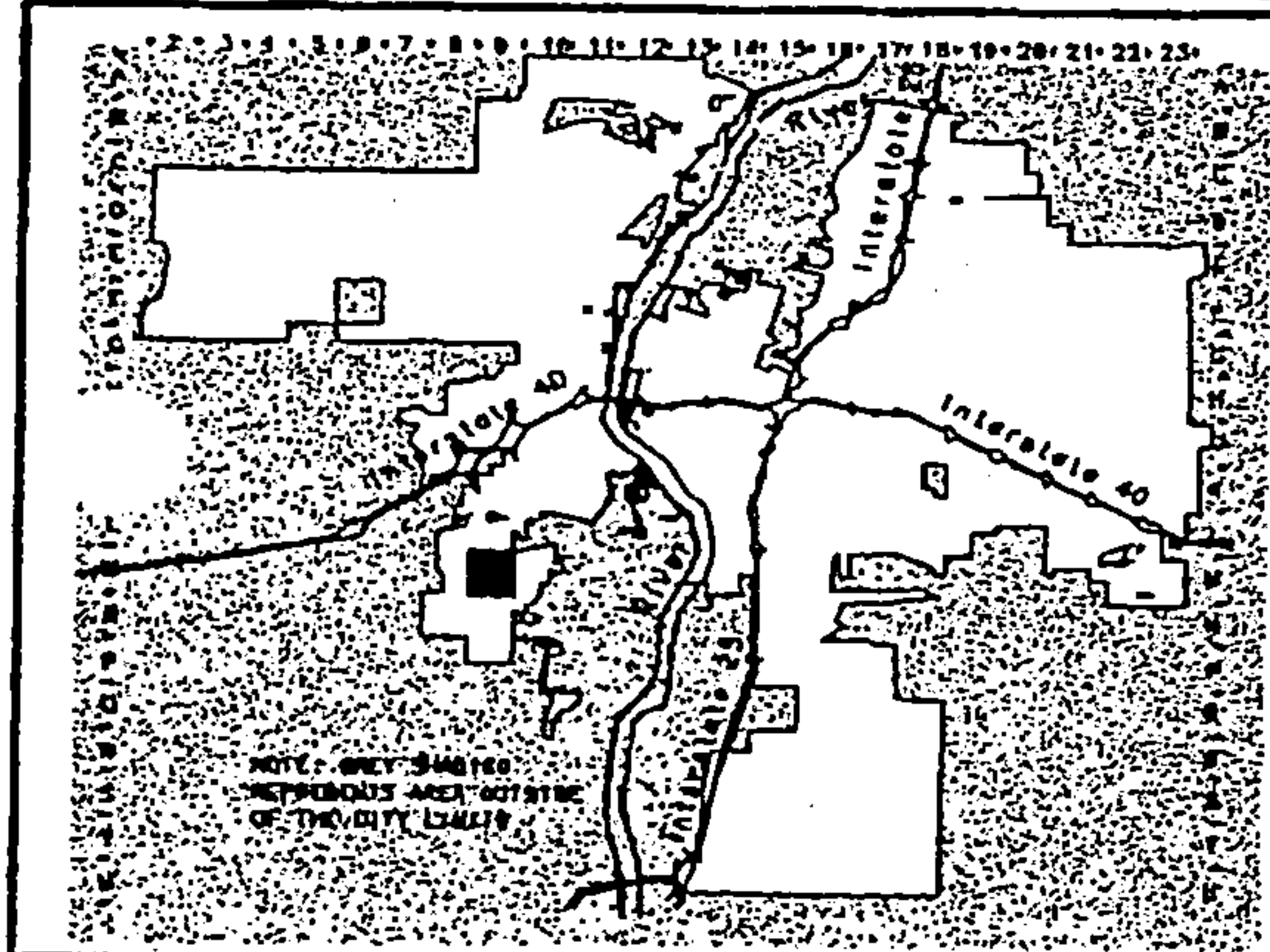
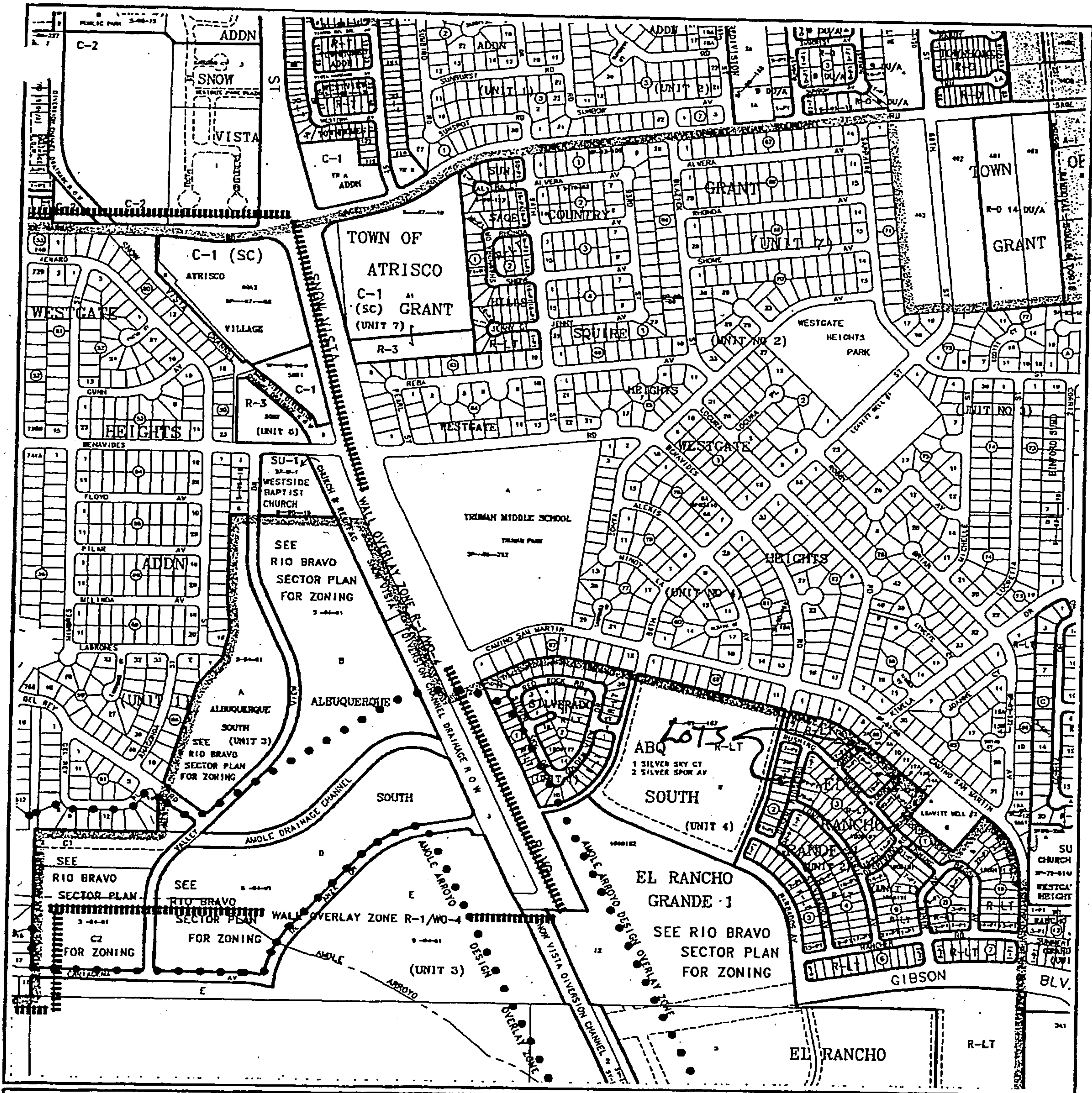
Call with any questions.

Sincerely,
MARK GOODWIN & ASSOCIATES, PA

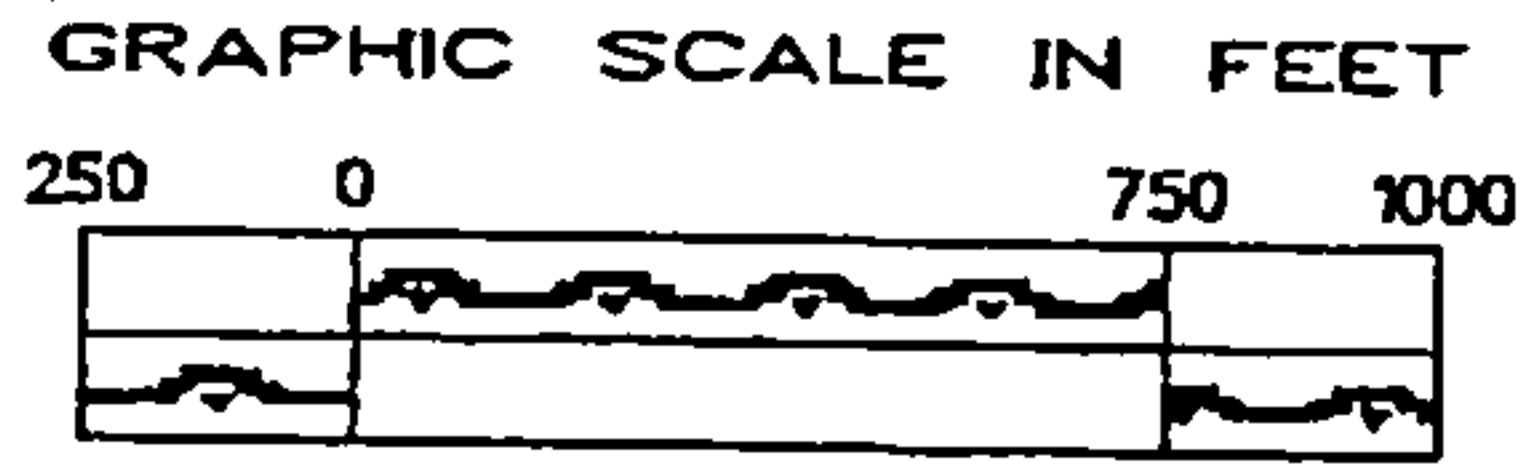

Gregory J. Krenik PE.
Vice President

GJK/bm





CITY OF
Albuquerque
A G I S
PLANNING DEPARTMENT
© Copyright 2001



Zone Atlas Page
M-9-Z
Map Amended through July 18, 2001

START TIME=0.0
***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 BACKYARDS
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.026674 SQ MI
PER A=0 B=100 C=0 D=0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994

RUN DATE (MON/DAY/YR) = 10/19/2001

START TIME (HR:MIN:SEC) = 08:19:18

USER NO.=

M_GOODWN.I01

INPUT FILE = ERGIBACK.DAT

START

TIME=0.0

***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 BACKYARDS

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400

HOURS

	.0000	.0013	.0027	.0041	.0055	.0069
.0084						
	.0099	.0115	.0131	.0147	.0164	.0181
.0199						
	.0217	.0236	.0256	.0276	.0296	.0318
.0340						
	.0363	.0387	.0412	.0438	.0465	.0493
.0523						
	.0554	.0587	.0622	.0675	.0731	.0791
.0920						
	.1208	.1651	.2289	.3159	.4302	.5759
.7574						
	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.5201						
	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.8130						
	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
1.9736						
	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0059						
	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0308						
	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0514						
	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0690						
	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0846						
	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.0985						
	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1112						
	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1229						
	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1337						
	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
2.1439						
	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520
2.1533						
	2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
2.1623						
	2.1635	2.1648	2.1660	2.1672	2.1684	2.1696

2.1708		2.1720	2.1731	2.1743	2.1754	2.1766	2.1777
2.1789							
		2.1800	2.1811	2.1822	2.1833	2.1844	2.1855
2.1866							
		2.1876	2.1887	2.1897	2.1908	2.1918	2.1929
2.1939							
		2.1949	2.1960	2.1970	2.1980	2.1990	2.2000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.026674 SQ MI
 PER A=0 B=100 C=0 D=0
 TP=0.1333 HR MASS RAINFALL=-1

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 65.545 CFS UNIT VOLUME = 1.000 B =
 327.55 P60 = 1.9000
 AREA = .026674 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

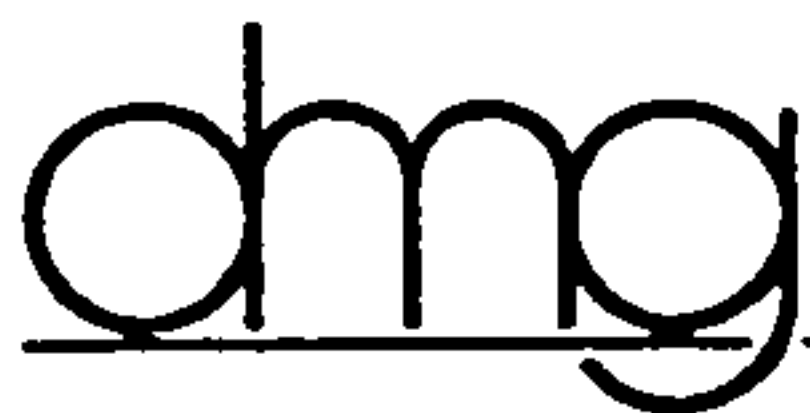
PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .68101 INCHES = .9688 ACRE-FEET
 PEAK DISCHARGE RATE = 35.21 CFS AT 1.533 HOURS BASIN
 AREA = .0267 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:19:18



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____

REVISED 4-17-00 SHEET 1 OF

- THIS PROJECT IS PART OF THE SILVERADO SUBDIVISION MASTER DRAINAGE REPORT (11/9/02)
- THIS PROJECT WILL DESIGN THE DOWNSTREAM IMPROVEMENTS (ENLARGE DETENTION POND AND MASTER PLAN STORMDRAIN FOR AREA NORTH OF GIBSON BETWEEN 98TH AND UNSER) FROM THE SILVERADO REPORT PREPARED BY MARK GOODWIN AND ASSOCIATES.
- THIS PROJECT CONSISTS OF TRACTS C + D OF THE BULK PLAT FOR ALBUQUERQUE SOUTH AND PARCEL 4 OF THE BULK PLAT FOR EL RANCHO GRANDE I. ALSO INCLUDED IS TRACT E OF ALBUQUERQUE SOUTH UNIT 1.

• TOTAL SITE = TRACT C + TRACT D + PORTION OF PARCEL 4
= 13.7159 + 8.7122 + 13.1206
= 35.5487 AC ~ 0.5100 AC (WID TO PARK) = 35.6387

• NUMBER OF LOTS = 192

- AREA THAT WILL BE SEPARATED OUT TO DETERMINE PER LOT RUNOFF, (BARBADOS + GIBSON R/W)

A = 1.2644 + 2.2562 = 3.5206 AC NOT INCLUDED IN PER LOT A.

• PADS = 60x35 = 2100

• DRIVE PAD = 20x20 = 400

2500 x 192 = 11,0193 AC TYPE "D"

- AREA OF ROW IN SUBDIVISION

6.9480 AC 80% "D" = 5.5584 AC, 20% "B" 1.3896 AC

TYPE "D"
11.0193 AC
5.5584 AC
16.5777 AC
-1.0078 AC
15.5699 AC
52.77 %

TYPE "B"
13.5508 AC = 24.5761
1.3896 AC = 6.9480
14.9404 AC = 31.5181 + 3.5206 = 35.6387
-1.0066 AC = 2.0144 AC SEE SHEET 3
13.9338 AC = 29.5037 AC
47.23 %

FROM AH440 OUTPUT SHEETS 23-25

Q = 97.62 CFS

192 - 13 = 179 LOTS

Q per lot = 97.62 / 179 = 0.5454 CFS/LOT

START TIME=0.0
***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 PER LOT RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.046100 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 02/15/2000
 START TIME (HR:MIN:SEC) = 08:55:49 USER NO.= M_GOODWN.I01
 INPUT FILE = ERGI.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 PER LOT RUNOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2						
DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
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2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.046100 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B = 526.28
 AREA = .024327 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B = 327.55
 AREA = .021773 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

25

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FeET
PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:55:49



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 13, 2001

Gregory J. Krenik, P.E.
Mark Goodwin & Assoc.
P.O. Box 90606
Albuquerque, New Mexico 87199

Re: Grading and Drainage Certification
El Rancho Grande I Units 1, 2, & 3 (M-9/D19)
Submitted for Release of Financial Guaranty
Engineers Stamp dated 8/11/2000
Engineers Certification Dated 3/7/2001

Dear Mr. Krenik:

Based upon the information provided in your submittal dated 3/8/2001, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirements for Release of Financial Guaranty for Units 1, 2, and 3.

If I can be of further assistance, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Senior Civil Engineer, Hydrology
Public Works Dept./C.O.A.

C: Arlene Portillo, PWD – #645681, #645682, and #645683
✓file

DRAINAGE INFORMATION SHEET

PROJECT TITLE: El Rancho Grande, Units 1 & 2 1/3 ZONE ATLAS#: M-9 / D019
DRB#: _____ EPC# _____ WORKORDER#: _____
LEGAL DESCRIPTION: Tracts C & D, ABQ South, Unit 4, TRACT E, ABQ SOUTH, UNIT 1 AND PARCE 4, EL RANCHO
CITY ADDRESS: GRANDE I

ENGINEERING FIRM:	<u>Mark Goodwin & Associates, PA</u>	CONTACT:	<u>Gregory J. Krenik</u>
ADDRESS:	<u>P.O. Box 90606, Albuquerque, NM 87199</u>	PHONE:	<u>828-2200</u>
OWNER:	<u>Curb, Inc.</u>	CONTACT:	<u>Chuck Haegelin</u>
ADDRESS:	<u>6301 Indian School Road NE</u>	PHONE:	<u>881-9190</u>
ARCHITECT:	<u>N/A</u>	CONTACT:	_____
ADDRESS:	_____	PHONE:	_____
SURVEYOR:	<u>N/A</u>	CONTACT:	_____
ADDRESS:	_____	PHONE:	_____
CONTACTOR:	<u>N/A</u>	CONTACT:	_____
ADDRESS:	_____	PHONE:	_____

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL
☒ ENGINEER'S CERTIFICATION FOR POND RE-EVALUATION
☐ OTHER
☐ EASEMENT VACATION

PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED

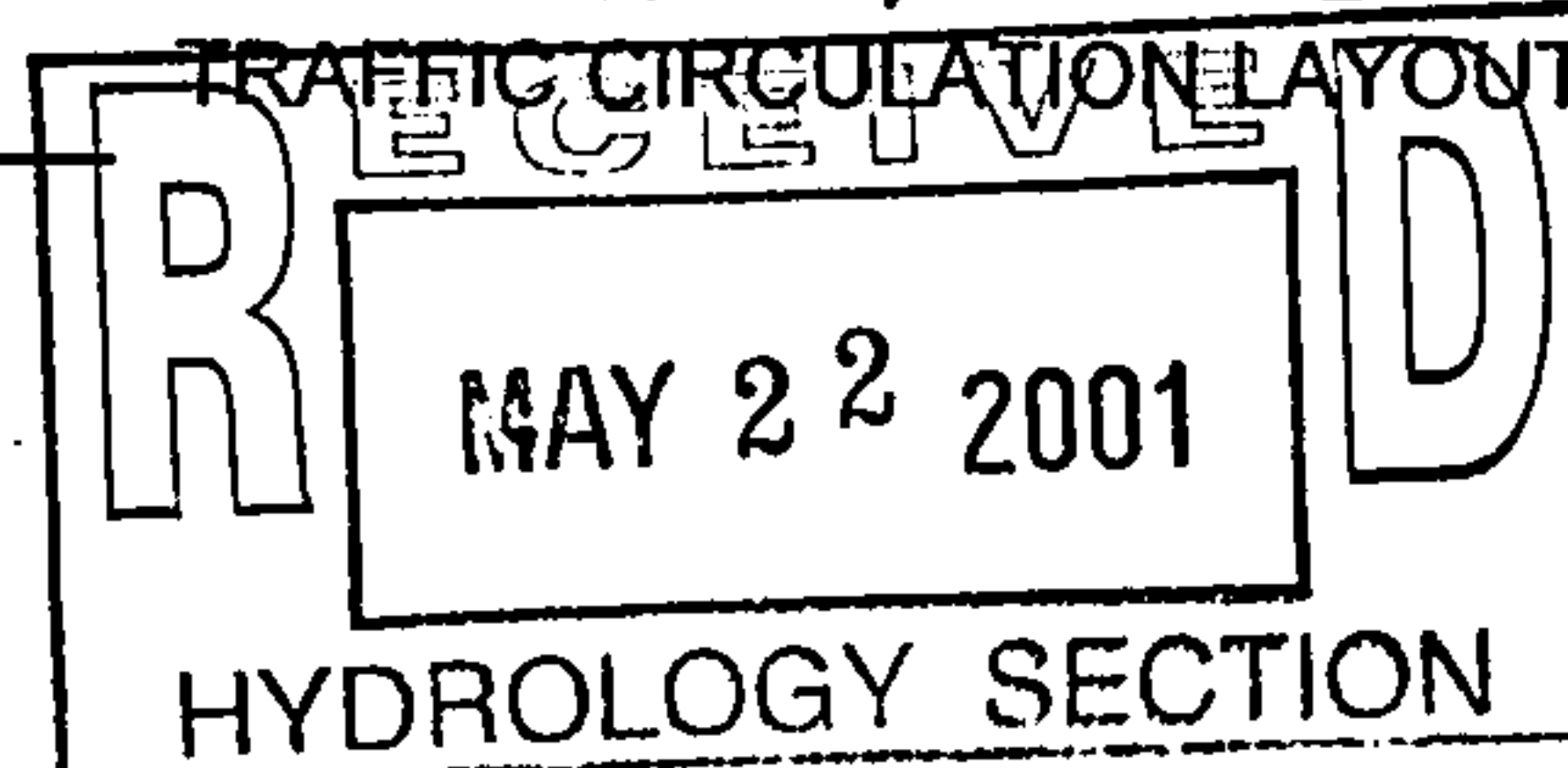
CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER - GRADING CERTIFICATION FOR POND RE-EVALUATION
☒ RELEASE OF FINANCIAL GUARANTY IF THERE IS ONE

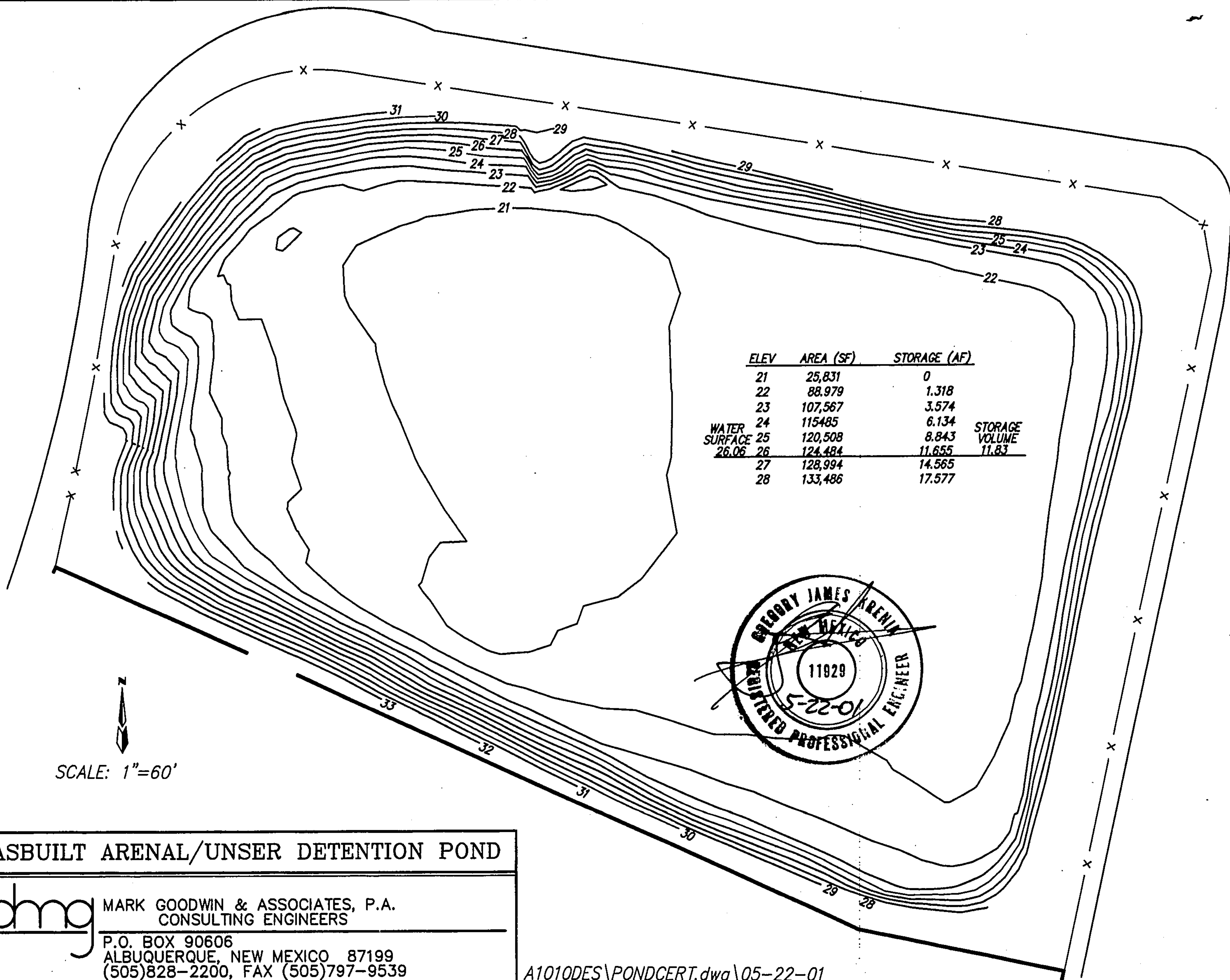
DATE SUBMITTED: 5-23-01

BY: _____

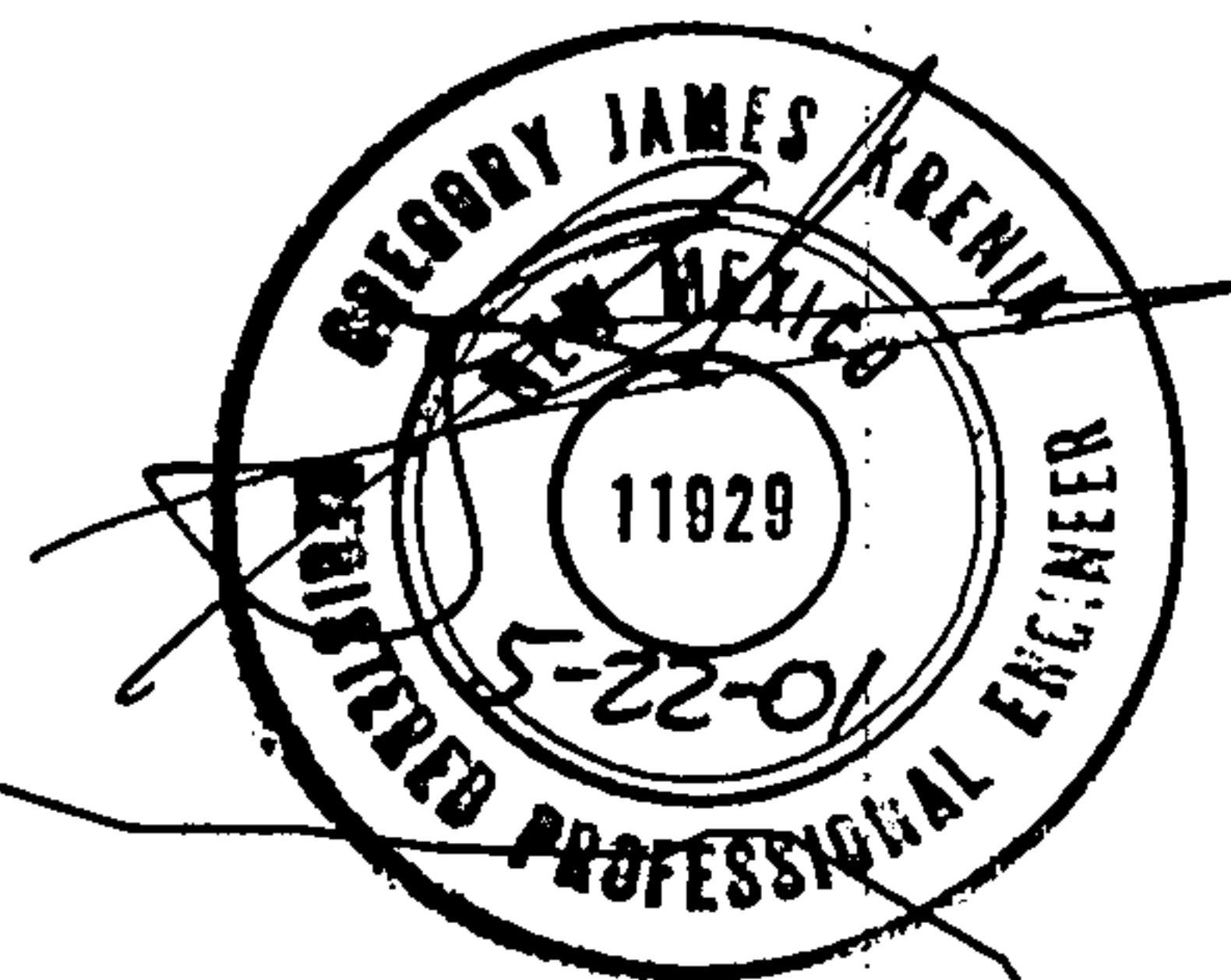
Gregory J. Krenik PE



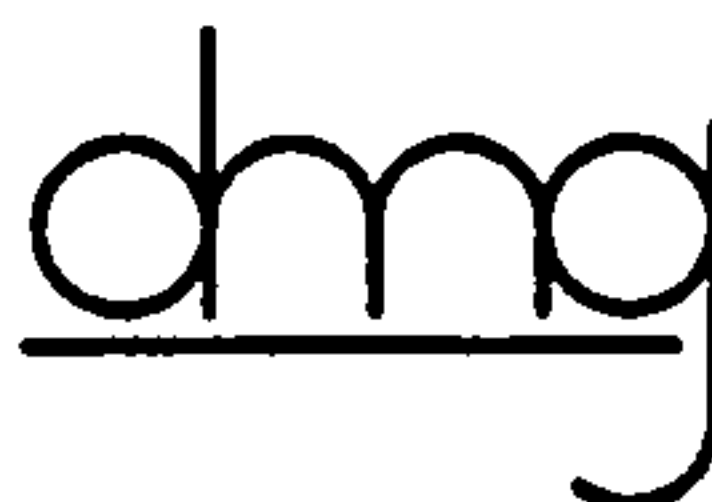
APPROVY
RELEASED!



ELEV	AREA (SF)	STORAGE (AF)	
21	25,831	0	
22	88,979	1.318	
23	107,567	3.574	
24	115,485	6.134	
WATER SURFACE 25	120,508	8.843	STORAGE VOLUME
26.06 26	124,484	11.655	11.83
27	128,994	14.565	
28	133,486	17.577	



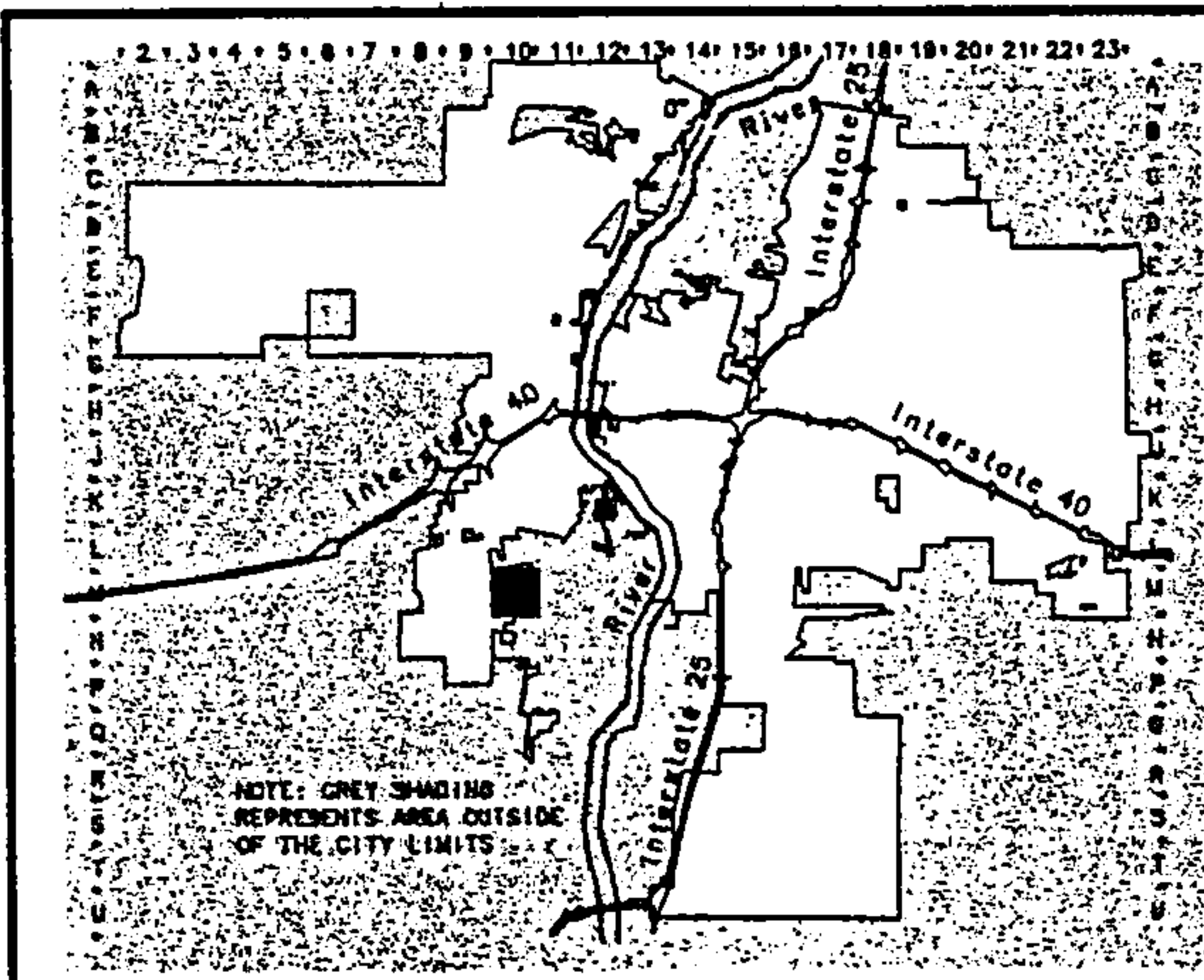
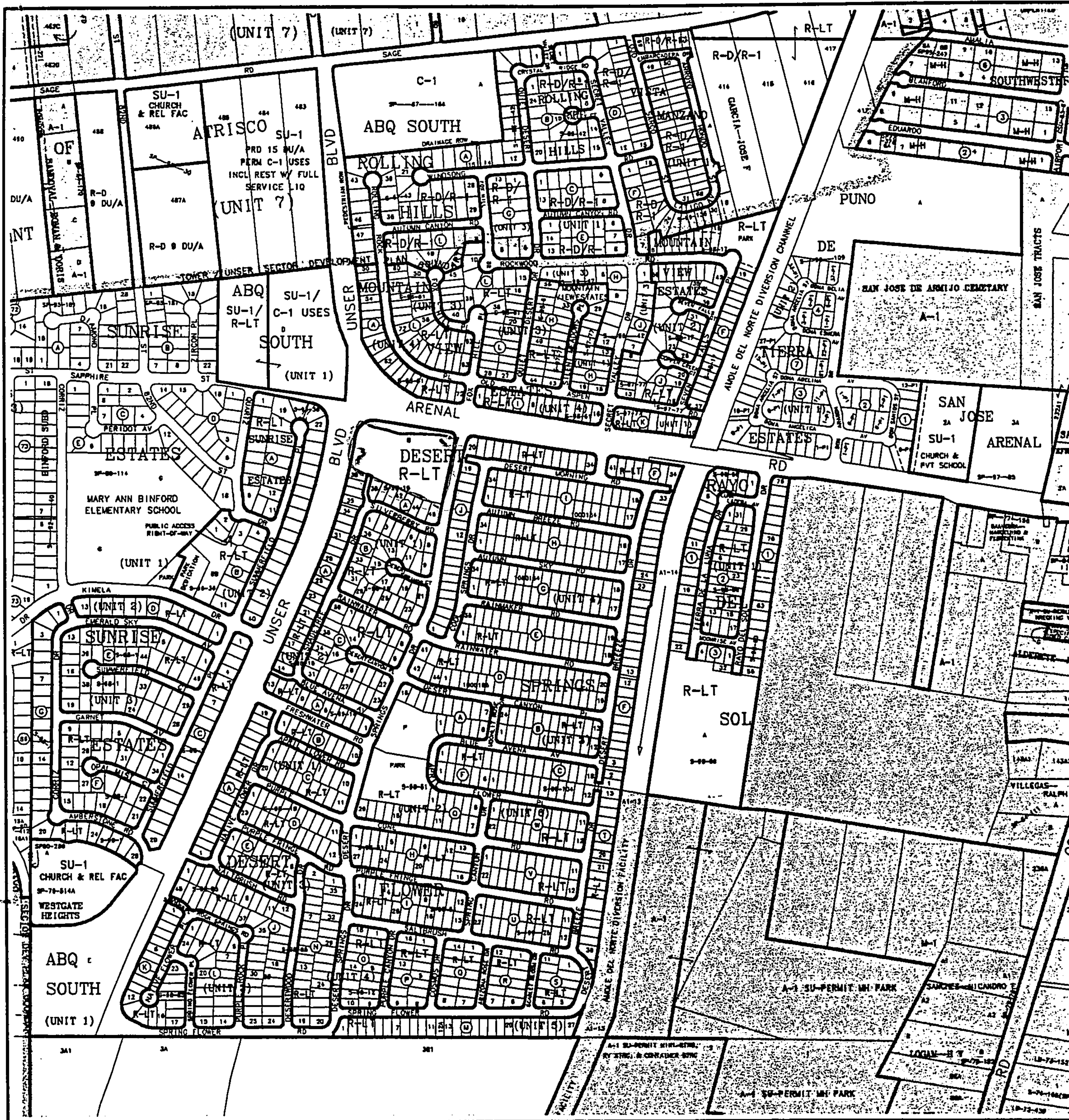
ASBUILT ARENAL/UNSER DETENTION POND



MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS

P.O. BOX 90606
ALBUQUERQUE, NEW MEXICO 87199
(505)828-2200, FAX (505)797-9539

A1010DES\POND CERT.dwg\05-22-01

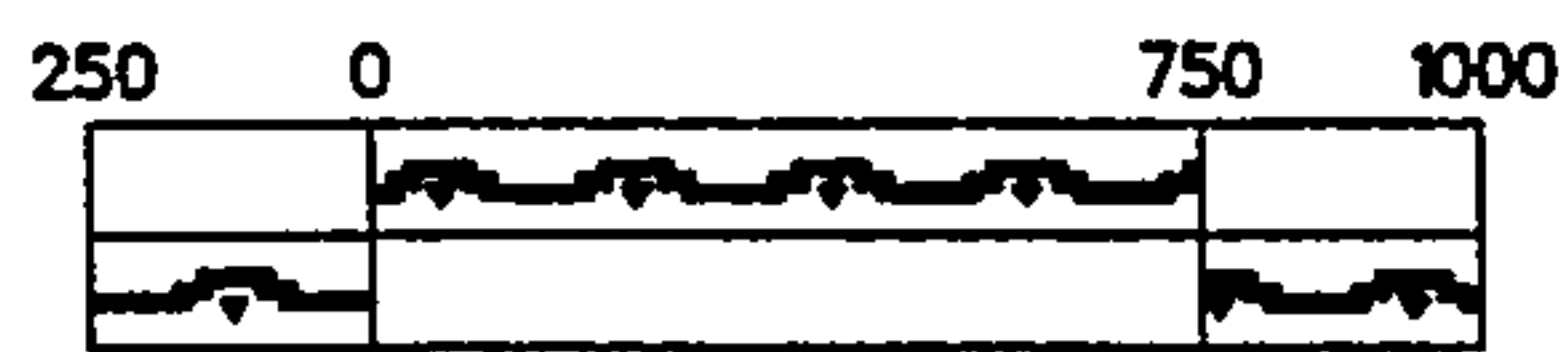


CITY OF
Albuquerque

Albuquerque Geographic Information System
PLANNING DEPARTMENT

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GRAPHIC SCALE IN FEET



Zone Atlas Page

M-10-Z

Map Amended through August 15, 2000

DRAINAGE INFORMATION SHEET

PROJECT TITLE: El Rancho Grande, Units 1 & 2 ~~1~~ 3 ZONE ATLAS#: M-9 / DO19
DRB#: 00460-00000-00116 EPC# WORKORDER#:
LEGAL DESCRIPTION: Tracts C & D, ABQ South, Unit 4, TRACT E, ABQ SOUTH, UNIT 1 AND PARCE 4, EL RANCHO
CITY ADDRESS: GRANDE I

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Curb, Inc.	CONTACT:	Chuck Haegelin
ADDRESS:	6301 Indian School Road NE	PHONE:	881-9190
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CONTACTOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL
☒ ENGINEER'S CERTIFICATION
☐ OTHER
☐ EASEMENT VACATION

PRE-DESIGN MEETING:

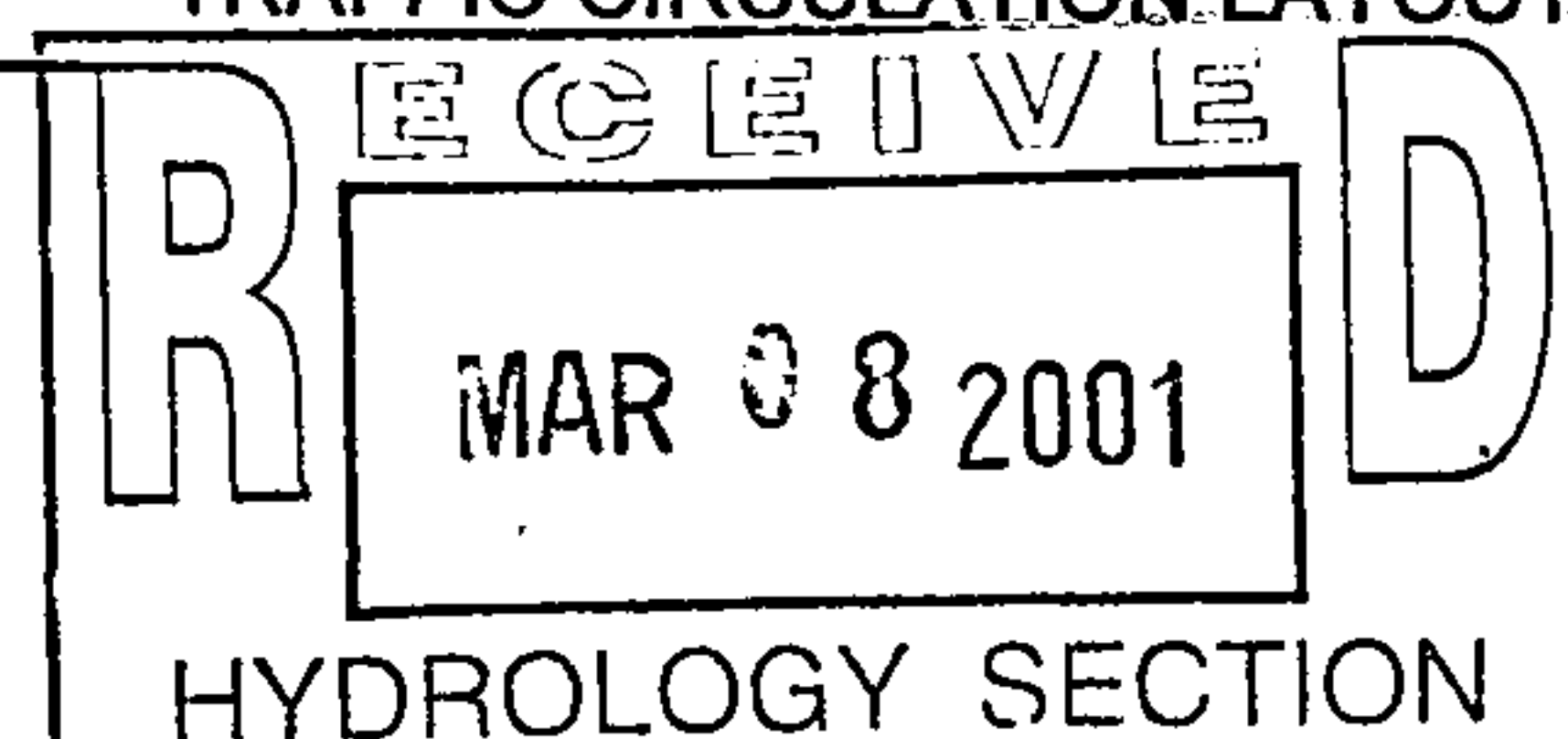
☐ YES
☐ NO
☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☒ OTHER - GRADING CERTIFICATION
☒ RELEASE OF FINANCIAL GUARANTY

TRAFFIC CIRCULATION LAYOUT.

DATE SUBMITTED: 3-7-01
BY: Gregory J. Krenik PE





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 25, 2000

Gregory J. Krenik, P.E.
Mark Goodwin & Associates, PA
P. O. Box 90606
Albuquerque, New Mexico 87199

RE: --Amended Drainage Report and Grading and Drainage Plan for El Rancho Grande I Subdivision, Units 1, 2 & 3 (M9/D19), Submitted for Preliminary Plat Approval and Grading Permit Approval, Engineer's Stamp Dated 8/11/00.

Dear Mr. Krenik:

Based on the information provided, the above referenced revised calculations and Grading and Drainage Plans dated August 11, 2000 are approved for Preliminary Plat action.

Since the grades for the Lots are identical to those on the plans dated May 12, 2000 which was approved by the DRB, these revised plans may be certified instead of the previous plans.

Prior to Final Plat sign-off, the Subdivision Improvements Agreement (SIA) must be in place. As you are aware, the Grading and Drainage Certification is required prior to release of the financial guarantees, or the SIA, for each Unit.

If you have any questions, or if I may be of further assistance to you, please call me at 924-3982.

Sincerely,

Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Bo K. Johnson, P.E., Curb Inc.
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: El Rancho Grande, Units 1 & 2 ~~1~~ 3 ZONE ATLAS#: M-9 / D019

DRB#: 00460-00000-00116 EPC# WORKORDER#:

LEGAL DESCRIPTION: Tracts C & D, ABQ South, Unit 4, TRACT E, ABQ SOUTH, UNIT 1 AND PARCE 4, EL RANCHO

CITY ADDRESS: GRANDE I

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Curb, Inc.	CONTACT:	Chuck Haegelin
ADDRESS:	6301 Indian School Road NE	PHONE:	881-9190
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CONTACTOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	

TYPE OF SUBMITTAL:

X	DRAINAGE REPORT - <i>AMENDED SHEETS</i>
X	DRAINAGE PLAN
	CONCEPTUAL GRADING & DRAINAGE PLAN
X	GRADING PLAN
	EROSION CONTROL
	ENGINEER'S CERTIFICATION
	OTHER
	EASEMENT VACATION

PRE-DESIGN MEETING:

_____ YES
_____ NO
_____ COPY PROVIDED

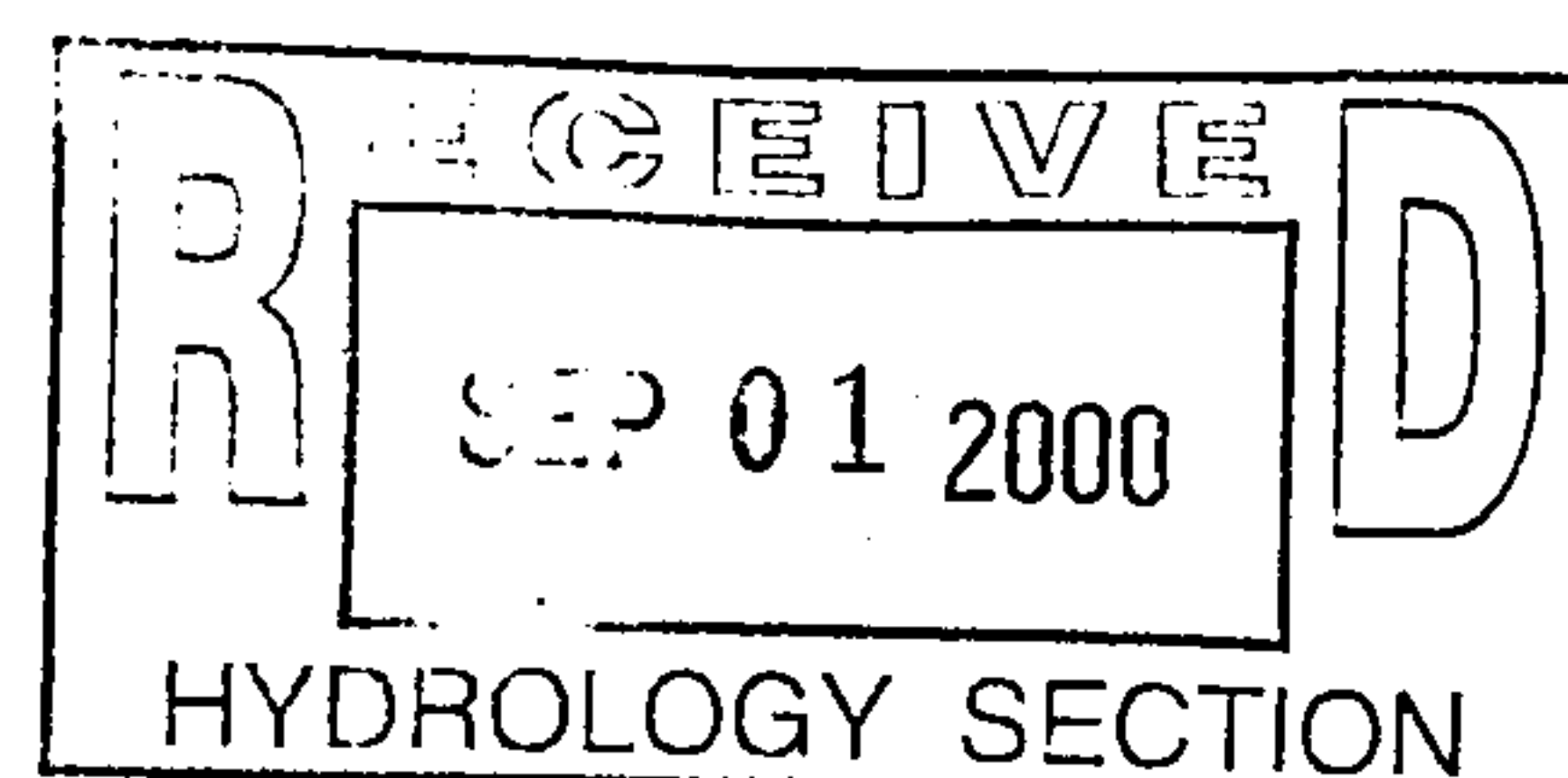
CHECK TYPE OF APPROVAL SOUGHT:

_____	SKETCH PLAT APPROVAL
X _____	PRELIMINARY PLAT APPROVAL
_____	S. DEV. PLAN FOR SUB'D APPROVAL
_____	S. DEV. PLAN FOR BLDG PERMIT APPROVAL
_____	SECTOR PLAN APPROVAL
_____	FINAL PLAT APPROVAL
_____	FOUNDATION PERMIT APPROVAL
_____	BUILDING PERMIT APPROVAL
_____	CERTIFICATION OF OCCUPANCY APPROVAL
_____	GRADING PERMIT APPROVAL
_____	PAVING PERMIT APPROVAL
_____	S.A.D. DRAINAGE REPORT
_____	DRAINAGE REQUIREMENTS
_____	OTHER
_____	RELEASE OF FINANCIAL GUARANTY
_____	TRAFFIC CIRCULATION LAYOUT

DATE SUBMITTED: 9-1-00

BY: 

~~Gregory J. Krenik PE~~



DRAINAGE INFORMATION SHEET

M-9/D19

PROJECT TITLE: El Rancho Grande, Units 1 & 2 ZONE ATLAS#: M-9
DRB#: 00460-00000-00116 EPC# WORKORDER#:
LEGAL DESCRIPTION: Tracts C & D, ABQ South, Unit 4, and a portion of remaining parcel 12
CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Curb, Inc.	CONTACT:	Chuck Haegelin
ADDRESS:	6301 Indian School Road NE	PHONE:	881-9190
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CONTACTOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	

TYPE OF SUBMITTAL:

☒ DRAINAGE REPORT
☒ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL
☐ ENGINEER'S CERTIFICATION
☐ OTHER
☐ EASEMENT VACATION

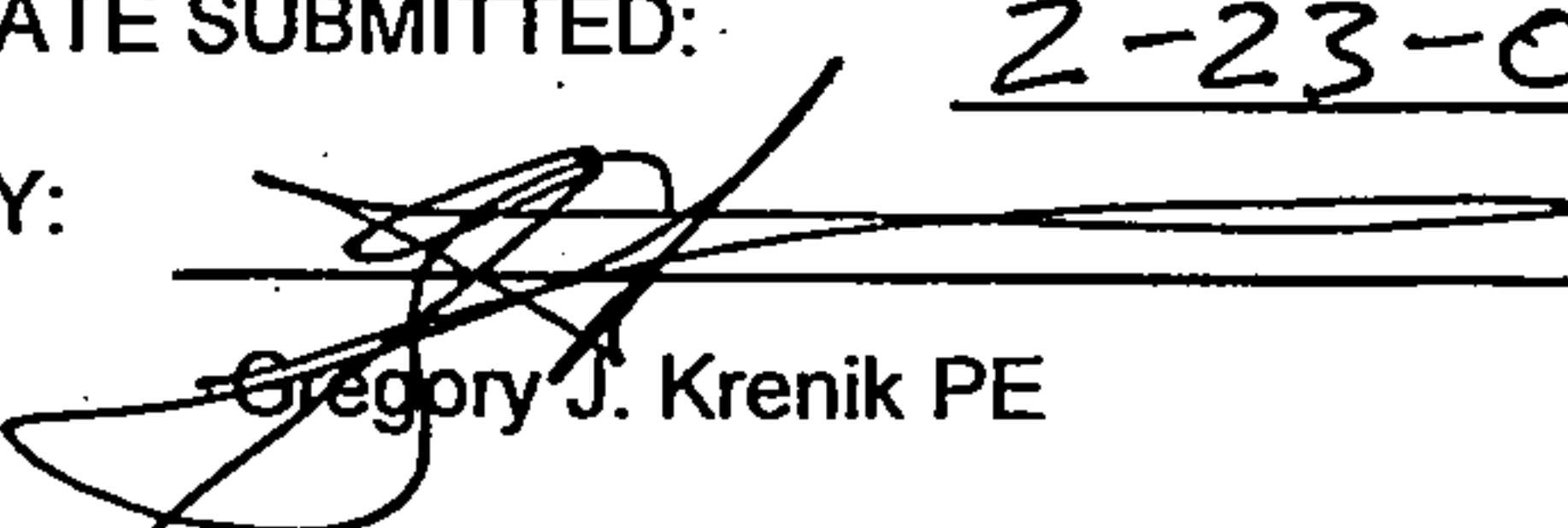
PRE-DESIGN MEETING:

☐ YES
☐ NO
☐ COPY PROVIDED

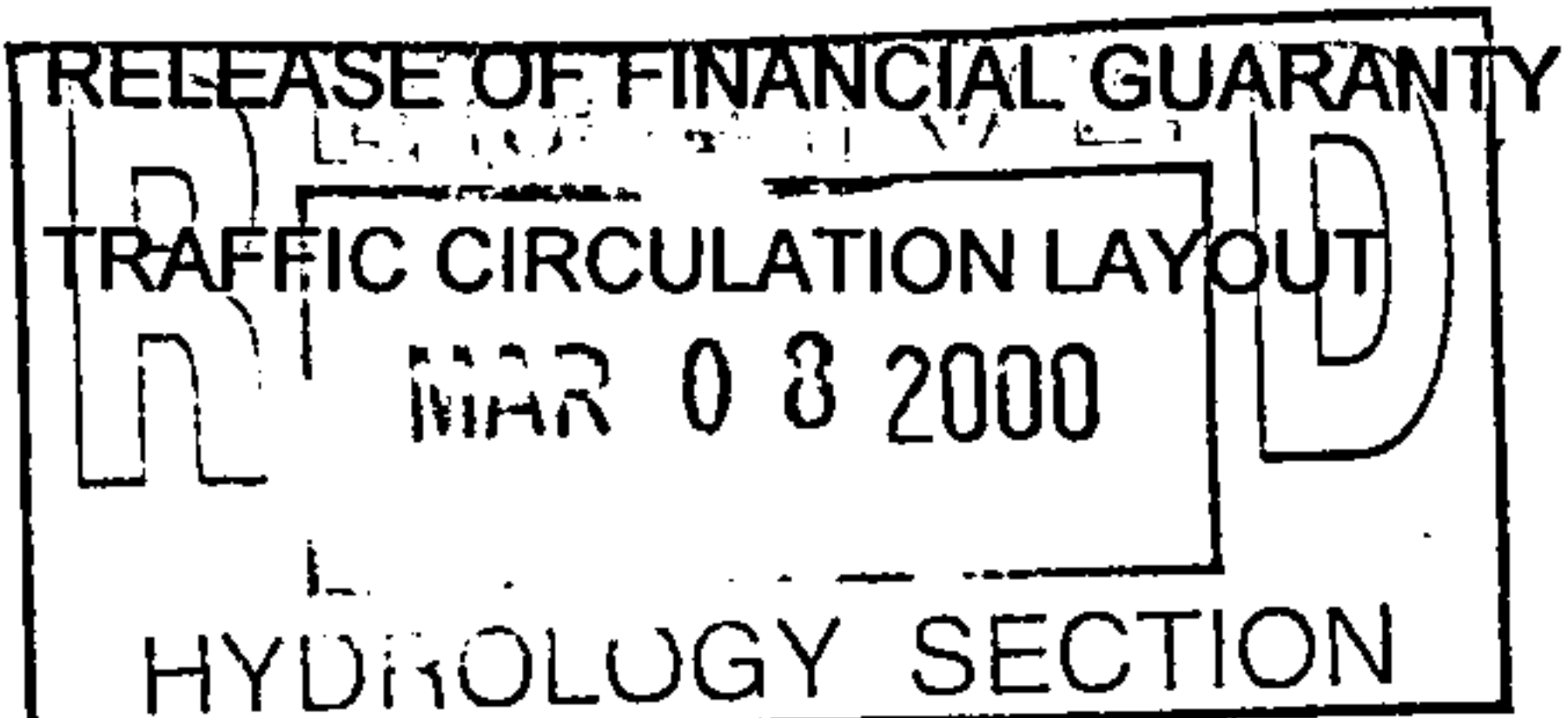
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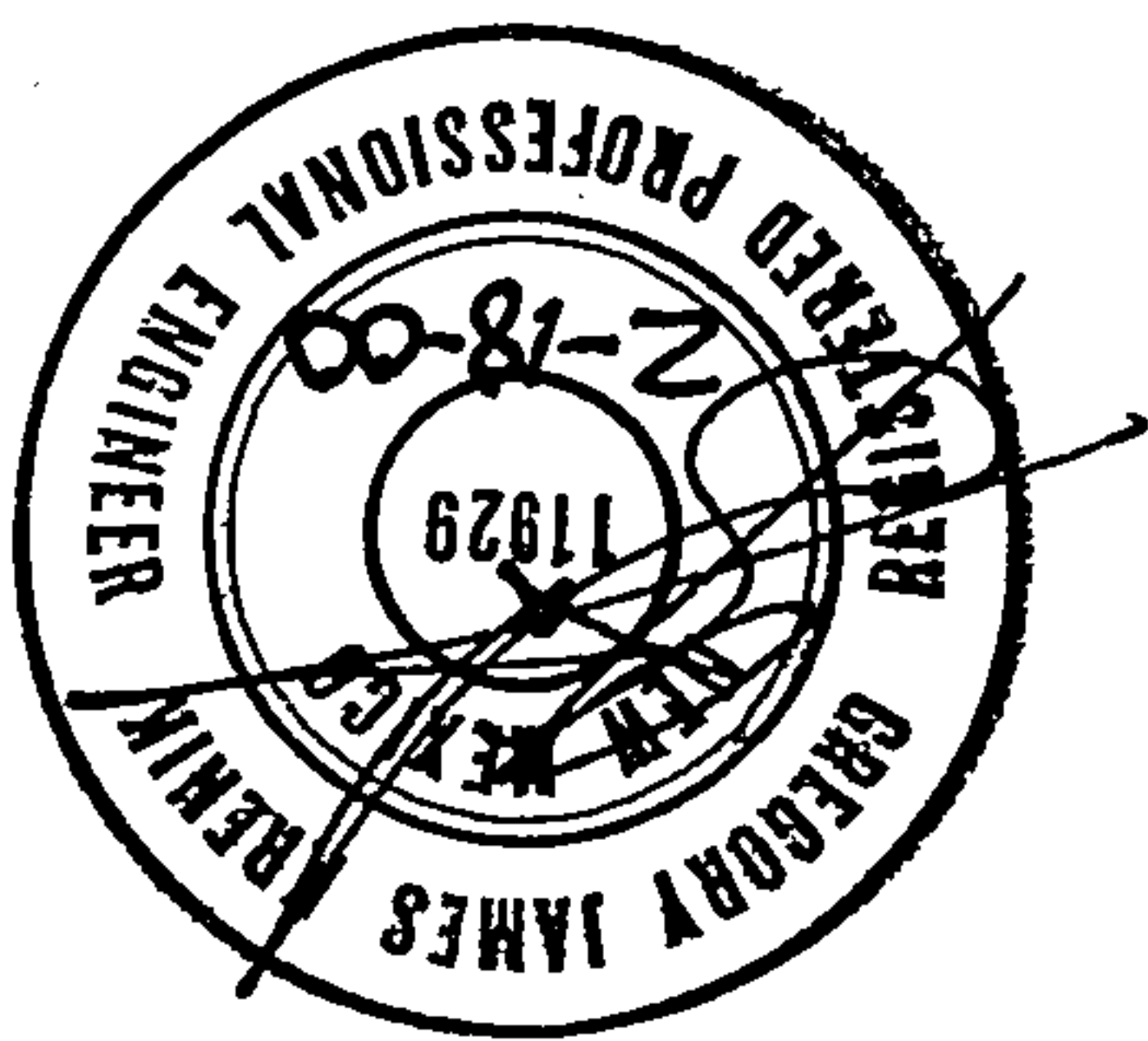
☐ SKETCH PLAT APPROVAL
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. PLAN FOR BLDG PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATION OF OCCUPANCY APPROVAL
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ S.A.D. DRAINAGE REPORT
☐ DRAINAGE REQUIREMENTS
☐ OTHER

DATE SUBMITTED: 2-23-00

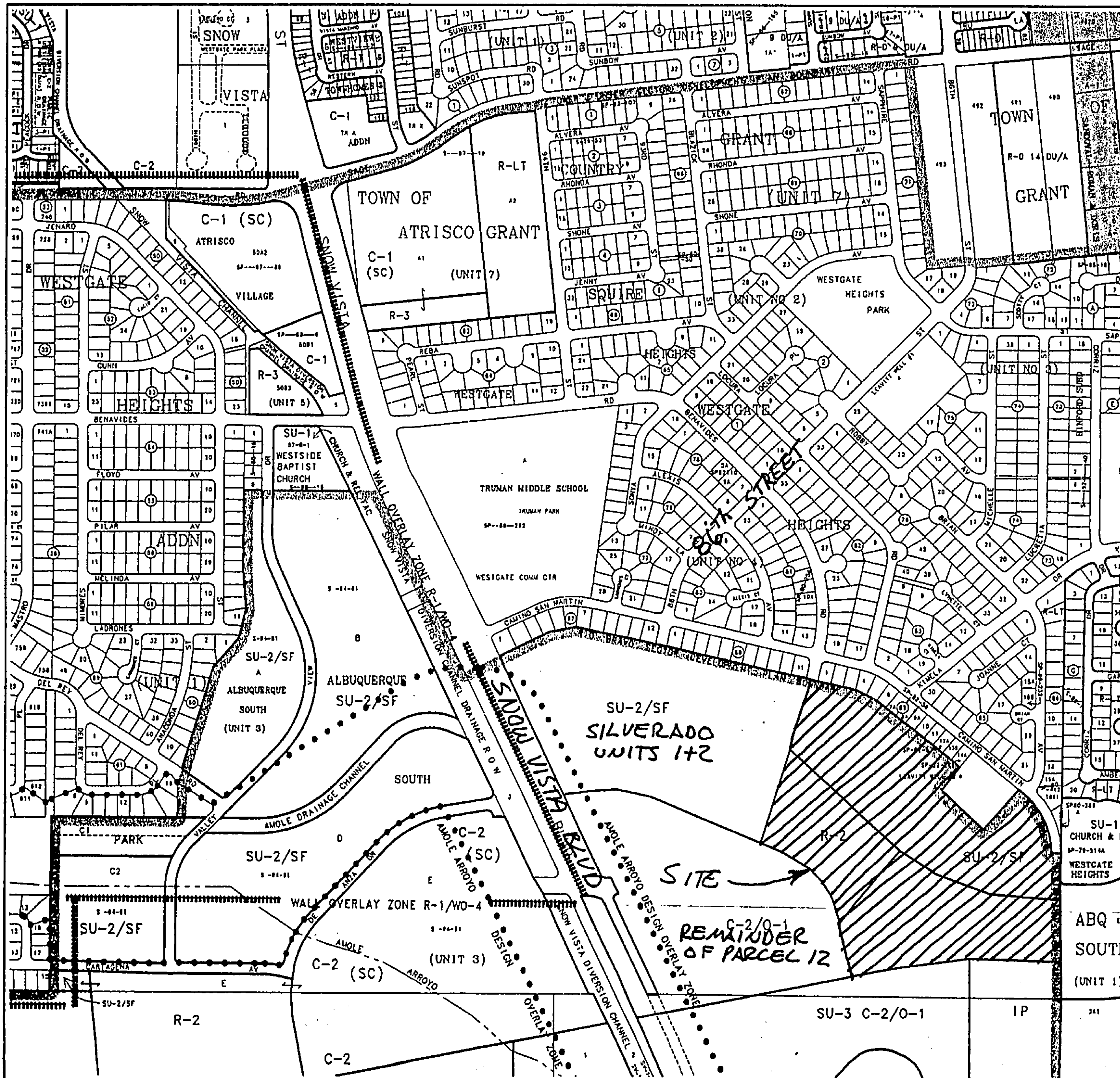
BY: 

Gregory J. Krenik PE

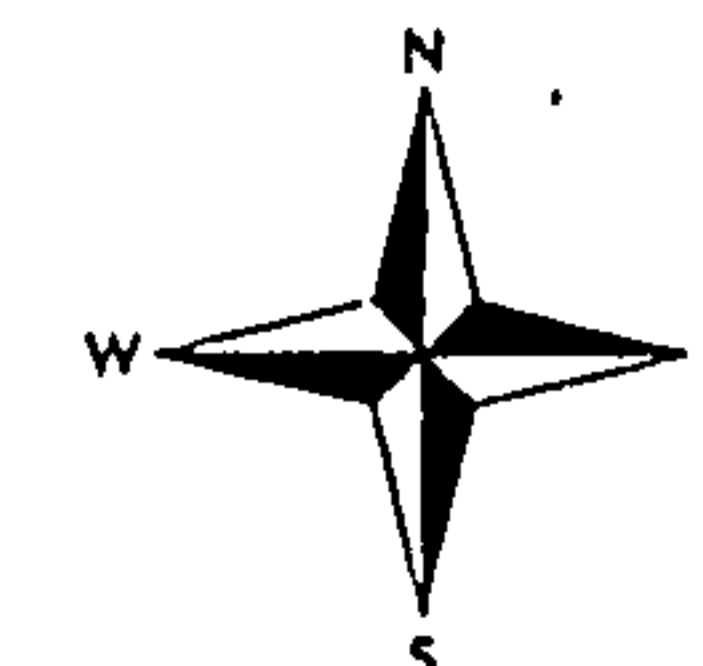




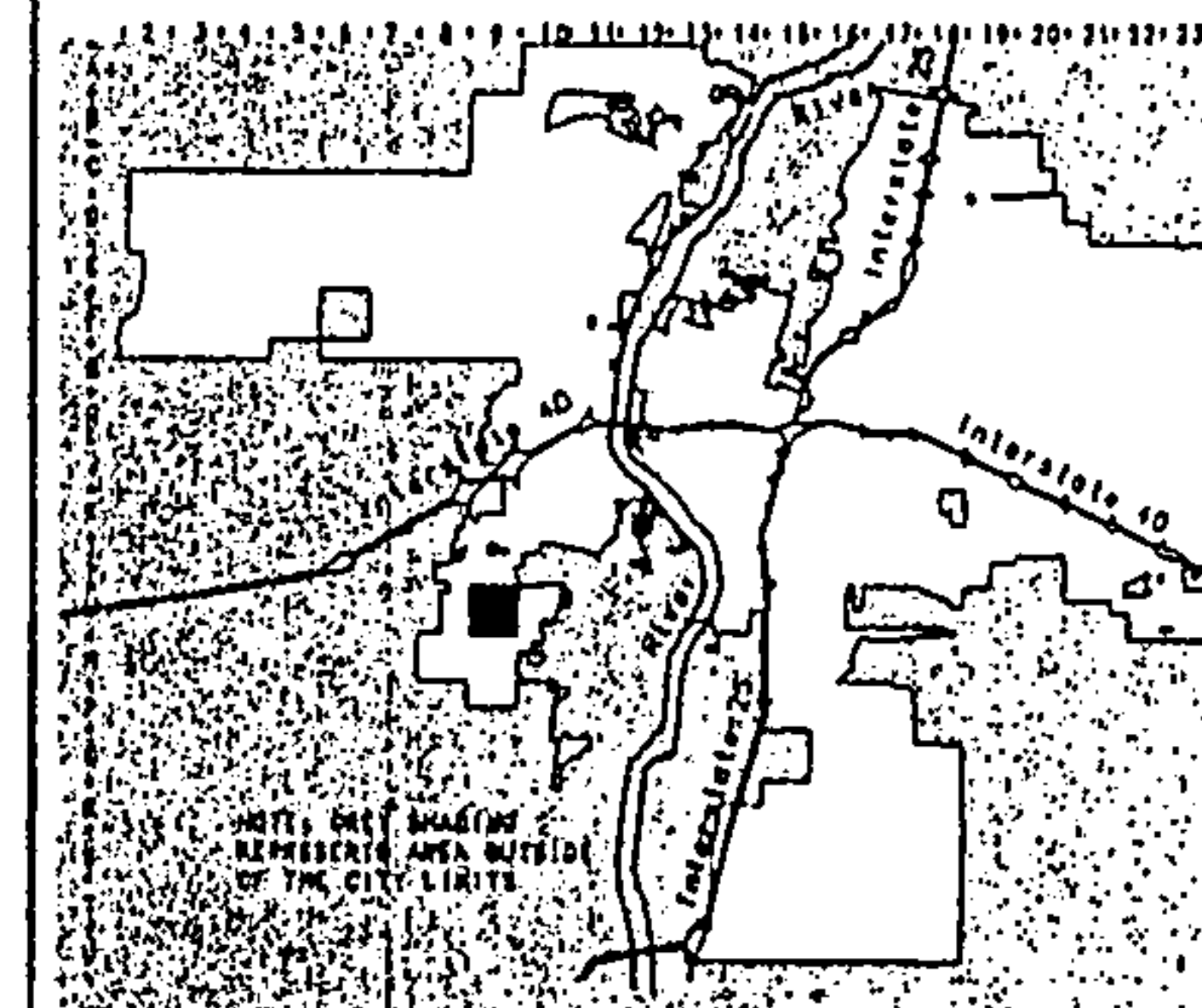
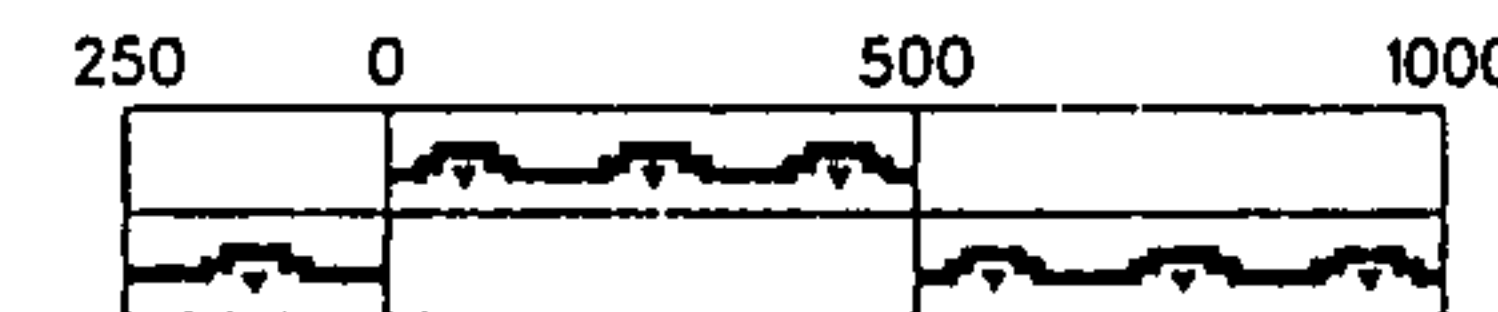
DRAINAGE REPORT
FOR
EL RANCHO GRANDE I
UNITS 1 & 2



CITY OF
Albuquerque
Geographic Information System
PLANNING DEPARTMENT
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GRAPHIC SCALE IN FEET



Zone Atlas Page
M-9-Z

Map Amended through
December 10, 1998



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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 1 OF _____

- THIS PROJECT IS PART OF WHAT WAS KNOWN AS SILVERADO SUBDIVISION (M9/D20). APPENDIX "A"
- THIS PROJECT WILL DESIGN THE DOWNSTREAM IMPROVEMENTS (ENLARGE DETENTION POND AND MASTER PLAN STORMDRAIN FOR AREA NORTH OF GIBSON BETWEEN 98TH AND UNSER)
- THIS PROJECT IS DOWNSTREAM OF CENTEX-SILVERADO (REPORT PREPARED BY MARK GOODWIN AND ASSOCIATES APPENDIX "B")
- THIS PROJECT CONSISTS OF UNITS 2 & 3 OF THE OLD SILVERADO SUBDIVISION REPORT PLUS THE UNPLATTED PORTION NORTH OF GIBSON BETWEEN BARBADOS AND CAMINO SAN MARTIN.

• TOTAL SITE = TRACT C + TRACT D + UNPLATTED PORTION
= 13.7159 + 8.7122 + 13.1206
= 35.5487 AC ~ 0.5100 AC (LAND TO PARK) = 35.0387

• NUMBER OF LOTS = 192

- AREA THAT WILL BE SEPARATED OUT TO DETERMINE PER LOT RUNOFF. (BARBADOS + GIBSON R/W)

A = 1.2644 + 2.2562 = 3.5206 AC NOT INCLUDED IN PER LOT A.

• PADS = 60x35 = 2100

• DRIVE PAD = 20x20 = 400

2500 x 192 = 11,0193 AC TYPE "D"

- AREA OF ROW IN SUBDIVISION

= 6.9480 AC 80% "D" = 5.5584 AC, 20% "B" 1.3896 AC

TYPE "D"
11.0193 AC
5.5584 AC

16.5777 AC
-1.0078 AC

15.5699 AC
52.77 %

TYPE "B"
13.5508 AC = 24.5701
1.3896 AC = 6.9480

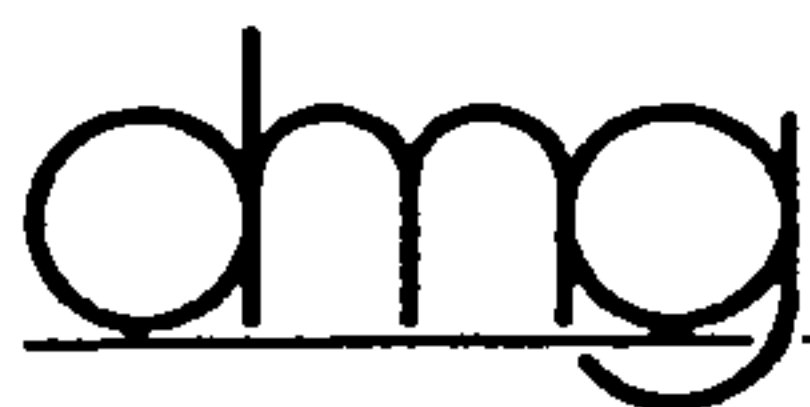
14.9404 AC = 31.5181 + 3.5206 = 35.0387
-1.0066 AC = 2.0144 AC SEE SHEET 3

13.9338 AC = 29.5037 AC
47.23 %

FROM AH440 OUTPUT SHEETS 19-21

Q = 97.62 CFS 192-13 = 179 LOTS

Q per lot = 97.62 / 179 = 0.5454 CFS / LOT

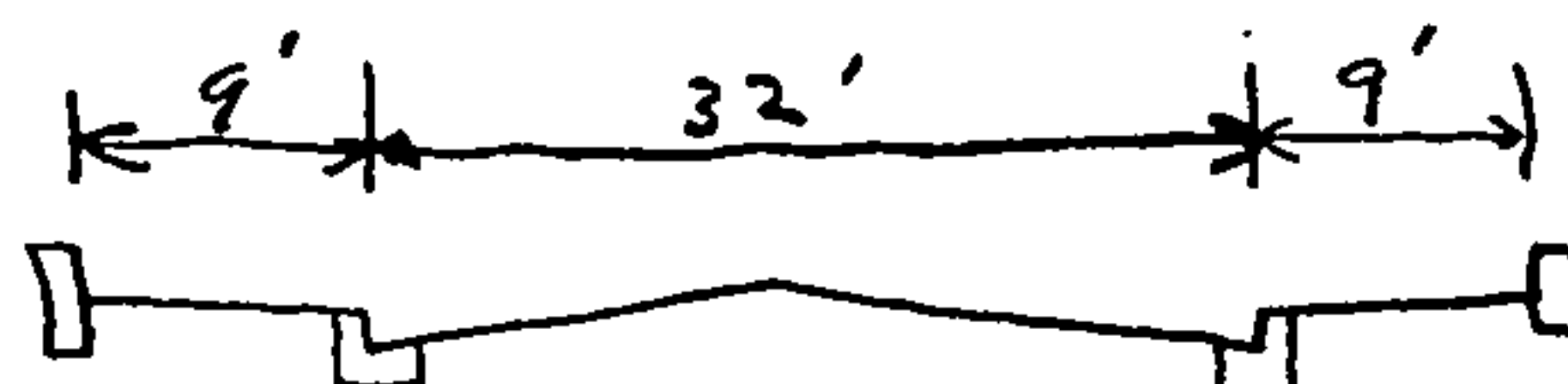


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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 2 OF _____

- FROM THE "ADDENDUM TO THE MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR PLAN" PREPARED BY MARK GOODWIN & ASSOCIATES - 9-21-98 (APPENDIX B) THE Q IN CAMINO SAN MARTIN IS 133.79 CFS AND THE CAPACITY OF THE EXISTING STREET IS 79.21 CFS.
- MODIFY STREET SECTION FROM BRIAN SOUTH TO END OF EXISTING PAVEMENT.



FIND NEW CAPACITY

$$\begin{aligned}d &= 1.52 & S &= 0.58\% \\WP &= 52.68 \\A &= 54.65 \\V &= 6.82 \text{ F/S} \\Q &= 372.82 \text{ CFS}\end{aligned}$$

FIND d

$$\begin{aligned}d &= 1.01 \\WP &= 51.66 \\A &= 29.15 \\V &= 4.55 \text{ F/S} \\Q &= 132.51 \text{ CFS} \approx 133.79 \text{ OK}\end{aligned}$$

$$d + \frac{V^2}{2g} = 1.01 + 0.32 = 1.33 < 1.52 \text{ OK}$$

A 6" HEADER CURB
WILL WORK

- FIND CAPACITY OF CAMINO SAN MARTIN SOUTH OF EXISTING PAVEMENT.

NO CROWN $S = 1\%$

$$\begin{aligned}d &= 0.67 \\WP &= 33.34 \\A &= 21.44 \\V &= 6.51 \text{ F/S} \\Q &= 139.63 \text{ CFS}\end{aligned}$$

FIND d

$$\begin{aligned}d &= 0.65 \\WP &= 33.30 \\A &= 20.80 \\V &= 6.387 \text{ F/S} \\Q &= 132.86 \text{ CFS} \approx 133.79 \text{ OK}\end{aligned}$$

$$d + \frac{V^2}{2g} = 0.65 + 0.63 = 1.28 > 0.85$$

NEED INLETS OR
TRENCH DRAIN



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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 3 OF _____

- INSTALL A TRENCH MAIN AT THE END OF THE EXISTING PAVEMENT.

- FIND RATIO OF FRONTAL FLOW INTERCEPTED TO TOTAL FRONTAL FLOW

$$R_f = 1 - 0.09(V - V_0) \quad \text{PER "DRAINAGE OF HIGHWAY PAVEMENTS" MANUAL PAGE 54}$$

V = Velocity in Gutter

V_0 = GUTTER VELOCITY WHERE SPLASH-OVER FIRST OCCURS

$$V = 4.55 \text{ F/S}$$

LENGTH OF GATE = 2.0'

USE 45° TILT-BAR GATE

FROM CHART 7 SHEET 15

R_f IS OFF THE CHART INDICATING IT IS OVER 1.0 WHICH MEANS ALL THE WATER WHICH RUNS OVER THE GATE IS TAKEN IN BY THE GATE. SINCE THE STREET DOES NOT HAVE CAPACITY ONLY THE FLOW IN THE STREET ENTERS THE GATE.

$$Q_{\text{GATE}} = 133.79 \text{ (PERCENT IN STREET)}$$

$$d = 1.01 \quad w = 32.0$$

$$A = 24.65$$

$$\text{AREA ROW} = 29.15 - \text{AREA STREET} = 24.65$$

$$\frac{24.65}{29.15} = 84.56\%$$

$$Q_{\text{gate}} = 133.79 (.8456) \\ = 113.14 \text{ CFS}$$

- FIND Q THAT TURNS EAST INTO TRACT E

$$Q = 133.79 - 113.14 = 20.65 \text{ CFS}$$

- ADD Q FROM 13 LOTS FROM EL RANCHO GRANDE I

$$\text{ROW} = 14,250 \text{ SF} = 0.3271 \text{ AC} \quad 0.2617 \text{ AC "D"} \quad 0.0654 \text{ AC "B"}$$

$$\text{LOTS} = 73,500 \text{ SF} = 1.6873 \text{ AC} \quad 2500 \times 13 = 32,500 \text{ SF} = 0.7461 \text{ AC "D"}$$

TYPE D

TYPE B

$$0.2617$$

$$0.0654$$

$$0.7461$$

$$0.9412$$

$$1.0078 \text{ AC}$$

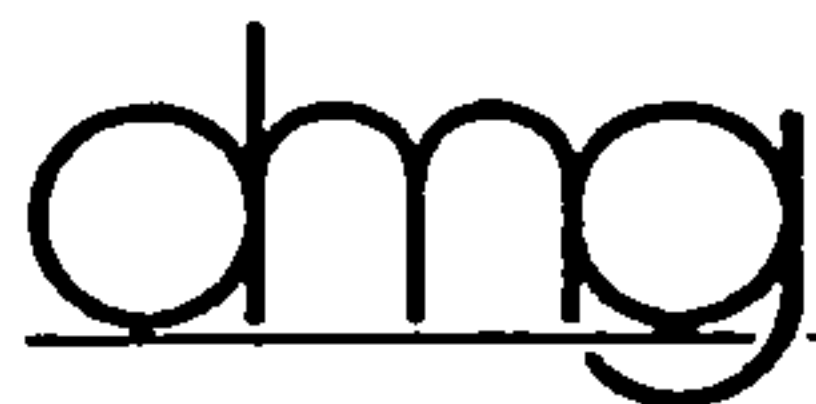
$$1.0066 \text{ AC} = 2.0144 \text{ AC}$$

$$50.03 \%$$

$$49.97 \%$$

FROM HYMO SHEET 22-24

$$Q = 6.55 \text{ CFS}$$



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PROJECT EL RANCHO GRANDE
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 4 OF _____

- ALLOWABLE DISCHARGE TO 24" STORM MAIN IN UNSER BLVD IS 24.5 CFS AT TRACT E

AREA TRACT E = 4.2103 AC

21 LOTS @ (35x60) + (20x20) = 52,500 SF = 1.2052 AC TYPE "D"

ROW AREA = 0.5756 AC

22.73% "B" 77.27% "D"

TYPE "B" = 2.4295 + 0.1308 = 2.5603 AC 60.81%

TYPE "D" = 1.2052 + 0.4448 = 1.6500 AC 39.19%

Q = 14.75 CFS

- SIZE POND ON TRACT E

A DETENTION POND WILL BE REQUIRED

USE 24" OUTFALL $A = 3.141593$ $Q = 0.6A\sqrt{2gh}$

ELEV	AREA(SF)	VOLUME(AC-FT)	OUTFLOW(CFS)
45.00	4007	0	0
46.00	5120	0.1048	4.78
47.00	6306	0.2359	15.12
48.00	7566	0.3951	21.42

FROM 1144 MO SHEETS 25-44

PEAK DISCHARGE = 19.712 CFS

MAX WATER SURFACE = 47.73

- DETERMINE CAPACITY OF 44' R/W STREETS 26' F-F

S = 1% n = 0.017 STD C+G $\times 9' \times 2' \times 11'$

d = 0.64

wP = 27.28

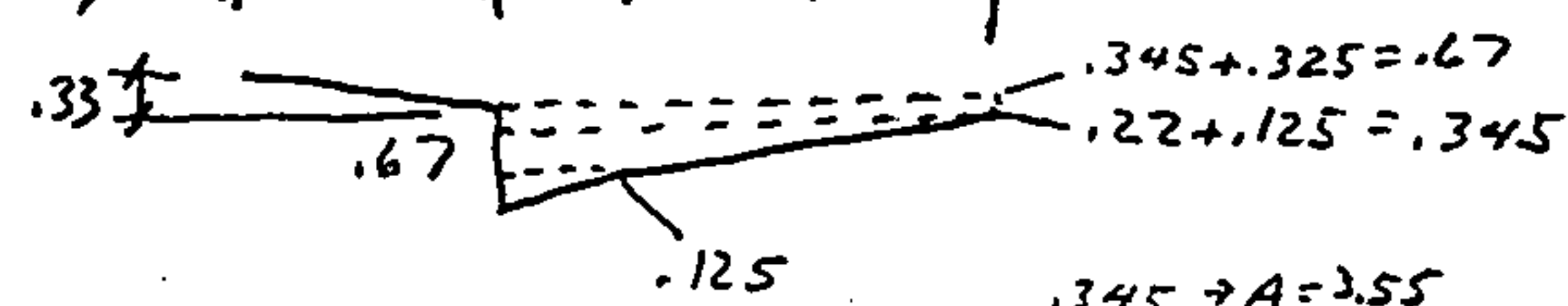
A = 11.22

V = 4.83 F/S

Q = 54.24 CFS

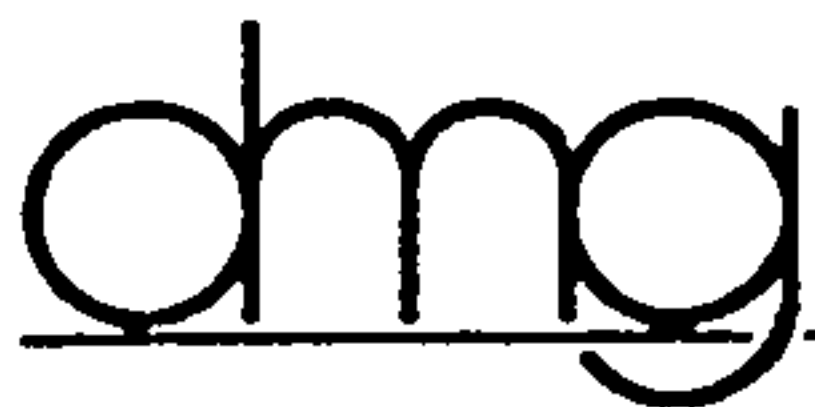
$$d + \frac{V^2}{2g} = 1.00 = 0.67 + 0.33 =$$

OK



- FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

$$54.24 / 0.5454 = 99.45 \text{ SAY } 99 \text{ LOTS}$$



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PROJECT ELIZABETH GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 5 OF _____

• DETERMINE CAPACITY OF 44' R/W STREETS 26' F-F

$S = 1\%$ $n = 0.017$ MOUNTABLE C+G

$$d = 0.42$$

$$WP = 26.84$$

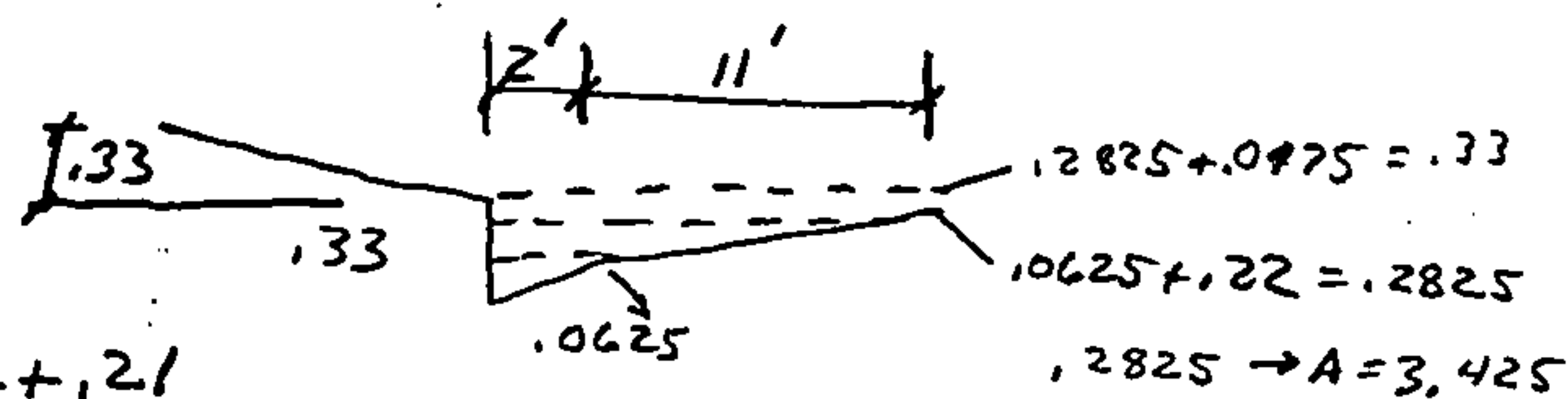
$$A = 7.22$$

$$V = 3.64 \text{ F/S}$$

$$Q = 26.30 \text{ CFS}$$

$$d + \frac{V^2}{2g} = .42 + .21$$

$$= .63 \approx .33 + .33 \quad \text{OK}$$



• FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

$$26.30 / .5454 = 48.22 \text{ SAY } 48 \text{ LOTS}$$

• DETERMINE CAPACITY OF 46' R/W STREETS 28' F-F

$S = 2.36\%$ $n = 0.017$ STD C+G

$$d = 0.5$$

$$WP = 29.00$$

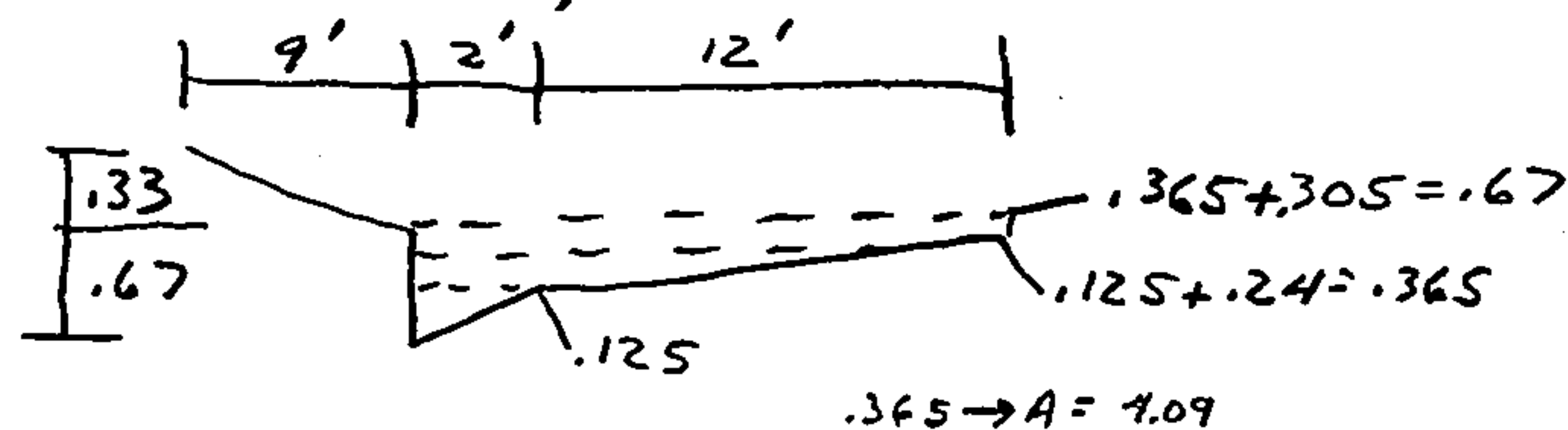
$$A = 7.87$$

$$V = 5.63 \text{ F/S}$$

$$Q = 44.30$$

$$d + \frac{V^2}{2g} = 0.99 \approx .67 + .33$$

OK



• FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

$$44.30 / .5454 = 81.22 \text{ SAY } 81$$

• DETERMINE CAPACITY OF 46' R/W STREETS 28' F-F

$S = 3.0\%$ $n = 0.017$ MOUNT. C+G

$$d = .33$$

$$WP = 28.66$$

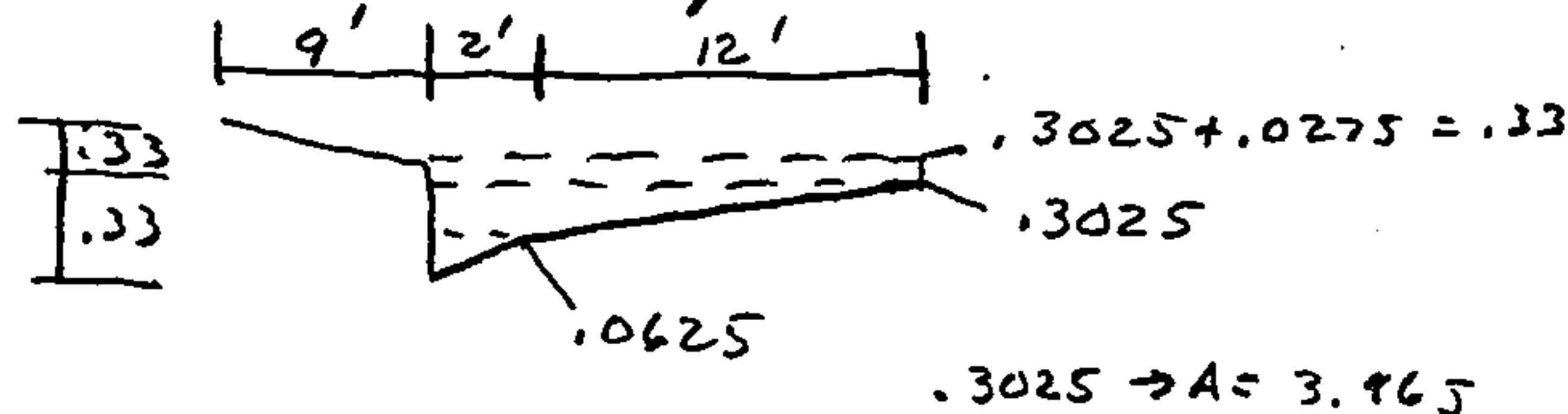
$$A = 4.735$$

$$V = 4.56 \text{ F/S}$$

$$Q = 21.58 \text{ CFS}$$

$$d + \frac{V^2}{2g} = .65 \approx .33 + .33$$

OK



FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

$$21.58 / .5454 = 39.57 \text{ SAY } 39 \text{ LOTS}$$



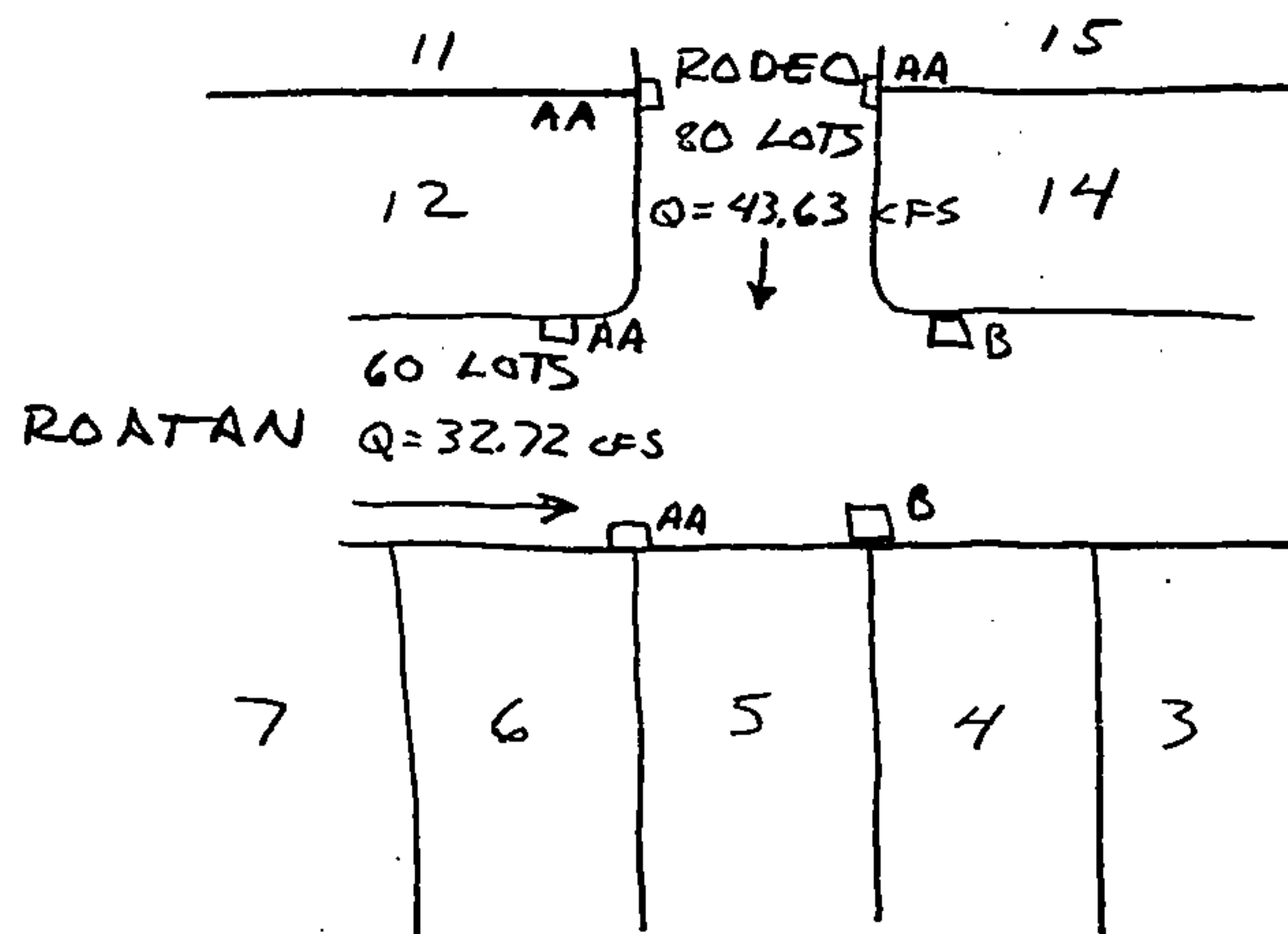
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PROJECT EL PAUCHO GRUPO I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 6 OF _____

• DETERMINE INLET LOCATIONS

INLETS ARE REQUIRED AT THE INTERSECTION
OF RODEO AND ROATAN



INSTALL A DBL "A" INLET BETWEEN LOTS 14+15 AND
11+12 ON RODEO

• FIND d

$$\begin{aligned}d &= 0.59 \\ WP &= 27.18 \\ A &= 9.92 \\ V &= 4.46 \text{ F/S} \\ Q &= 44.29 \text{ cfs} \approx 43.63 \text{ cfs} \quad \text{OK}\end{aligned}$$

FROM NOMO SHEET 16

$$Q_{\text{GATE}} = 9.4 \text{ cfs}$$

$$\begin{aligned}Q \text{ INTO ROATAN} &= 43.63 - 2(9.4) \\ &= 24.83 \text{ cfs}\end{aligned}$$

INSTALL A DBL "A" INLET BETWEEN LOTS 5+6 AND AT
THE RETURN OF LOT 12 ON ROATAN

• FIND d

$$\begin{aligned}d &= 0.45 \\ WP &= 28.90 \\ A &= 6.47 \\ V &= 4.95 \text{ F/S} \\ Q &= 32.03 \text{ cfs} \approx 32.72 \text{ cfs} \quad \text{OK}\end{aligned}$$

FROM NOMO SHEET 16

$$Q_{\text{GATE}} = 5.5 \text{ cfs}$$

$$Q \text{ CONTINUING IN ROATAN} = 32.72 - 2(5.5) = 21.72 \text{ cfs}$$



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PROJECT EL RANCHO GRANDE I

SUBJECT DRAINAGE CALCS

BY GJK DATE 12-13-99

CHECKED _____ DATE _____

SHEET 7 OF _____

- FIND Q IN ROATAN PAST INLETS

$$Q = 24.83 + 21.72 \\ = 46.55 \text{ CFS}$$

NUMBER OF LOTS

$$46.55 / .5454 = 85.35 > 81 \text{ NEED MORE INLETS}$$

INSTALL A TYPE "B" INLET BETWEEN LOTS 4+5
AND AT THE RETURN OF LOT 14 ON ROATAN

$$Q = 46.55 + .5454 \\ = 47.10 \text{ CFS}$$

$$d = 0.51$$

$$WP = 29.02$$

$$A = 8.15$$

$$V = 5.76 \text{ F/S}$$

$$Q = 46.93 \text{ CFS} \approx 47.10 \text{ CFS OK}$$

FROM NOD SHEET 17

$$Q_{\text{gate}} = 14 \text{ CFS}$$

Q PAST INLETS

$$= 47.10 - 2(14) \\ = 19.10 \text{ CFS}$$

- FIND Q IN ROATAN AT CAMINO SAN MARTIN

$$Q = 19.10 + 4(.5454) \\ = 21.28 \text{ CFS}$$

THIS FLOW WILL CROSS CAMINO SAN MARTIN
AND FLOW THROUGH TRACT E

- FIND TOTAL Q THAT ENTERS TRACT E

$$Q = 20.65 + 6.55 + 21.28 \\ = 48.48 \text{ CFS}$$

ADD TO TRACT E FLOW

Q THROUGH TRACT E

$$= 48.48 + 14.75 \\ = 63.23 \text{ CFS}$$

- THIS WILL BE SURFACE FLOW THROUGH TRACT E.
- THE STREET WILL HAVE NO CROWN AND WILL
ACT AS A CHANNEL.



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PROJECT EL Rancho Grande I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 8 OF _____

• SIZE TRACT E STREET

44' R/W 26' F-F STD C+G

NO CROWN $S = 0.75\%$ $n = 0.017$

$$d = 0.5$$

$$WP = 27.00$$

$$A = 13.50$$

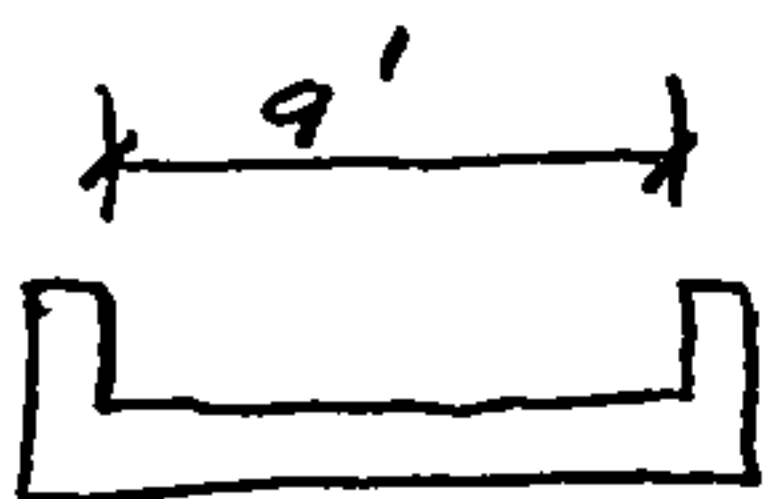
$$V = 4.77 \text{ F/S}$$

$$Q = 64.38 \text{ CFS} \approx 63.23 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 0.85 < 0.67 + .33$$

~~OK~~
OK

• SIZE CHANNEL INTO POND IN TRACT E



$$S = 1.29\% \quad n = 0.013$$

$$d = 0.74$$

$$WP = 10.48$$

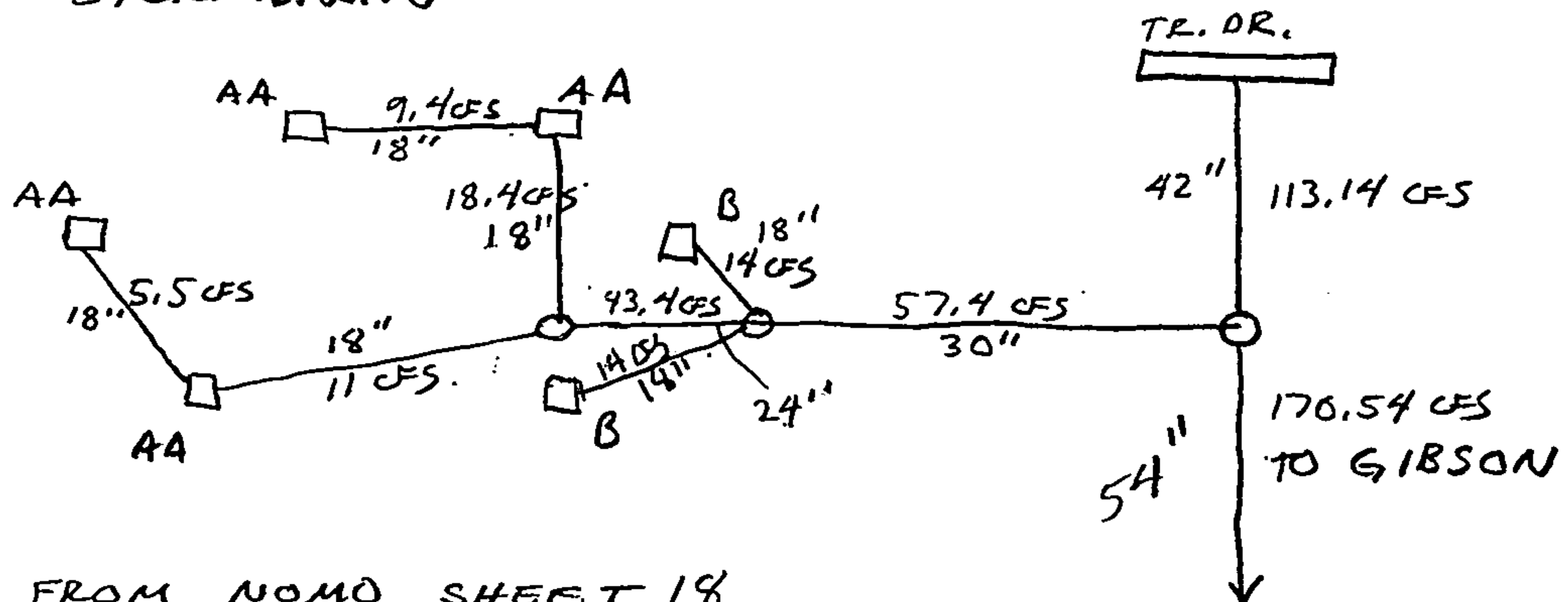
$$A = 6.66$$

$$V = 9.60 \text{ F/S}$$

$$Q = 63.91 \text{ CFS} \approx 63.23 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 2.17' \text{ HEIGHT OF OUTSIDE CHANNEL WALL WHERE IT TURNS INTO POND.}$$

• SIZE STORM DRAIN



FROM NOMO SHEET 18

18" RCP AT 1% CARRIES 10.5 CFS

18" RCP AT 2% CARRIES 14.7 CFS

24" RCP AT 1% CARRIES 22.2 CFS

27" RCP AT 2% CARRIES 42.0 CFS

30" RCP AT 2% CARRIES 55.0 CFS

42" RCP AT 1.35% CARRIES 111.0 CFS

60" RCP AT 0.77% CARRIES 210.0 CFS



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PROJECT EL RANCHO GRANDE I
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BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 9 OF _____

- DETERMINE RUN OFF IN BARBADOS

$$A = 1.2644 \text{ AC}$$
$$80\% \text{ D } 20\% \text{ B}$$

FROM HYMO OUTPUT SHEETS 45-47

$$Q = 5.02 \text{ CFS}$$

- ADD CENTEX SILVERADO RUNOFF

$$Q = 8.95 \text{ CFS} + 42.37 \text{ CFS}$$
$$= 51.32 \text{ CFS}$$

- FIND Q IN BARBADOS AT ROATAN

$$Q = 5.02 + 51.32$$
$$= 56.34 \text{ CFS}$$

- FIND $d = 0.50$ $S = 1\%$ $n = 0.017$ 48' F-F STD C+G

$$WP = 49.00$$

$$A = 14.57$$

$$V = 3.89 \text{ F/S}$$

$$Q = 56.74 \text{ CFS} \approx 56.34 \text{ CFS} \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.73 < 0.67 + 1.33 \text{ OK}$$

- FIND Q IN ROATAN AT BARBADOS

$$Q = 34 \times 0.5454$$
$$= 18.54 \text{ CFS}$$

- TOTAL Q IN BARBADOS BETWEEN ROATAN AND GIBSON

$$Q = 56.34 + 18.54$$
$$= 74.88 \text{ CFS} \quad \text{NO CROWN } S = 1\%$$

- FIND $d = 0.36$

$$WP = 48.72$$

$$A = 17.28$$

$$V = 4.38 \text{ F/S}$$

$$Q = 75.68 \text{ CFS} \approx 74.88 \text{ CFS} \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.66 < 0.67 + 0.33 \text{ OK}$$

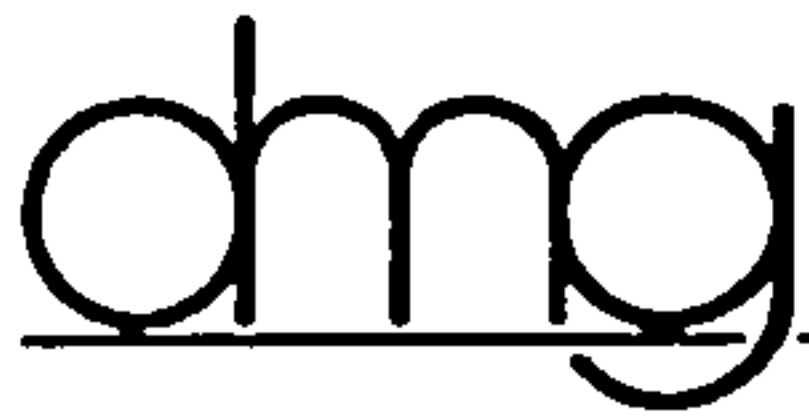
- INSTALL TRENCH DRAIN MIDWAY BETWEEN ROATAN AND GIBSON. CROWN WILL BE TAKEN OUT OF ROAD

SAME TRENCH DRAIN AS SHEET 3

$$V = 4.38$$

Length of grate = 2'-0"

USE 45° TILT-BAR GRATE



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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 10 OF _____

• SIZE STORMDRAIN IN GIBSON

FOR THIS WE WILL DETERMINE RUNOFF FROM
THE REMAINDER OF PARCEL 12.

LIMITS OF AREA FOR STORMDRAIN ARE NORTH OF
AND INCLUDING GIBSON BLVD BETWEEN THE SNOW
VISTA CHANNEL AND CAMINO SAN MARTIN.

- REMAINDER OF PARCEL 12 IS ZONED COMMERCIAL
A POND WILL BE IMPOSED ON THIS PARCEL.

RUNOFF WILL BE LIMITED TO RESIDENTIAL DISCHARGE.

$$\text{AREA} = 25.7951 \text{ AC}$$

LAND TREATMENTS WILL BE THE SAME AS
EL RANCHO GRANDE I

$$\text{TYPE "B"} = 47.23\%$$

$$\text{TYPE "D"} = 52.77\%$$

FROM AHYMO OUTPUT SHEETS 48-50

$$Q = 85.35 \text{ CFS}$$

A DETENTION POND WITH 85.35 CFS WILL
BE IMPOSED ON THE DEVELOPED PARCEL 12.

- FIND Q ENTERING GIBSON STORMDRAIN AT
BARBADOS.

$$\begin{aligned} Q &= 85.35 + 74.88 + 2(5.4) \\ &= 171.03 \text{ CFS} + 34.4 \\ &= 194.63 \end{aligned}$$

FROM NOMO SHEET 18

48" RCP AT 2% CARRIES 185 CFS

42" RCP AT 1% CARRIES 95 CFS

- FIND Q OF GIBSON BLVD

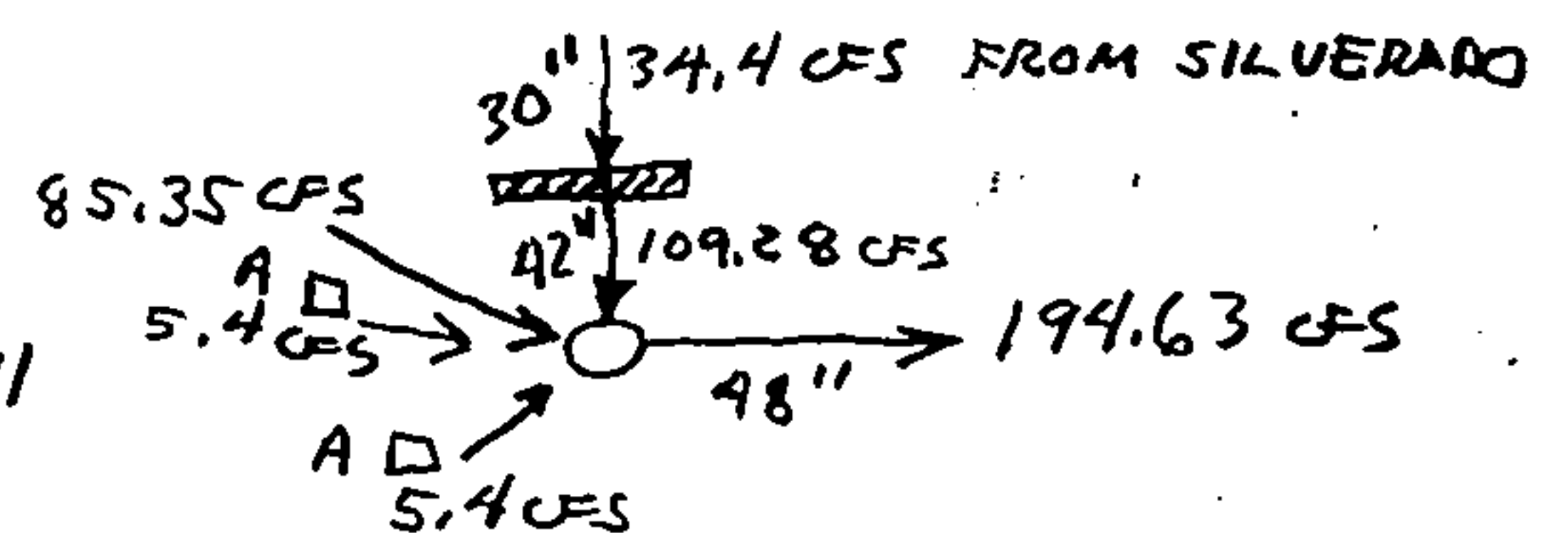
50% "B" 50% "D"

$$A = 8.2185 \text{ AC}$$

FROM AHYMO OUTPUT SHEETS 51-53

$$Q = 26.66 \text{ CFS}$$

$$Q_{1/2} = 13.33 \text{ CFS}$$





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P.O. BOX 90606, ALBUQUERQUE, NM 87199
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PROJECT EL PASO GRADE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 11 OF _____

• FIND CAPACITY OF ONE LINE OF GIBSON

$$S = 3.69\% \quad n = 0.017$$

$$d = 0.345$$

$$WP = 13.345$$

$$A = 1.775$$

$$V = 4.375 \text{ F/S}$$

$$Q = 7.77 \text{ CFS}$$

INSTALL A DBL "A" INLET ON EACH SIDE OF
GIBSON AT BARBADOS

FROM NOMO SHEET 16

$$Q_{\text{GATE}} = 5.40 \text{ CFS}$$

$Q_{1/2}$ AT BARBADOS IN GIBSON

$$Q = 13.33/2 = 6.67 \text{ CFS}$$

$$Q_{\text{PAST BARBADOS}} = 6.67 - 5.40 \\ = 1.27 \text{ CFS}$$

$Q_{1/2}$ AT CAMINO SAN MARTIN IN GIBSON

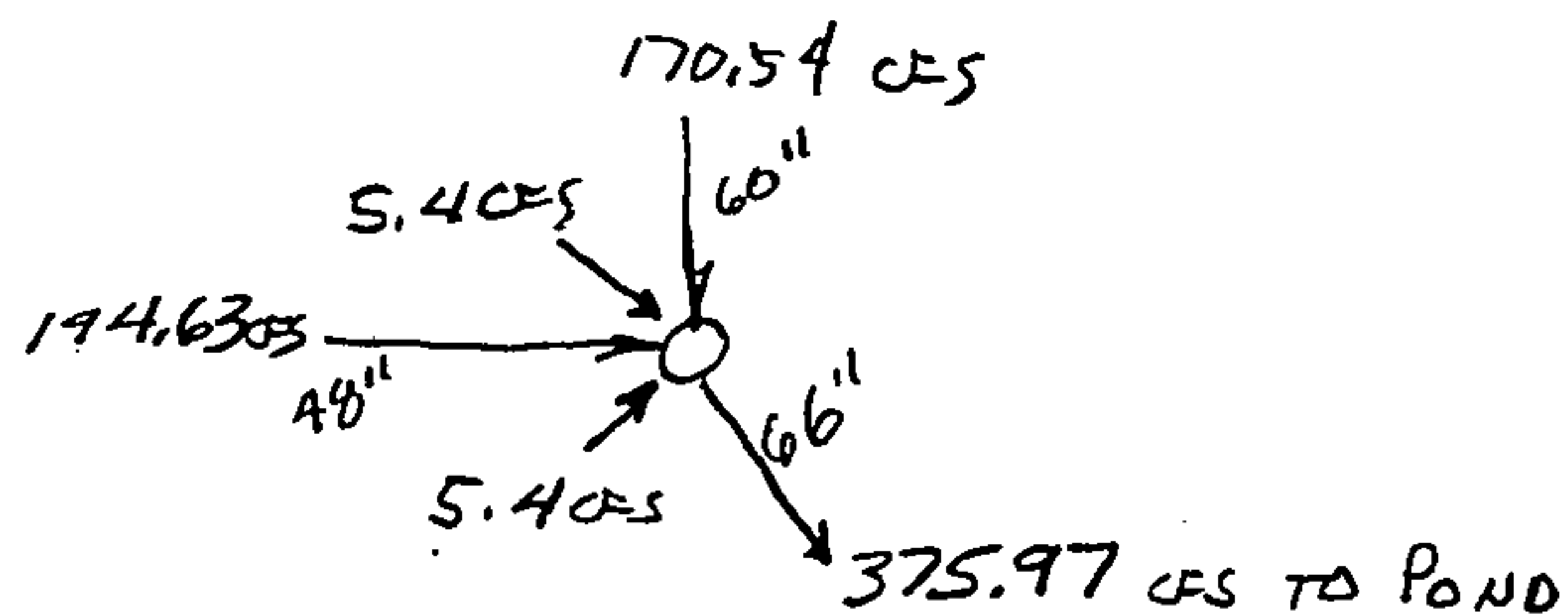
$$Q = 6.67 + 1.27 \\ = 7.94 \text{ CFS}$$

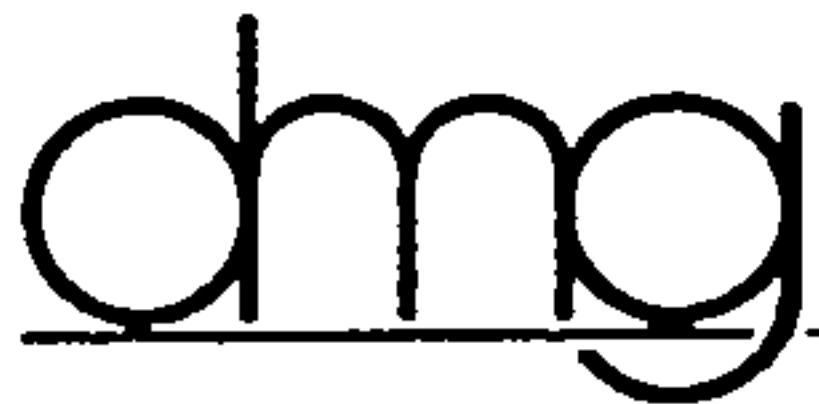
INSTALL A DBL "A" INLET ON EACH SIDE OF
GIBSON AT CAMINO SAN MARTIN

$Q_{\text{PAST CAMINO SAN MARTIN}}$

$$Q = 7.94 - 5.40 \\ = 2.54 \text{ CFS}$$

• FIND Q ENTERING GIBSON & TORMONIN AT
CAMINO SAN MARTIN





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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 12 OF _____

- SIZE GIBSON POND USE EXISTING 42" RCP AS OUTFALL

ELEV	AREA (SF)	VOLUME (AC-FT)	OUTFLOW (CFS)
40	43810	0	0
41	49762	1.074	46.33
42	55899	2.287	65.51
43	62217	3.643	80.24
44	68717	5.146	92.65
45	75400	6.800	103.59

- ADD GIBSON R/W FROM CAMINO SAN MARTIN TO
UNSER AND UNSER R/S FROM NORTH HIGH POINT
TO SOUTH HIGH POINT.

$$A = 4.66 \text{ AC}$$

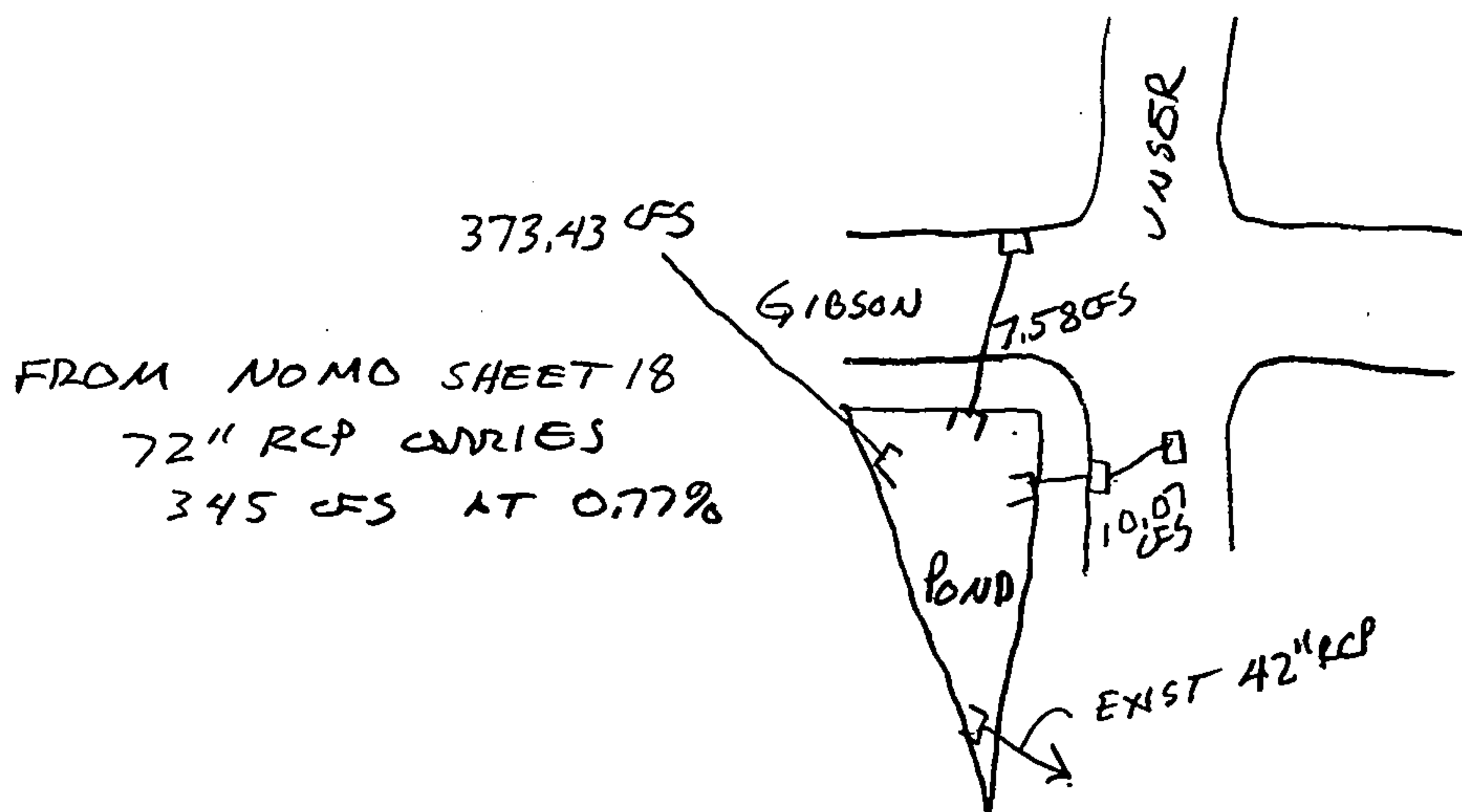
$$50\% \text{ "B" } 50\% \text{ "D"}$$

FROM AHYMO OUTPUT SHEETS 54-56

$$Q = 15.11 \text{ CFS}$$

THIS FLOW WILL BE ADDED TO THE 2.54 CFS
THAT CONTINUED PAST CAMINO SAN MARTIN.

TOTAL $15.11 + 2.54 = 17.65 \text{ CFS}$ WILL BE
TAKEN BY 3 SINGLE "A" INLETS IN
SUMP CONDITION AROUND THE INTERSECTION



FROM AHYMO OUTPUT SHEETS 57-82

PEAK DISCHARGE = 97.93 CFS
MAX WATER SURFACE = 44.48



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PROJECT EL RANCHO GRANDE

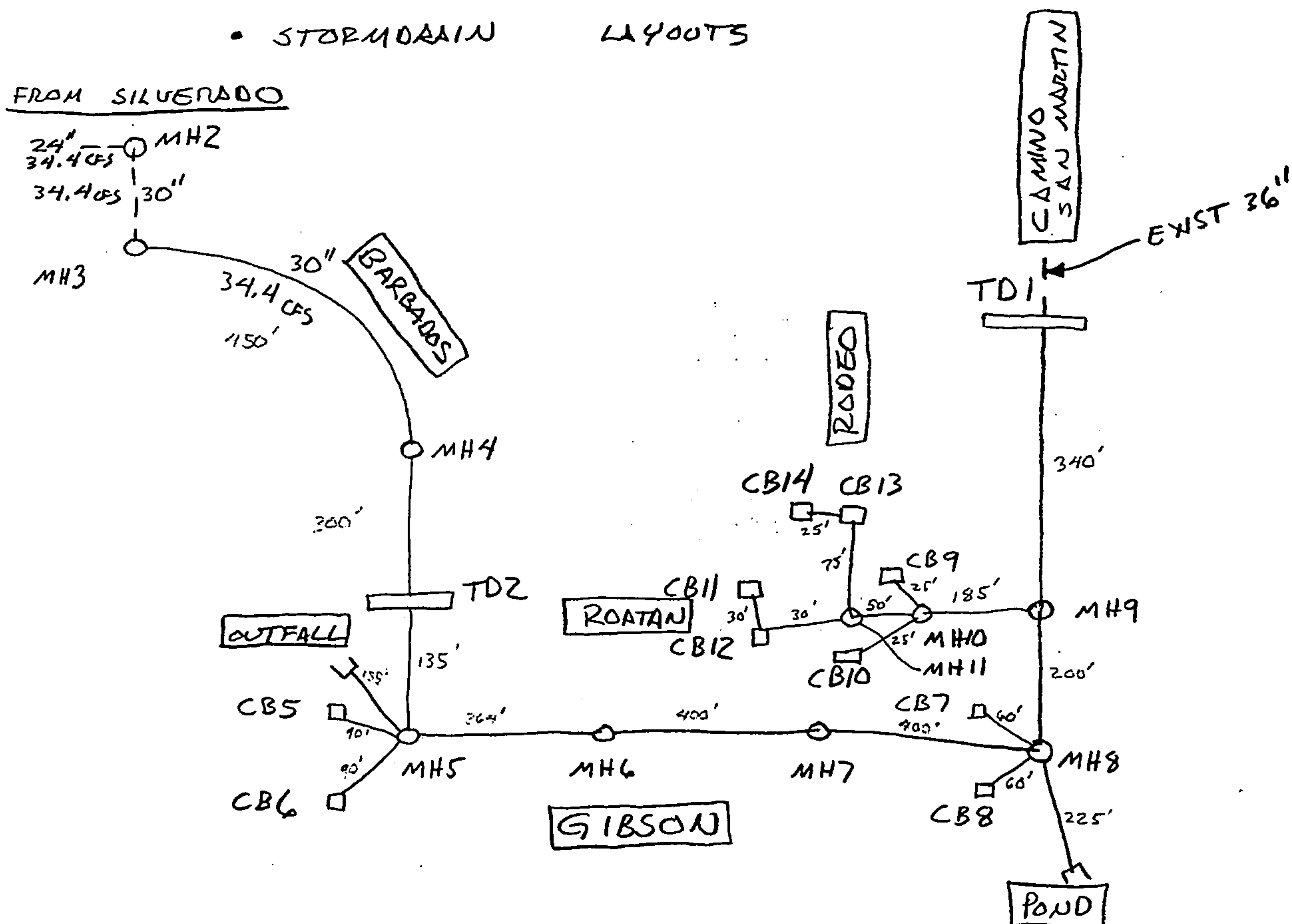
SUBJECT DRAINAGE CALCS

BY GSK DATE 12-13-99

CHECKED _____ DATE _____

SHEET 13 OF _____

• STORM DRAIN LAYOUTS



STRUCTURE	RIM/GRATE	INV.	PIPE SIZE LEAVING STRUCTURE
MH3	86.18	78.58	30" RCP
MH4	81.50	74.08	30" RCP
MH5	77.50	69.73	48" RCP
MH6	73.00	62.45	48" RCP
MH7	68.00	54.45	48" RCP
MH8	56.25	41.77	66" RCP
MH9	57.58	43.35	48" RCP
MH10	59.46	47.72	30" RCP
MH11	60.55	50.00	24" RCP
CB5	77.98	73.98	18" RCP
CB6	77.98	73.98	18" RCP
CB7	57.00	53.00	18" RCP
CB8	57.00	53.00	18" RCP
CB9	59.70	54.50	18" RCP
CB10	59.94	54.75	18" RCP
CB11	61.66	56.22	18" RCP
CB12	61.19	55.86	18" RCP
CB13	61.48	55.57	18" RCP
CB14	61.57	56.07	18" RCP



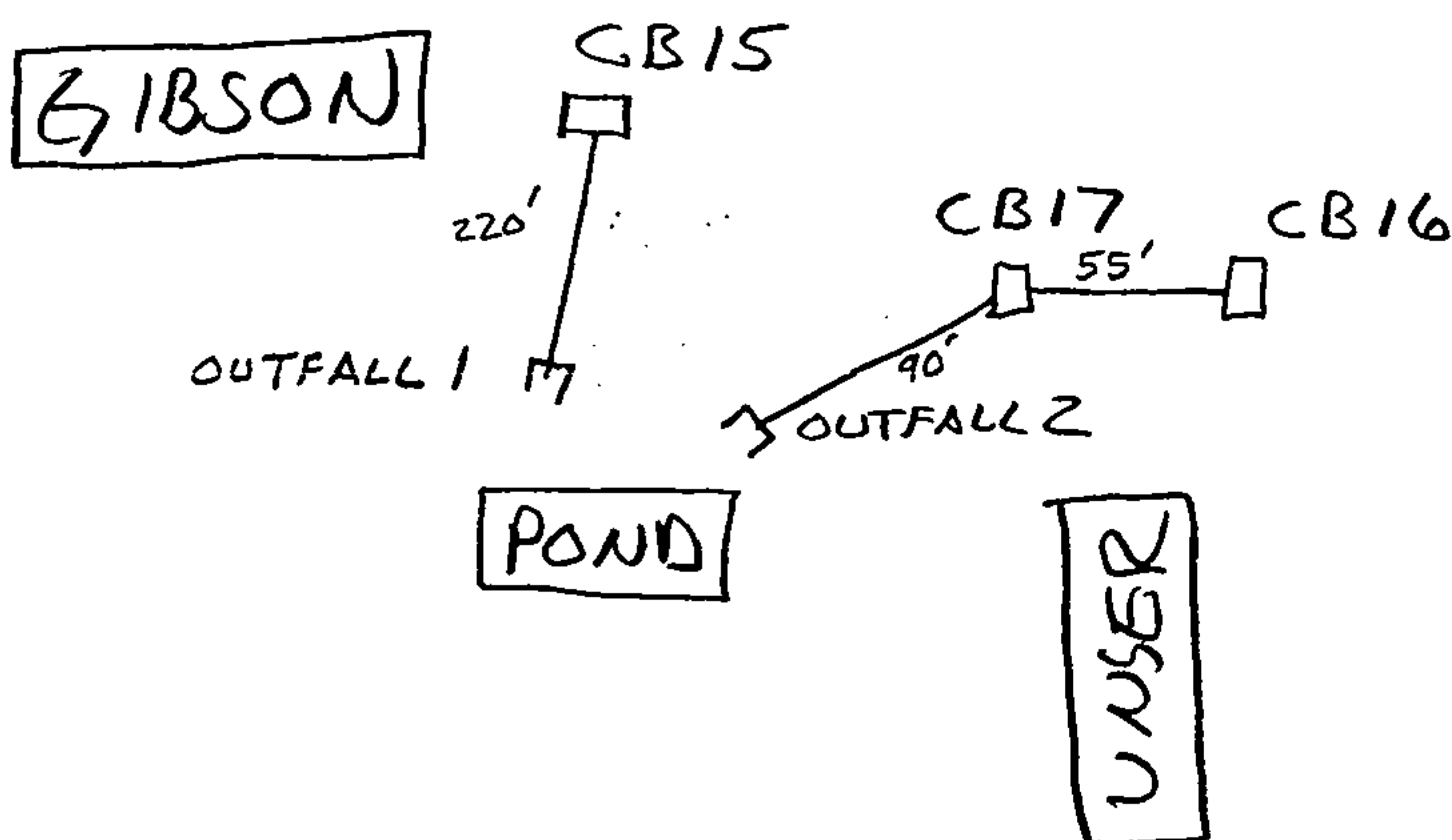
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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 14 OF _____

STRUCTURE	RIM/GATE	INV.	PIPE SIZE LEAVING STRUCTURE
TD 1	56.56	47.77	42" RCP
TD 2	78.35	71.08	42" RCP
OUTFALL	N/A		
POND	N/A	40.00	N/A

SEE HYDRAULIC ANALYSIS FOR STORMRAIN DESIGN
SHEETS 83-100



STRUCTURE	RIM/GATE	INV.	PIPE SIZE LEAVING STRUCTURE
CB15	46.00	42.50	18" RCP
CB16	45.00	42.50	18" RCP
CB17	45.00	42.00	24" RCP
OUTFALL 1	N/A	40.00	N/A
OUTFALL 2	N/A	40.00	N/A

EACH LINE IS SIZED FOR TWICE THE FLOW
SINCE ALL THREE INLETS ARE IN SUMP CONDITION.

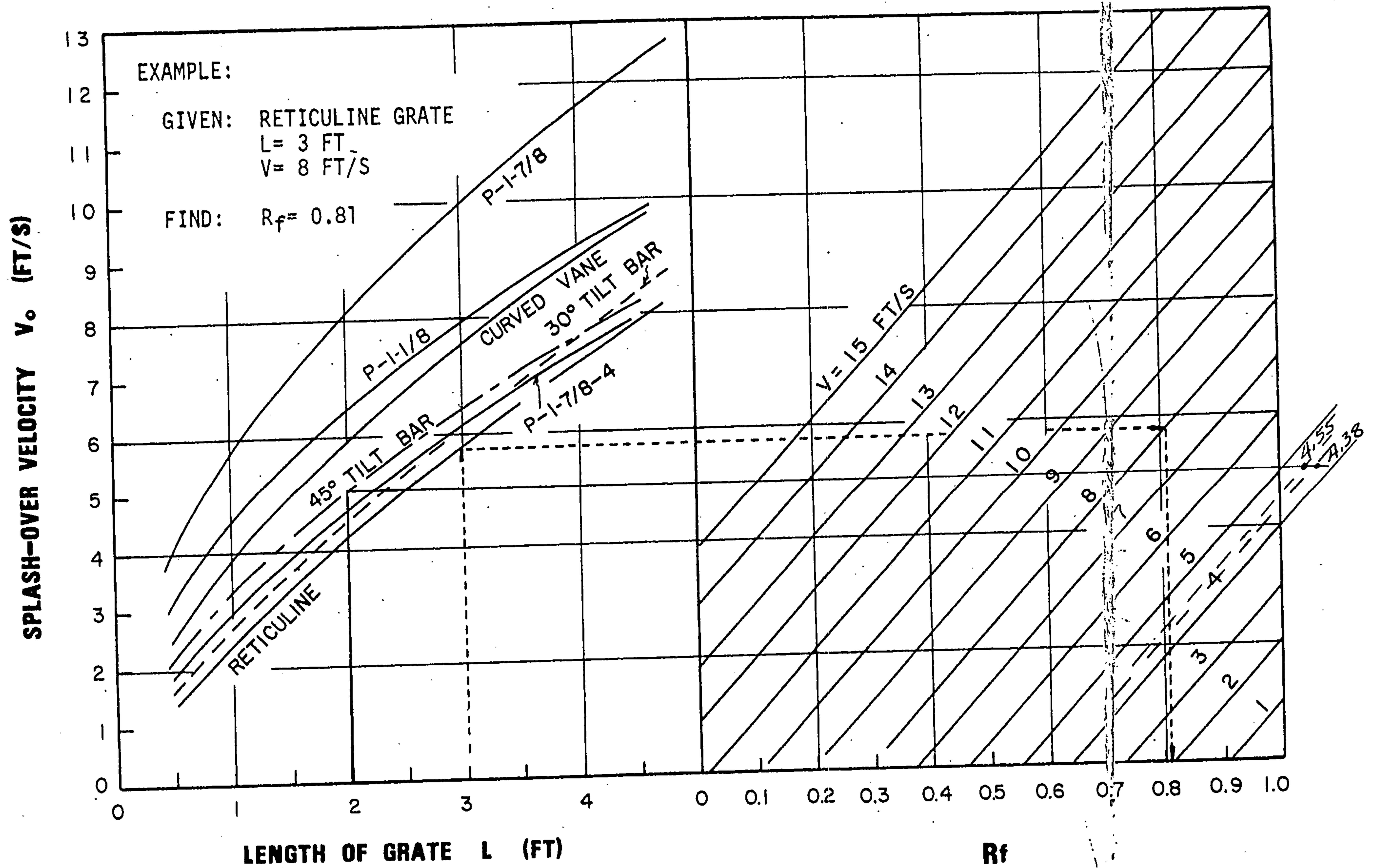
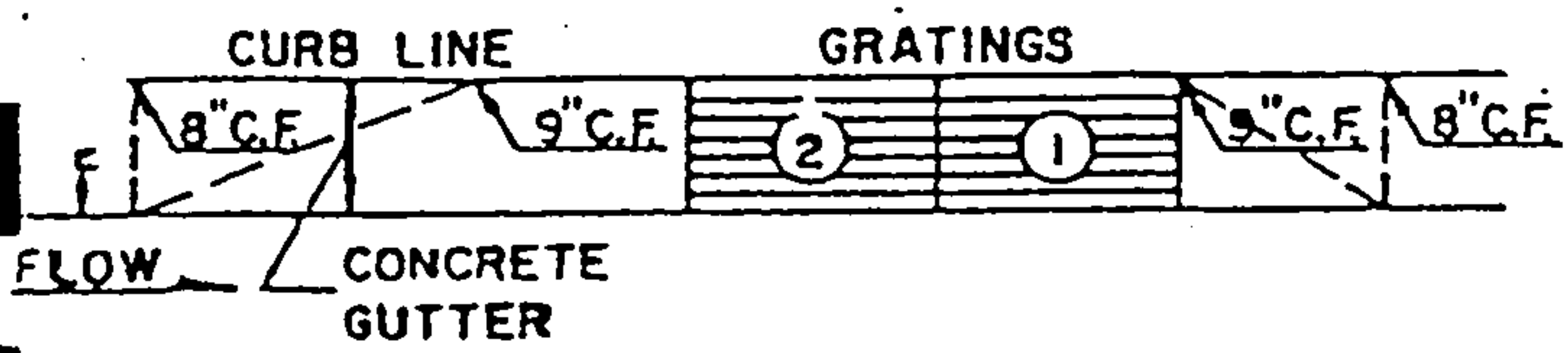
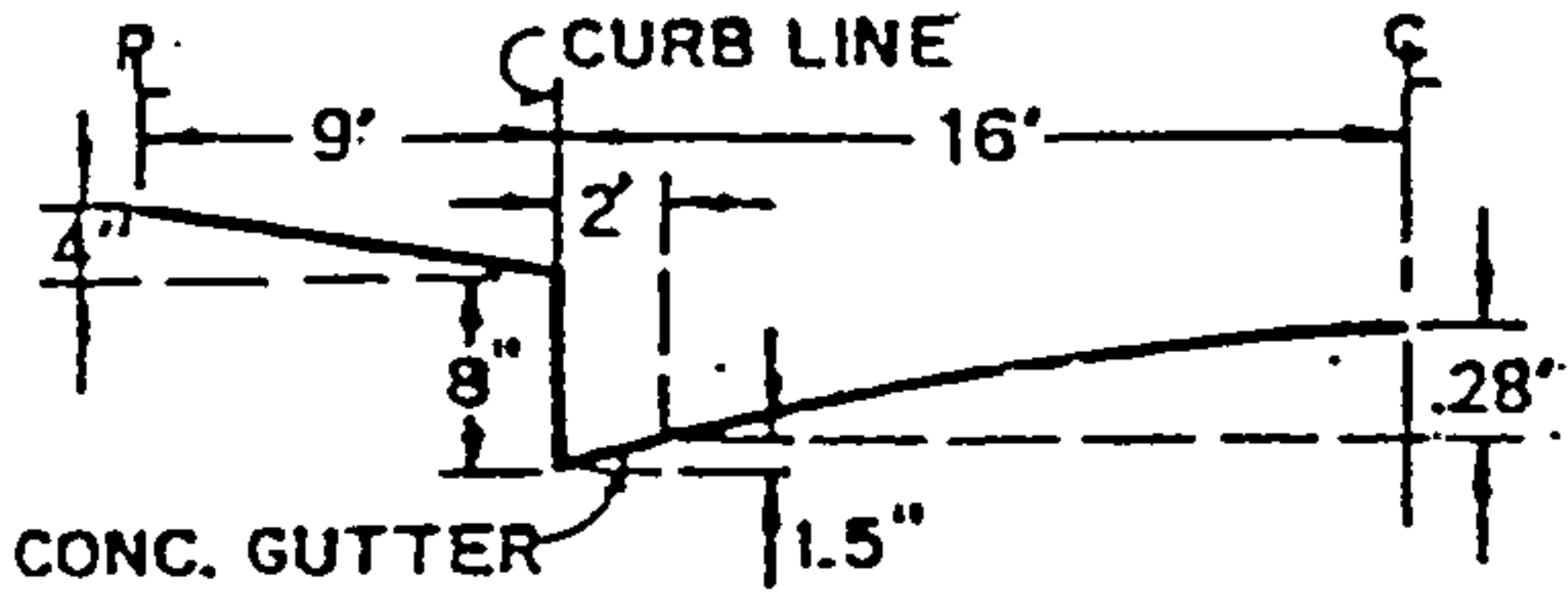


CHART 7. Grate inlet frontal flow interception efficiency.

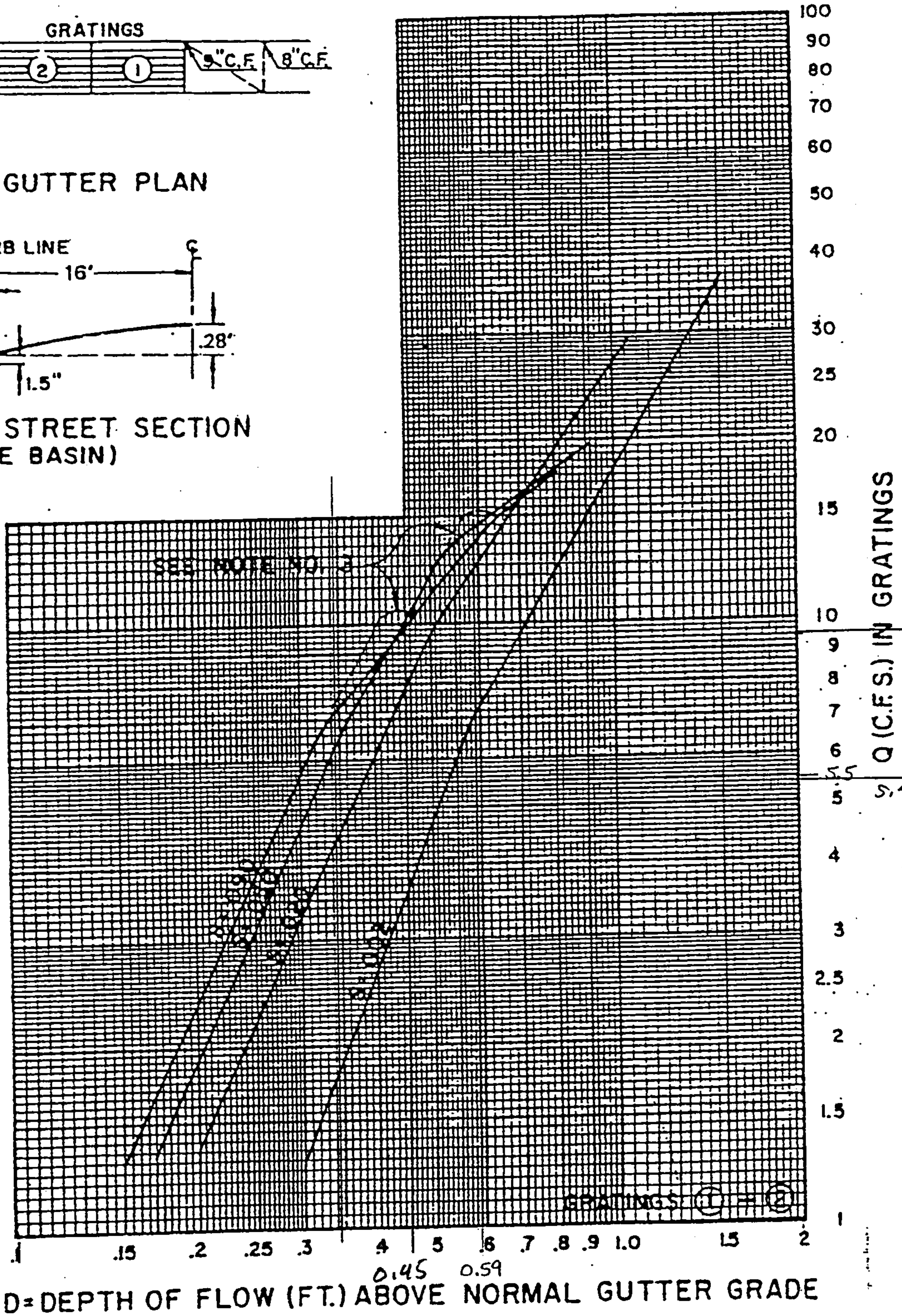
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



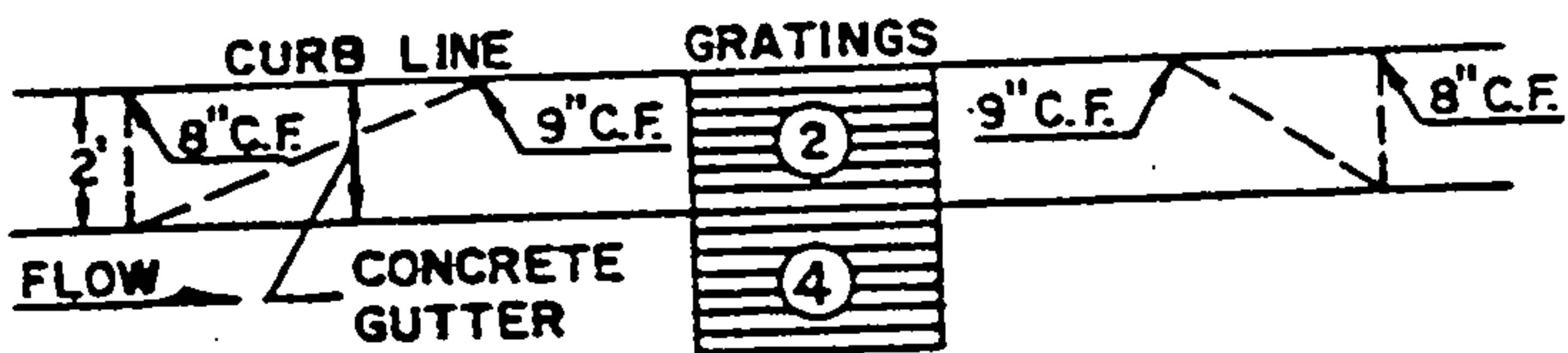
GRATING & GUTTER PLAN



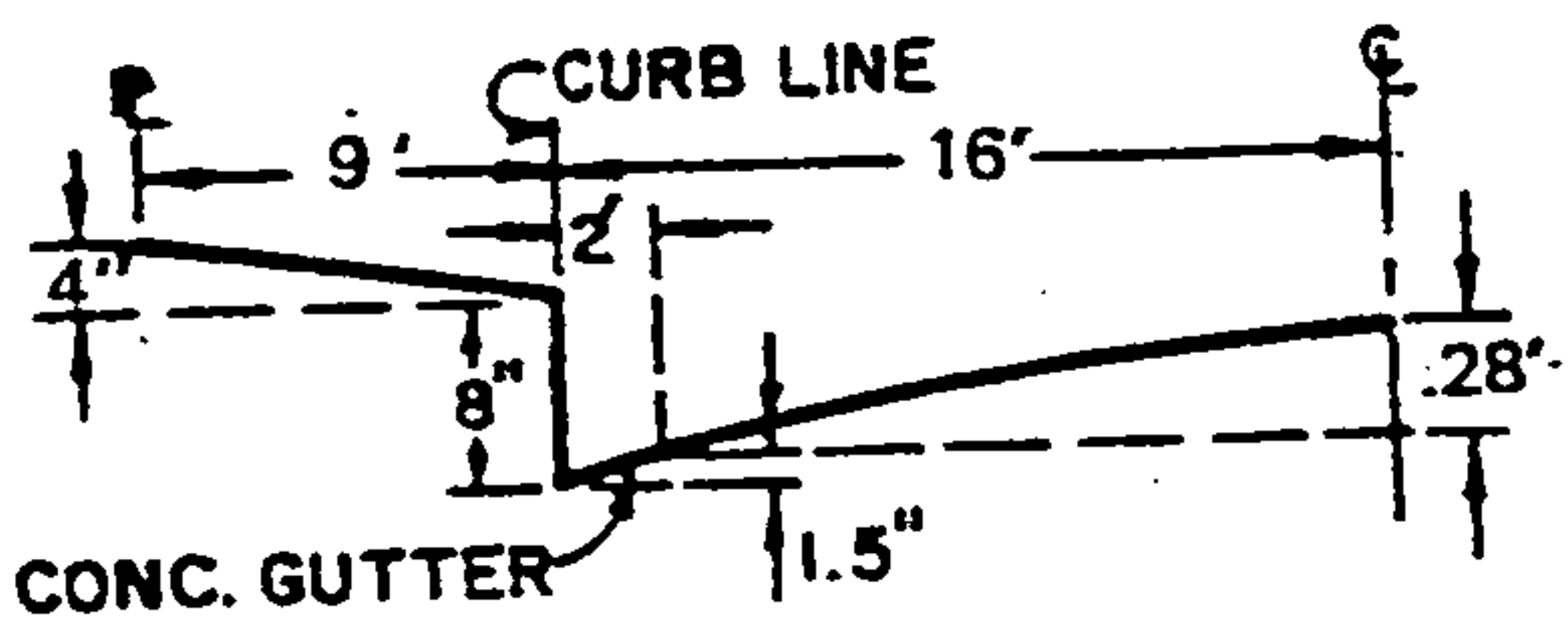
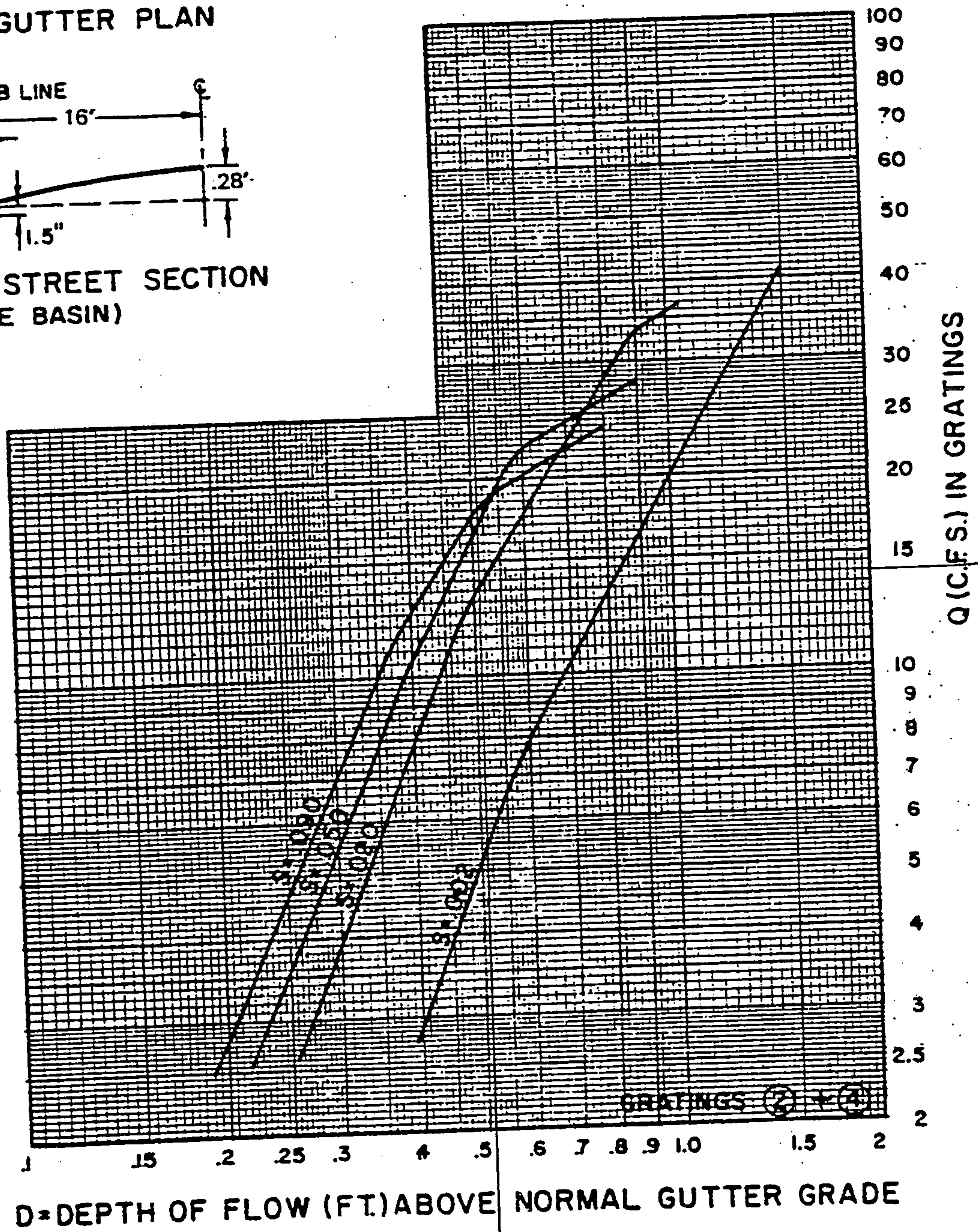
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



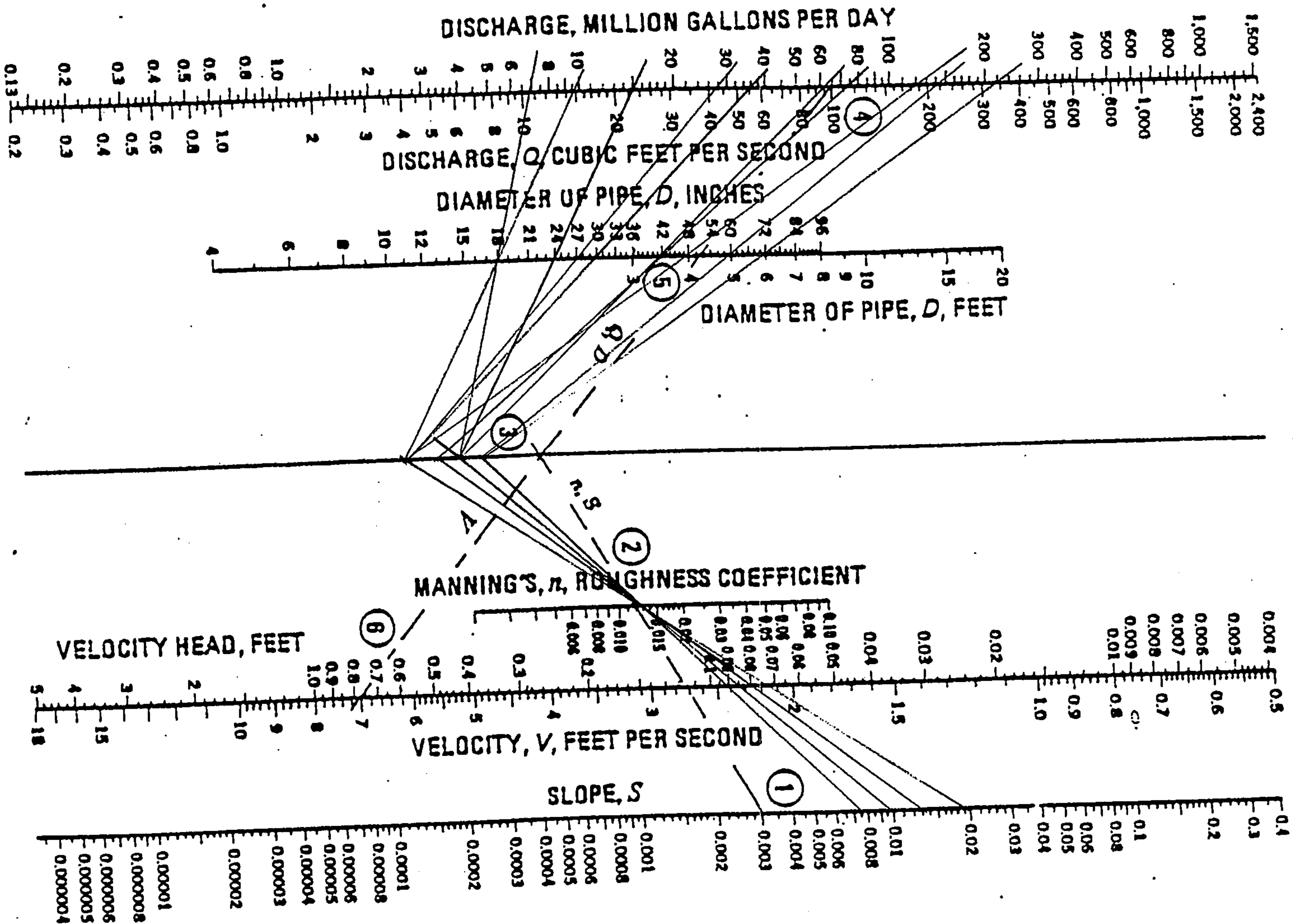
GRATING CAPACITIES FOR TYPE "B"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

START

TIME=0.0

***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 PER LOT RUNOFF

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD

ID=1 HYD NO=101.1 AREA=0.046100 SQ MI

PER A=0 B=47.23 C=0 D=52.77

TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD

ID=1 CODE=1

FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 02/15/2000
 START TIME (HR:MIN:SEC) = 08:55:49 USER NO.= M_GOODWN.I01
 INPUT FILE = ERGI.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 PER LOT RUNOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.046100 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B = 526.28
 AREA = .024327 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B = 327.55
 AREA = .021773 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FEET
PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:55:49

START TIME=0.0
***** HYDROGRAPH FOR 13 LOTS
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003148 SQ MI
PER A=0 B=49.97 C=0 D=50.03
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 02/14/2000
 START TIME (HR:MIN:SEC) = 14:01:45 USER NO.= M_GOODWN.I01
 INPUT FILE = 13lots.dat

START TIME=0.0
 ***** HYDROGRAPH FOR 13 LOTS
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003148 SQ MI
 PER A=0 B=49.97 C=0 D=50.03
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.2180 CFS UNIT VOLUME = .9976 B = 526.28
 AREA = .001575 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 3.8654 CFS UNIT VOLUME = .9967 B = 327.55
 AREA = .001573 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.32408 INCHES = .2223 ACRE-FEET
PEAK DISCHARGE RATE = 6.55 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:01:45

START

TIME=0.0

***** HYDROGRAPH FOR TRACT E POND

**BASIN A

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD

ID=1 HYD NO=101 AREA=0.015125 SQ MI
 PER A=0 PER B=40 PER C=0 PER D=60
 TP=0.1333 HR MASS RAINFALL=-1
 ID=1 CODE=1

PRINT HYD

*

**BASIN B-1

COMPUTE NM HYD

ID=2 HYD NO=102 AREA=0.004391 SQ MI
 PER A=0 PER B=38 PER C=0 PER D=62
 TP=0.1333 HR MASS RAINFALL=-1
 ID=2 CODE=1

PRINT HYD

*

**BASIN B-2

COMPUTE NM HYD

ID=3 HYD NO=103 AREA=0.001375 SQ MI
 PER A=0 PER B=47 PER C=0 PER D=53
 TP=0.1333 HR MASS RAINFALL=-1
 ID=3 CODE=1

PRINT HYD

*

**BASIN B-3

COMPUTE NM HYD

ID=4 HYD NO=104 AREA=0.002469 SQ MI
 PER A=0 PER B=54 PER C=0 PER D=46
 TP=0.1333 HR MASS RAINFALL=-1
 ID=4 CODE=1

PRINT HYD

*

**BASIN C-1

COMPUTE NM HYD

ID=5 HYD NO=105 AREA=0.0045 SQ MI
 PER A=0 B=49 C=0 D=51
 TP=0.1333 HR MASS RAINFALL=-1
 ID=5 CODE=1

PRINT HYD

*

**BASIN C-2

COMPUTE NM HYD

ID=6 HYD NO=106 AREA=0.001047 SQ MI
 PER A=0 PER B=89 PER C=0 PER D=11
 TP=0.1333 HR MASS RAINFALL=-1
 ID=6 CODE=1

PRINT HYD

*

**BASIN C-3

COMPUTE NM HYD

ID=7 HYD NO=107 AREA=0.001516 SQ MI
 PER A=0 PER B=20 PER C=0 PER D=80
 TP=0.1333 HR MASS RAINFALL=-1
 ID=7 CODE=1

PRINT HYD

*

**BASIN C-4

COMPUTE NM HYD

ID=8 HYD NO=108 AREA=0.001422 SQ MI
 PER A=0 PER B=52 PER C=0 PER D=48
 TP=0.1333 HR MASS RAINFALL=-1
 ID=8 CODE=1

PRINT HYD

*

**BASIN C-5

COMPUTE NM HYD

ID=9 HYD NO=109 AREA=0.003063 SQ MI
 PER A=0 B=43 C=0 D=57
 TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD
*
**BASIN C-6
COMPUTE NM HYD

PRINT HYD
*
**BASIN C-7
COMPUTE NM HYD

PRINT HYD
*
**BASIN D-1
COMPUTE NM HYD

PRINT HYD
*
**BASIN D-2
COMPUTE NM HYD

PRINT HYD
*
**BASIN D-3
COMPUTE NM HYD

PRINT HYD
*
**BASIN E-1
COMPUTE NM HYD

PRINT HYD
*
**BASIN OS-1
COMPUTE NM HYD

PRINT HYD
*
**BASIN OS-2
COMPUTE NM HYD

PRINT HYD
*
**BASIN TMSB
COMPUTE NM HYD

PRINT HYD
*
**BASIN TMSC
COMPUTE NM HYD

PRINT HYD

ID=9 CODE=1

ID=10 HYD NO=110 AREA=0.002016 SQ MI
PER A=0 PER B=43 PER C=0 PER D=57
TP=0.1333 HR MASS RAINFALL=-1
ID=10 CODE=1

ID=11 HYD NO=111 AREA=0.002063 SQ MI
PER A=0 PER B=53 PER C=0 PER D=47
TP=0.1333 HR MASS RAINFALL=-1
ID=11 CODE=1

ID=12 HYD NO=112 AREA=0.002844 SQ MI
PER A=0 PER B=49 PER C=0 PER D=51
TP=0.1333 HR MASS RAINFALL=-1
ID=12 CODE=1

ID=13 HYD NO=113 AREA=0.000813 SQ MI
PER A=0 B=66 C=0 D=34
TP=0.1333 HR MASS RAINFALL=-1
ID=13 CODE=1

ID=14 HYD NO=114 AREA=0.000828 SQ MI
PER A=0 PER B=62 PER C=0 PER D=38
TP=0.1333 HR MASS RAINFALL=-1
ID=14 CODE=1

ID=15 HYD NO=115 AREA=0.0015 SQ MI
PER A=0 PER B=44 PER C=0 PER D=56
TP=0.1333 HR MASS RAINFALL=-1
ID=15 CODE=1

ID=16 HYD NO=116 AREA=0.001196 SQ MI
PER A=0 PER B=78 PER C=0 PER D=22
TP=0.1333 HR MASS RAINFALL=-1
ID=16 CODE=1

ID=17 HYD NO=117 AREA=0.007484 SQ MI
PER A=0 B=30 C=0 D=70
TP=0.1333 HR MASS RAINFALL=-1
ID=17 CODE=1

ID=18 HYD NO=118 AREA=0.004453 SQ MI
PER A=38.61 B=5.07 C=0 D=56.32
TP=0.1333 HR MASS RAINFALL=-1
ID=18 CODE=1

ID=19 HYD NO=119 AREA=0.003891 SQ MI
PER A=4.15 B=50.6 C=0 D=45.25
TP=0.1333 HR MASS RAINFALL=-1
ID=19 CODE=1

*
**BASIN 13 LOTS

COMPUTE NM HYD

ID=38 HYD NO=138 AREA=0.003148 SQ MI
PER A=0 B=49.97 C=0 D=50.03
TP=0.1333 HR MASS RAINFALL=-1
ID=38 CODE=1

PRINT HYD

*
**BASIN TRACT E

COMPUTE NM HYD

ID=39 HYD NO=139 AREA=0.006579 SQ MI
PER A=0 B=39.19 C=0 D=60.81
TP=0.1333 HR MASS RAINFALL=-1
ID=39 CODE=1

PRINT HYD

*
**BASIN EL RANCHO GRANDE I

COMPUTE NM HYD

ID=42 HYD NO=142 AREA=0.046100 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1
ID=42 CODE=1

PRINT HYD

*
ADD HYD

ID=20 HYD NO=120 ID=1 ID=2
ID=20 CODE=1

PRINT HYD

*
ADD HYD

ID=21 HYD NO=121 ID=3 ID=4
ID=21 CODE=1

PRINT HYD

*
ADD HYD

ID=22 HYD NO=122 ID=5 ID=6
ID=22 CODE=1

PRINT HYD

*
ADD HYD

ID=23 HYD NO=123 ID=7 ID=8
ID=23 CODE=1

PRINT HYD

*
ADD HYD

ID=24 HYD NO=124 ID=9 ID=10
ID=24 CODE=1

PRINT HYD

*
ADD HYD

ID=25 HYD NO=125 ID=11 ID=12
ID=25 CODE=1

PRINT HYD

*
ADD HYD

ID=26 HYD NO=126 ID=13 ID=14
ID=26 CODE=1

PRINT HYD

*
ADD HYD

ID=27 HYD NO=127 ID=15 ID=16
ID=27 CODE=1

PRINT HYD

*
ADD HYD

ID=28 HYD NO=128 ID=17 ID=18
ID=28 CODE=1

PRINT HYD

*
ADD HYD

ID=29 HYD NO=129 ID=20 ID=21
ID=29 CODE=1

PRINT HYD

*
ADD HYD

ID=30 HYD NO=130 ID=22 ID=23
ID=30 CODE=1

PRINT HYD

*
ADD HYD

ID=31 HYD NO=131 ID=24 ID=25
ID=31 CODE=1

PRINT HYD

*
ADD HYD

ID=32 HYD NO=132 ID=26 ID=27
ID=32 CODE=1

PRINT HYD

*
ADD HYD

ID=33 HYD NO=133 ID=28 ID=19
ID=33 CODE=1

PRINT HYD


```
*
ADD HYD ID=34 HYD NO=134 ID=29 ID=30
PRINT HYD ID=34 CODE=1
*
ADD HYD ID=35 HYD NO=135 ID=31 ID=32
PRINT HYD ID=35 CODE=1
*
ADD HYD ID=36 HYD NO=136 ID=34 ID=35
PRINT HYD ID=36 CODE=1
*
ADD HYD ID=37 HYD NO=137 ID=33 ID=36
PRINT HYD ID=37 CODE=1
*
ADD HYD ID=40 HYD NO=140 ID=38 ID=39
PRINT HYD ID=40 CODE=1
*
ADD HYD ID=41 HYD NO=141 ID=37 ID=40
PRINT HYD ID=41 CODE=1
*
ADD HYD ID=43 HYD NO=143 ID=41 ID=42
PRINT HYD ID=43 CODE=1
*
*DIVIDE BY MAXIMUM FLOW RATE
DIVIDE HYD ID=43 Q=189.48 ID I=44 HYD NO=144
ID II=45 HYD NO=145
```

* ROUTING THROUGH POND

*
ROUTE RESERVOIR

OUTFLOW(CFS)	INFLOW ID=45 CODE=24 STORAGE(AC-FT)	ELEVATION(FT)
0.0	0.0	45.0
4.78	0.1048	46.0
15.12	0.2359	47.0
21.42	0.3951	48.0

PRINT HYD ID=46 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/15/2000
START TIME (HR:MIN:SEC) = 13:51:47 USER NO.= M_GOODWN.I01
INPUT FILE = TREPOND.DAT

START TIME=0.0

***** HYDROGRAPH FOR TRACT E POND

**BASIN A
RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD

ID=1 HYD NO=101 AREA=0.015125 SQ MI
PER A=0 PER B=40 PER C=0 PER D=60
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 35.829 CFS UNIT VOLUME = .9990 B = 526.28
AREA = .009075 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 14.866 CFS UNIT VOLUME = .9994 B = 327.55
AREA = .006050 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=1 CODE=1

30

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.45223 INCHES = 1.1715 ACRE-FEET
PEAK DISCHARGE RATE = 33.71 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN B-1

COMPUTE NM HYD

ID=2 HYD NO=102 AREA=0.004391 SQ MI
PER A=0 PER B=38 PER C=0 PER D=62
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 10.748 CFS UNIT VOLUME = .9982 B = 526.28
AREA = .002722 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 4.1001 CFS UNIT VOLUME = .9970 B = 327.55
AREA = .001669 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.47794 INCHES = .3461 ACRE-FEET
PEAK DISCHARGE RATE = 9.93 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN B-2

COMPUTE NM HYD

ID=3 HYD NO=103 AREA=0.001375 SQ MI
PER A=0 PER B=47 PER C=0 PER D=53
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 2.8771 CFS UNIT VOLUME = .9955 B = 526.28
AREA = .000729 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 1.5880 CFS UNIT VOLUME = .9919 B = 327.55
AREA = .000646 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.36226 INCHES = .0999 ACRE-FEET

PEAK DISCHARGE RATE = 2.93 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN B-3

COMPUTE NM HYD

ID=4 HYD NO=104 AREA=0.002469 SQ MI
PER A=0 PER B=54 PER C=0 PER D=46
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 4.4840 CFS UNIT VOLUME = .9969 B = 526.28
AREA = .001136 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 3.2762 CFS UNIT VOLUME = .9961 B = 327.55
AREA = .001333 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.27228 INCHES = .1675 ACRE-FEET
PEAK DISCHARGE RATE = 4.99 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-1

COMPUTE NM HYD

ID=5 HYD NO=105 AREA=0.0045 SQ MI
PER A=0 B=49 C=0 D=51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 9.0608 CFS UNIT VOLUME = .9981 B = 526.28
AREA = .002295 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 5.4182 CFS UNIT VOLUME = .9978 B = 327.55
AREA = .002205 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = 1.33655 INCHES = .3208 ACRE-FEET
PEAK DISCHARGE RATE = 9.42 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-2

COMPUTE NM HYD

ID=6 HYD NO=106 AREA=0.001047 SQ MI
PER A=0 PER B=89 PER C=0 PER D=11
TP=0.1333 HR MASS RAINFALL=-1

32

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = .45470 CFS UNIT VOLUME = .9751 B = 526.28
AREA = .000115 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 2.2897 CFS UNIT VOLUME = .9943 B = 327.55
AREA = .000932 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = .82240 INCHES = .0459 ACRE-FEET
PEAK DISCHARGE RATE = 1.56 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-3

COMPUTE NM HYD

ID=7 HYD NO=107 AREA=0.001516 SQ MI
PER A=0 PER B=20 PER C=0 PER D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 4.7882 CFS UNIT VOLUME = .9969 B = 526.28
AREA = .001213 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = .74504 CFS UNIT VOLUME = .9822 B = 327.55
AREA = .000303 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.70931 INCHES = .1382 ACRE-FEET
PEAK DISCHARGE RATE = 3.86 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-4

COMPUTE NM HYD

ID=8 HYD NO=108 AREA=0.001422 SQ MI
PER A=0 PER B=52 PER C=0 PER D=48
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 2.6948 CFS UNIT VOLUME = .9949 B = 526.28

AREA = .000683 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.8170 CFS UNIT VOLUME = .9926 B = 327.55
 AREA = .000739 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.29799 INCHES = .0984 ACRE-FEET
 PEAK DISCHARGE RATE = 2.92 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-5

COMPUTE NM HYD ID=9 HYD NO=109 AREA=0.003063 SQ MI
 PER A=0 B=43 C=0 D=57
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.8929 CFS UNIT VOLUME = .9978 B = 526.28
 AREA = .001746 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 3.2364 CFS UNIT VOLUME = .9961 B = 327.55
 AREA = .001317 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 109.00

RUNOFF VOLUME = 1.41367 INCHES = .2309 ACRE-FEET
 PEAK DISCHARGE RATE = 6.70 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-6

COMPUTE NM HYD ID=10 HYD NO=110 AREA=0.002016 SQ MI
 PER A=0 PER B=43 PER C=0 PER D=57
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 4.5368 CFS UNIT VOLUME = .9969 B = 526.28
 AREA = .001149 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 2.1301 CFS UNIT VOLUME = .9938 B = 327.55

34

AREA = .000867 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.41367 INCHES = .1520 ACRE-FEET
PEAK DISCHARGE RATE = 4.41 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-7

COMPUTE NM HYD

ID=11 HYD NO=111 AREA=0.002063 SQ MI
PER A=0 PER B=53 PER C=0 PER D=47
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 3.8281 CFS UNIT VOLUME = .9965 B = 526.28
AREA = .000970 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 2.6867 CFS UNIT VOLUME = .9953 B = 327.55
AREA = .001093 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=11 CODE=1

PARTIAL HYDROGRAPH 111.00

RUNOFF VOLUME = 1.28513 INCHES = .1414 ACRE-FEET
PEAK DISCHARGE RATE = 4.20 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN D-1

COMPUTE NM HYD

ID=12 HYD NO=112 AREA=0.002844 SQ MI
PER A=0 PER B=49 PER C=0 PER D=51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 5.7264 CFS UNIT VOLUME = .9973 B = 526.28
AREA = .001450 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 3.4243 CFS UNIT VOLUME = .9964 B = 327.55
AREA = .001394 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=12 CODE=1

PARTIAL HYDROGRAPH 112.00

RUNOFF VOLUME = 1.33655 INCHES = .2027 ACRE-FEET
 PEAK DISCHARGE RATE = 5.96 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN D-2

COMPUTE NM HYD ID=13 HYD NO=113 AREA=0.000813 SQ MI
 PER A=0 B=66 C=0 D=34
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 1.0913 CFS UNIT VOLUME = .9881 B = 526.28
 AREA = .000276 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.3185 CFS UNIT VOLUME = .9903 B = 327.55
 AREA = .000537 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 113.00

RUNOFF VOLUME = 1.11804 INCHES = .0485 ACRE-FEET
 PEAK DISCHARGE RATE = 1.50 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN D-3

COMPUTE NM HYD ID=14 HYD NO=114 AREA=0.000828 SQ MI
 PER A=0 PER B=62 PER C=0 PER D=38
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 1.2422 CFS UNIT VOLUME = .9897 B = 526.28
 AREA = .000315 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.2615 CFS UNIT VOLUME = .9894 B = 327.55
 AREA = .000513 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 114.00

RUNOFF VOLUME = 1.16945 INCHES = .0516 ACRE-FEET
 PEAK DISCHARGE RATE = 1.58 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN E-1

COMPUTE NM HYD

ID=15 HYD NO=115 AREA=0.0015 SQ MI
 PER A=0 PER B=44 PER C=0 PER D=56
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 3.3164 CFS UNIT VOLUME = .9961 B = 526.28
 AREA = .000840 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.6218 CFS UNIT VOLUME = .9919 B = 327.55
 AREA = .000660 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=15 CODE=1

PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = 1.40082 INCHES = .1121 ACRE-FEET
 PEAK DISCHARGE RATE = 3.27 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN OS-1

COMPUTE NM HYD

ID=16 HYD NO=116 AREA=0.001196 SQ MI
 PER A=0 PER B=78 PER C=0 PER D=22
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 1.0388 CFS UNIT VOLUME = .9881 B = 526.28
 AREA = .000263 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 2.2923 CFS UNIT VOLUME = .9943 B = 327.55
 AREA = .000933 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=16 CODE=1

PARTIAL HYDROGRAPH 116.00

RUNOFF VOLUME = .96379 INCHES = .0615 ACRE-FEET
 PEAK DISCHARGE RATE = 1.99 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN OS-2

COMPUTE NM HYD

ID=17 HYD NO=117 AREA=0.007484 SQ MI
 PER A=0 B=30 C=0 D=70
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 20.683 CFS UNIT VOLUME = .9988 B = 526.28
 AREA = .005239 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 5.5170 CFS UNIT VOLUME = .9978 B = 327.55
 AREA = .002245 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=17 CODE=1

PARTIAL HYDROGRAPH 117.00

RUNOFF VOLUME = 1.58077 INCHES = .6310 ACRE-Feet
 PEAK DISCHARGE RATE = 17.83 CFS AT 1.500 HOURS BASIN AREA =

**BASIN TMSB
 COMPUTE NM HYD

ID=18 HYD NO=118 AREA=0.004453 SQ MI
 PER A=38.61 B=5.07 C=0 D=56.32
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 9.9014 CFS UNIT VOLUME = .9982 B = 526.28
 AREA = .002508 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .159194HR TP = .133300HR K/TP RATIO = 1.194252 SHAPE
 UNIT PEAK = 4.0816 CFS UNIT VOLUME = .9961 B = 279.72
 AREA = .001945 SQ MI IA = .63259 INCHES INF = 1.62125 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=18 CODE=1

PARTIAL HYDROGRAPH 118.00

RUNOFF VOLUME = 1.31369 INCHES = .3120 ACRE-Feet
 PEAK DISCHARGE RATE = 8.84 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN TMSC
 COMPUTE NM HYD

ID=19 HYD NO=119 AREA=0.003891 SQ MI
 PER A=4.15 B=50.6 C=0 D=45.25
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.9512 CFS UNIT VOLUME = .9978 B = 526.28
 AREA = .001761 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .133199HR TP = .133300HR K/TP RATIO = .999241 SHAPE
UNIT PEAK = 5.1577 CFS UNIT VOLUME = .9977 B = 322.73
AREA = .002130 SQ MI IA = .51137 INCHES INF = 1.28184 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=19 CODE=1

PARTIAL HYDROGRAPH 119.00

RUNOFF VOLUME = 1.25155 INCHES = .2597 ACRE-FEET
PEAK DISCHARGE RATE = 7.72 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN 13 LOTS

COMPUTE NM HYD

ID=38 HYD NO=138 AREA=0.003148 SQ MI
PER A=0 B=49.97 C=0 D=50.03
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 6.2180 CFS UNIT VOLUME = .9976 B = 526.28
AREA = .001575 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 3.8654 CFS UNIT VOLUME = .9967 B = 327.55
AREA = .001573 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=38 CODE=1

PARTIAL HYDROGRAPH 138.00

RUNOFF VOLUME = 1.32408 INCHES = .2223 ACRE-FEET
PEAK DISCHARGE RATE = 6.55 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN TRACT E

COMPUTE NM HYD

ID=39 HYD NO=139 AREA=0.006579 SQ MI
PER A=0 B=39.19 C=0 D=60.81
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 15.795 CFS UNIT VOLUME = .9987 B = 526.28
AREA = .004001 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 6.3356 CFS UNIT VOLUME = .9982 B = 327.55
AREA = .002578 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=39 CODE=1

PARTIAL HYDROGRAPH 139.00

RUNOFF VOLUME = 1.46264 INCHES = .5132 ACRE-FEET
 PEAK DISCHARGE RATE = 14.75 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN EL RANCHO GRANDE I

COMPUTE NM HYD ID=42 HYD NO=142 AREA=0.046100 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B = 526.28
 AREA = .024327 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B = 327.55
 AREA = .021773 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=42 CODE=1

PARTIAL HYDROGRAPH 142.00

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FEET
 PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD ID=20 HYD NO=120 ID=1 ID=2
 PRINT HYD ID=20 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 1.45799 INCHES = 1.5175 ACRE-FEET
 PEAK DISCHARGE RATE = 43.64 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD ID=21 HYD NO=121 ID=3 ID=4
 PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 121.00

RUNOFF VOLUME = 1.30432 INCHES = .2674 ACRE-FEET
 PEAK DISCHARGE RATE = 7.92 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=22 HYD NO=122 ID=5 ID=6
ID=22 CODE=1

40

PARTIAL HYDROGRAPH 122.00

RUNOFF VOLUME = 1.23942 INCHES = .3667 ACRE-Feet
PEAK DISCHARGE RATE = 10.99 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=23 HYD NO=123 ID=7 ID=8
ID=23 CODE=1

PARTIAL HYDROGRAPH 123.00

RUNOFF VOLUME = 1.51002 INCHES = .2366 ACRE-Feet
PEAK DISCHARGE RATE = 6.78 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=24 HYD NO=124 ID=9 ID=10
ID=24 CODE=1

PARTIAL HYDROGRAPH 124.00

RUNOFF VOLUME = 1.41356 INCHES = .3829 ACRE-Feet
PEAK DISCHARGE RATE = 11.11 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=25 HYD NO=125 ID=11 ID=12
ID=25 CODE=1

PARTIAL HYDROGRAPH 125.00

RUNOFF VOLUME = 1.31482 INCHES = .3441 ACRE-Feet
PEAK DISCHARGE RATE = 10.16 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=26 HYD NO=126 ID=13 ID=14
ID=26 CODE=1

PARTIAL HYDROGRAPH 126.00

RUNOFF VOLUME = 1.14369 INCHES = .1001 ACRE-Feet
PEAK DISCHARGE RATE = 3.09 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=27 HYD NO=127 ID=15 ID=16
ID=27 CODE=1

PARTIAL HYDROGRAPH 127.00

RUNOFF VOLUME = 1.20675 INCHES = .1735 ACRE-Feet
PEAK DISCHARGE RATE = 5.25 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=28 HYD NO=128 ID=17 ID=18
ID=28 CODE=1

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = 1.48109 INCHES = .9429 ACRE-Feet
PEAK DISCHARGE RATE = 26.67 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=29 HYD NO=129 ID=20 ID=21
ID=29 CODE=1

PARTIAL HYDROGRAPH 129.00

RUNOFF VOLUME = 1.43270 INCHES = 1.7849 ACRE-Feet
PEAK DISCHARGE RATE = 51.56 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=30 HYD NO=130 ID=22 ID=23
ID=30 CODE=1

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.33312 INCHES = .6033 ACRE-Feet
PEAK DISCHARGE RATE = 17.77 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=31 HYD NO=131 ID=24 ID=25
ID=31 CODE=1

PARTIAL HYDROGRAPH 131.00

RUNOFF VOLUME = 1.36504 INCHES = .7270 ACRE-Feet
PEAK DISCHARGE RATE = 21.27 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=32 HYD NO=132 ID=26 ID=27
ID=32 CODE=1

PARTIAL HYDROGRAPH 132.00

RUNOFF VOLUME = 1.18289 INCHES = .2736 ACRE-Feet
PEAK DISCHARGE RATE = 8.34 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=33 HYD NO=133 ID=28 ID=19
ID=33 CODE=1

PARTIAL HYDROGRAPH 133.00

RUNOFF VOLUME = 1.42465 INCHES = 1.2026 ACRE-Feet
PEAK DISCHARGE RATE = 34.39 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=34 HYD NO=134 ID=29 ID=30
ID=34 CODE=1

PARTIAL HYDROGRAPH 134.00

RUNOFF VOLUME = 1.40617 INCHES = 2.3882 ACRE-Feet
PEAK DISCHARGE RATE = 69.32 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=35 HYD NO=135 ID=31 ID=32
ID=35 CODE=1

PARTIAL HYDROGRAPH 135.00

RUNOFF VOLUME = 1.30988 INCHES = 1.0006 ACRE-Feet
PEAK DISCHARGE RATE = 29.61 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=36 HYD NO=136 ID=34 ID=35
ID=36 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = 1.37630 INCHES = 3.3888 ACRE-Feet
PEAK DISCHARGE RATE = 98.94 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=37 HYD NO=137 ID=33 ID=36
ID=37 CODE=1

PARTIAL HYDROGRAPH 137.00

RUNOFF VOLUME = 1.38864 INCHES = 4.5915 ACRE-Feet
PEAK DISCHARGE RATE = 133.32 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=40 HYD NO=140 ID=38 ID=39
ID=40 CODE=1

PARTIAL HYDROGRAPH 140.00

RUNOFF VOLUME = 1.41774 INCHES = .7355 ACRE-Feet
PEAK DISCHARGE RATE = 21.30 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=41 HYD NO=141 ID=37 ID=40
ID=41 CODE=1

PARTIAL HYDROGRAPH 141.00

RUNOFF VOLUME = 1.39259 INCHES = 5.3269 ACRE-Feet
PEAK DISCHARGE RATE = 154.62 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=43 HYD NO=143 ID=41 ID=42
ID=43 CODE=1

PARTIAL HYDROGRAPH 143.00

RUNOFF VOLUME = 1.37956 INCHES = 8.6690 ACRE-Feet
PEAK DISCHARGE RATE = 252.24 CFS AT 1.500 HOURS BASIN AREA =

*

*DIVIDE BY MAXIMUM FLOW RATE

DIVIDE HYD ID=43 Q=189.48 ID I=44 HYD NO=144
ID II=45 HYD NO=145

* ROUTING THROUGH POND

*

ROUTE RESERVOIR

ID=46 HYD NO=146 OUTFLOW(CFS)	INFLOW ID=45 CODE=24 STORAGE(AC-FT)	ELEVATION(FT)
0.0	0.0	45.0
4.78	0.1048	46.0
15.12	0.2359	47.0
21.42	0.3951	48.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)	
.00	.00	45.00	.000	.00	
.80	.00	45.00	.000	.00	
PEAK DISCHARGE =					19.712 CFS - PEAK OCCURS AT HOUR 1.57
MAXIMUM WATER SURFACE ELEVATION =					47.729
MAXIMUM STORAGE =					.3519 AC-FT INCREMENTAL TIME=.033330HR

PRINT HYD ID=46 CODE=1

PARTIAL HYDROGRAPH 146.00

RUNOFF VOLUME = 1.37956 INCHES = .4949 ACRE-Feet
PEAK DISCHARGE RATE = 19.71 CFS AT 1.567 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 13:51:48

START TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I BARBADOS RUOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001976 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

45

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/15/2000
START TIME (HR:MIN:SEC) = 09:02:22 USER NO.= M_GOODWN.I01
INPUT FILE = ERGIBAR.DAT

START TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I BARBADOS RUOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001976 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 6.2411 CFS UNIT VOLUME = .9976 B = 526.28
AREA = .001581 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = .97111 CFS UNIT VOLUME = .9863 B = 327.55
AREA = .000395 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

RUNOFF VOLUME = 1.70931 INCHES = .1801 ACRE-FeET
PEAK DISCHARGE RATE = 5.02 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 09:02:22

START TIME=0.0
***** HYDROGRAPH FOR REMAINDER OF PARCEL 12 RUNOFF (PER EL RANCHO TREATMENTS)
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.040305 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/15/2000
START TIME (HR:MIN:SEC) = 16:32:15 USER NO.= M_GOODWN.I01
INPUT FILE = PAR12R.DAT

START TIME=0.0
***** HYDROGRAPH FOR REMAINDER OF PARCEL 12 RUNOFF (PER EL RANCHO TREATMENT
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2						
DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.040305 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 83.971 CFS UNIT VOLUME = .9992 B = 526.28
AREA = .021269 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 46.776 CFS UNIT VOLUME = 1.000 B = 327.55
AREA = .019036 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

50

RUNOFF VOLUME = 1.35930 INCHES = 2.9219 ACRE-FEET
PEAK DISCHARGE RATE = 85.35 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 16:32:15

START TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.012841 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994

RUN DATE (MON/DAY/YR) = 02/16/2000
START TIME (HR:MIN:SEC) = 10:15:12 USER NO.=

M_GOODWN.I01

INPUT FILE = ERGIGIB.DAT

START TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

	DT = .033330 HOURS			END TIME = 5.999400		
HOURS						
.0084	.0000	.0013	.0027	.0041	.0055	.0069
.0199	.0099	.0115	.0131	.0147	.0164	.0181
.0340	.0217	.0236	.0256	.0276	.0296	.0318
.0523	.0363	.0387	.0412	.0438	.0465	.0493
.0920	.0554	.0587	.0622	.0675	.0731	.0791
.7574	.1208	.1651	.2289	.3159	.4302	.5759
1.5201	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.8130	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.9736	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
2.0059	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0308	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0514	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0690	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0846	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0985	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.1112	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1229	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1337	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1439	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
2.1533	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520
2.1623	2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
	2.1635	2.1648	2.1660	2.1672	2.1684	2.1696

2.1708
 2.1789
 2.1866
 2.1939
 2.1720 2.1731 2.1743 2.1754 2.1766 2.1777
 2.1800 2.1811 2.1822 2.1833 2.1844 2.1855
 2.1876 2.1887 2.1897 2.1908 2.1918 2.1929
 2.1949 2.1960 2.1970 2.1980 2.1990 2.2000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.012841 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 25.348 CFS UNIT VOLUME = .9989 B =
 526.28 P60 = 1.9000
 AREA = .006421 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 15.777 CFS UNIT VOLUME = .9995 B =
 327.55 P60 = 1.9000
 AREA = .006421 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.32370 INCHES = .9065 ACRE-FEET
 PEAK DISCHARGE RATE = 26.66 CFS AT 1.500 HOURS BASIN
 AREA = .0128 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 10:15:13


```

START          TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON/UNSER RUNOFF
RAINFALL      TYPE=1 RAIN QUARTER=0.0 IN
              RAIN ONE=1.90 IN RAIN SIX=2.20 IN
              RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.007274 SQ MI
              PER A=0 B=50 C=0 D=50
              TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD     ID=1 CODE=1
FINISH

```


1994 AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,

RUN DATE (MON/DAY/YR) = 02/16/2000
 START TIME (HR:MIN:SEC) = 14:29:46 USER NO.=
 M_GOODWN.I01
 INPUT FILE = GIBUNS.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON/UNSER RUNOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
 ATLAS 2 - PEAK AT 1.40 HR.

HOURS	DT =	.033330 HOURS	END TIME =	5.999400		
	.0000	.0013	.0027	.0041	.0055	.0069
.0084	.0099	.0115	.0131	.0147	.0164	.0181
.0199	.0217	.0236	.0256	.0276	.0296	.0318
.0340	.0363	.0387	.0412	.0438	.0465	.0493
.0523	.0554	.0587	.0622	.0675	.0731	.0791
.0920	.1208	.1651	.2289	.3159	.4302	.5759
.7574	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.5201	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.8130	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
1.9736	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0059	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0308	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0514	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0690	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0846	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.0985	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1112	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1229	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1337	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
2.1439	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520
2.1533	2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
2.1623	2.1635	2.1648	2.1660	2.1672	2.1684	2.1696

2.1708
 2.1789
 2.1866
 2.1939

2.1720	2.1731	2.1743	2.1754	2.1766	2.1777
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.007274 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 14.359 CFS UNIT VOLUME = .9985 B =
 526.28 P60 = 1.9000
 AREA = .003637 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 8.9370 CFS UNIT VOLUME = .9988 B =
 327.55 P60 = 1.9000
 AREA = .003637 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.32370 INCHES = .5135 ACRE-FEET
 PEAK DISCHARGE RATE = 15.11 CFS AT 1.500 HOURS BASIN
 AREA = .0073 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:29:47


```

START                                TIME=0.0
*****
*****  HYDROGRAPH FOR GIBSON POND
*****
**BASIN A
RAINFALL                            TYPE=1 RAIN QUARTER=0.0 IN
                                      RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                                      RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD                      ID=1 HYD NO=101 AREA=0.015125 SQ MI
                                      PER A=0 PER B=40 PER C=0 PER D=60
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=1 CODE=1
*
**BASIN B-1
COMPUTE NM HYD                      ID=2 HYD NO=102 AREA=0.004391 SQ MI
                                      PER A=0 PER B=38 PER C=0 PER D=62
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=2 CODE=1
*
**BASIN B-2
COMPUTE NM HYD                      ID=3 HYD NO=103 AREA=0.001375 SQ MI
                                      PER A=0 PER B=47 PER C=0 PER D=53
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=3 CODE=1
*
**BASIN B-3
COMPUTE NM HYD                      ID=4 HYD NO=104 AREA=0.002469 SQ MI
                                      PER A=0 PER B=54 PER C=0 PER D=46
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=4 CODE=1
*
**BASIN C-1
COMPUTE NM HYD                      ID=5 HYD NO=105 AREA=0.0045 SQ MI
                                      PER A=0 B=49 C=0 D=51
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=5 CODE=1
*
**BASIN C-2
COMPUTE NM HYD                      ID=6 HYD NO=106 AREA=0.001047 SQ MI
                                      PER A=0 PER B=89 PER C=0 PER D=11
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=6 CODE=1
*
**BASIN C-3
COMPUTE NM HYD                      ID=7 HYD NO=107 AREA=0.001516 SQ MI
                                      PER A=0 PER B=20 PER C=0 PER D=80
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=7 CODE=1
*
**BASIN C-4
COMPUTE NM HYD                      ID=8 HYD NO=108 AREA=0.001422 SQ MI
                                      PER A=0 PER B=52 PER C=0 PER D=48
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=8 CODE=1
*
**BASIN C-5
COMPUTE NM HYD                      ID=9 HYD NO=109 AREA=0.003063 SQ MI
                                      PER A=0 B=43 C=0 D=57
                                      TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD                           ID=9 CODE=1

```



```
*
**BASIN C-6
COMPUTE NM HYD      ID=10 HYD NO=110 AREA=0.002016 SQ MI
                     PER A=0 PER B=43 PER C=0 PER D=57
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=10 CODE=1
PRINT HYD
*
**BASIN C-7
COMPUTE NM HYD      ID=11 HYD NO=111 AREA=0.002063 SQ MI
                     PER A=0 PER B=53 PER C=0 PER D=47
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=11 CODE=1
PRINT HYD
*
**BASIN D-1
COMPUTE NM HYD      ID=12 HYD NO=112 AREA=0.002844 SQ MI
                     PER A=0 PER B=49 PER C=0 PER D=51
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=12 CODE=1
PRINT HYD
*
**BASIN D-2
COMPUTE NM HYD      ID=13 HYD NO=113 AREA=0.000813 SQ MI
                     PER A=0 B=66 C=0 D=34
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=13 CODE=1
PRINT HYD
*
**BASIN D-3
COMPUTE NM HYD      ID=14 HYD NO=114 AREA=0.000828 SQ MI
                     PER A=0 PER B=62 PER C=0 PER D=38
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=14 CODE=1
PRINT HYD
*
**BASIN E-1
COMPUTE NM HYD      ID=15 HYD NO=115 AREA=0.0015 SQ MI
                     PER A=0 PER B=44 PER C=0 PER D=56
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=15 CODE=1
PRINT HYD
*
**BASIN OS-1
COMPUTE NM HYD      ID=16 HYD NO=116 AREA=0.001196 SQ MI
                     PER A=0 PER B=78 PER C=0 PER D=22
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=16 CODE=1
PRINT HYD
*
**BASIN OS-2
COMPUTE NM HYD      ID=17 HYD NO=117 AREA=0.007484 SQ MI
                     PER A=0 B=30 C=0 D=70
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=17 CODE=1
PRINT HYD
**BASIN TMSB
COMPUTE NM HYD      ID=18 HYD NO=118 AREA=0.004453 SQ MI
                     PER A=38.61 B=5.07 C=0 D=56.32
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=18 CODE=1
PRINT HYD
*
**BASIN TMSC
COMPUTE NM HYD      ID=19 HYD NO=119 AREA=0.003891 SQ MI
                     PER A=4.15 B=50.6 C=0 D=45.25
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=19 CODE=1
PRINT HYD
*
**BASIN 13 LOTS
```



```

COMPUTE NM HYD      ID=38  HYD NO=138  AREA=0.003148 SQ MI
                     PER A=0 B=49.97 C=0 D=50.03
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=38 CODE=1
*
**BASIN PARCEL 12
COMPUTE NM HYD      ID=39  HYD NO=139  AREA=0.040305 SQ MI
                     PER A=0 B=47.23 C=0 D=52.77
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=39 CODE=1
*
**BASIN EL RANCHO GRANDE I
COMPUTE NM HYD      ID=42  HYD NO=142  AREA=0.046100 SQ MI
                     PER A=0 B=47.23 C=0 D=52.77
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=42 CODE=1
*
**BASIN SILVERADO SUBDIVISION UNITS 1&2
COMPUTE NM HYD      ID=43  HYD NO=143  AREA=0.036431 SQ MI
                     PER A=0 B=48.08 C=0 D=51.92
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=43 CODE=1
*
**BASIN GIBSON BLVD
COMPUTE NM HYD      ID=44  HYD NO=144  AREA=0.012841 SQ MI
                     PER A=0 B=50 C=0 D=50
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=44 CODE=1
*
**BASIN GIBSON/UNSER RUNOFF
COMPUTE NM HYD      ID=48  HYD NO=148  AREA=.007274 SQ MI
                     PER A=0 B=50 C=0 D=50
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=48 CODE=1
*
ADD HYD             ID=20  HYD NO=120  ID=1  ID=2
PRINT HYD           ID=20 CODE=1
*
ADD HYD             ID=21  HYD NO=121  ID=3  ID=4
PRINT HYD           ID=21 CODE=1
*
ADD HYD             ID=22  HYD NO=122  ID=5  ID=6
PRINT HYD           ID=22 CODE=1
*
ADD HYD             ID=23  HYD NO=123  ID=7  ID=8
PRINT HYD           ID=23 CODE=1
*
ADD HYD             ID=24  HYD NO=124  ID=9  ID=10
PRINT HYD           ID=24 CODE=1
*
ADD HYD             ID=25  HYD NO=125  ID=11 ID=12
PRINT HYD           ID=25 CODE=1
*
ADD HYD             ID=26  HYD NO=126  ID=13 ID=14
PRINT HYD           ID=26 CODE=1
*
ADD HYD             ID=27  HYD NO=127  ID=15 ID=16
PRINT HYD           ID=27 CODE=1
*
ADD HYD             ID=28  HYD NO=128  ID=17 ID=18
PRINT HYD           ID=28 CODE=1

```



```

*
ADD HYD          ID=29 HYD NO=129  ID=20  ID=21
PRINT HYD        ID=29 CODE=1
*
ADD HYD          ID=30 HYD NO=130  ID=22  ID=23
PRINT HYD        ID=30 CODE=1
*
ADD HYD          ID=31 HYD NO=131  ID=24  ID=25
PRINT HYD        ID=31 CODE=1
*
ADD HYD          ID=32 HYD NO=132  ID=26  ID=27
PRINT HYD        ID=32 CODE=1
*
ADD HYD          ID=33 HYD NO=133  ID=28  ID=19
PRINT HYD        ID=33 CODE=1
*
ADD HYD          ID=34 HYD NO=134  ID=29  ID=30
PRINT HYD        ID=34 CODE=1
*
ADD HYD          ID=35 HYD NO=135  ID=31  ID=32
PRINT HYD        ID=35 CODE=1
*
ADD HYD          ID=36 HYD NO=136  ID=34  ID=35
PRINT HYD        ID=36 CODE=1
*
ADD HYD          ID=37 HYD NO=137  ID=33  ID=36
PRINT HYD        ID=37 CODE=1
*
ADD HYD          ID=40 HYD NO=140  ID=38  ID=39
PRINT HYD        ID=40 CODE=1
*
ADD HYD          ID=41 HYD NO=141  ID=37  ID=40
PRINT HYD        ID=41 CODE=1
*
ADD HYD          ID=45 HYD NO=145  ID=41  ID=42
PRINT HYD        ID=45 CODE=1
*
ADD HYD          ID=46 HYD NO=146  ID=43  ID=44
PRINT HYD        ID=46 CODE=1
*
ADD HYD          ID=47 HYD NO=147  ID=45  ID=46
PRINT HYD        ID=47 CODE=1
*
ADD HYD          ID=49 HYD NO=149  ID=47  ID=48
PRINT HYD        ID=49 CODE=1
*
*DIVIDE BY MAXIMUM FLOW RATE
DIVIDE HYD        ID=49  Q=48.48  ID I=50  HYD NO=150
                                      ID II=51  HYD NO=151
* ROUTING THROUGH POND
*
ROUTE RESERVOIR  ID=52 HYD NO=152  INFLOW ID=51 CODE=24
OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
      0.0          0.0             40.0
      46.33        1.174           41.0
      65.51        2.187           42.0
      80.24        3.643           43.0
      92.65        5.146           44.0
      103.59       6.800           45.0
PRINT HYD        ID=52 CODE=1
FINISH

```


AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994

RUN DATE (MON/DAY/YR) = 02/16/2000
START TIME (HR:MIN:SEC) = 14:44:39 USER NO.=

M_GOODWN.I01

INPUT FILE = GIBPOND.DAT

START TIME=0.0

***** HYDROGRAPH FOR GIBSON POND

**BASIN A

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400

HOURS

	.0000	.0013	.0027	.0041	.0055	.0069
.0084	.0099	.0115	.0131	.0147	.0164	.0181
.0199	.0217	.0236	.0256	.0276	.0296	.0318
.0340	.0363	.0387	.0412	.0438	.0465	.0493
.0523	.0554	.0587	.0622	.0675	.0731	.0791
.0920	.1208	.1651	.2289	.3159	.4302	.5759
.7574	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.5201	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.8130	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
1.9736	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0059	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0308	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0514	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0690	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0846	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.0985	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1112	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1229	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1337	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
2.1439	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520

2.1533						
	2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
2.1623						
	2.1635	2.1648	2.1660	2.1672	2.1684	2.1696
2.1708						
	2.1720	2.1731	2.1743	2.1754	2.1766	2.1777
2.1789						
	2.1800	2.1811	2.1822	2.1833	2.1844	2.1855
2.1866						
	2.1876	2.1887	2.1897	2.1908	2.1918	2.1929
2.1939						
	2.1949	2.1960	2.1970	2.1980	2.1990	2.2000

COMPUTE NM HYD

ID=1 HYD NO=101 AREA=0.015125 SQ MI
PER A=0 PER B=40 PER C=0 PER D=60
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 35.829 CFS UNIT VOLUME = .9990 B =
526.28 P60 = 1.9000
AREA = .009075 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 14.866 CFS UNIT VOLUME = .9994 B =
327.55 P60 = 1.9000
AREA = .006050 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.45223 INCHES = 1.1715 ACRE-FEET
PEAK DISCHARGE RATE = 33.71 CFS AT 1.500 HOURS BASIN
AREA = .0151 SQ. MI.

*

**BASIN B-1

COMPUTE NM HYD

ID=2 HYD NO=102 AREA=0.004391 SQ MI
PER A=0 PER B=38 PER C=0 PER D=62
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.748 CFS UNIT VOLUME = .9982 B =
526.28 P60 = 1.9000
AREA = .002722 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 4.1001 CFS UNIT VOLUME = .9970 B =
 327.55 P60 = 1.9000
 AREA = .001669 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.47794 INCHES = .3461 ACRE-FEET
 PEAK DISCHARGE RATE = 9.93 CFS AT 1.500 HOURS BASIN
 AREA = .0044 SQ. MI.

*

**BASIN B-2

COMPUTE NM HYD

ID=3 HYD NO=103 AREA=0.001375 SQ MI
 PER A=0 PER B=47 PER C=0 PER D=53
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 2.8771 CFS UNIT VOLUME = .9955 B =
 526.28 P60 = 1.9000
 AREA = .000729 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.5880 CFS UNIT VOLUME = .9919 B =
 327.55 P60 = 1.9000
 AREA = .000646 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.36226 INCHES = .0999 ACRE-FEET
 PEAK DISCHARGE RATE = 2.93 CFS AT 1.500 HOURS BASIN
 AREA = .0014 SQ. MI.

*

**BASIN B-3

COMPUTE NM HYD

ID=4 HYD NO=104 AREA=0.002469 SQ MI

64

PER A=0 PER B=54 PER C=0 PER D=46
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.4840 CFS UNIT VOLUME = .9969 B =
526.28 P60 = 1.9000
AREA = .001136 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 3.2762 CFS UNIT VOLUME = .9961 B =
327.55 P60 = 1.9000
AREA = .001333 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.27228 INCHES = .1675 ACRE-FEET
PEAK DISCHARGE RATE = 4.99 CFS AT 1.500 HOURS BASIN
AREA = .0025 SQ. MI.

*

**BASIN C-1

COMPUTE NM HYD

ID=5 HYD NO=105 AREA=0.0045 SQ MI
PER A=0 B=49 C=0 D=51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.0608 CFS UNIT VOLUME = .9981 B =
526.28 P60 = 1.9000
AREA = .002295 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 5.4182 CFS UNIT VOLUME = .9978 B =
327.55 P60 = 1.9000
AREA = .002205 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = 1.33655 INCHES = .3208 ACRE-FEET
PEAK DISCHARGE RATE = 9.42 CFS AT 1.500 HOURS BASIN
AREA = .0045 SQ. MI.

*

**BASIN C-2

COMPUTE NM HYD

ID=6 HYD NO=106 AREA=0.001047 SQ MI
PER A=0 PER B=89 PER C=0 PER D=11
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .45470 CFS UNIT VOLUME = .9751 B =
526.28 P60 = 1.9000
AREA = .000115 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 2.2897 CFS UNIT VOLUME = .9943 B =
327.55 P60 = 1.9000
AREA = .000932 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = .82240 INCHES = .0459 ACRE-FEET
PEAK DISCHARGE RATE = 1.56 CFS AT 1.500 HOURS BASIN
AREA = .0010 SQ. MI.

*

**BASIN C-3

COMPUTE NM HYD

ID=7 HYD NO=107 AREA=0.001516 SQ MI
PER A=0 PER B=20 PER C=0 PER D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.7882 CFS UNIT VOLUME = .9969 B =
526.28 P60 = 1.9000
AREA = .001213 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950

SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = .74504 CFS UNIT VOLUME = .9822 B =
 327.55 P60 = 1.9000
 AREA = .000303 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.70931 INCHES = .1382 ACRE-FEET
 PEAK DISCHARGE RATE = 3.86 CFS AT 1.500 HOURS BASIN
 AREA = .0015 SQ. MI.

*

**BASIN C-4

COMPUTE NM HYD

ID=8 HYD NO=108 AREA=0.001422 SQ MI
 PER A=0 PER B=52 PER C=0 PER D=48
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 2.6948 CFS UNIT VOLUME = .9949 B =
 526.28 P60 = 1.9000
 AREA = .000683 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.8170 CFS UNIT VOLUME = .9926 B =
 327.55 P60 = 1.9000
 AREA = .000739 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.29799 INCHES = .0984 ACRE-FEET
 PEAK DISCHARGE RATE = 2.92 CFS AT 1.500 HOURS BASIN
 AREA = .0014 SQ. MI.

*

**BASIN C-5

COMPUTE NM HYD

ID=9 HYD NO=109 AREA=0.003063 SQ MI
 PER A=0 B=43 C=0 D=57
 TP=0.1333 HR MASS RAINFALL=-1

67

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 6.8929 CFS UNIT VOLUME = .9978 B =
 526.28 P60 = 1.9000
 AREA = .001746 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 3.2364 CFS UNIT VOLUME = .9961 B =
 327.55 P60 = 1.9000
 AREA = .001317 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 109.00

RUNOFF VOLUME = 1.41367 INCHES = .2309 ACRE-FEET
 PEAK DISCHARGE RATE = 6.70 CFS AT 1.500 HOURS BASIN
 AREA = .0031 SQ. MI.

*
 **BASIN C-6

COMPUTE NM HYD

ID=10 HYD NO=110 AREA=0.002016 SQ MI
 PER A=0 PER B=43 PER C=0 PER D=57
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 4.5368 CFS UNIT VOLUME = .9969 B =
 526.28 P60 = 1.9000
 AREA = .001149 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 2.1301 CFS UNIT VOLUME = .9938 B =
 327.55 P60 = 1.9000
 AREA = .000867 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.41367 INCHES = .1520 ACRE-FEET

PEAK DISCHARGE RATE = 4.41 CFS AT 1.500 HOURS BASIN
 AREA = .0020 SQ. MI.

*

**BASIN C-7

COMPUTE NM HYD

ID=11 HYD NO=111 AREA=0.002063 SQ MI
 PER A=0 PER B=53 PER C=0 PER D=47
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 3.8281 CFS UNIT VOLUME = .9965 B =
 526.28 P60 = 1.9000
 AREA = .000970 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 2.6867 CFS UNIT VOLUME = .9953 B =
 327.55 P60 = 1.9000
 AREA = .001093 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD

ID=11 CODE=1

PARTIAL HYDROGRAPH 111.00

RUNOFF VOLUME = 1.28513 INCHES = .1414 ACRE-FEET
 PEAK DISCHARGE RATE = 4.20 CFS AT 1.500 HOURS BASIN
 AREA = .0021 SQ. MI.

*

**BASIN D-1

COMPUTE NM HYD

ID=12 HYD NO=112 AREA=0.002844 SQ MI
 PER A=0 PER B=49 PER C=0 PER D=51
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 5.7264 CFS UNIT VOLUME = .9973 B =
 526.28 P60 = 1.9000
 AREA = .001450 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 3.4243 CFS UNIT VOLUME = .9964 B =
 327.55 P60 = 1.9000

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AREA = .001394 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 112.00

RUNOFF VOLUME = 1.33655 INCHES = .2027 ACRE-FEET
PEAK DISCHARGE RATE = 5.96 CFS AT 1.500 HOURS BASIN
AREA = .0028 SQ. MI.

*

**BASIN D-2

COMPUTE NM HYD

ID=13 HYD NO=113 AREA=0.000813 SQ MI
PER A=0 B=66 C=0 D=34
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.0913 CFS UNIT VOLUME = .9881 B =
526.28 P60 = 1.9000
AREA = .000276 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 1.3185 CFS UNIT VOLUME = .9903 B =
327.55 P60 = 1.9000
AREA = .000537 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 113.00

RUNOFF VOLUME = 1.11804 INCHES = .0485 ACRE-FEET
PEAK DISCHARGE RATE = 1.50 CFS AT 1.500 HOURS BASIN
AREA = .0008 SQ. MI.

*

**BASIN D-3

COMPUTE NM HYD

ID=14 HYD NO=114 AREA=0.000828 SQ MI
PER A=0 PER B=62 PER C=0 PER D=38
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.2422 CFS UNIT VOLUME = .9897 B =

526.28 P60 = 1.9000
 AREA = .000315 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.2615 CFS UNIT VOLUME = .9894 B =
 327.55 P60 = 1.9000
 AREA = .000513 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 114.00

RUNOFF VOLUME = 1.16945 INCHES = .0516 ACRE-FEET
 PEAK DISCHARGE RATE = 1.58 CFS AT 1.500 HOURS BASIN
 AREA = .0008 SQ. MI.

*

**BASIN E-1

COMPUTE NM HYD

ID=15 HYD NO=115 AREA=0.0015 SQ MI
 PER A=0 PER B=44 PER C=0 PER D=56
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 3.3164 CFS UNIT VOLUME = .9961 B =
 526.28 P60 = 1.9000
 AREA = .000840 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.6218 CFS UNIT VOLUME = .9919 B =
 327.55 P60 = 1.9000
 AREA = .000660 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = 1.40082 INCHES = .1121 ACRE-FEET
 PEAK DISCHARGE RATE = 3.27 CFS AT 1.500 HOURS BASIN
 AREA = .0015 SQ. MI.

*

**BASIN OS-1

COMPUTE NM HYD

ID=16 HYD NO=116 AREA=0.001196 SQ MI

PER A=0 PER B=78 PER C=0 PER D=22

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.0388 CFS UNIT VOLUME = .9881 B =
526.28 P60 = 1.9000
AREA = .000263 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 2.2923 CFS UNIT VOLUME = .9943 B =
327.55 P60 = 1.9000
AREA = .000933 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=16 CODE=1

PARTIAL HYDROGRAPH 116.00

RUNOFF VOLUME = .96379 INCHES = .0615 ACRE-FEET
PEAK DISCHARGE RATE = 1.99 CFS AT 1.500 HOURS BASIN
AREA = .0012 SQ. MI.

*

**BASIN OS-2

COMPUTE NM HYD

ID=17 HYD NO=117 AREA=0.007484 SQ MI

PER A=0 B=30 C=0 D=70

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 20.683 CFS UNIT VOLUME = .9988 B =
526.28 P60 = 1.9000
AREA = .005239 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 5.5170 CFS UNIT VOLUME = .9978 B =
327.55 P60 = 1.9000
AREA = .002245 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER

METHOD - DT = .033330

PRINT HYD

ID=17 CODE=1

PARTIAL HYDROGRAPH 117.00

RUNOFF VOLUME = 1.58077 INCHES = .6310 ACRE-FEET
PEAK DISCHARGE RATE = 17.83 CFS AT 1.500 HOURS BASIN
AREA = .0075 SQ. MI.

**BASIN TMSB

COMPUTE NM HYD

ID=18 HYD NO=118 AREA=0.004453 SQ MI
PER A=38.61 B=5.07 C=0 D=56.32
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.9014 CFS UNIT VOLUME = .9982 B =
526.28 P60 = 1.9000
AREA = .002508 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .159194HR TP = .133300HR K/TP RATIO = 1.194252
SHAPE CONSTANT, N = 2.974290
UNIT PEAK = 4.0816 CFS UNIT VOLUME = .9961 B =
279.72 P60 = 1.9000
AREA = .001945 SQ MI IA = .63259 INCHES INF =
1.62125 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=18 CODE=1

PARTIAL HYDROGRAPH 118.00

RUNOFF VOLUME = 1.31369 INCHES = .3120 ACRE-FEET
PEAK DISCHARGE RATE = 8.84 CFS AT 1.500 HOURS BASIN
AREA = .0045 SQ. MI.

*

**BASIN TMSC

COMPUTE NM HYD

ID=19 HYD NO=119 AREA=0.003891 SQ MI
PER A=4.15 B=50.6 C=0 D=45.25
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.9512 CFS UNIT VOLUME = .9978 B =
526.28 P60 = 1.9000
AREA = .001761 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER

METHOD - DT = .033330

K = .133199HR TP = .133300HR K/TP RATIO = .999241
SHAPE CONSTANT, N = 3.533011
UNIT PEAK = 5.1577 CFS UNIT VOLUME = .9977 B =
322.73 P60 = 1.9000
AREA = .002130 SQ MI IA = .51137 INCHES INF =
1.28184 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 119.00

RUNOFF VOLUME = 1.25155 INCHES = .2597 ACRE-FEET
PEAK DISCHARGE RATE = 7.72 CFS AT 1.500 HOURS BASIN
AREA = .0039 SQ. MI.

*
**BASIN 13 LOTS
COMPUTE NM HYD

ID=38 HYD NO=138 AREA=0.003148 SQ MI
PER A=0 B=49.97 C=0 D=50.03
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.2180 CFS UNIT VOLUME = .9976 B =
526.28 P60 = 1.9000
AREA = .001575 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=38 CODE=1

PARTIAL HYDROGRAPH 138.00

RUNOFF VOLUME = 1.32408 INCHES = .2223 ACRE-FEET
PEAK DISCHARGE RATE = 6.55 CFS AT 1.500 HOURS BASIN
AREA = .0031 SQ. MI.

*
**BASIN PARCEL 12

COMPUTE NM HYD ID=39 HYD NO=139 AREA=0.040305 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 83.971 CFS UNIT VOLUME = .9992 B =
 526.28 P60 = 1.9000
 AREA = .021269 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 46.776 CFS UNIT VOLUME = 1.000 B =
 327.55 P60 = 1.9000
 AREA = .019036 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=39 CODE=1

PARTIAL HYDROGRAPH 139.00

RUNOFF VOLUME = 1.35930 INCHES = 2.9219 ACRE-FEET
 PEAK DISCHARGE RATE = 85.35 CFS AT 1.500 HOURS BASIN
 AREA = .0403 SQ. MI.

*

**BASIN EL RANCHO GRANDE I

COMPUTE NM HYD ID=42 HYD NO=142 AREA=0.046100 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B =
 526.28 P60 = 1.9000
 AREA = .024327 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B =
 327.55 P60 = 1.9000
 AREA = .021773 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=42 CODE=1

PARTIAL HYDROGRAPH 142.00

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FEET
 PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN
 AREA = .0461 SQ. MI.

*

**BASIN SILVERADO SUBDIVISION UNITS 1&2
 COMPUTE NM HYD ID=43 HYD NO=143 AREA=0.036431 SQ MI
 PER A=0 B=48.08 C=0 D=51.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 74.677 CFS UNIT VOLUME = .9992 B =
 526.28 P60 = 1.9000
 AREA = .018915 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 43.041 CFS UNIT VOLUME = 1.000 B =
 327.55 P60 = 1.9000
 AREA = .017516 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=43 CODE=1

PARTIAL HYDROGRAPH 143.00

RUNOFF VOLUME = 1.34837 INCHES = 2.6199 ACRE-FEET
 PEAK DISCHARGE RATE = 76.67 CFS AT 1.500 HOURS BASIN
 AREA = .0364 SQ. MI.

*

**BASIN GIBSON BLVD
 COMPUTE NM HYD ID=44 HYD NO=144 AREA=0.012841 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 25.348 CFS UNIT VOLUME = .9989 B =
 526.28 P60 = 1.9000
 AREA = .006421 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

76

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 15.777 CFS UNIT VOLUME = .9995 B =
 327.55 P60 = 1.9000
 AREA = .006421 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=44 CODE=1

PARTIAL HYDROGRAPH 144.00

RUNOFF VOLUME = 1.32370 INCHES = .9065 ACRE-FEET
 PEAK DISCHARGE RATE = 26.66 CFS AT 1.500 HOURS BASIN
 AREA = .0128 SQ. MI.

*

**BASIN GIBSON/UNSER RUNOFF
 COMPUTE NM HYD ID=48 HYD NO=148 AREA=.007274 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 14.359 CFS UNIT VOLUME = .9985 B =
 526.28 P60 = 1.9000
 AREA = .003637 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 8.9370 CFS UNIT VOLUME = .9988 B =
 327.55 P60 = 1.9000
 AREA = .003637 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=48 CODE=1

PARTIAL HYDROGRAPH 148.00

RUNOFF VOLUME = 1.32370 INCHES = .5135 ACRE-FEET
 PEAK DISCHARGE RATE = 15.11 CFS AT 1.500 HOURS BASIN
 AREA = .0073 SQ. MI.

*

ADD HYD ID=20 HYD NO=120 ID=1 ID=2
 PRINT HYD ID=20 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 1.45799 INCHES = 1.5175 ACRE-FEET
 PEAK DISCHARGE RATE = 43.64 CFS AT 1.500 HOURS BASIN
 AREA = .0195 SQ. MI.

*
 ADD HYD ID=21 HYD NO=121 ID=3 ID=4
 PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 121.00

RUNOFF VOLUME = 1.30432 INCHES = .2674 ACRE-FEET
 PEAK DISCHARGE RATE = 7.92 CFS AT 1.500 HOURS BASIN
 AREA = .0038 SQ. MI.

*
 ADD HYD ID=22 HYD NO=122 ID=5 ID=6
 PRINT HYD ID=22 CODE=1

PARTIAL HYDROGRAPH 122.00

RUNOFF VOLUME = 1.23942 INCHES = .3667 ACRE-FEET
 PEAK DISCHARGE RATE = 10.99 CFS AT 1.500 HOURS BASIN
 AREA = .0055 SQ. MI.

*
 ADD HYD ID=23 HYD NO=123 ID=7 ID=8
 PRINT HYD ID=23 CODE=1

PARTIAL HYDROGRAPH 123.00

RUNOFF VOLUME = 1.51002 INCHES = .2366 ACRE-FEET
 PEAK DISCHARGE RATE = 6.78 CFS AT 1.500 HOURS BASIN
 AREA = .0029 SQ. MI.

*
 ADD HYD ID=24 HYD NO=124 ID=9 ID=10
 PRINT HYD ID=24 CODE=1

PARTIAL HYDROGRAPH 124.00

RUNOFF VOLUME = 1.41356 INCHES = .3829 ACRE-FEET
 PEAK DISCHARGE RATE = 11.11 CFS AT 1.500 HOURS BASIN
 AREA = .0051 SQ. MI.

*

ADD HYD ID=25 HYD NO=125 ID=11 ID=12
PRINT HYD ID=25 CODE=1

PARTIAL HYDROGRAPH 125.00

RUNOFF VOLUME = 1.31482 INCHES = .3441 ACRE-FEET
PEAK DISCHARGE RATE = 10.16 CFS AT 1.500 HOURS BASIN
AREA = .0049 SQ. MI.

*
ADD HYD ID=26 HYD NO=126 ID=13 ID=14
PRINT HYD ID=26 CODE=1

PARTIAL HYDROGRAPH 126.00

RUNOFF VOLUME = 1.14369 INCHES = .1001 ACRE-FEET
PEAK DISCHARGE RATE = 3.09 CFS AT 1.500 HOURS BASIN
AREA = .0016 SQ. MI.

*
ADD HYD ID=27 HYD NO=127 ID=15 ID=16
PRINT HYD ID=27 CODE=1

PARTIAL HYDROGRAPH 127.00

RUNOFF VOLUME = 1.20675 INCHES = .1735 ACRE-FEET
PEAK DISCHARGE RATE = 5.25 CFS AT 1.500 HOURS BASIN
AREA = .0027 SQ. MI.

*
ADD HYD ID=28 HYD NO=128 ID=17 ID=18
PRINT HYD ID=28 CODE=1

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = 1.48109 INCHES = .9429 ACRE-FEET
PEAK DISCHARGE RATE = 26.67 CFS AT 1.500 HOURS BASIN
AREA = .0119 SQ. MI.

*
ADD HYD ID=29 HYD NO=129 ID=20 ID=21
PRINT HYD ID=29 CODE=1

PARTIAL HYDROGRAPH 129.00

RUNOFF VOLUME = 1.43270 INCHES = 1.7849 ACRE-FEET
PEAK DISCHARGE RATE = 51.56 CFS AT 1.500 HOURS BASIN
AREA = .0234 SQ. MI.

*
ADD HYD ID=30 HYD NO=130 ID=22 ID=23
PRINT HYD ID=30 CODE=1

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.33312 INCHES = .6033 ACRE-FEET
PEAK DISCHARGE RATE = 17.77 CFS AT 1.500 HOURS BASIN
AREA = .0085 SQ. MI.

*
ADD HYD ID=31 HYD NO=131 ID=24 ID=25
PRINT HYD ID=31 CODE=1

PARTIAL HYDROGRAPH 131.00

RUNOFF VOLUME = 1.36504 INCHES = .7270 ACRE-FEET
PEAK DISCHARGE RATE = 21.27 CFS AT 1.500 HOURS BASIN
AREA = .0100 SQ. MI.

*
ADD HYD ID=32 HYD NO=132 ID=26 ID=27
PRINT HYD ID=32 CODE=1

PARTIAL HYDROGRAPH 132.00

RUNOFF VOLUME = 1.18289 INCHES = .2736 ACRE-FEET
PEAK DISCHARGE RATE = 8.34 CFS AT 1.500 HOURS BASIN
AREA = .0043 SQ. MI.

*
ADD HYD ID=33 HYD NO=133 ID=28 ID=19
PRINT HYD ID=33 CODE=1

PARTIAL HYDROGRAPH 133.00

RUNOFF VOLUME = 1.42465 INCHES = 1.2026 ACRE-FEET
PEAK DISCHARGE RATE = 34.39 CFS AT 1.500 HOURS BASIN
AREA = .0158 SQ. MI.

*
ADD HYD ID=34 HYD NO=134 ID=29 ID=30
PRINT HYD ID=34 CODE=1

PARTIAL HYDROGRAPH 134.00

RUNOFF VOLUME = 1.40617 INCHES = 2.3882 ACRE-FEET
 PEAK DISCHARGE RATE = 69.32 CFS AT 1.500 HOURS BASIN
 AREA = .0318 SQ. MI.

*
 ADD HYD ID=35 HYD NO=135 ID=31 ID=32
 PRINT HYD ID=35 CODE=1

PARTIAL HYDROGRAPH 135.00

RUNOFF VOLUME = 1.30988 INCHES = 1.0006 ACRE-FEET
 PEAK DISCHARGE RATE = 29.61 CFS AT 1.500 HOURS BASIN
 AREA = .0143 SQ. MI.

*
 ADD HYD ID=36 HYD NO=136 ID=34 ID=35
 PRINT HYD ID=36 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = 1.37630 INCHES = 3.3888 ACRE-FEET
 PEAK DISCHARGE RATE = 98.94 CFS AT 1.500 HOURS BASIN
 AREA = .0462 SQ. MI.

*
 ADD HYD ID=37 HYD NO=137 ID=33 ID=36
 PRINT HYD ID=37 CODE=1

PARTIAL HYDROGRAPH 137.00

RUNOFF VOLUME = 1.38864 INCHES = 4.5915 ACRE-FEET
 PEAK DISCHARGE RATE = 133.32 CFS AT 1.500 HOURS BASIN
 AREA = .0620 SQ. MI.

*
 ADD HYD ID=40 HYD NO=140 ID=38 ID=39
 PRINT HYD ID=40 CODE=1

PARTIAL HYDROGRAPH 140.00

RUNOFF VOLUME = 1.35674 INCHES = 3.1442 ACRE-FEET
 PEAK DISCHARGE RATE = 91.90 CFS AT 1.500 HOURS BASIN
 AREA = .0435 SQ. MI.

*
 ADD HYD ID=41 HYD NO=141 ID=37 ID=40

PRINT HYD ID=41 CODE=1

PARTIAL HYDROGRAPH 141.00

RUNOFF VOLUME = 1.37549 INCHES = 7.7357 ACRE-FEET
 PEAK DISCHARGE RATE = 225.22 CFS AT 1.500 HOURS BASIN
 AREA = .1054 SQ. MI.

*

ADD HYD ID=45 HYD NO=145 ID=41 ID=42
 PRINT HYD ID=45 CODE=1

PARTIAL HYDROGRAPH 145.00

RUNOFF VOLUME = 1.37057 INCHES = 11.0777 ACRE-FEET
 PEAK DISCHARGE RATE = 322.84 CFS AT 1.500 HOURS BASIN
 AREA = .1515 SQ. MI.

*

ADD HYD ID=46 HYD NO=146 ID=43 ID=44
 PRINT HYD ID=46 CODE=1

PARTIAL HYDROGRAPH 146.00

RUNOFF VOLUME = 1.34193 INCHES = 3.5264 ACRE-FEET
 PEAK DISCHARGE RATE = 103.33 CFS AT 1.500 HOURS BASIN
 AREA = .0493 SQ. MI.

*

ADD HYD ID=47 HYD NO=147 ID=45 ID=46
 PRINT HYD ID=47 CODE=1

PARTIAL HYDROGRAPH 147.00

RUNOFF VOLUME = 1.36354 INCHES = 14.6041 ACRE-FEET
 PEAK DISCHARGE RATE = 426.18 CFS AT 1.500 HOURS BASIN
 AREA = .2008 SQ. MI.

*

ADD HYD ID=49 HYD NO=149 ID=47 ID=48
 PRINT HYD ID=49 CODE=1

PARTIAL HYDROGRAPH 149.00

RUNOFF VOLUME = 1.36215 INCHES = 15.1176 ACRE-FEET
 PEAK DISCHARGE RATE = 441.28 CFS AT 1.500 HOURS BASIN
 AREA = .2081 SQ. MI.

*
 *DIVIDE BY MAXIMUM FLOW RATE
 DIVIDE HYD ID=49 Q=48.48 ID I=50 HYD NO=150
 ID II=51 HYD NO=151

* ROUTING THROUGH POND
 *

ELEVATION(FT)	ROUTE RESERVOIR OUTFLOW(CFS)	ID=52 HYD NO=152 INFLOW ID=51 CODE=24 STORAGE(AC-FT)
	0.0	0.0
40.0	46.33	1.174
41.0	65.51	2.187
42.0	80.24	3.643
43.0	92.65	5.146
44.0	103.59	6.800
45.0		

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	40.00	.000	.00
.80	.00	40.00	.000	.00
1.60	268.89	43.80	4.840	90.13
2.40	.00	42.49	2.897	72.70
3.20	.00	40.23	.267	10.53
4.00	.00	40.02	.020	.77
4.80	.00	40.00	.001	.06
5.60	.00	40.00	.000	.00

PEAK DISCHARGE = 97.931 CFS - PEAK OCCURS AT HOUR 1.80
 MAXIMUM WATER SURFACE ELEVATION = 44.483
 MAXIMUM STORAGE = 5.9444 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=52 CODE=1

PARTIAL HYDROGRAPH 152.00

RUNOFF VOLUME = 1.36215 INCHES = 10.0316 ACRE-FEET
 PEAK DISCHARGE RATE = 97.93 CFS AT 1.800 HOURS BASIN
 AREA = .1381 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

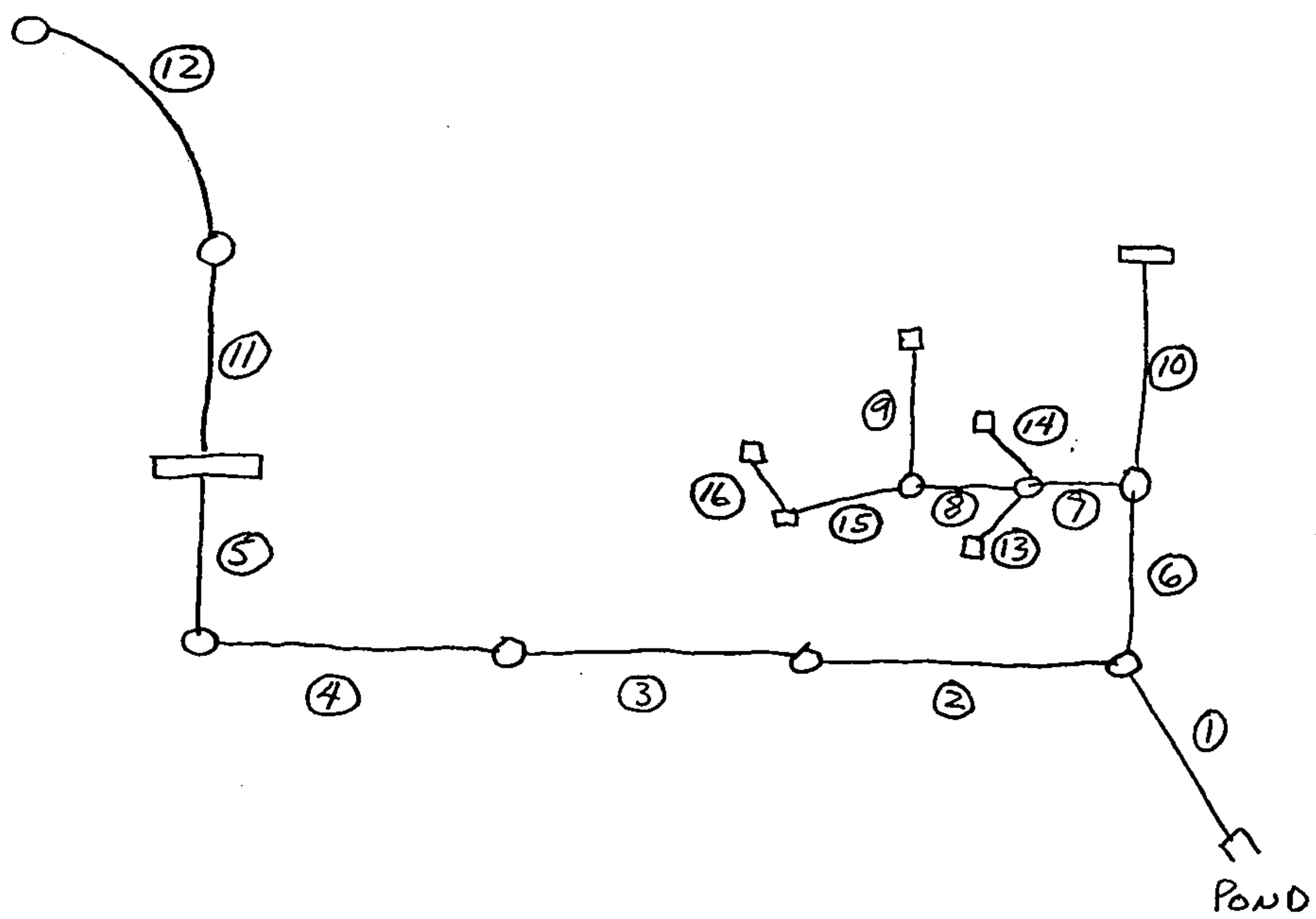
END TIME (HR:MIN:SEC) = 14:44:41

HYDRAULIC REPORT FOR

EL RANCHO GRANDE I

GIBSON BLVD STORMDRAIN

INTERIOR STORMDRAIN



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LINE	Qact (cfs)	Qcap (cfs)	HT (in)	WID (in)	HGDN (ft)	HGUP (ft)	DNLN	INV DN (ft)	INV UP (ft)
1	376.0	315.1	66	66	45.17	47.65	0	40.00	41.76
2	194.6	245.5	48	48	48.63	58.34	1	42.77	54.45
3	194.6	203.1	48	48	59.28	66.43	2	54.45	62.45
4	194.6	203.1	48	48	67.37	73.64	3	62.45	69.73
5	109.3	100.6	42	42	74.58	76.17	4	69.73	71.08
6	170.5	134.4	48	48	48.63	51.69	1	41.76	43.66
7	57.4	98.8	36	36	52.40	53.77	6	43.66	47.72
8	43.4	48.3	24	24	54.03	55.87	7	47.72	50.00
9	18.4	27.3	18	18	56.61	59.34	8	50.50	55.57
10	113.1	239.2	42	42	52.40	53.52	6	43.66	46.26
11	34.4	41.0	30	30	76.67	78.79	5	71.08	74.08
12	34.4	41.0	30	30	78.98	82.33	11	74.08	78.58
13	14.0	15.6	18	18	55.31	56.25	7	54.20	54.75
14	14.0	11.5	18	18	55.59	56.32	7	54.20	54.50
15	11.0	16.7	18	18	56.61	57.13	8	55.10	55.86
16	5.5	11.5	18	18	57.31	57.37	15	55.86	56.22

Calc Option = 1
Graphics mode = VGA

☒ F.M.

☒ Box

☒ Circular

1) Screen 2) Printer 3) Screen plot [PgUp] ↑ [PgDn] ↓ [Esc] Menu

85

LINE 1 / Q = 376.0 / HT = 66 / WID = 66 / N = .013 / L = 200 / JLC = .25

1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.17	62.09	40.00	16.11	49.20	28.21	4.5	23.34
UPSTRM	47.65	66.00	41.76	15.82	51.54	0.00	8.99	23.76

Drainage area (ac)	=	0	Slope of invert (%)	=	0.880
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.170
Time of conc (min)	=	11	Critical depth (in)	=	62.09
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	344.5
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	98.9
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	375.9	Confluence angle (deg)	=	45
Default Q (cfs)	=	375.97	Natural ground elev (ft)	=	56.25
Line capac. (cfs)	=	315.1	Line storage (cuft)	=	4710

86

LINE 2 / Q = 194.6 / HT = 48 / WID = 48 / N = .013 / L = 400 / JLC = .25

 2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	48.63	48.00	42.77	15.49	52.35	0.00	9.47	12.56
UPSTRM	58.34	46.65	54.45	15.61	62.12	15.85	9.54	12.47

Drainage area (ac)	=	0	Slope of invert (%)	=	2.920
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.442
Time of conc (min)	=	9	Critical depth (in)	=	46.61
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	178.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	51.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	194.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	194.63	Natural ground elev (ft)	=	68
Line capac. (cfs)	=	245.5	Line storage (cuft)	=	5006

87

LINE 3 / Q = 194.6 / HT = 48 / WID = 48 / N = .013 / L = 400 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	59.28	48.00	54.45	15.49	63.01	0.00	9.54	12.56
UPSTRM	66.43	47.81	62.45	15.49	70.16	6.06	6.54	12.56

Drainage area (ac)	=	0	Slope of invert (%)	=	2.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.788
Time of conc (min)	=	7	Critical depth (in)	=	46.61
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	178.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	51.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	194.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	194.63	Natural ground elev (ft)	=	73
Line capac. (cfs)	=	203.1	Line storage (cuft)	=	5025

LINE 4 / Q = 194.6 / HT = 48 / WID = 48 / N = .013 / L = 364 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	67.37	48.00	62.45	15.49	71.09	0.00	6.54	12.56
UPSTRM	73.64	46.88	69.73	15.58	77.41	14.49	3.76	12.49

Drainage area (ac)	=	0	Slope of invert (%)	=	2.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.735
Time of conc (min)	=	5	Critical depth (in)	=	46.61
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	178.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	51.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	194.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	194.63	Natural ground elev (ft)	=	77.5
Line capac. (cfs)	=	203.1	Line storage (cuft)	=	4560

LINE 5 / Q = 109.3 / HT = 42 / WID = 42 / N = .013 / L = 135 / JLC = .25

5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	74.58	42.00	69.73	11.36	76.58	0.00	4.26	9.62
UPSTRM	76.17	42.00	71.08	11.36	78.18	0.00	3.76	9.62

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.180
Time of conc (min)	=	4	Critical depth (in)	=	38.43
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	100.1
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	28.7
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	109.2	Confluence angle (deg)	=	90
Default Q (cfs)	=	109.28	Natural ground elev (ft)	=	78.35
Line capac. (cfs)	=	100.6	Line storage (cuft)	=	1299

LINE 6 / Q = 170.5 / HT = 48 / WID = 48 / N = .013 / L = 217 / JLC = .25

6 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	48.63	48.00	41.76	13.57	51.49	0.00	10.49	12.56
UPSTRM	51.69	48.00	43.66	13.57	54.55	0.00	6.58	12.57

Drainage area (ac)	=	0	Slope of invert (%)	=	0.876
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.410
Time of conc (min)	=	2	Critical depth (in)	=	45.16
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	156.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	44.9
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	170.5	Confluence angle (deg)	=	-45
Default Q (cfs)	=	170.54	Natural ground elev (ft)	=	54.24
Line capac. (cfs)	=	134.4	Line storage (cuft)	=	2727

LINE 7 / Q = 57.4 / HT = 36 / WID = 36 / N = .013 / L = 185 / JLC = .25

 7 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.40	36.00	43.66	8.12	53.43	0.00	7.58	7.07
UPSTRM	53.77	36.00	47.72	8.12	54.80	0.00	8.73	7.07

Drainage area (ac) = 0	Slope of invert (%) = 2.195
Runoff coefficient = 0	Slope energy grade line (%) = 0.741
Time of conc (min) = 1	Critical depth (in) = 28.97
Inlet time (min) = 0	Req'd length curb inlet (ft) = 52.6
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 15.1
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 57.4	Confluence angle (deg) = 90
Default Q (cfs) = 57.4	Natural ground elev (ft) = 59.46
Line capac. (cfs) = 98.8	Line storage (cuft) = 1308

LINE 8 / Q = 43.4 / HT = 24 / WID = 24 / N = .013 / L = 50 / JLC = .25

8 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	54.03	24.00	47.72	13.82	56.99	0.00	9.73	3.14
UPSTRM	55.87	24.00	50.00	13.81	58.83	0.00	8.7	3.14

Drainage area (ac)	=	0	Slope of invert (%)	=	4.560
Runoff coefficient	=	0	Slope energy grade line (%)	=	3.683
Time of conc (min)	=	0	Critical depth (in)	=	23.78
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	39.8
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	11.4
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	43.4	Confluence angle (deg)	=	0
Default Q (cfs)	=	43.4	Natural ground elev (ft)	=	60.71
Line capac. (cfs)	=	48.3	Line storage (cuft)	=	157

LINE 9 / Q = 18.4 / HT = 18 / WID = 18 / N = .013 / L = 75 / JLC = .25

9 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	56.61	18.00	50.50	10.41	58.30	0.00	8.7	1.77
UPSTRM	59.34	18.00	55.57	10.41	61.02	0.00	4.4	1.77

Drainage area (ac)	=	0	Slope of invert (%)	=	6.760
Runoff coefficient	=	0	Slope energy grade line (%)	=	3.632
Time of conc (min)	=	0	Critical depth (in)	=	17.62
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	16.9
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	4.8
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	18.3	Confluence angle (deg)	=	90
Default Q (cfs)	=	18.4	Natural ground elev (ft)	=	61.48
Line capac. (cfs)	=	27.3	Line storage (cuft)	=	133

94

LINE 10 / Q = 113.1 / HT = 42 / WID = 42 / N = .013 / L = 46 / JLC = .25

10 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.40	42.00	43.66	11.76	54.55	0.00	7.08	9.62
UPSTRM	53.52	42.00	46.26	11.76	55.67	0.00	4.36	9.62

Drainage area (ac)	=	0	Slope of invert (%)	=	5.652
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.432
Time of conc (min)	=	0	Critical depth (in)	=	38.99
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	103.7
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	29.8
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	113.1	Confluence angle (deg)	=	0
Default Q (cfs)	=	113.14	Natural ground elev (ft)	=	54.12
Line capac. (cfs)	=	239.2	Line storage (cuft)	=	443

95

LINE 11 / Q = 34.4 / HT = 30 / WID = 30 / N = .013 / L = 300 / JLC = .25

11 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	76.67	30.00	71.08	7.01	77.44	0.00	4.76	4.91
UPSTRM	78.79	30.00	74.08	7.01	79.55	0.00	4.91	4.91

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.704
Time of conc (min)	=	3	Critical depth (in)	=	23.52
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	31.5
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	9.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	34.4	Confluence angle (deg)	=	0
Default Q (cfs)	=	34.4	Natural ground elev (ft)	=	81.5
Line capac. (cfs)	=	41.0	Line storage (cuft)	=	1472

LINE 12 / Q = 34.4 / HT = 30 / WID = 30 / N = .013 / L = 450 / JLC = .25

 12 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	78.98	30.00	74.08	7.01	79.74	0.00	4.91	4.91
UPSTRM	82.33	30.00	78.58	7.01	83.10	0.00	5.09	4.91

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.746
Time of conc (min)	=	0	Critical depth (in)	=	23.52
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	31.5
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	9.0
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	34.4	Confluence angle (deg)	=	45
Default Q (cfs)	=	34.4	Natural ground elev (ft)	=	86.18
Line capac. (cfs)	=	41.0	Line storage (cuft)	=	2209

LINE 13 / Q = 14.0 / HT = 18 / WID = 18 / N = .013 / L = 25 / JLC = .25

13 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.31	13.35	54.20	9.96	56.85	15.76	3.75	1.41
UPSTRM	56.25	13.35	54.75	9.96	57.79	15.76	3.68	1.41

Drainage area (ac)	=	0	Slope of invert (%)	=	2.200
Runoff coefficient	=	0	Slope energy grade line (%)	=	3.742
Time of conc (min)	=	0	Critical depth (in)	=	16.71
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	12.8
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	3.7
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	14	Confluence angle (deg)	=	45
Default Q (cfs)	=	14	Natural ground elev (ft)	=	59.94
Line capac. (cfs)	=	15.6	Line storage (cuft)	=	35

LINE 14 / Q = 14.0 / HT = 18 / WID = 18 / N = .013 / L = 25 / JLC = .25

 14 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.59	16.71	54.20	8.18	56.63	9.28	3.75	1.71
UPSTRM	56.32	18.00	54.50	7.92	57.29	0.00	3.7	1.77

Drainage area (ac) = 0	Slope of invert (%) = 1.200
Runoff coefficient = 0	Slope energy grade line (%) = 2.632
Time of conc (min) = 0	Critical depth (in) = 16.71
Inlet time (min) = 0	Req'd length curb inlet (ft) = 12.8
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 3.7
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 14	Confluence angle (deg) = -45
Default Q (cfs) = 14	Natural ground elev (ft) = 59.7
Line capac. (cfs) = 11.5	Line storage (cuft) = 43

99

LINE 15 / Q = 11.0 / HT = 18 / WID = 18 / N = .013 / L = 30 / JLC = .25

15 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	56.61	18.00	55.10	6.23	57.21	0.00	4.11	1.77
UPSTRM	57.13	15.20	55.86	6.91	57.87	13.06	3.82	1.59

Drainage area (ac)	=	0	Slope of invert (%)	=	2.533
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.181
Time of conc (min)	=	0	Critical depth (in)	=	15.19
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	10.1
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	2.9
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	11	Confluence angle (deg)	=	0
Default Q (cfs)	=	11	Natural ground elev (ft)	=	61.19
Line capac. (cfs)	=	16.7	Line storage (cuft)	=	50

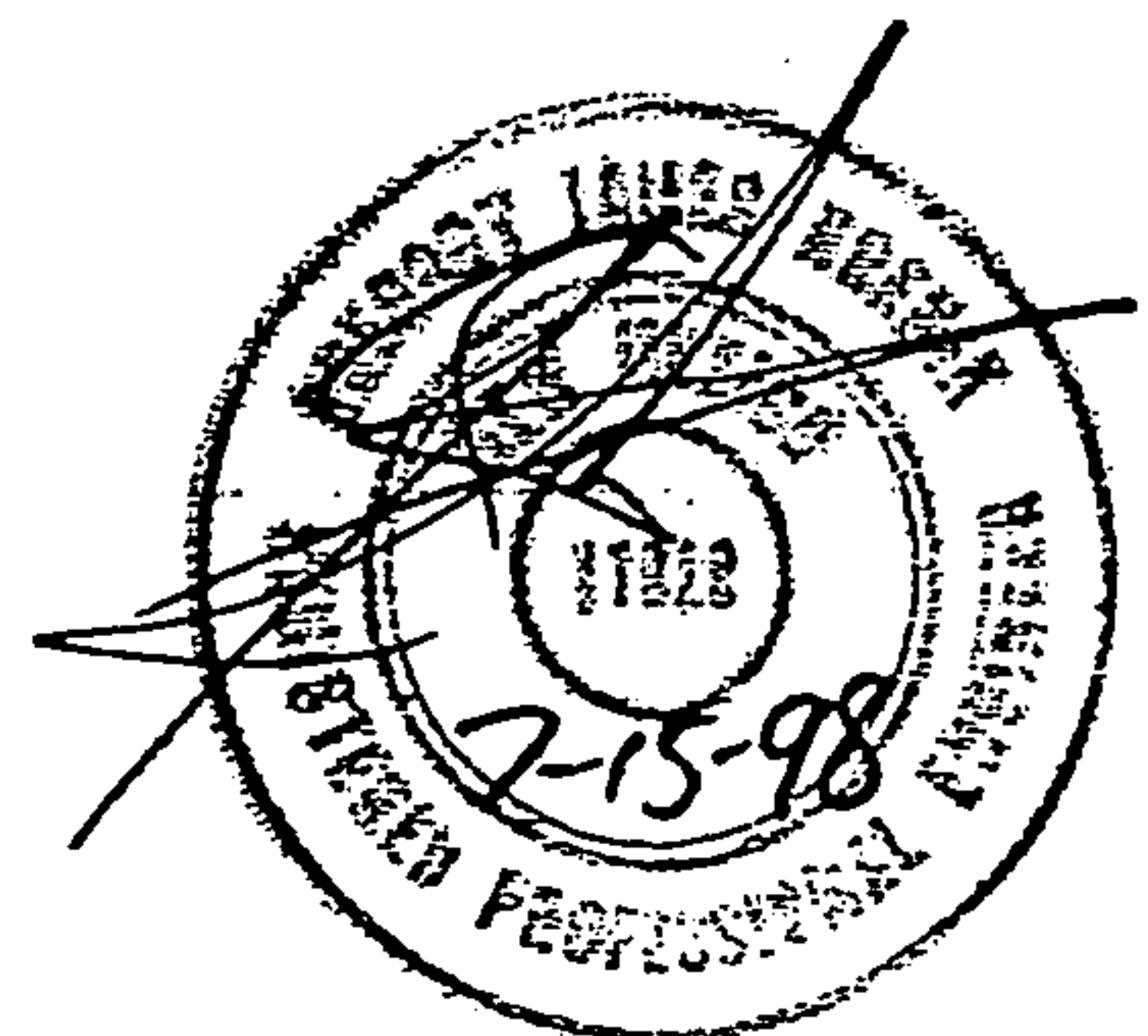
LINE 16 / Q = 5.5 / HT = 18 / WID = 18 / N = .013 / L = 30 / JLC = .25

16 / DNLN = 15

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	57.31	17.42	55.86	3.14	57.46	6.03	3.82	1.75
UPSTRM	57.37	13.07	56.22	4.00	57.62	16.05	3.93	1.37

Drainage area (ac)	=	0	Slope of invert (%)	=	1.200
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.311
Time of conc (min)	=	0	Critical depth (in)	=	10.74
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	5.0
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	1.4
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	5.5	Confluence angle (deg)	=	90
Default Q (cfs)	=	5.5	Natural ground elev (ft)	=	61.66
Line capac. (cfs)	=	11.5	Line storage (cuft)	=	47

DRAINAGE CALCULATIONS
FOR
SILVERADO SUBDIVISION



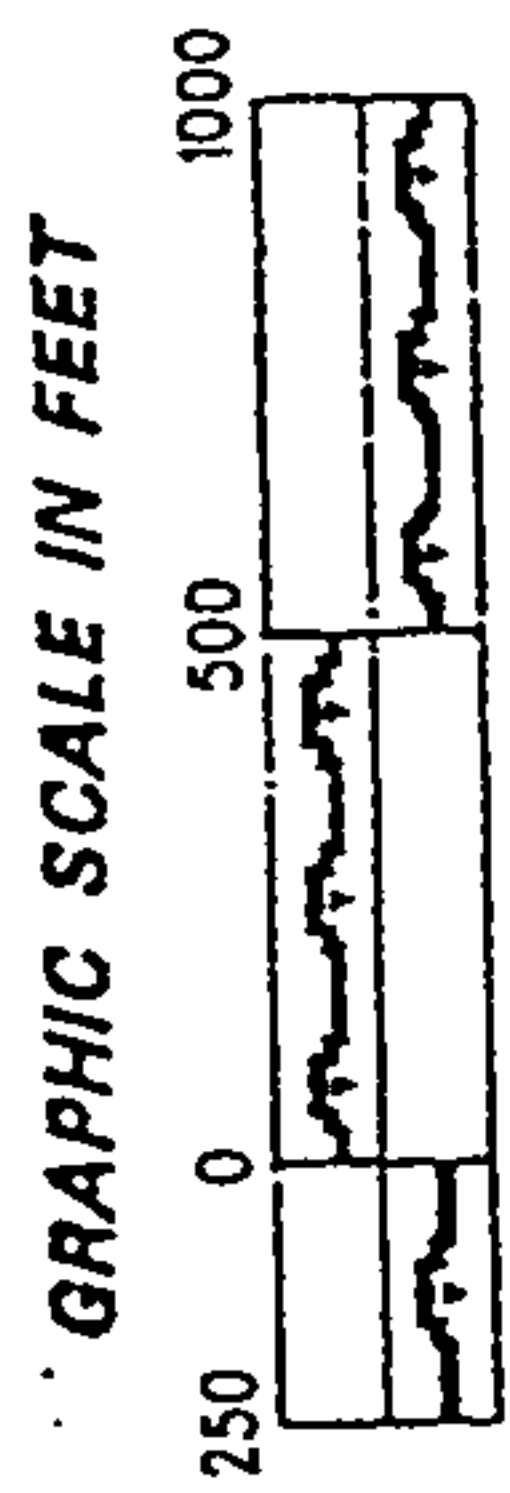
8-5-98

8-25-98

9-30-98

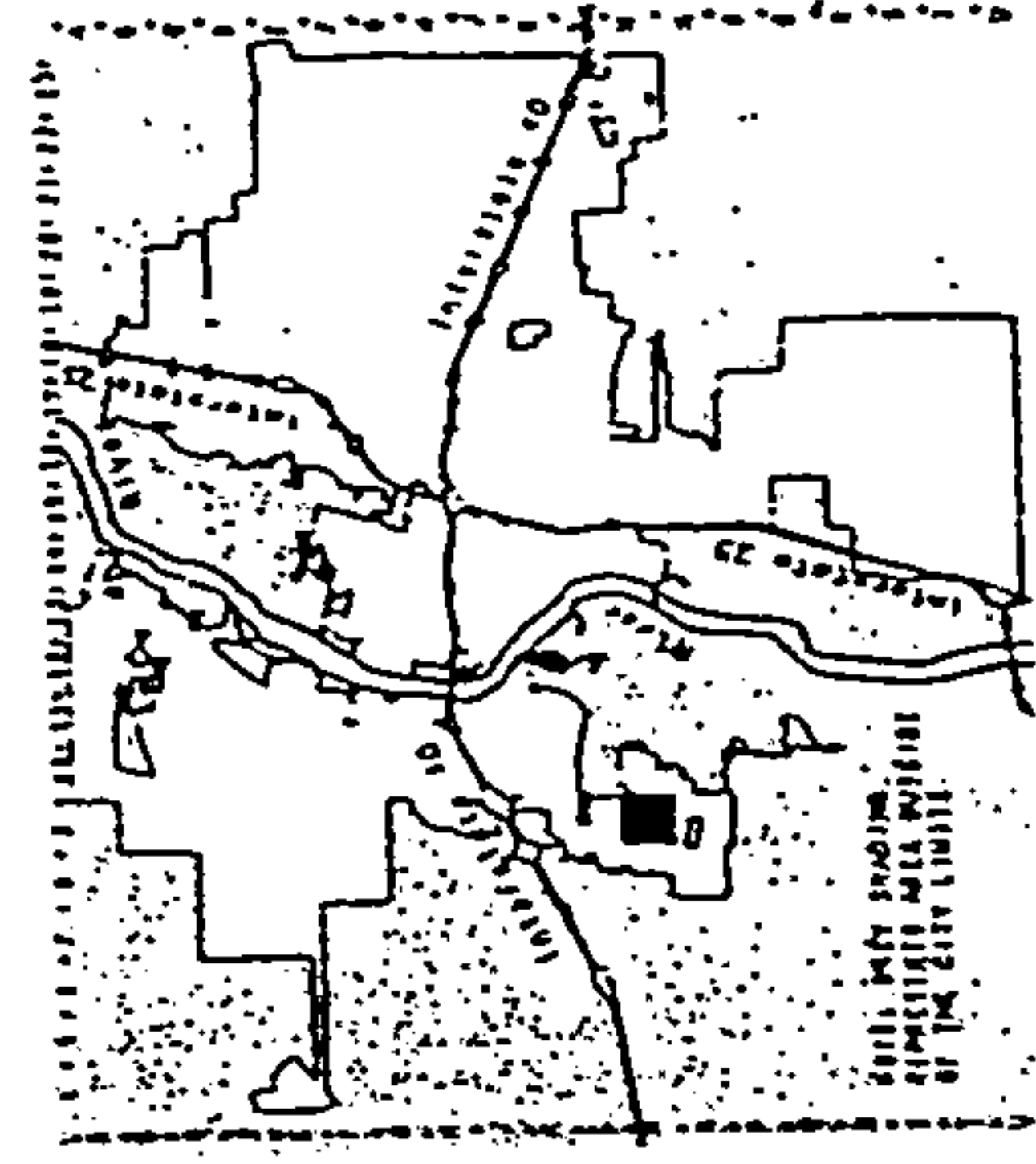
PARCEL 11 AND PART OF PARCEL 12

TOWN OF ATRISCO

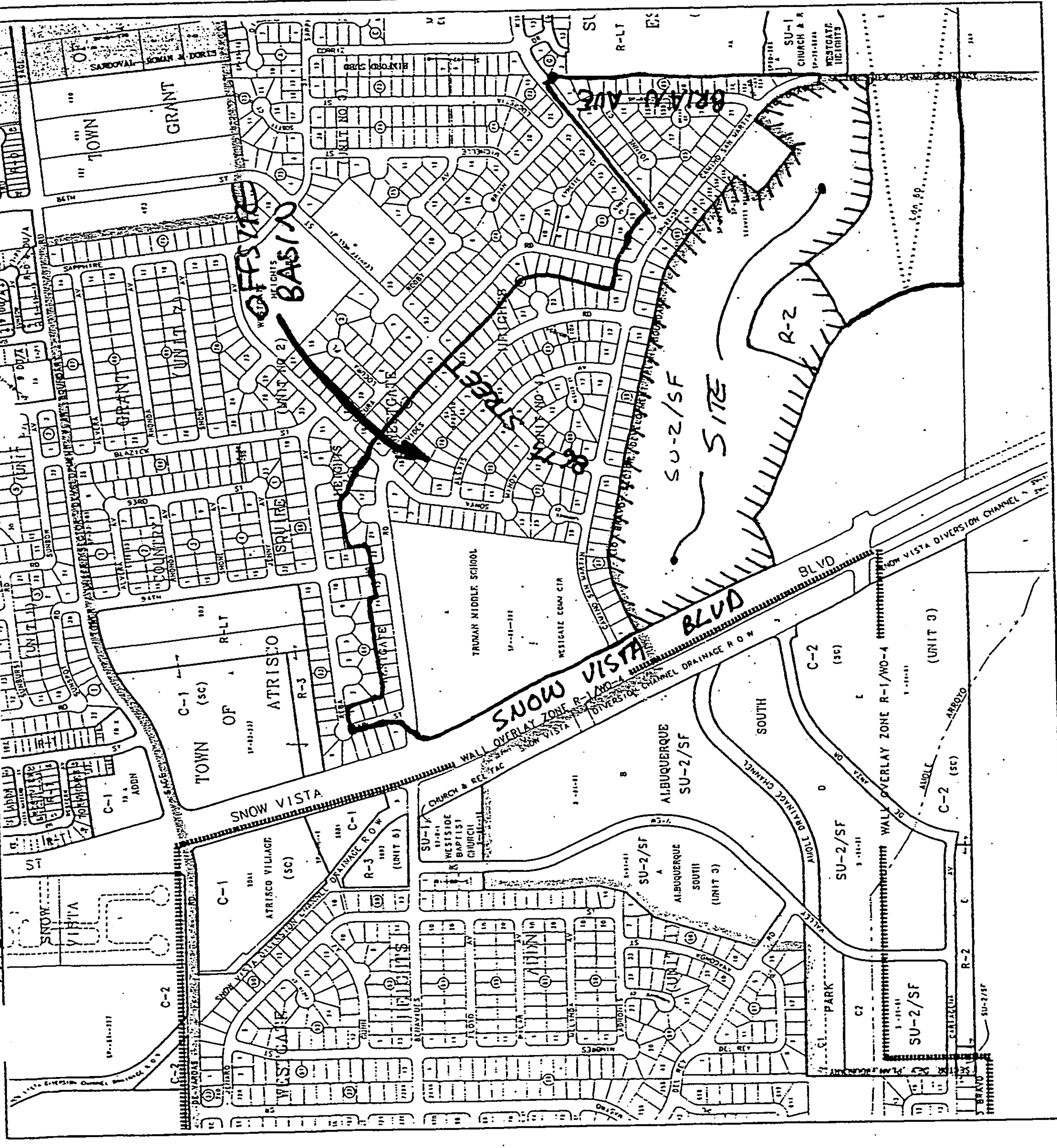


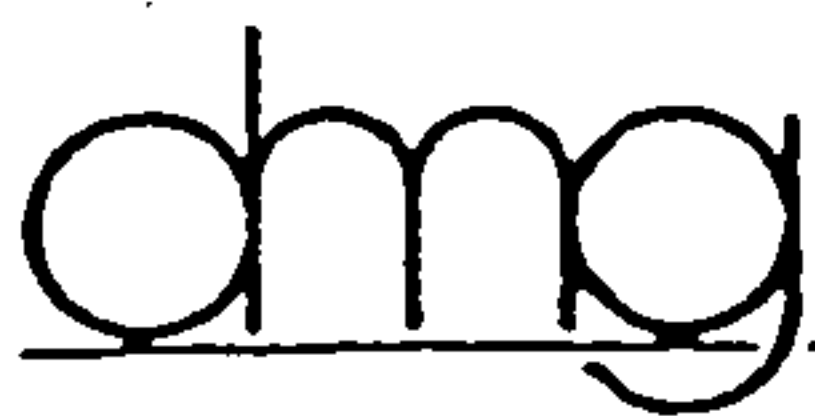
CITY OF
ALBUQUERQUE
PLANNING DEPARTMENT
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Map Amended through February 12, 1997



LEGAL DESCRIPTION
T10N
R1E
SEC 33
UNIFORM PROPERTY CODE
1005-045
M-9-Z





D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT SILVERADO SUBDIVISION

SUBJECT DRAINAGE CALCS

BY GJK DATE 6-25-98

CHECKED _____ DATE _____

SHEET 1 OF _____

REVISED 8-5-98

- SITE IS PART OF THE RIO BRAVO SECTOR PLAN.
- SITE IS NOT IN A 100 YR FLOOD ZONE.
- OFFSITE FLOWS COULD IMPACT THE SITE BUT DEPENDS ON THE DESIGN OF SNOW VISTA AND THE FUTURE 98th STREET. A WORST CASE WOULD BE THE AREA BETWEEN THE ROW AND OUR SITE WOULD DRAIN TOWARD OUR LOTS BUT COULD EASILY BE DIVERTED IN A SWALE AND DISCHARGE TO THE SNOW VISTA CHANNEL. WE WILL ASSUME FOR THIS REPORT THAT OFFSITE FLOWS DO NOT IMPACT THE SITE.

• TOTAL SITE = 48.9141 AC + 0.2146 ← 86th ST ROW AT WEST END

• NUMBER OF RESIDENTIAL LOTS = 241 (SU-2/SF)

$$\text{PAD SIZE} = 56' \times 28' = 1568$$

$$\text{DRIVE PAD} = 20' \times 20' = 400$$

$$\frac{1968}{1968} \times 241 = 474,288 \div = 10.8882 \text{ AC.}$$

"TYPE D"

- THE SITE IS SPLIT INTO TWO DIFFERENT ZONING DESIGNATIONS THE BULK OF THE SITE IS SU-2/SF WHICH IS THE SINGLE FAMILY LOTS INDICATED ABOVE. THE REMAINING PORTION IS ZONED R-2 (SEE MAP)

$$\text{AREA SU-2/SF} = 45.3723 \text{ AC}$$

TRACT "A" → AREA R-2 = 3.5418 AC WILL DRAIN INTO THE SU-2/SF AREA
ROW AT WEST END OF 86th = 0.2146 AC USE 20% B 80% D
AREA OF ROW IN SU-2/SF = 13.4793 AC USE 20% B 80% D

- FIND RUNOFF

SU-2/SF

TYPE "D"

$$10.8882 + 0.8(0.2146 + 13.4793) =$$

$$10.8882 + 10.9551 = 21.8433 \text{ AC}$$

$$\frac{21.8433}{45.3723 - 0.2146} = 47.92\%$$

R-2

USE 80% "D" 2.8334 AC

$$P_1 = 1.90 \text{ in}$$

$$P_2 = 2.2 \text{ in}$$

$$P_{24} = 2.7 \text{ in}$$

CONT. ON SHEET 3

TYPE "B"

$$(45.3723 - 13.4793)$$

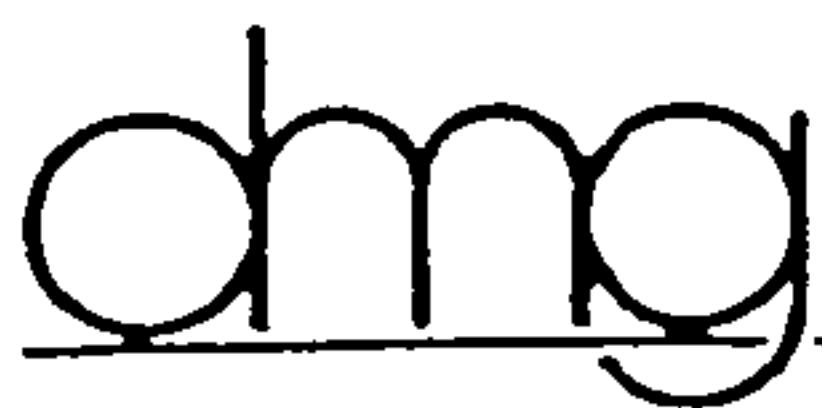
$$(31.8930 - 10.8882) +$$

$$0.2(0.2146 + 13.4793) =$$

$$21.0048 + 2.7388 = 23.7436$$

$$52.08\%$$

USE 20% "B" 0.7084 AC

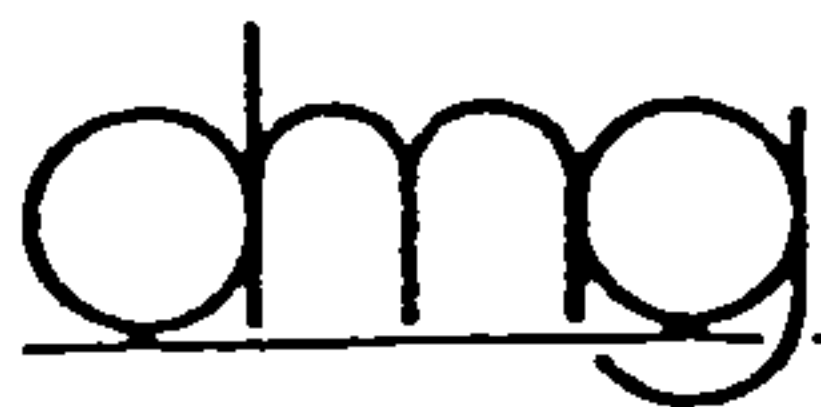


D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 8-21-98
CHECKED _____ DATE _____
SHEET 2 OF _____

REVISED 9-22-98

- THIS SITE IS ADJACENT TO SNOW VISTA BLVD ROW.
- FINAL GRADES FOR SNOW VISTA ARE SHOWN ON THE G+D PLAN. THESE GRADES WILL BE USED AS A BASE WITH WHICH TO DESIGN THE INTERSECTION WITH 86TH WHICH IS NOT PART OF THIS PROJECT
- THE SNOW VISTA CHANNEL IS A DIRT CHANNEL TO THE VICINITY TO DE ANZA DR. FROM THIS POINT IT FOLLOWS AN EXISTING ARROYO TO THE AMOLE DETENTION BASIN. THE PLANS FOR LINING AND SETTING THE ALIGNMENT FOR THE CHANNEL IS UNKNOWN AT THIS TIME, AND IT FOLLOWS THAT THE CROSSING STRUCTURES ARE ALSO UNKNOWN AT THIS TIME. SEE MASTER PLAN FOR RIO BLVD.
- PER THE TRANSPORTATION DEPARTMENT WE WILL BE REQUIRED TO INSTALL A PERMANENT PAVEMENT SECTION IN SNOW VISTA. THIS WILL BE DONE WITH TEMP. PAVEMENT IN UNIT 1 AND PERM. IN UNIT 4.
- AS PART OF THIS DESIGN IT WILL BE NECESSARY TO GRADE IN THE SNOW VISTA ROW AND THE PNM EASEMENT TO DISCHARGE ROW WATER TO THE SNOW VISTA CHANNEL. WE WILL TENTATIVELY SET GRADE ON THE PROPOSED ALIGNMENT OF SNOW VISTA / 98TH STREET TO GIVE A BASE FOR THE ACTUAL DESIGN OF THIS AREA. GRADING IN PNM'S ROW IS ALLOWED JUST SO THE INTEGRITY OF THE POLES IS NOT COMPROMISED. THE GRADING IN THE ROW AND DISCHARGE TO SNOW VISTA CHANNEL IS NECESSARY TO PREVENT ROW WATER FROM ENTERING THE HOMES BACK YARDS.
- FOR THIS REPORT A DETENTION POND WILL BE REQUIRED. PER A MEETING WITH SUSAN CALONGUE, FRED AGUIRRE, LISA MANWILL (AMAFCA), FRED ARFMAN (DETENTION POND ENGINEER) AND GREG KRENK (MGA) IT WAS DECIDED TO BASE THIS REPORT ON USING THE PROPOSED DETENTION POND THAT WILL BE CONSTRUCTED ON CITY PROPERTY.
- THIS REPORT WILL ADDRESS THE FINAL BUILD OUT WHICH WILL USE THE DETENTION POND AS WELL AS THE PHASING OF THE PROJECT. PHASE I WILL INCORPORATE A TEMP. RETENTION POND. PHASE II WILL INCORPORATE A TEMP. RETENTION POND AND DO A CLOSURE ON PHASE I POND. PHASE III WILL CONNECT TO THE PERMANENT DETENTION POND AND DO A CLOSURE ON PHASE II POND. PHASE IV HAS NO STORM MAIN IMPROVEMENTS. TO HANDLE THE RUN OFF ON BARBADOS AVE A SEPARATE FINANCIAL GUARANTEE WILL BE DONE TO DEFER CONSTRUCTION UNTIL THE CONNECTION THROUGH ADJACENT PROPERTY CAN BE MADE TO THE DETENTION POND VIA GIBSON. GRADES FOR THIS CONNECTION ARE SHOWN ON THE GRADING PLANS.



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 6-25-98
CHECKED _____ DATE _____

REVISED 8-5-98 SHEET 3 OF _____

FROM HY4MO SHEETS 15-20

$$Q_{\text{SURF}} = 145.59 \text{ CFS} \quad V = 5.0742 \text{ AC-FT}$$

$$Q_{R-2} = 14.03 \text{ CFS} \quad V = 0.5645 \text{ AC-FT}$$

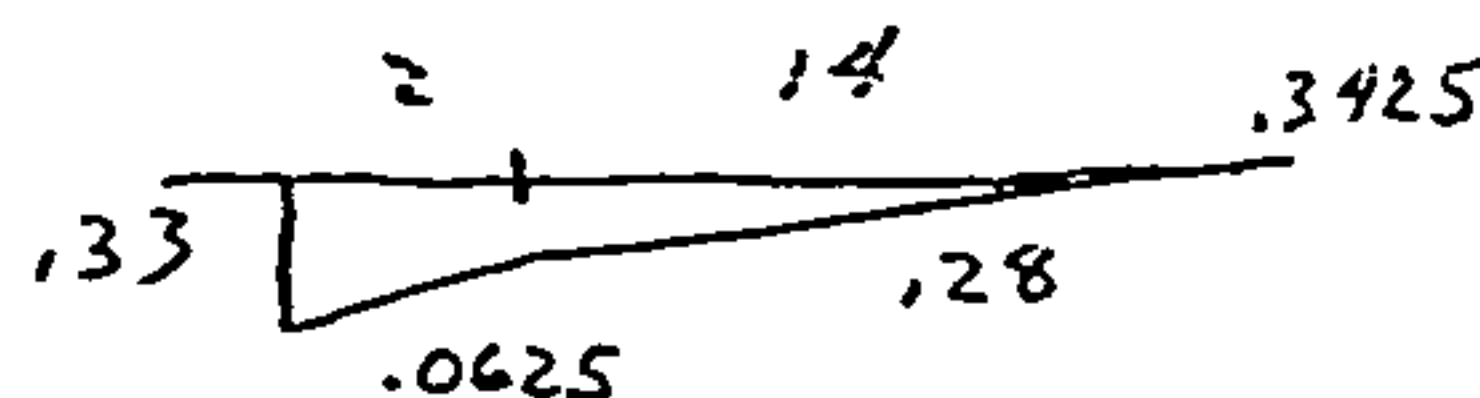
- FIND CFS PER LOT

$$145.59 / 241 = 0.6041 \text{ CFS/LOT}$$

- FIND STREET CAPACITY

MOUNTABLE CURB AT 2%

$$\begin{aligned} d &= .33 \\ WP_{1/2} &= 15.705 \\ A_{1/2} &= 2.3864 \\ V_{1/2} &= 3.52 \text{ F/S} \\ Q_{1/2} &= 8.4 \text{ CFS} \end{aligned}$$



$$d + V^2/2g = 0.52 < 0.53 \text{ OK}$$

$$\text{TOTAL } Q \text{ IN STREET} = 2 \times 8.4 = 16.8 \text{ CFS}$$

- No. of LOTS which can drain to street

$$16.8 / 0.6041 = 27.81$$

MOUNTABLE CURB AT 1%

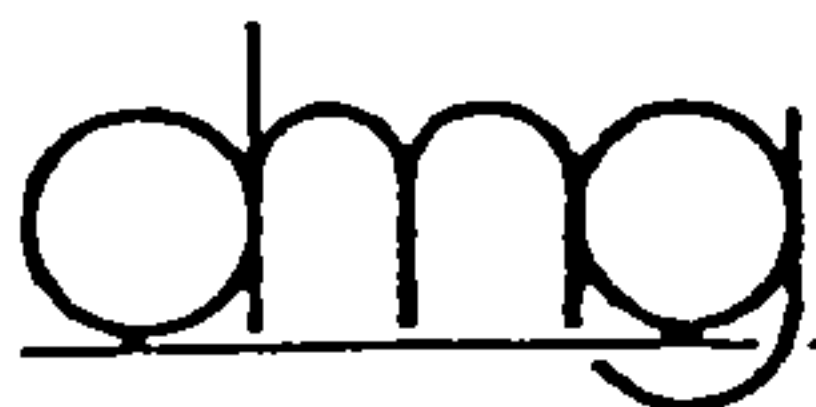
$$\begin{aligned} d &= .33 \\ WP &= 15.705 \\ A &= 2.3864 \\ V_{1/2} &= 2.489 \text{ F/S} \\ Q_{1/2} &= 5.94 \text{ CFS} \end{aligned}$$

$$d + V^2/2g = 0.43 < 0.53 \text{ OK}$$

$$\text{TOTAL } Q = 2 \times 5.94 = 11.88 \text{ CFS}$$

- No. of LOTS to drain

$$11.88 / 0.6041 = 19.67$$

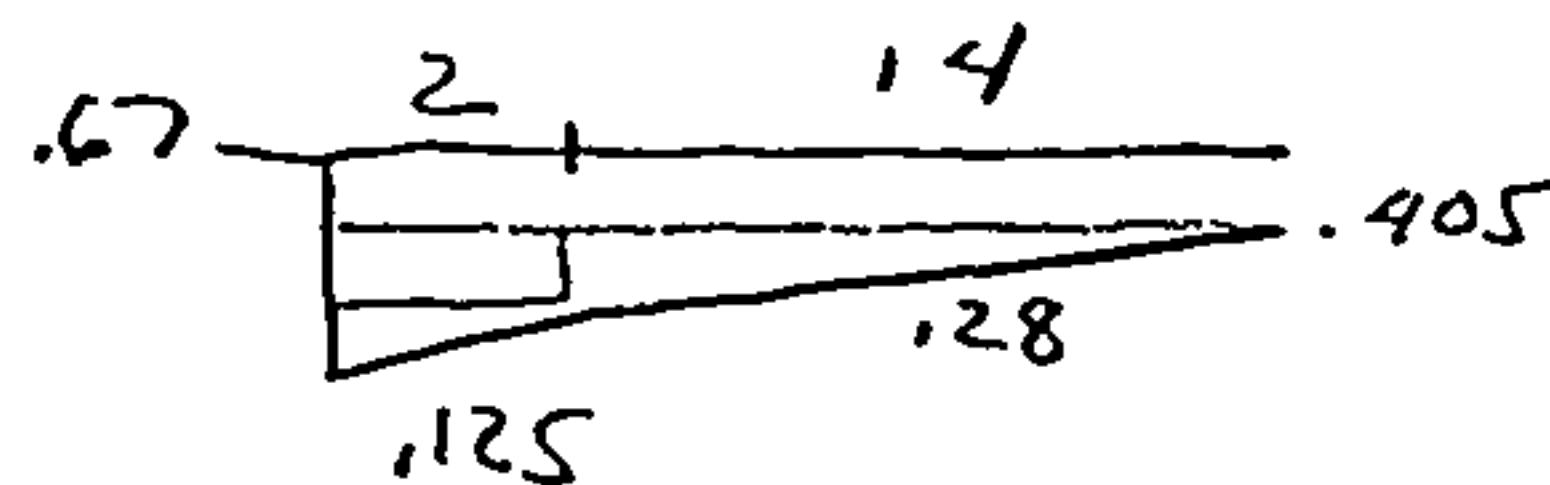


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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 4 OF _____
REVISED 8-5-98

STANDARD C+G AT 1%₀

$$\begin{aligned}d &= .59 \\WP &= 33.18 \\A &= 11.21 \\V &= 4.24 \text{ F/S} \\Q &= 47.53 \text{ CFS}\end{aligned}$$



$$d + V^2/2g = 0.87 = 0.87 \text{ OK}$$

NO. OF LOTS TO DRAIN

$$47.53 / 0.6041 = 78.68$$

STANDARD C+G AT 1.67%₀

$$\begin{aligned}d &= 0.52 \\WP &= 33.04 \\A &= 8.97 \\V &= 4.73 \text{ F/S} \\Q &= 42.48 \text{ CFS}\end{aligned}$$

$$d + V^2/2g = 0.87 = 0.87 \text{ OK}$$

NO. OF LOTS TO DRAIN

$$42.48 / 0.6041 = 70.32$$

INLETS REQUIRED AT THIS POINT

BETWEEN LOTS 7 & 8 BLOCK 3 - RODEO AVE

BETWEEN LOTS 21 & 22 BLOCK 4 - RODEO AVE

USE "DOUBLE A" INLETS

FROM SHEET 11

$$Q_{\text{GATE}} = 9.4 \text{ CFS}$$

$$71 \times 0.6041 = 42.89$$

$$\begin{aligned}Q_{\text{IN STREET}} &= 42.89 - 2(9.4) \\&= 24.09 \text{ CFS}\end{aligned}$$

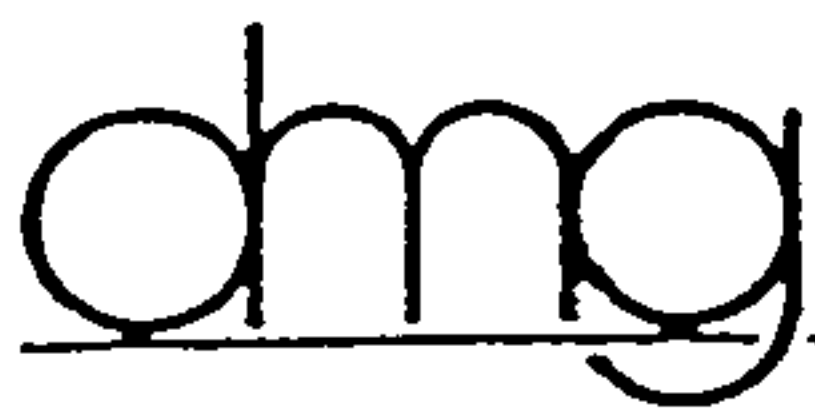
FIND d ON WATERS OR AT RODEO AVE

$$Q = 32.02 \text{ CFS} \quad S = 1\% \quad 53 \text{ LOTS}$$

$$\begin{aligned}d &= 0.51 \\WP &= 33.02 \\A &= 8.65 \\V &= 3.58 \text{ F/S} \\Q &= 30.96 \text{ CFS} \approx 32.02 \text{ CFS}\end{aligned}$$

$$d + V^2/2g = 0.71 < 0.87 \text{ OK}$$

USE 2- "DBL A" INLETS



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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____

REVISED 8-5-98

SHEET 5 OF _____

FROM SHEET 11

$$Q_{\text{gate}} = 7.0 \text{ cfs}$$

Q INTO INTERSECTION

$$32.02 - 2(7) = 18.02 \text{ cfs}$$

- FIND d ON ROAD AT WATERS

$$24.09 + 10(0.6041) = 30.13$$

$$Q = 29.63 \text{ cfs} \quad S = 1.67\%$$

$$d = 0.47$$

$$WP = 32.94$$

$$A = 7.37$$

$$V = 4.16 \text{ f/s}$$

$$Q = 30.68 \text{ cfs} \approx 30.13 \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.74 < 0.87 \text{ OK}$$

- INSTALL 2 "B" INLETS BEFORE INTERSECTION
FROM SHEET 12

$$Q_{\text{gate}} = 10.0 \text{ cfs}$$

Q INTO INTERSECTION

$$30.13 - 2(10) = 10.13 \text{ cfs}$$

- TOTAL Q PAST INTERSECTION

$$Q = 18.02 + 10.13 \\ = 28.15 \text{ cfs}$$

- FIND CAPACITY OF MOUNTABLE CURB AT 32

$$d = 0.29$$

$$WP = 13.665$$

$$A = 1.8114$$

$$V_{1/2} = 3.936 \text{ f/s}$$

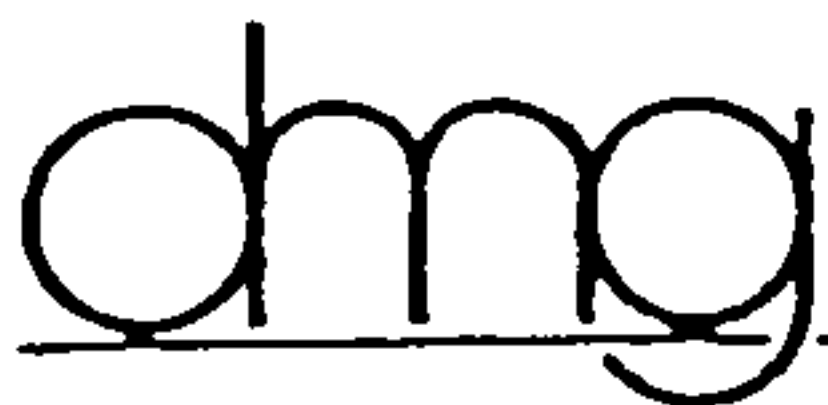
$$Q_{1/2} = 7.13 \text{ cfs}$$

$$d + \frac{V^2}{2g} = 0.53 = 0.53 \text{ OK}$$

$$\text{TOTAL } Q = 2 \times 7.13 = 14.26$$

- NO. OF LOTS TO DRAIN

$$14.26 / 0.6041 = 23.61$$



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PROJECT SILVERADO SUBDIVISION
SUBJECT ORDINANCE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 6 OF _____
REVISED 8-5-98

- FIND CAPACITY OF STD C+G AT 220

$$\begin{aligned}d &= 0.49 \\w_p &= 32.98 \\A &= 8.01 \\V &= 4.812 \text{ F/s} \\Q &= 38.545 \text{ CFS}\end{aligned}$$

$$d + V^2/2g = 0.85 < 0.87 \text{ O.K.}$$

FIND LOCATION OF NEXT INLETS ON RODEO.

$$Q \text{ OF STREET} = 38.55 \text{ CFS}$$

$$Q \text{ past Benewides} = 28.15 + 3(0.6041) = 29.96$$

$$Q = 38.55 - 29.96 = 8.59 \text{ CFS}$$

$$\text{No. of Lots} = 8.59 / 0.6041 = 14.22 \text{ USE 14 lots}$$

$$Q = 14 \times 0.6041 + 29.96 = 38.42$$

- ADD two "B" inlets here

FROM sheet 12

$$Q_{\text{gate}} = 12.75 \text{ CFS}$$

$$Q \text{ past INLETS}$$

$$= 38.42 - 2(12.75)$$

$$= 12.92 \text{ CFS}$$

- ADD 2 SGL "A" INLETS ON THE WEST SIDE OF NEVIS EAST ON JEREMIAH

$$\text{NO. LOTS} = 19 \times 0.6041 = 11.48 \text{ CFS}$$

$$\text{PLUS FLOW FROM R-2} = 14.03 \text{ CFS}$$

$$Q = 25.51 \text{ CFS} \quad S = 3\%$$

$$d = .415$$

$$w_p = 32.83$$

$$A = 5.61$$

$$V = 4.66 \text{ F/s}$$

$$Q = 26.16 \text{ CFS} \approx 25.51 \text{ CFS}$$

$$d + V^2/2g = 0.75 < .85 \text{ OK}$$

$$Q_{\text{gate}} = 6.6 \text{ CFS FROM SHEET 13}$$

$$Q_{\text{past inlets}} = 25.51 - 2(6.6) = 12.31 \text{ CFS}$$

- ADD 2 "B" INLETS ON SABA JUST NORTH OF JEREMIAH

$$Q = 35(0.6041) + 12.31 = 33.45 \text{ CFS} \quad S = 1\%$$

$$d = 0.52$$

$$w_p = 33.04$$

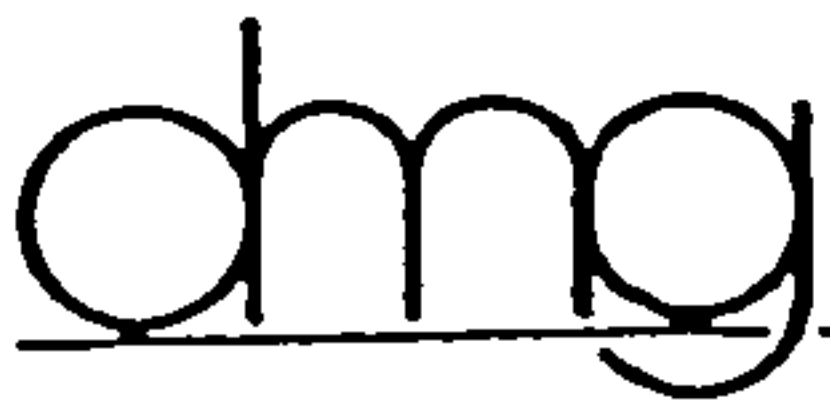
$$A = 8.97$$

$$V = 3.66 \text{ F/s}$$

$$Q = 32.87 \text{ CFS} \approx 33.45 \text{ O.K.}$$

$$\text{FROM SHEET 12 } Q_{\text{gate}} = 9.0 \text{ CFS}$$

$$Q_{\text{past inlets}} = 33.45 - 2(9) = 15.45 \text{ CFS}$$



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PROJECT Silverado Subdivision
SUBJECT Drainage Calcs
BY GSK DATE 6-25-98
CHECKED _____ DATE _____

REvised 8-5-98 SHEET 7 OF _____

- FIND Q AT ROATAN & SAINT KITTS

$$Q = 15.45 + 29(0.6041) \\ = 32.97 \text{ CFS}$$

PUT 2 "DBL A" IN SUMP

$$P = 34$$

$$Q/P = 3.0 H^{1.5}$$

$$H = 0.47 < 0.67 \text{ OK}$$

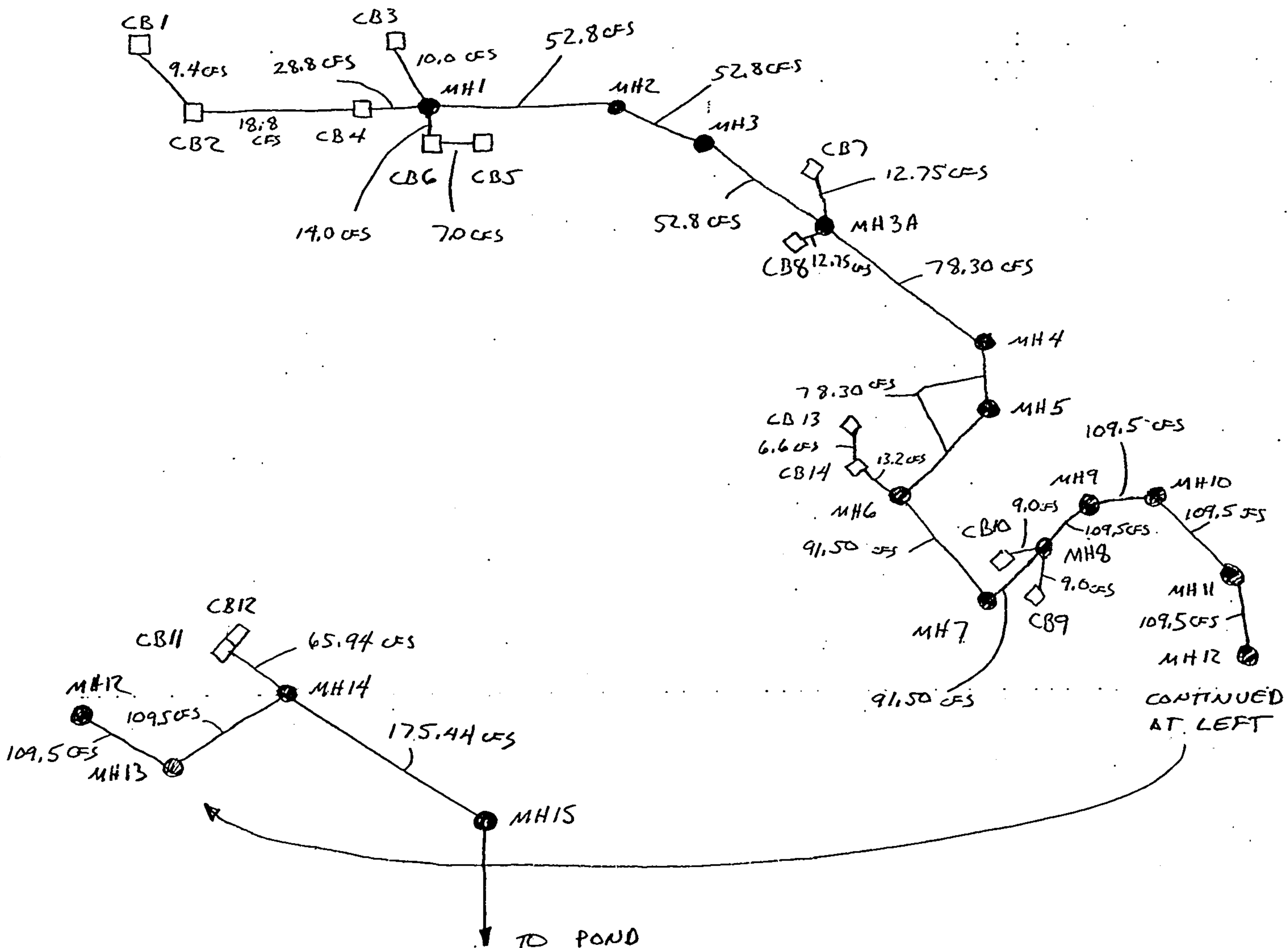
FIND H WITH 2-100yr STORMS

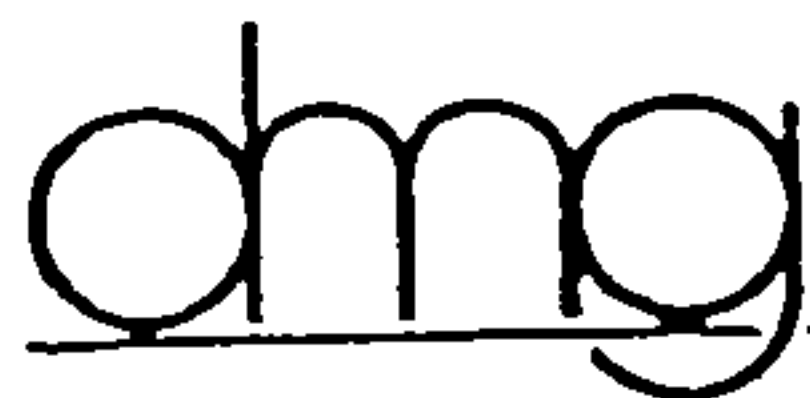
$$H = 0.65 < 0.67$$

WATER SURFACE WILL ALWAYS BE BELOW CURB.

SINCE WE HAVE A SUMP CONDITION THE PIPE NEEDS TO BE SIZED FOR $2 \times 32.97 \text{ CFS} = 65.94 \text{ CFS}$.

- REMAINING 9 LOTS DRAIN TO CAMINO SAN MARTIN $Q = 7 \times 0.6041 = 4.23 \text{ CFS}$





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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____

REVISED 8-5-98

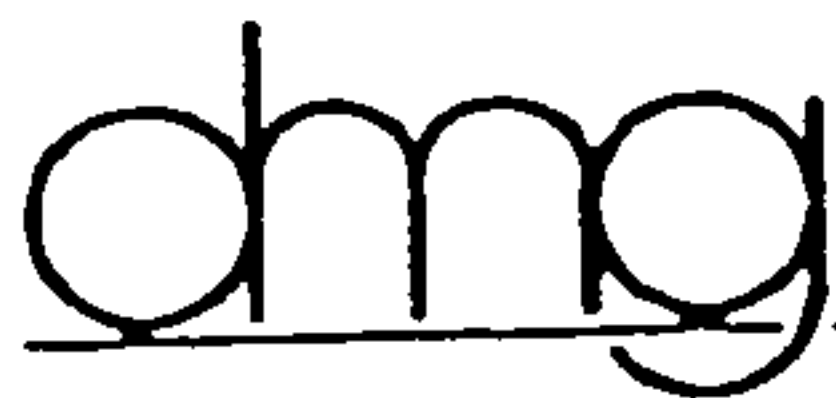
SHEET 8 OF _____

STRUCTURE	RIM / GATE	INV	TYPE
CB1	96.98	93.48	OBL A
CB2	96.80	93.18	OBL A
CB3	91.15	87.65	B
CB4	91.25	87.15	B
CB5	91.25	87.75	OBL A
CB6	91.25	87.45	OBL A
CB7	82.54	79.04	B
CB8	82.10	78.60	B
CB9	69.52	66.02	B
CB10	69.52	66.02	B
CB11	61.60	57.10	OBL A
CB12	61.60	57.10	OBL A
MH1	91.04	86.70	
MH2	86.29	79.14	
MH3	84.33	77.70	
MH4	77.67	72.67	
MH5	75.07	70.07	
MH6	72.21	67.21	
MH7	69.94	64.44	
MH8	69.47	63.84	
MH9	68.27	62.59	
MH10	67.17	61.67	
MH11	65.96	59.32	
MH12	64.61	58.22	
MH13	63.60	57.62	
MH14	62.30	56.12 / 55.62	
MH15	57.00	50.00	
MH3A	82.21	75.72	

• SIZE INTERIOR STORM DRAIN

FROM NOMO SHEET 14

18" RCP	@	1%	carries	10.5 CFS
" "	@	3%	"	18.0 CFS
	@	11.1%	"	30.0 CFS
24" RCP	@	1.8%	"	30.0 CFS
30" RCP	@	1.8%	"	54.0 CFS
" "	@	2.8%	"	63.0 CFS
36" RCP	@	1.42%	"	76.0 CFS
" "	@	2.74%	"	104.0 CFS
42" RCP	@	1.0%	"	98.0 CFS
48" RCP	@	3.4%	"	240.0 CFS



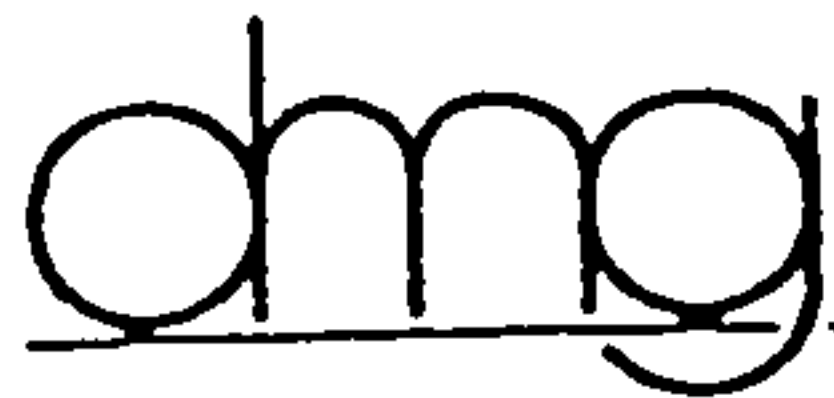
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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____

SHEET 9 OF _____

REVISED 8-5-98

PIPE RUN	Q(CFS)	SLOPE(%)	SIZE	L
CB13-CB14	6.6	1.0	18"	60'
CB14-MH6	13.2	3.0	18"	45'
CB1-CB2	9.4	1.0	18"	30'
CB2-CB4	18.8	1.8	24"	335'
CB4-MH1	28.8	1.8	24"	25'
CB3-MH1	10.0	1.0	18"	25'
CB5-CB-6	7.0	1.0	18"	30'
CB6-MH1	14.0	3.0	18"	25'
MH1-MH2	52.8	1.8	30"	420'
MH2-MH3	52.8	1.8	30"	80'
MH3-MH3A	52.8	1.8	30"	110'
CB7-MH3A	12.75	11.1	18"	30'
CB8-MH3A	12.75	57.6	18"	5'
MH3A-MH4	78.30	1.42	36"	215'
MH4-MH5	78.30	2.74	36"	95'
MH5-MH6	78.30	1.26	42"	265'
MH6-MH7	91.50	1.13	42"	245'
MH7-MH8	91.50	1.0	42"	60'
CB9-MH8	9.0	1.0	18"	10'
CB10-MH8	9.0	1.0	18"	15'
MH8-MH9	109.5	1.0	42"	125'
MH9-MH10	109.5	1.53	42"	60'
MH10-MH11	109.5	1.0	42"	235'
MH11-MH12	109.5	1.0	42"	110'
MH12-MH13	109.5	1.0	42"	60'
MH13-MH14	109.5	1.0	42"	150'
CB11/12-MH14	65.94	2.8	2-30"	35'
MH14-MH15	175.44	3.4	48"	165'



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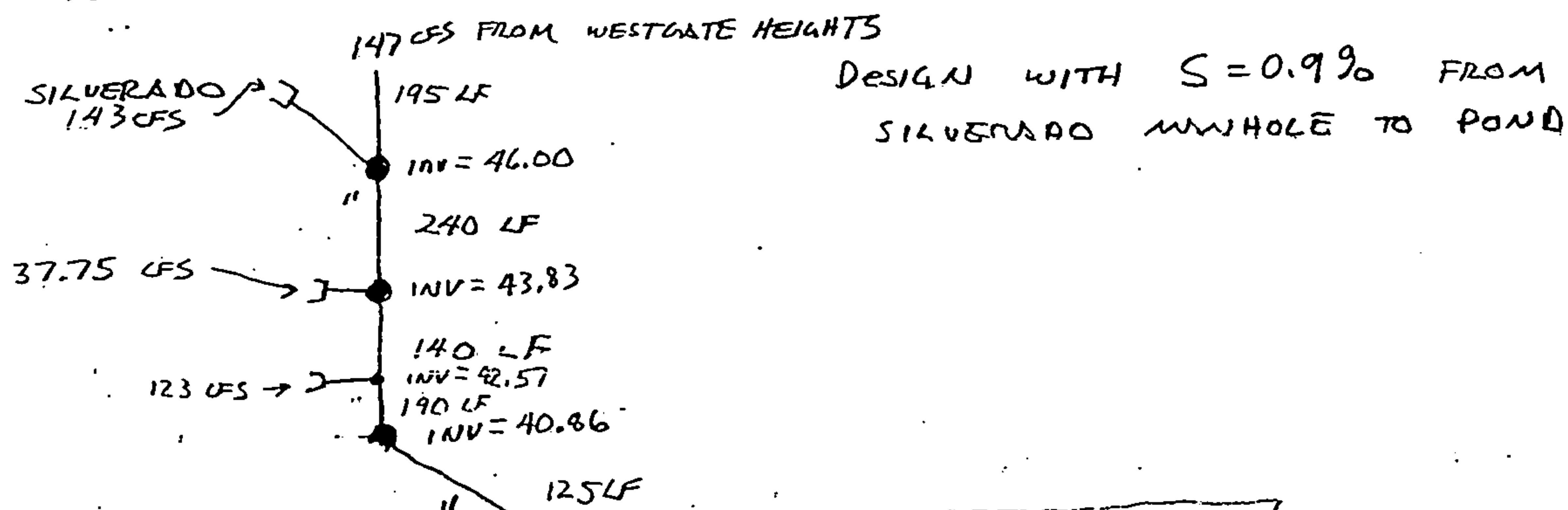
PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____
REVISED 8-5-98 SHEET 10 OF _____

FROM HYDRO OUTPUT SHEETS 21-25

$Q_{max} = 101.48$ CFS < 102 ALLOWABLE PER " MASTER DRAINAGE
PLAN FOR RIO BRAVO SECTOR RAN
WATER SURFACE = 48.62

ADDENDUM TO THE

• SIZE STORM DRAIN



★ SEE ADDENDUM
TO THE MASTER DRAINAGE
PLAN TO THE RIO BRAVO
SECTOR PLAN FOR
STORM DRAIN DESIGN

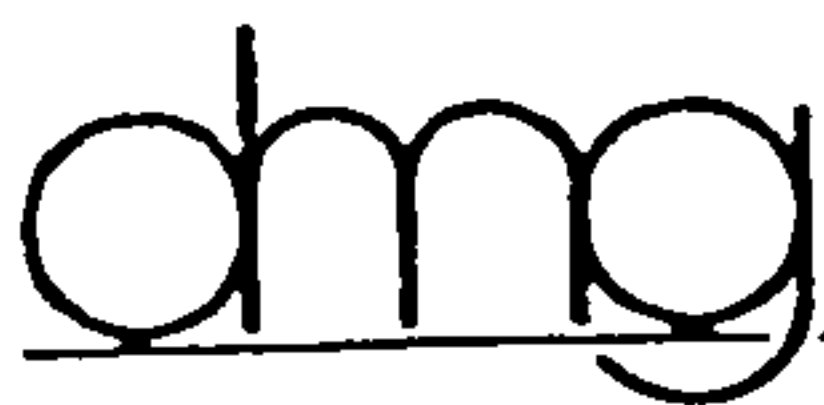
36" ORIFICE
ON EXISTING 48" PIPE

INV = 39.73

POND

ALLOWABLE $Q = 102$ CFS
PER VISTA del Sol Report

- FROM THE HYDRAULIC REPORT IN THE ADDENDUM TO THE
MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR PLAN
THE PORTION REQUIRED FROM THE SILVERADO SUBDIVISION
TO THE POND IS 66" x 72' RCP SHOWN ABOVE.



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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 9-22-98
CHECKED _____ DATE _____
SHEET 10A OF _____

- THE SITE WILL BE DEVELOPED INTO 4 UNITS.
 - UNIT 1 WILL HAVE A TEMPORARY RETENTION POND.
 - UNIT 2 WILL CLOSE THE UNIT 1 POND AND HAVE A NEW LARGER POND TO HANDLE BOTH UNITS 1 & 2
 - UNIT 3 WILL CLOSE THE UNIT 2 POND AND CONNECT TO THE STORMDRAIN SYSTEM.
 - UNIT 4 HAS NO STORMDRAIN IMPROVEMENTS AND DRAINS INTO UNIT 1. A TEMP POND WILL BE NEEDED TO POND EXISTING RUNOFF UNTIL UNIT 4 IS DEVELOPED
- SIZE TEMP. RETENTION POND FOR UNIT 1

78 LOTS

SEE SHEET 4 OF 5

VOLUME PER LOT

FIND 100 yf 10600

$$V = 5.0742 + 21.9433 \left(\frac{3.0722}{12} \right)$$

$$= 7.75 \text{ AC-FT}$$

$$V/\text{LOT} = 7.75/241$$

$$= 0.032158 \text{ AC-F}$$

$$= 1400.79 \text{ CF/LOT}$$

POND VOL Req.

$$= 78 \times 1400.79$$

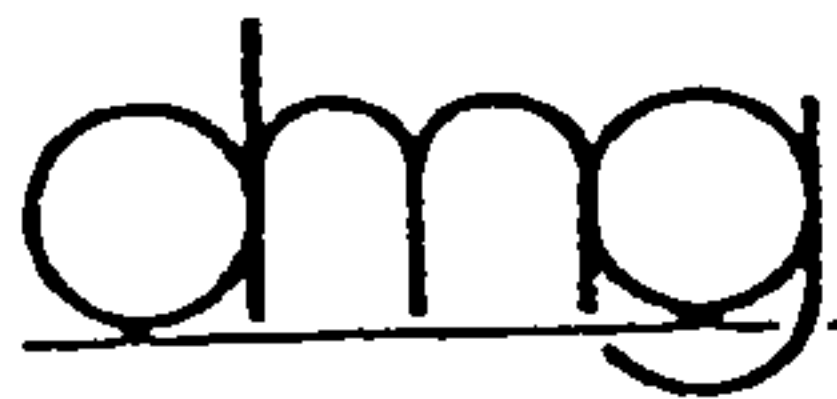
$$= 109,262 \text{ CF}$$

- SIZE POND

ELEV	AREA(SF)	VOLUME (CF)
82	186 x 34 = 6324	0
83	192 x 40 = 7680	7002
84	199 x 46 = 9108	15396
85	204 x 52 = 10608	25254
86	210 x 58 = 12180	36648
87	216 x 64 = 13824	49650
88	222 x 70 = 15540	64332
89	228 x 76 = 17328	80766
90	234 x 82 = 19198	99024
91	240 x 88 = 21120	119178

WATER SURFACE = 90.51

EMERGENCY SPILLWAY WILL PUMP ONTO RODEO AVE
AND BENEVIDES INTERSECTION.



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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 9-22-98
CHECKED _____ DATE _____
SHEET 10B OF _____

• SIZE POND ON UNIT 4

100% A A = 10,684 AC
FROM HYMO OUTPUT SHEETS 33-35
Q = 14,17 CFS
V = 0.3998 AC-FT
= 17,415 CF

$$V_{100 \text{ day}} = 0.3998 + 0 \left(\frac{3.67 - 2.2}{12} \right) \\ = 0.3998$$

ELEV	AREA (SF)	VOLUME (CF)	
6.0	10,384	0	
7.0	11,656	11,020	water surface = 7.48
8.0	13,000	23,348	

EMERGENCY SPILLWAY WILL DUMP ONTO 86TH STREET.

• SIZE POND ON UNIT 2

SEE SHEET 5 OF 5

78 LOTS + 54 LOTS + TRACT "A"

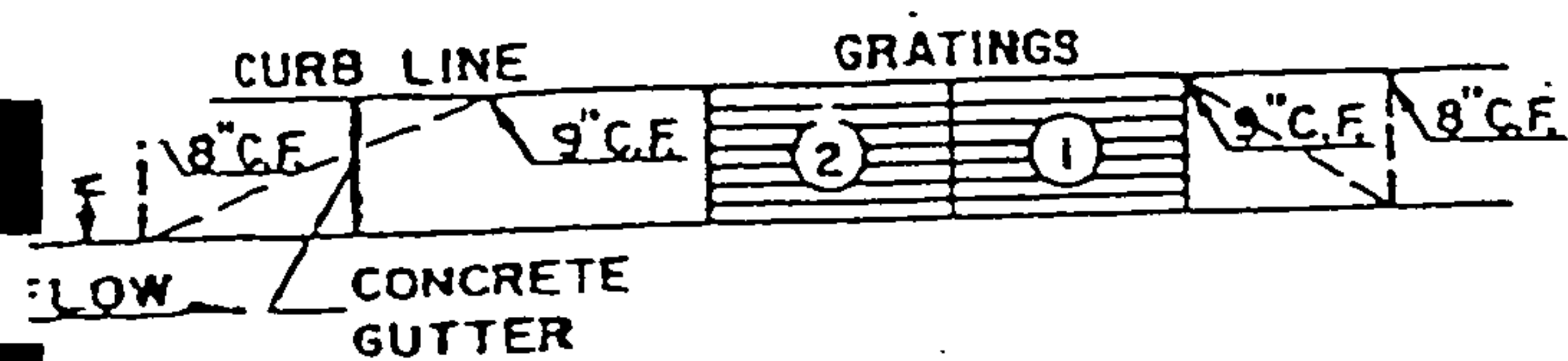
$$V = (132 \times 1400.79) + 0.5045 \text{ AC-FT see sheet 3} \\ = 206,880 \text{ CF}$$

ELEV	AREA (SF)	VOLUME (CF)	
64	236 x 66 = 15,576	0.0	
65	242 x 72 = 17,424	16,500	
66	248 x 78 = 19,344	34,884	
67	254 x 84 = 21,336	55,224	
68	260 x 90 = 23,400	77,592	
69	266 x 96 = 25,536	102,060	
70	272 x 102 = 27,744	128,700	
71	278 x 108 = 30,024	157,584	
72	284 x 114 = 32,376	188,784	water surface = 72.46
73	290 x 120 = 34,800	222,372	

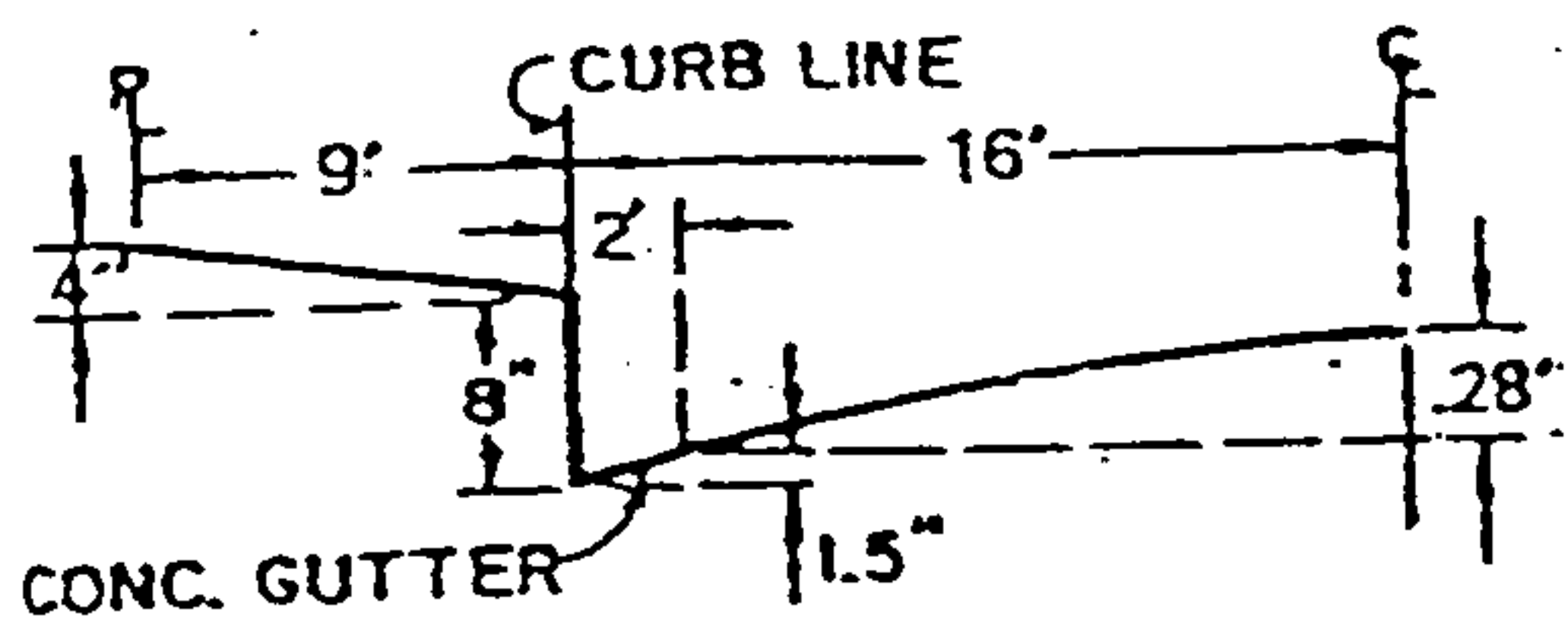
EMERGENCY SPILLWAY WILL DUMP ON TO JEREMIAH PL.

- A. BLOCKED DRAINAGE BASEMENT WILL BE SHOWN ON THE PLATS FOR UNIT 1 AND UNIT 2 SO THE WATER FROM THE SPILLWAYS CAN FOLLOW HISTORIC PATHS UNTIL UNIT 3 CONNECTS TO THE STORM DRAIN AND PERMANENT DETENTION POND.

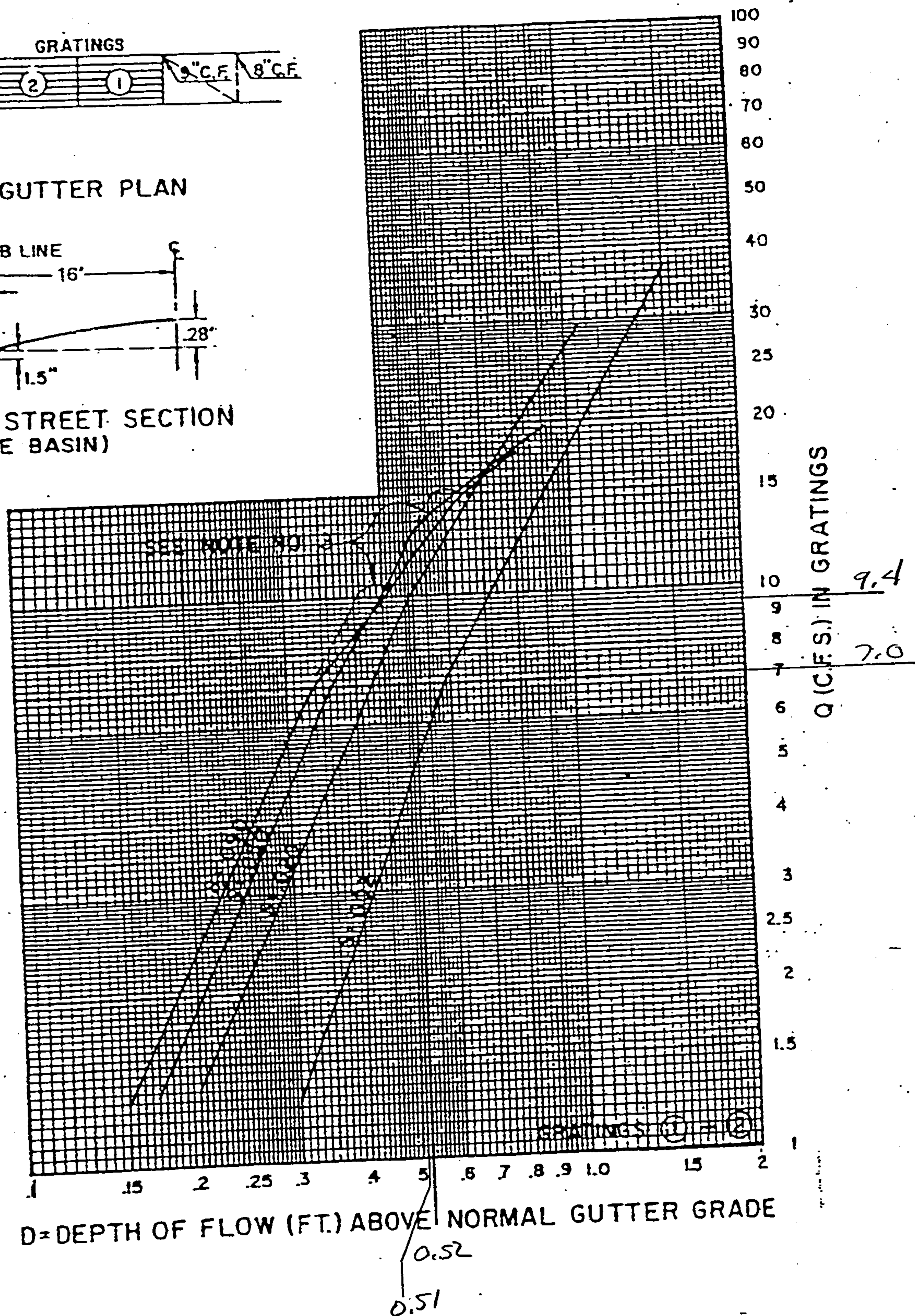
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C." AND "D"



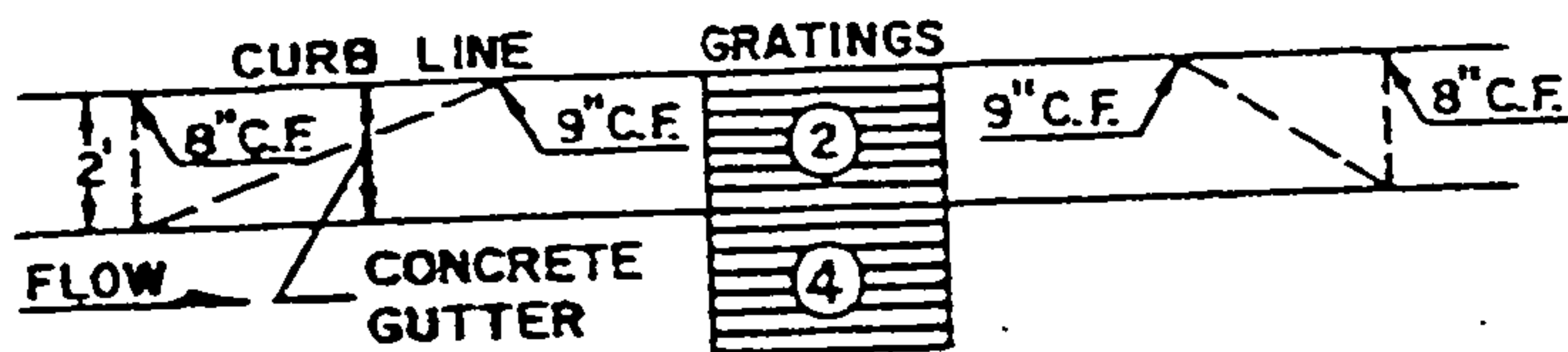
GRATING & GUTTER PLAN



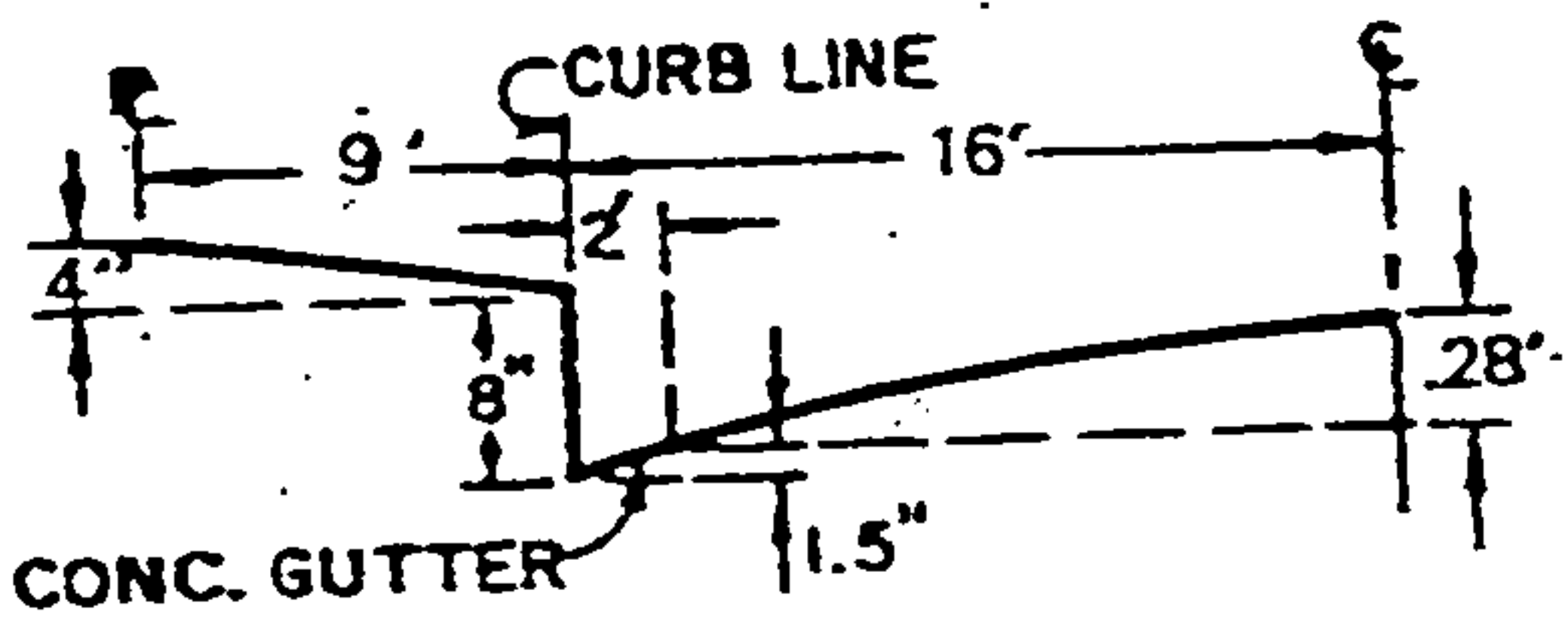
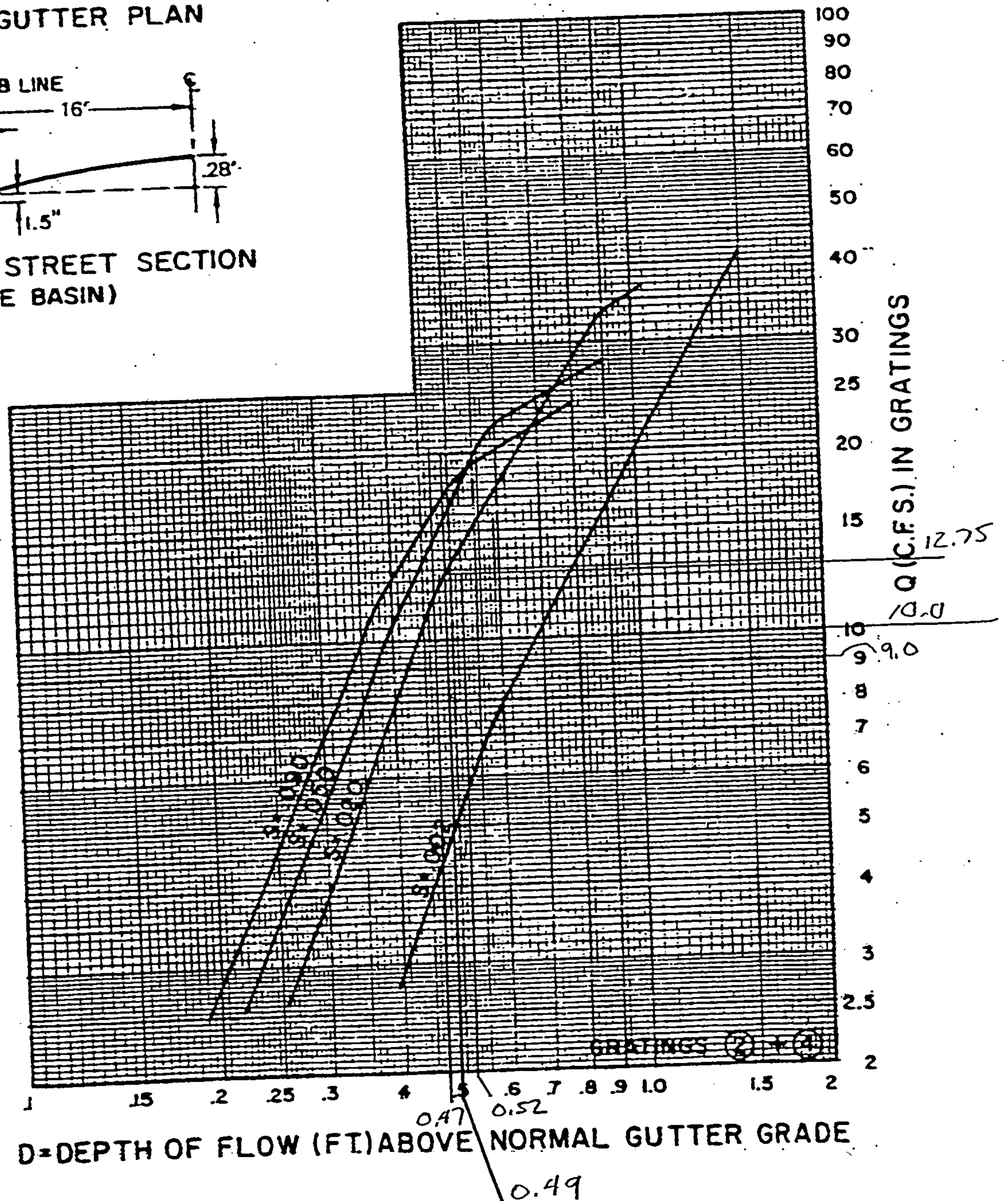
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



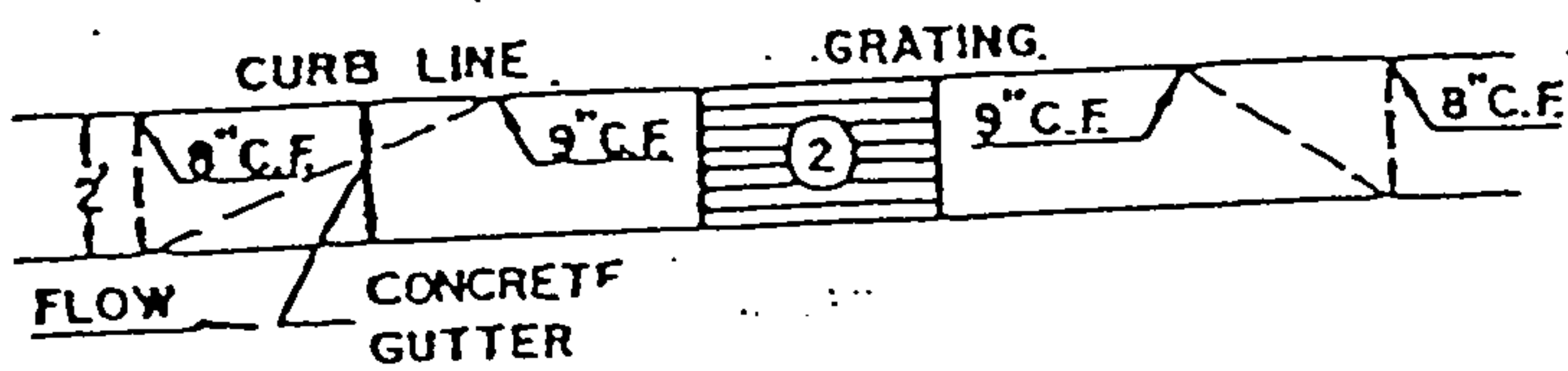
GRATING CAPACITIES FOR TYPE "B"



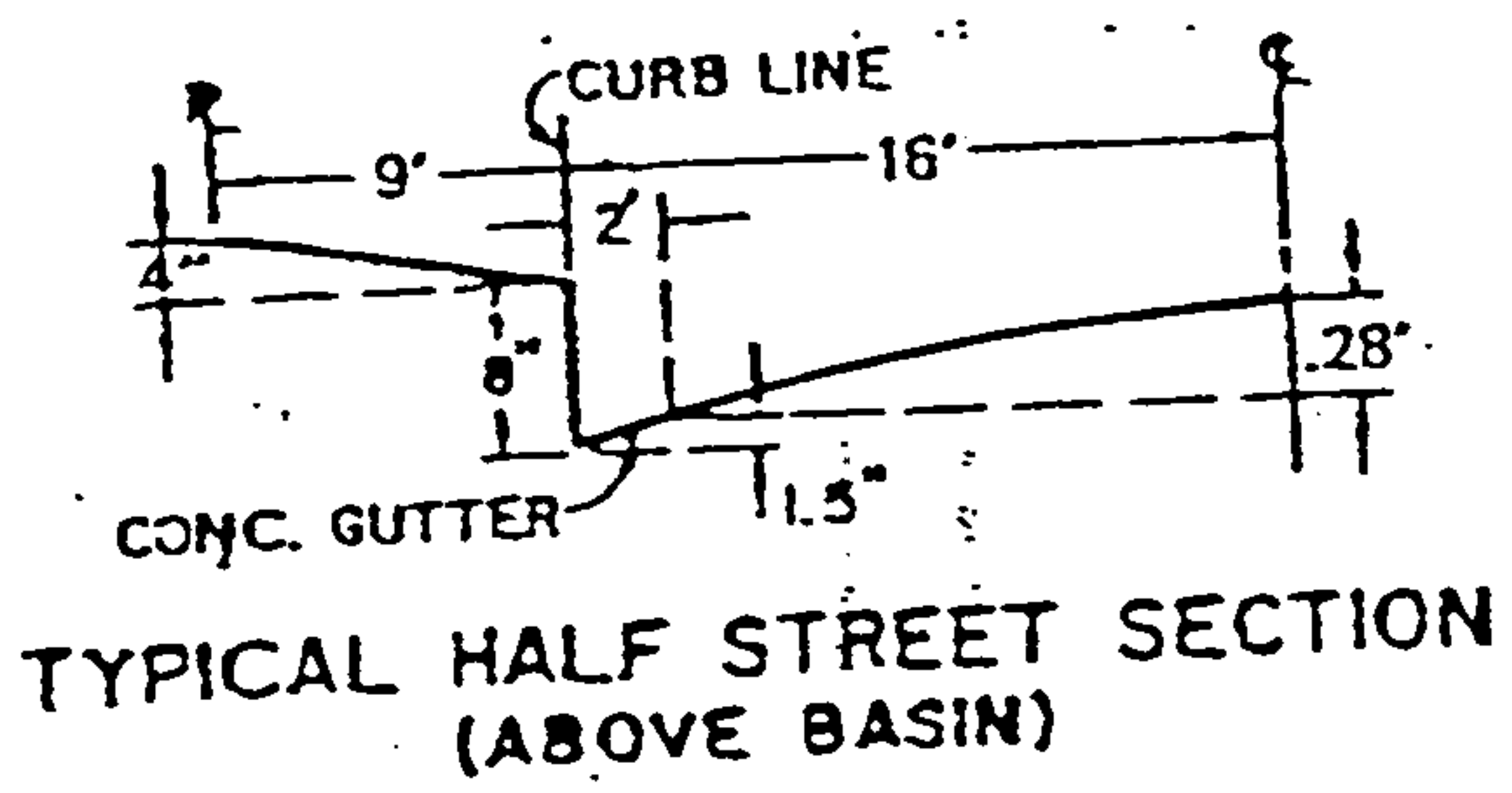
GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

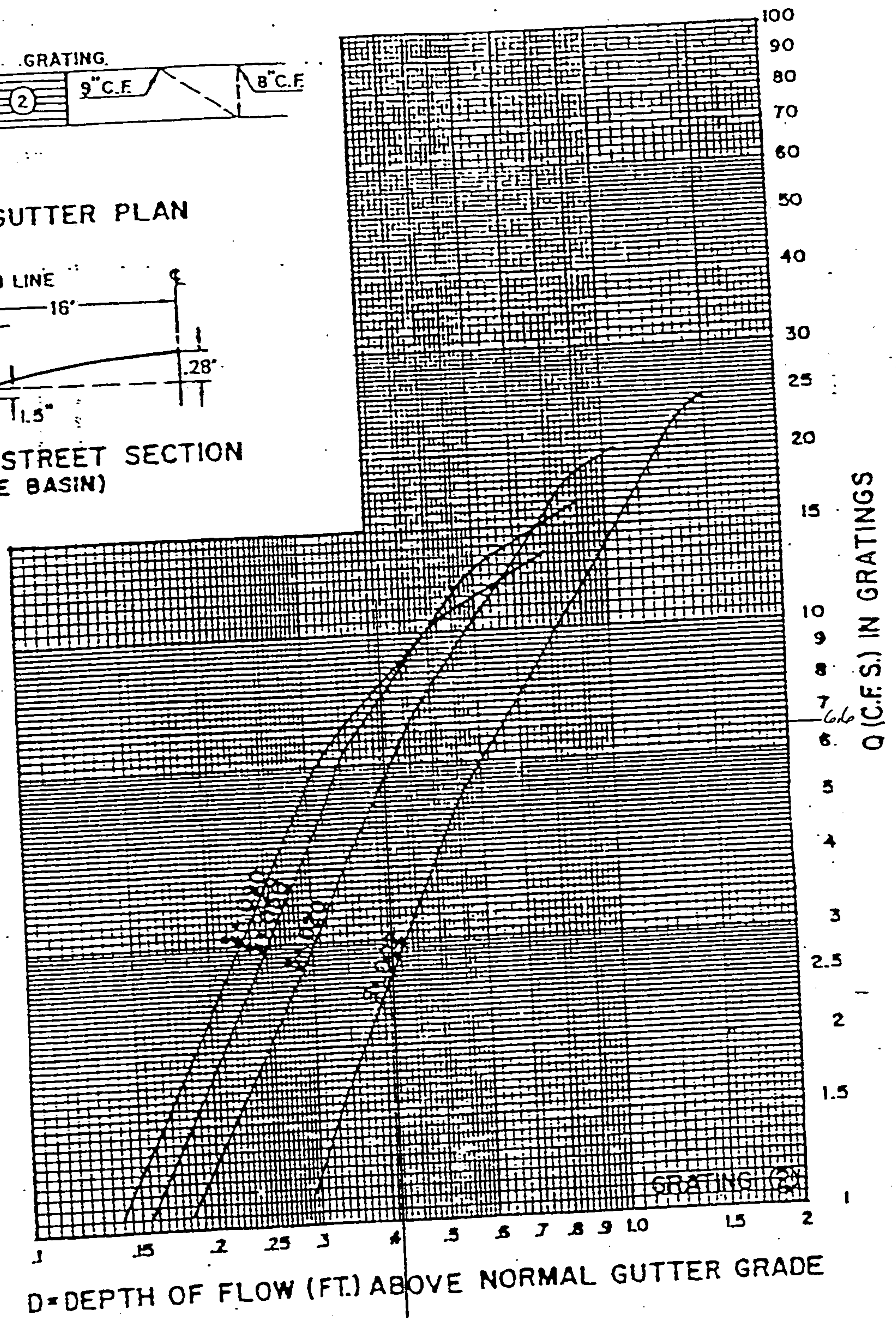
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



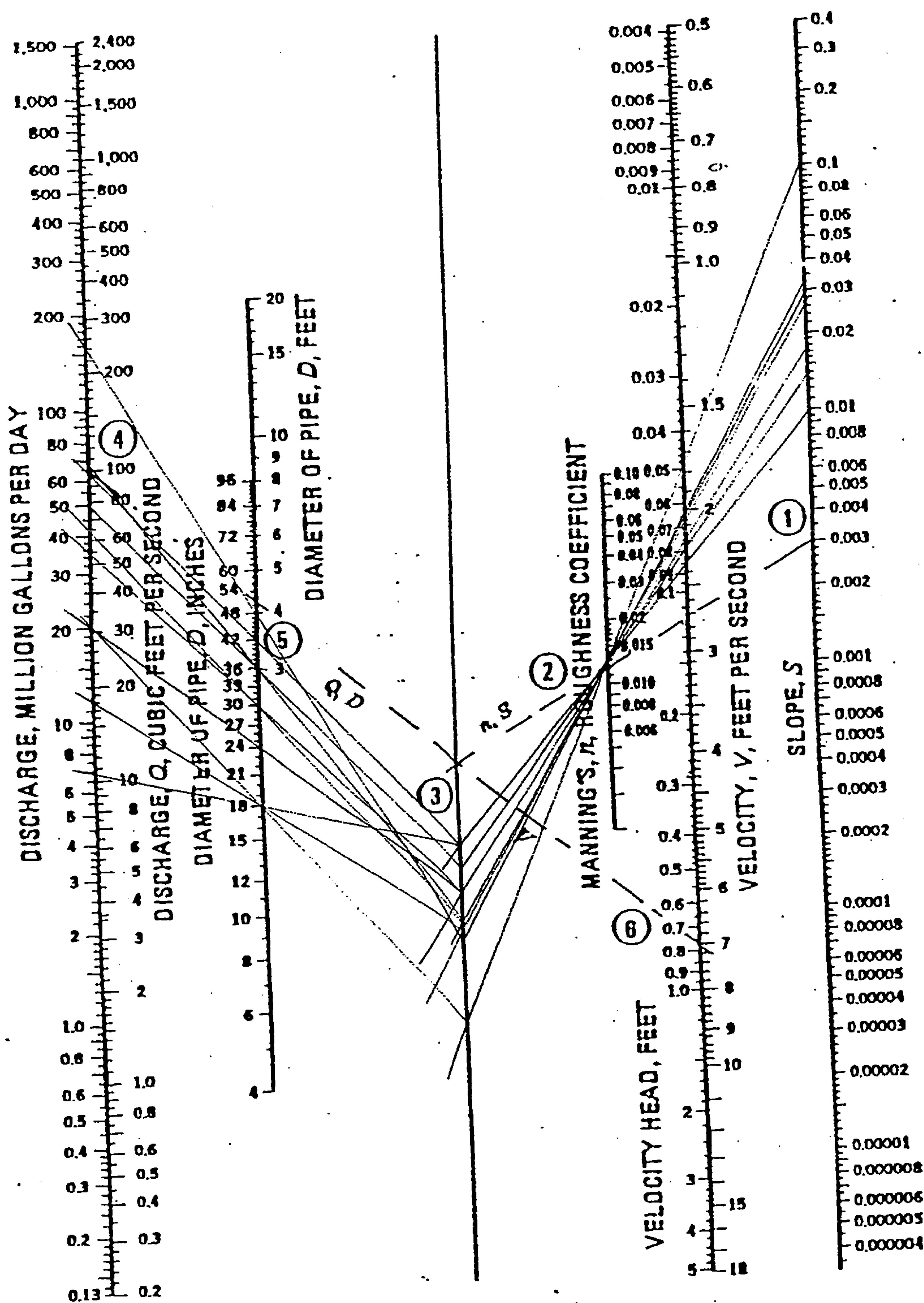
GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION RESIDENTIAL
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.07123 SQ MI
PER A=0 B=52.08 C=0 D=47.92
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

16

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 08/06/1998
 START TIME (HR:MIN:SEC) = 07:32:40 USER NO.= M_GOODWN.I01
 INPUT FILE = slvrres.dat

START TIME=0.0
 ***** HYDROGRAPH FOR SILVERADO SUBDIVISION RESIDENTIAL
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.07123 SQ MI
 PER A=0 B=52.08 C=0 D=47.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072786HR TP = .133300HR K/TP RATIO = .546033 SHAPE CONSTANT, N =
 UNIT PEAK = 134.55 CFS UNIT VOLUME = .9993 B = 525.47 P60 = 1.90
 AREA = .034133 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130328HR TP = .133300HR K/TP RATIO = .977702 SHAPE CONSTANT, N =
 UNIT PEAK = 91.399 CFS UNIT VOLUME = 1.000 B = 328.42 P60 = 1.90
 AREA = .037097 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

17
RUNOFF VOLUME = 1.29696 INCHES = 4.9270 ACRE-FEET
PEAK DISCHARGE RATE = 145.59 CFS AT 1.500 HOURS BASIN AREA = .0712 SQ. MI.

FINISH

COMMAND NOT IN TABLE

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 07:32:40

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION MULTI-FAMILY
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.005534 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

19

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 06/25/1998
 START TIME (HR:MIN:SEC) = 14:41:23 USER NO.= M_GOODWN.I01
 INPUT FILE = SLVRMUL.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR SILVERADO SUBDIVISION MULTI-FAMILY
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.005534 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
 UNIT PEAK = 17.479 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.90
 AREA = .004427 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
 UNIT PEAK = 2.7197 CFS UNIT VOLUME = .9953 B = 327.55 P60 = 1.90
 AREA = .001107 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.70931 INCHES = .5045 ACRE-FEET
PEAK DISCHARGE RATE = 14.03 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:41:30

START

TIME=0.0

***** HYDROGRAPH FOR SILVERADO POND

*SILVERADO SUBDIVISION AND WESTGATE HEIGHTS

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

*SILVERADO SUBDIVISION RESIDENTIAL

COMPUTE NM HYD ID=1 HYD NO=101 AREA=0.07123 SQ MI
 PER A=0 B=52.08 C=0 D=47.92
 TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1

*SILVERADO SUBDIVISION MUTI-FAMILY

COMPUTE NM HYD ID=2 HYD NO=102 AREA=0.005534 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=2 CODE=1

*WESTGATE HEIGHTS

COMPUTE NM HYD ID=3 HYD NO=103 AREA=0.061996 SQ MI
 PER A=3.03 B=0 C=41.34 D=55.63
 TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=3 CODE=1

*UNDEVELOPED AREA SOUTH OF SILVERADO

COMPUTE NM HYD ID=4 HYD NO=104 AREA=0.020292
 PER A=0 B=15 C=0 D=85
 TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=4 CODE=1

ADD HYD ID=5 HYD NO=105 ID=1 ID=2

PRINT HYD ID=5 CODE=1

ADD HYD ID=6 HYD NO=106 ID=3 ID=4

PRINT HYD ID=6 CODE=1

ADD HYD ID=7 HYD NO=107 ID=5 ID=6

PRINT HYD ID=7 CODE=1

*

* ROUTING THROUGH POND

*

ROUTE RESERVOIR	ID=8 HYD NO=108	INFLOW ID=7 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
			0.0	0.0	51.0
			34.03	1.12	52.0
			48.13	2.30	53.0
			58.95	3.54	54.0
			68.07	4.86	55.0
			76.10	6.24	56.0
			83.37	7.69	57.0
			90.05	9.22	58.0

PRINT HYD ID=8 CODE=1

FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 08/07/1998
 START TIME (HR:MIN:SEC) = 09:41:48 USER NO.= M_GOODWN.I01
 INPUT FILE = slvrpond.dat

START TIME=0.0

***** HYDROGRAPH FOR SILVERADO POND

*SILVERADO SUBDIVISION AND WESTGATE HEIGHTS

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

*SILVERADO SUBDIVISION RESIDENTIAL

COMPUTE NM HYD

ID=1 HYD NO=101 AREA=0.07123 SQ MI

PER A=0 B=52.08 C=0 D=47.92

TP=0.1333 HR MASS RAINFALL=-1

K = .072786HR TP = .133300HR K/TP RATIO = .546033 SHAPE CONSTANT, N =
 UNIT PEAK = 134.55 CFS UNIT VOLUME = .9993 B = 525.47 P60 = 1.90
 AREA = .034133 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130328HR TP = .133300HR K/TP RATIO = .977702 SHAPE CONSTANT, N =
 UNIT PEAK = 91.399 CFS UNIT VOLUME = 1.000 B = 328.42 P60 = 1.90
 AREA = .037097 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=1 CODE=1

23

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.29696 INCHES = 4.9270 ACRE-FEET
PEAK DISCHARGE RATE = 145.59 CFS AT 1.500 HOURS BASIN AREA = .0712 SQ. MI.

*SILVERADO SUBDIVISIION MUTI-FAMILY

COMPUTE NM HYD ID=2 HYD NO=102 AREA=0.005534 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 17.479 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.90
AREA = .004427 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
UNIT PEAK = 2.7197 CFS UNIT VOLUME = .9953 B = 327.55 P60 = 1.90
AREA = .001107 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.70931 INCHES = .5045 ACRE-FEET
PEAK DISCHARGE RATE = 14.03 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

*WESTGATE HEIGHTS

COMPUTE NM HYD ID=3 HYD NO=103 AREA=0.061996 SQ MI
PER A=3.03 B=0 C=41.34 D=55.63
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 136.16 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.90
AREA = .034488 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .110079HR TP = .133300HR K/TP RATIO = .825797 SHAPE CONSTANT, N =
UNIT PEAK = 77.620 CFS UNIT VOLUME = 1.000 B = 376.14 P60 = 1.90
AREA = .027508 SQ MI IA = .37049 INCHES INF = .88736 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.51951 INCHES = 5.0241 ACRE-FEET
PEAK DISCHARGE RATE = 146.77 CFS AT 1.500 HOURS BASIN AREA = .0620 SQ. MI.

*UNDEVELOPED AREA SOUTH OF SILVERADO

COMPUTE NM HYD ID=4 HYD NO=104 AREA=0.020292
 PER A=0 B=15 C=0 D=85
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
 UNIT PEAK = 68.097 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.90
 AREA = .017248 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
 UNIT PEAK = 7.4794 CFS UNIT VOLUME = .9985 B = 327.55 P60 = 1.90
 AREA = .003044 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.77358 INCHES = 1.9194 ACRE-FEET
 PEAK DISCHARGE RATE = 52.96 CFS AT 1.500 HOURS BASIN AREA = .0203 SQ. MI.

ADD HYD ID=5 HYD NO=105 ID=1 ID=2
 PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = 1.32668 INCHES = 5.4315 ACRE-FEET
 PEAK DISCHARGE RATE = 159.62 CFS AT 1.500 HOURS BASIN AREA = .0768 SQ. MI.

ADD HYD ID=6 HYD NO=106 ID=3 ID=4
 PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = 1.58215 INCHES = 6.9435 ACRE-FEET
 PEAK DISCHARGE RATE = 199.73 CFS AT 1.500 HOURS BASIN AREA = .0823 SQ. MI.

ADD HYD ID=7 HYD NO=107 ID=5 ID=6
 PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.45885 INCHES = 12.3750 ACRE-FEET
 PEAK DISCHARGE RATE = 359.36 CFS AT 1.500 HOURS BASIN AREA = .1591 SQ. MI.

*
* ROUTING THROUGH POND
*

ROUTE RESERVOIR	ID=8	HYD NO=108	INFLOW ID=7	CODE=24
	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)	
	0.0	0.0	51.0	
	34.03	1.12	52.0	
	48.13	2.30	53.0	
	58.95	3.54	54.0	
	68.07	4.86	55.0	
	76.10	6.24	56.0	
	83.37	7.69	57.0	
	90.05	9.22	58.0	

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	51.00	.000	.00
.80	.00	51.00	.000	.00
1.60	256.28	55.15	5.063	69.25
2.40	13.60	55.50	5.553	72.10
3.20	2.32	52.77	2.023	44.83
4.00	1.27	51.31	.347	10.55
4.80	1.25	51.07	.082	2.48
5.60	1.50	51.05	.051	1.54
6.40	.14	51.03	.031	.94
7.20	.00	51.00	.005	.14
8.00	.00	51.00	.001	.02
8.80	.00	51.00	.000	.00
PEAK DISCHARGE = 79.460 CFS - PEAK OCCURS AT HOUR 1.97				
MAXIMUM WATER SURFACE ELEVATION = 56.462				
MAXIMUM STORAGE = 6.9101 AC-FT INCREMENTAL TIME= .033330HRS				

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.45885 INCHES = 12.3750 ACRE-FEET
PEAK DISCHARGE RATE = 79.46 CFS AT 1.966 HOURS BASIN AREA = .1591 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 09:41:49

1

HYDRAULIC REPORT FOR

0

SILVERADO SUBDIVISION

STORM DRAIN DESIGN

1
0

Run date: 08-07-1998
File: silver.ST3

Return Period = 100 Yrs
Rainfall file: Your_County

LINE 1 / Q = 102.0 / HT = 48 / WID = 48 / N = .013 / L = 228 / JLC = .25

1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	43.68	47.40	39.73	8.13	44.71	9.14	5.56	12.55
UPSTRM	44.80	35.91	41.81	10.12	46.39	41.67	5.31	10.08

Drainage area (ac) = 0	Slope of invert (%) = 0.912
Runoff coefficient = 0	Slope energy grade line (%) = 0.739
Time of conc (min) = 4	Critical depth (in) = 35.83
Inlet time (min) = 0	Req'd length curb inlet (ft) = 93.5
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 26.8
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 102	Confluence angle (deg) = -45
Default Q (cfs) = 102	Natural ground elev (ft) = 51.13
Line capac. (cfs) = 137.2	Line storage (cuft) = 2580

LINE 2 / Q = 102.0 / HT = 48 / WID = 48 / N = .013 / L = 327 / JLC = .25

2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.20	40.68	41.81	8.95	46.44	34.15	5.31	11.40
UPSTRM	46.81	43.23	43.21	8.56	47.95	28.73	7.61	11.92

Drainage area (ac) =	0	Slope of invert (%) =	0.428
Runoff coefficient =	0	Slope energy grade line (%) =	0.461
Time of conc (min) =	2	Critical depth (in) =	35.83
Inlet time (min) =	0	Req'd length curb inlet (ft) =	93.5
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	26.8
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	102	Confluence angle (deg) =	-45
Default Q (cfs) =	102	Natural ground elev (ft) =	54.82
Line capac. (cfs) =	94.0	Line storage (cuft) =	3812

LINE 3 / Q = 102.0 / HT = 48 / WID = 48 / N = .013 / L = 37 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	47.10	46.64	43.21	8.16	48.13	13.80	7.61	12.50
UPSTRM	47.23	45.49	43.44	8.28	48.30	21.38	7.12	12.32

Drainage area (ac) = 0	Slope of invert (%) = 0.622
Runoff coefficient = 0	Slope energy grade line (%) = 0.447
Time of conc (min) = 2	Critical depth (in) = 35.83
Inlet time (min) = 0	Req'd length curb inlet (ft) = 93.5
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 26.8
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 102	Confluence angle (deg) = -45
Default Q (cfs) = 102	Natural ground elev (ft) = 54.56
Line capac. (cfs) = 113.3	Line storage (cuft) = 459

LINE 4 / Q = 80.0 / HT = 36 / WID = 36 / N = .013 / L = 324 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	47.50	36.00	43.44	11.32	49.49	0.00	8.12	7.07
UPSTRM	52.16	36.00	45.34	11.32	54.15	0.00	10.65	7.07

Drainage area (ac) = 0	Slope of invert (%) = 0.586
Runoff coefficient = 0	Slope energy grade line (%) = 1.439
Time of conc (min) = 0	Critical depth (in) = 33.87
Inlet time (min) = 0	Req'd length curb inlet (ft) = 73.3
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 21.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 80	Confluence angle (deg) = 0
Default Q (cfs) = 80	Natural ground elev (ft) = 59
Line capac. (cfs) = 51.1	Line storage (cuft) = 2290

LINE 5 / Q = 80.0 / HT = 36 / WID = 36 / N = .013 / L = 45 / JLC = .25

5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.66	36.00	45.34	11.32	54.65	0.00	10.65	7.07
UPSTRM	54.35	33.91	51.00	11.59	56.43	16.83	4	6.90

Drainage area (ac) = 0
 Runoff coefficient = 0
 Time of conc (min) = 0
 Inlet time (min) = 0
 Intensity (in/hr) = 0.00
 Cumulative C*A = 0.0
 Flow contrib (cfs) = 80
 Default Q (cfs) = 80
 Line capac. (cfs) = 236.5

Slope of invert (%) = 12.578
 Slope energy grade line (%) = 2.808
 Critical depth (in) = 33.87
 Req'd length curb inlet (ft) = 73.3
 Req'd grate area (sf) = 21.0
 Depth at inlet opening (in) = 6
 Confluence angle (deg) = 90
 Natural ground elev (ft) = 58
 Line storage (cuft) = 314

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION UNIT 4 EXISTING
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.016690 SQ MI
PER A=100 B=0 C=0 D=0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

34
AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 09/23/1998
START TIME (HR:MIN:SEC) = 10:40:18 USER NO.= M_GOODWN.I01
INPUT FILE = SLVR4.DAT

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION UNIT 4 EXISTING
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.016690 SQ MI
PER A=100 B=0 C=0 D=0
TP=0.1333 HR MASS RAINFALL=-1

K = .162928HR TP = .133300HR K/TP RATIO = 1.222262 SHAPE CONSTANT, N =
UNIT PEAK = 34.377 CFS UNIT VOLUME = .9993 B = 274.56 P60 = 1.90
AREA = .016690 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .44920 INCHES = .3998 ACRE-FEET
PEAK DISCHARGE RATE = 14.17 CFS AT 1.533 HOURS BASIN AREA = .0167 SQ. MI.

FINISH

COMMAND NOT IN TABLE

NORMAL PROGRAM FINISH

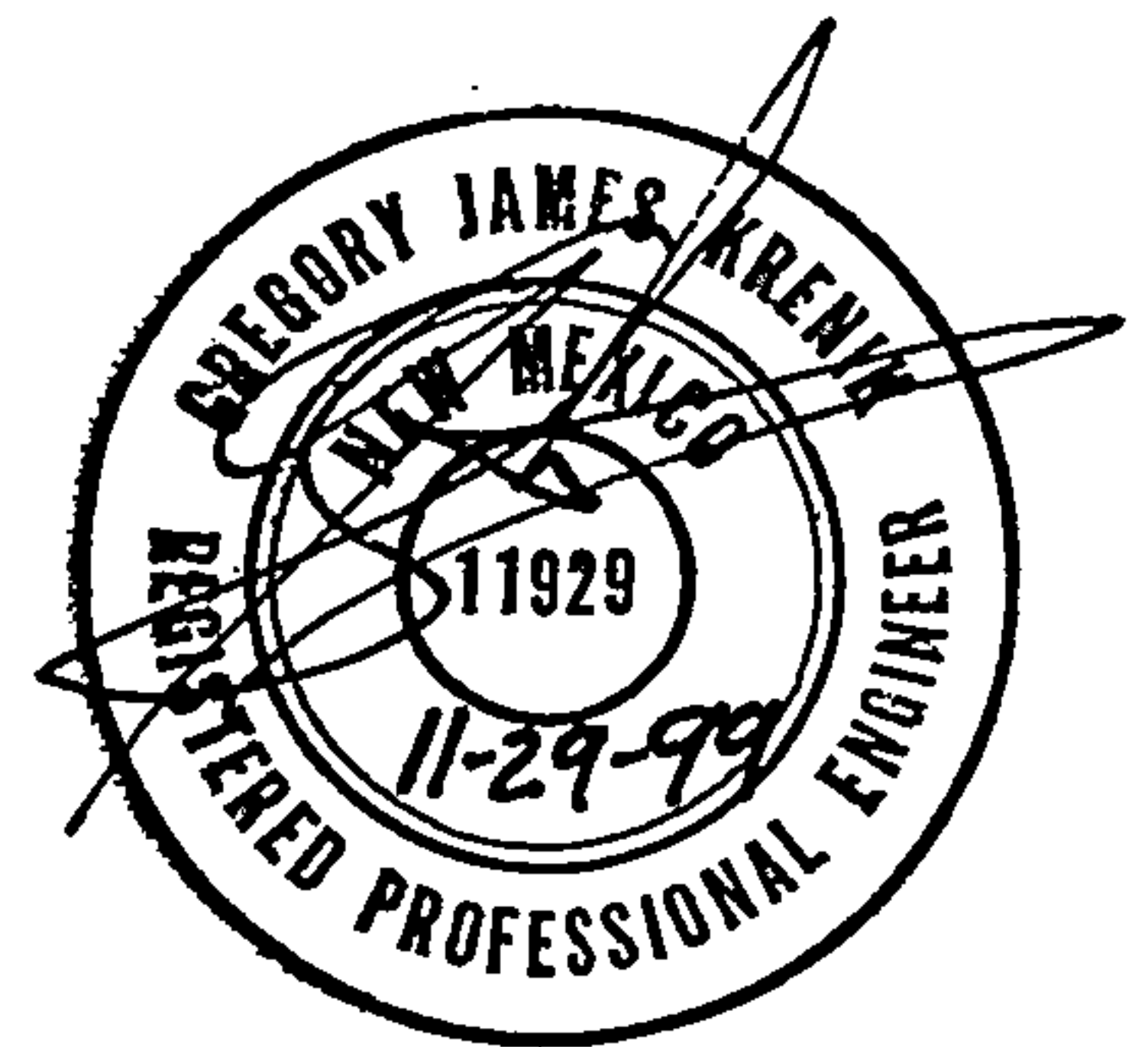
END TIME (HR:MIN:SEC) = 10:40:18

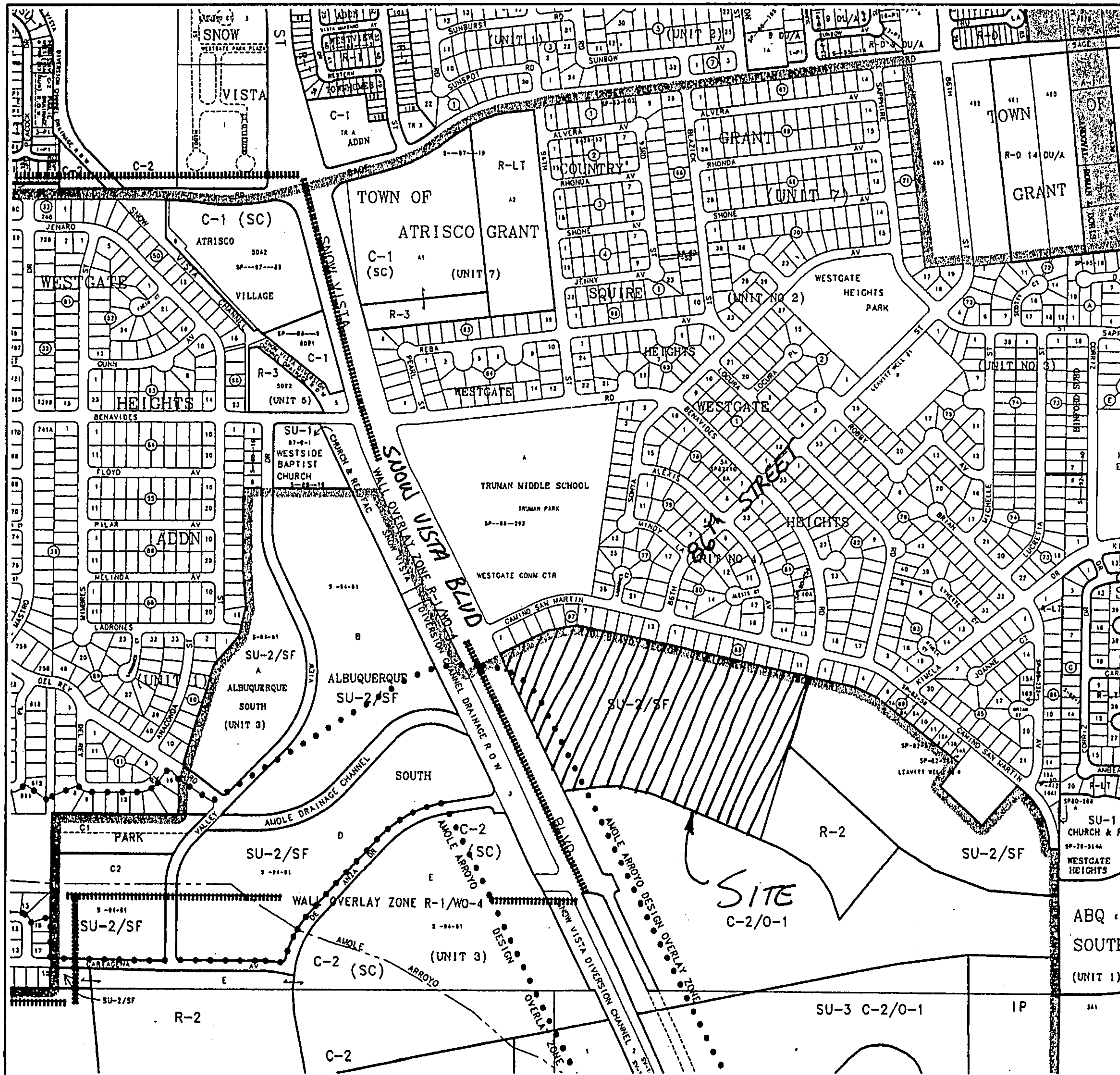
DRAINAGE REPORT
for
CENTEX — SILVERADO

Prepared By

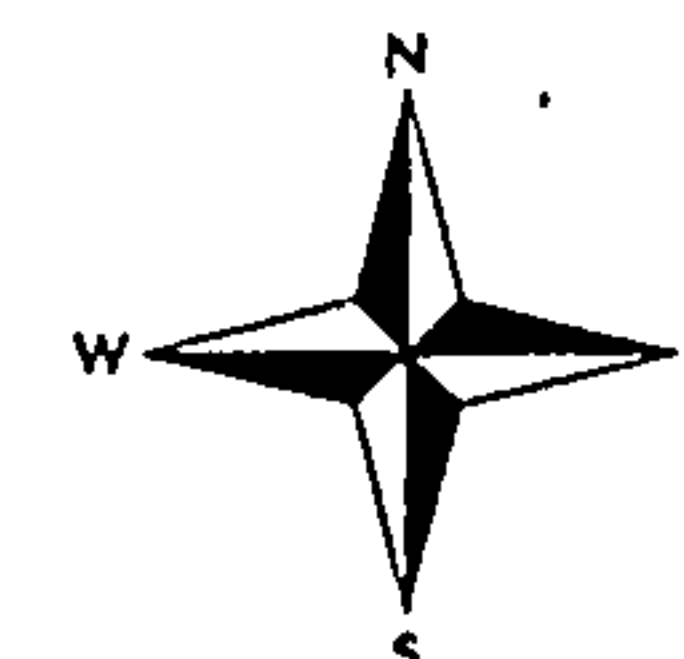
Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

November 1999

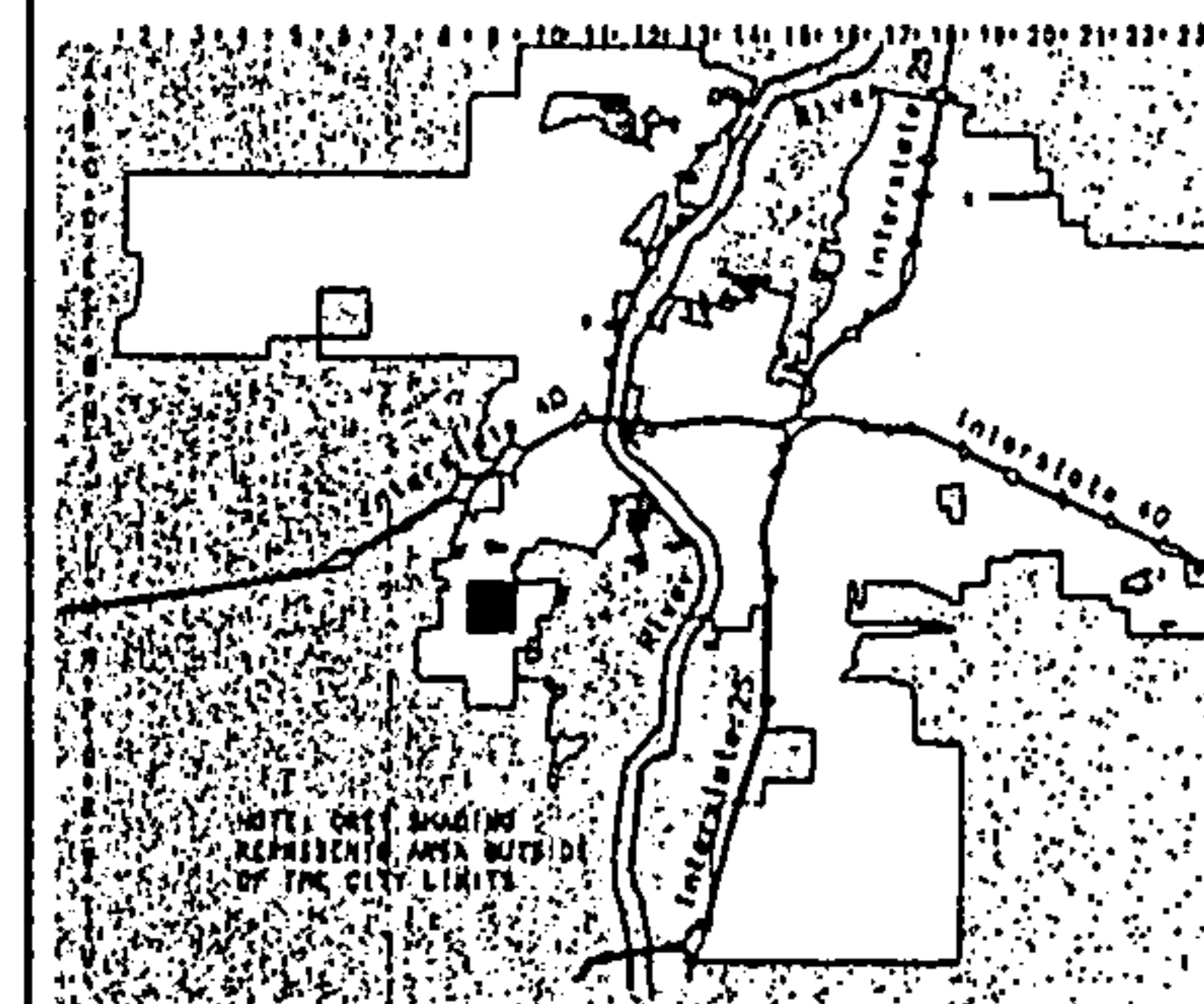
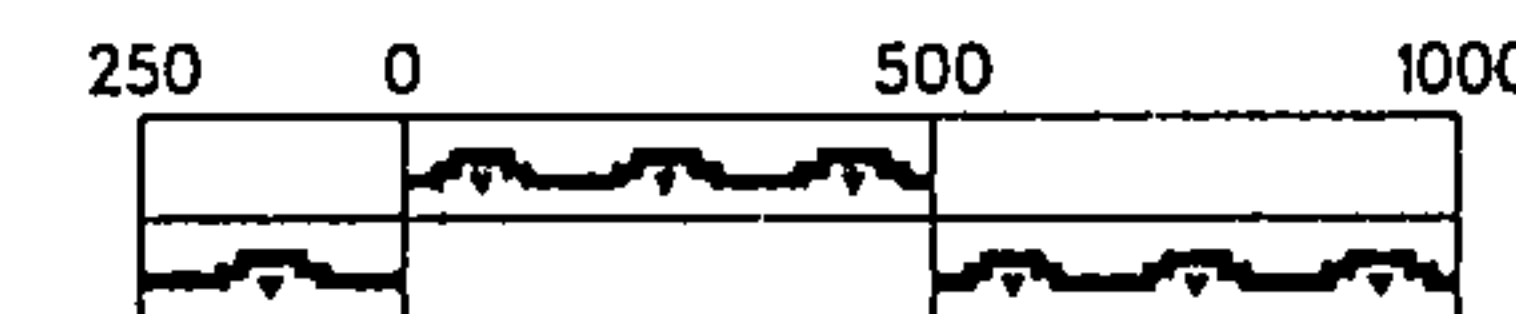




CITY OF
Albuquerque
Geographic Information System
PLANNING DEPARTMENT
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GRAPHIC SCALE IN FEET



Zone Atlas Page
M-9-Z

Map Amended through
December 10, 1998



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Consulting Engineers

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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET INTROOF

- THIS PROJECT IS PART OF WHAT WAS KNOWN AS SILVERADO SUBDIVISION (M9/D20). APPENDIX "A"
- WHAT HAS OCCURRED SINCE THE PRELIMINARY PLAT APPROVAL ON OCT. 26, 1998 IS THAT THE PROPERTY HAS BEEN SOLD AND A BULK PLAT WAS COMPLETED. THERE ARE NOW TWO OWNERS. CENTEX PURCHASED UNITS 1 & 4 AND CURB INC. UNITS 2 & 3 PLUS THE 10 ACRES TO THE SOUTH ALONG WITH TRACT E.
- SINCE THE SCOPE OF THESE PROJECTS HAS INCREASED IT WILL BE NECESSARY TO DESIGN THEM TOGETHER BUT EACH WILL BE SUBMITTED SEPARATELY. WITH THIS IN MIND A REALIGNMENT OF GIBSON WILL OCCUR BETWEEN 98th AND UNSER. TRANSPORTATION IS AWARE OF THIS.
A REDESIGN OF THE STORMDRAIN SYSTEM FOR THIS AREA WILL BE DONE TO MINIMIZE SIZE AND LENGTH OF PIPE WHICH DRAINS TO THE DETENTION POND.
- FOR THIS REPORT, THE TWO UNITS HAVE BEEN REGRADED TO BALANCE THE EARTHWORK, MINIMIZE RETAINING WALLS AND REDESIGN STORMDRAIN TO WORK WITH THE NEW LAYOUT TO THE SOUTH AND EAST OF THE PROPERTY.
- CENTEX WILL CONSTRUCT FIRST. AS PART OF THE BULK PLAT DRAINAGE EASEMENTS ARE IN PLACE FOR TEMPORARY PONDING UNTIL DOWNSTREAM IMPROVEMENTS ARE CONSTRUCTED BY CURB INC.



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 1 OF _____

THIS IS AN ADDENDUM TO THE DRAINAGE
REPORT OF SILVERADO SUBDIVISION PREPARED
BY MARK GOODWIN & ASSOCIATES (APPENDIX "A")

THIS ADDENDUM IS FOR THE TWO TRACTS BETWEEN
SNOW VISTA BLVD. AND BENEVIDES ROAD,

- TOTAL SITE = 10.6771 AC + 15.8089 AC
= 26.4860 AC
- NUMBER OF LOTS = 156
- AREA THAT WILL BE SEPARATED OUT TO DETERMINE PER
LOT RUNOFF. (THIS RUNOFF FOLLOWS BARBADOS DOWN TO GIBSON)
BARBADOS AVE AND 86TH BETWEEN SNOW VISTA & BARBADOS
AND BENEVIDES (THIS RUNOFF FOLLOWS THE STREETS TO THE
EAST OF BENEVIDES)

$$A = 1.4000 + 0.2107 + 0.5592 \\ = 2.1699 \text{ AC}$$

- FIND PER LOT RUNOFF

$$26.4860 - 2.1699 = 23.3161 \text{ AC}$$

$$\text{PAD SIZE} = 56' \times 28' = 1568$$

$$\text{PRIVATE PAD} = 20' \times 20' = 400$$

$$1968 \times 156 = 7.0479 \text{ AC TYPE "D"}$$

- AREA OF ROW WITHIN SUBDIVISION

$$A = 6.3214 \text{ AC}$$

$$80\% \text{ D } 20\% \text{ B}$$

TYPE D

TYPE B

$$7.0479 \text{ AC}$$

$$19.9468 \text{ AC}$$

INTERIOR

$$5.0571 \text{ AC}$$

$$1.2643 \text{ AC}$$

ROW

$$12.1050 \text{ AC}$$

+

$$11.2111 \text{ AC}$$

$$= 23.3161 \text{ AC}$$

$$= 51.92\%$$

$$= 48.08\%$$

FROM A HYMO OUTPUT SHEETS 11-13

$$Q = 76.76 \text{ CFS}$$

$$Q \text{ PER LOT} = 76.76 / 156 = 0.4921 \text{ CFS}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CACS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 2 OF _____

PER SHEET 3 OF SILVERADO SUBDIVISION REPORT (SSR)

- MOUNTABLE C+G CAPACITY AT 2%

$$Q_{1/2} = 8.4 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 8.4 \times 2 / .4921 = 34.14$$

- MOUNTABLE C+G CAPACITY AT 1%

$$Q_{1/2} = 5.94 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 5.94 \times 2 / .4921 = 24.14$$

PER SHEET 4 OF THE SSR

- STD C+G CAPACITY AT 1%

$$Q = 47.53 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 47.53 / .4921 = 96.59$$

PER SHEET 6 OF THE SSR

- STD C+G CAPACITY AT 2%

$$Q = 38.545 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 38.545 / .4921 = 78.33$$

- DETERMINE INLET LOCATIONS

INLETS ARE REQUIRED AT THE INTERSECTION
OF SILVERADO AVE & WATERS DRIVE

71.5 LOTS ON SILVERADO (2%) LOT 19 BLOCK 5

78.5 LOTS ON WATERS (1%) LOT 27 BLOCK 4

$$Q \text{ ON SILVERADO} = 71.5 \times 0.4921 = 35.19 \text{ CFS}$$

$$Q \text{ ON WATERS} = 78.5 \times 0.4921 = 38.63 \text{ CFS}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 3 OF _____

• FIND d ON SILVERADO

$$Q = 35.19 \text{ cfs} \quad S = 2.0\%$$

$$d = 0.48$$

$$NP = 32.96$$

$$A = 7.69$$

$$V = 4.685 \text{ F/s}$$

$$Q = 36.03 \text{ cfs} \approx 35.19 \text{ cfs} \quad \text{OK}$$

• USE 2 "DBL A" INLETS

FROM NOMO SHEET 9

$$Q = 9.0 \text{ cfs}$$

Q PAST INLETS

$$35.19 - 2(9.0) = 17.19 \text{ cfs}$$

• FIND d ON WATERS

$$Q = 38.63 \text{ cfs} \quad S = 1.0\%$$

$$d = 0.55$$

$$NP = 33.10$$

$$A = 9.93$$

$$V = 3.917 \text{ F/s}$$

$$Q = 38.90 \text{ cfs} \approx 38.63 \text{ cfs} \quad \text{OK}$$

• USE 2 "DBL A" INLETS

FROM NOMO SHEET 9

$$Q = 8.2 \text{ cfs}$$

Q PAST INLETS

$$38.63 - 2(8.2) = 22.23 \text{ cfs}$$

• FIND Q AT SILVERADO AND BENEVIDEZ

$$Q = 17.19 + 22.23 + 6(0.4921)$$

$$= 42.37 \text{ cfs}$$

• FIND $d = 0.56$ $S = 1.0\%$

$$NP = 33.12$$

$$A = 10.33$$

$$V = 4.02 \text{ F/s}$$

$$Q = 41.53 \text{ cfs} \approx 42.37 \text{ cfs} \quad \text{OK}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 4 OF _____

THIS WATER WILL TURN ON BENEVIDEZ AND
FLOW TO BARBADOS AND DOWN BARBADOS
TO GIBSON.

THIS CONTINUATION IS SHOWN IN
THE EL RANCHO GRANDE I DRAINAGE
REPORT (APPENDIX "B")

- DETERMINE RUNOFF IN BARBADOS (BOTH SIDES ARE BUILT)
WE WILL HAVE TO ADD AREA OUTSIDE OF
THE LIMITS OF THIS PROJECT

86TH STREET FROM THE SNOW VISTA CHANNEL
TO BARBADOS WILL BE ADDED.

AREA OF 86TH = 0.8586 AC (0.2107 AC IS PART OF THIS PROJECT)
AREA OF BARBADOS = 1.4000 AC

TOTAL = 2.2586 AC

80% D 20% B

FROM AH4MO OUTPUT SHEETS 14-16

$Q = 8.95$ CFS

- FIND d IN BARBADOS AT BENEVIDEZ

$S = 3.3\%$

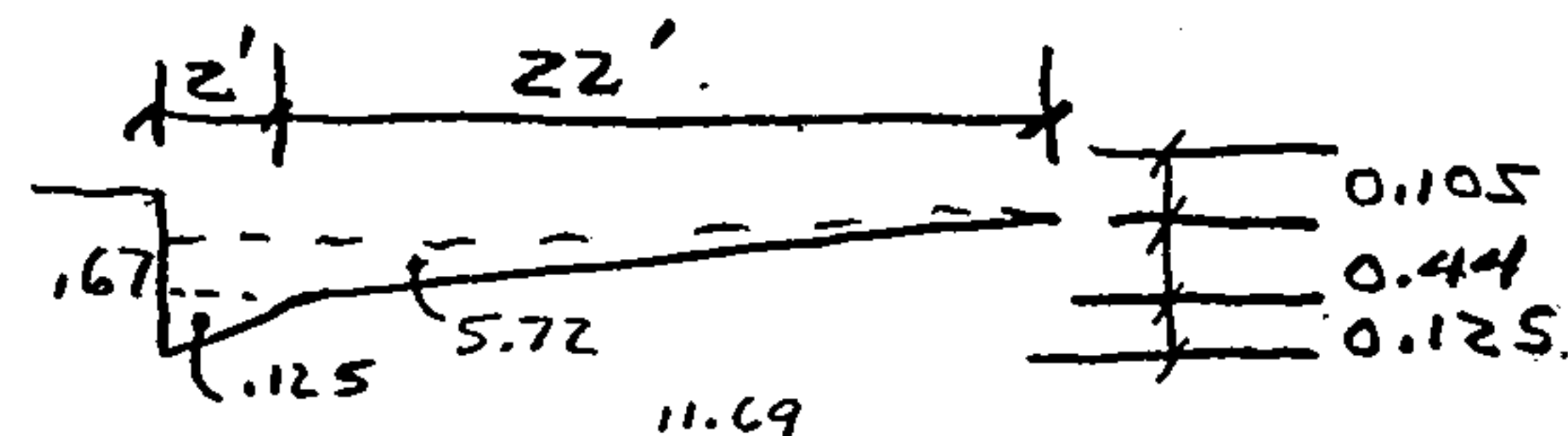
$d = 0.30$

$wp = 11.05$

$A = 1.25$

$V_{1/2} = 3.714$ F/S

$Q_{1/2} = 4.61$ CFS $\approx 8.95/2 = 4.475$ CFS OK



- FIND d IN BARBADOS JUST PAST BENEVIDEZ

$Q = 8.95 + 42.37 = 51.32$ CFS $S = 1.0\%$

$d = 0.48$

$wp = 48.96$

$A = 13.61$

$V = 3.723$ F/S

$Q = 50.67$ CFS ≈ 51.32 OK

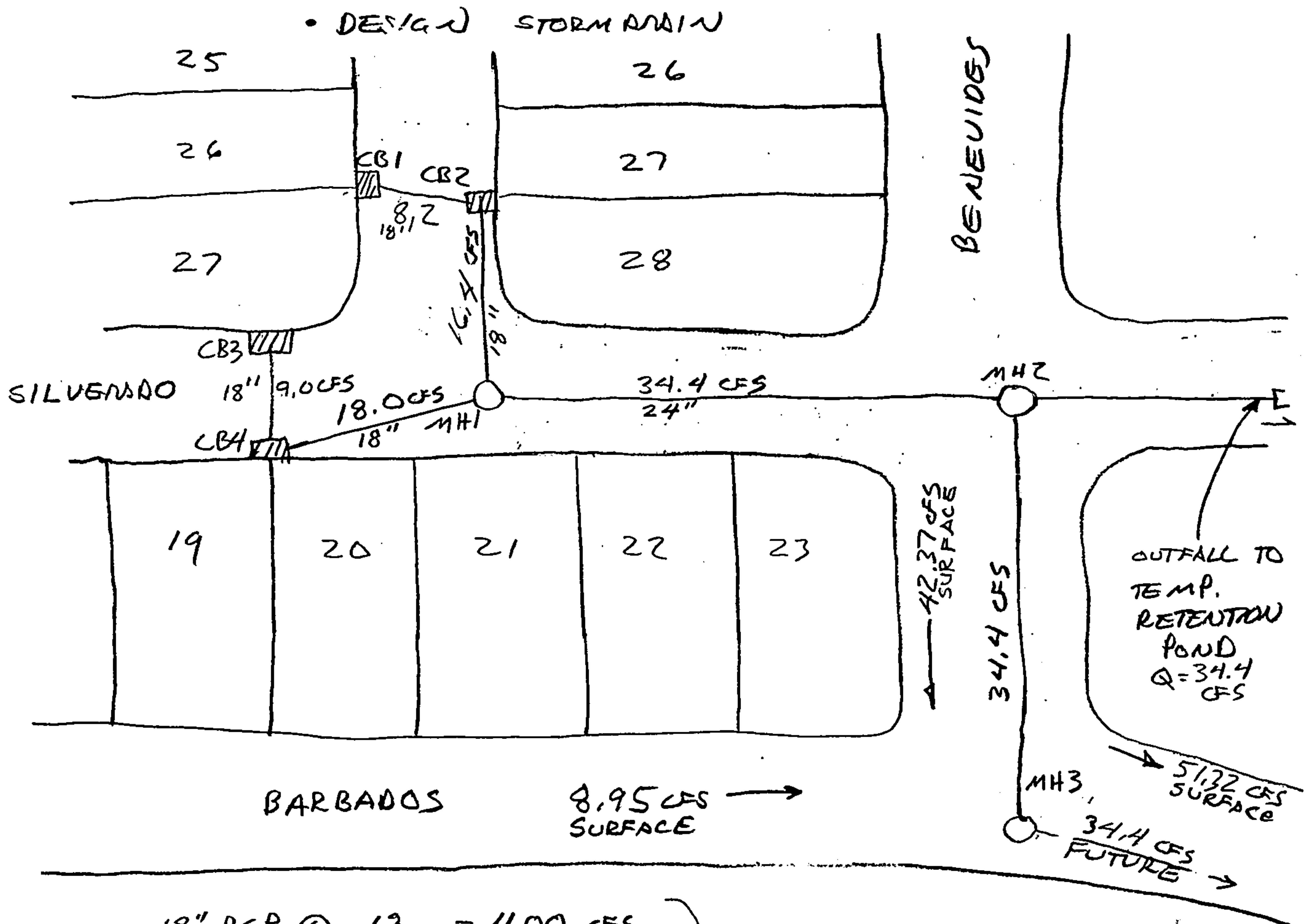
$d + \frac{V^2}{2g} = 0.70 < 0.67 + 0.33$ OK



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 5 OF _____



18" RCP @ 12 = 11.00 CFS
18" RCP @ 2.4% = 17.5 CFS

24" RCP @ 2.2% = 33 CFS
30" RCP @ 1.0% = 40 CFS

SEE NOMO SHEET 10

STRUCTURE	RIM/GRATE	INV	PIPE SIZE LEAVING STRUCTURE
CB1	89.55	86.05	18" RCP
CB2	89.55	85.77	18" RCP
CB3	89.22	85.72	18" RCP
CB4	89.22	85.44	18" RCP
MH1	88.90	83.61	24" RCP
MH2	87.89	80.31	30" RCP
MH3	86.18	78.58	30" RCP



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 6 OF _____

- DESIGN CHANNEL FROM SILVER SKY CT TO GOLDEN VIEW DRIVE.

$$Q = 3 \times 0.5068$$
$$= 1.52 \text{ CFS}$$

• SIZE WIER

$$Q = 2.95 L H^{1.5}$$

$$H = 4''$$

$$L = 2.68'$$

USE 5'

• SIZE CHANNEL

$$S = 4\% \quad n = 0.013$$

TRY 3' WIDE, 4" TALL

$$d = 0.33$$

$$WP = 3.67$$

$$A = 1.0$$

$$V = 9.61 \text{ F/S}$$

$$Q = 9.61 \text{ CFS} = \text{CAPACITY}$$

FIND ACTUAL d

$$d = 0.104$$

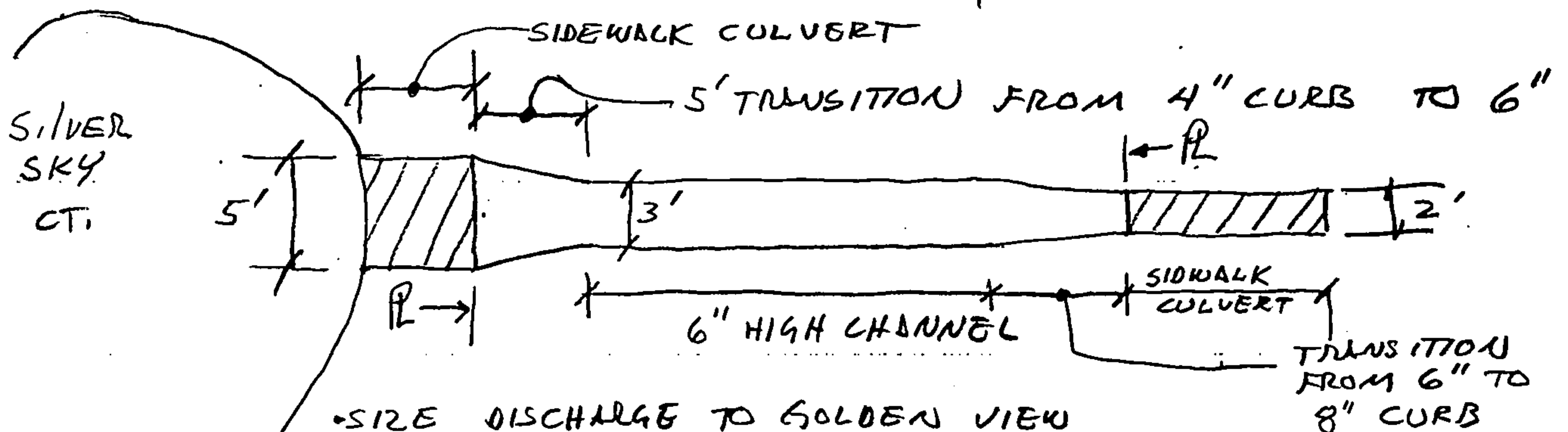
$$WP = 3.208$$

$$A = 0.3125$$

$$V = 4.84 \text{ F/S}$$

$$Q = 1.51 \text{ CFS} \approx 1.52 \text{ CFS OK}$$

$$\frac{V^2}{2g} = 0.47 > 0.33 \quad \text{USE 6" TALL CHANNEL}$$



• SIZE DISCHARGE TO GOLDEN VIEW

$$d = 0.18$$

$$WP = 2.36$$

$$A = 0.36$$

$$V = 4.615 \text{ F/S}$$

$$Q = 1.66 \text{ CFS} \approx 1.52 \text{ CFS OK}$$

$$\frac{V^2}{2g} = 0.51 \quad \text{USE 8\" CURB}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 7 OF _____

- SIZE TEMPORARY RETENTION POND FOR UNITS 1 + 2
FROM AH4MO OUTPUT (ON TRACT "C")
 $V = 2.6199 \text{ AC-FT}$

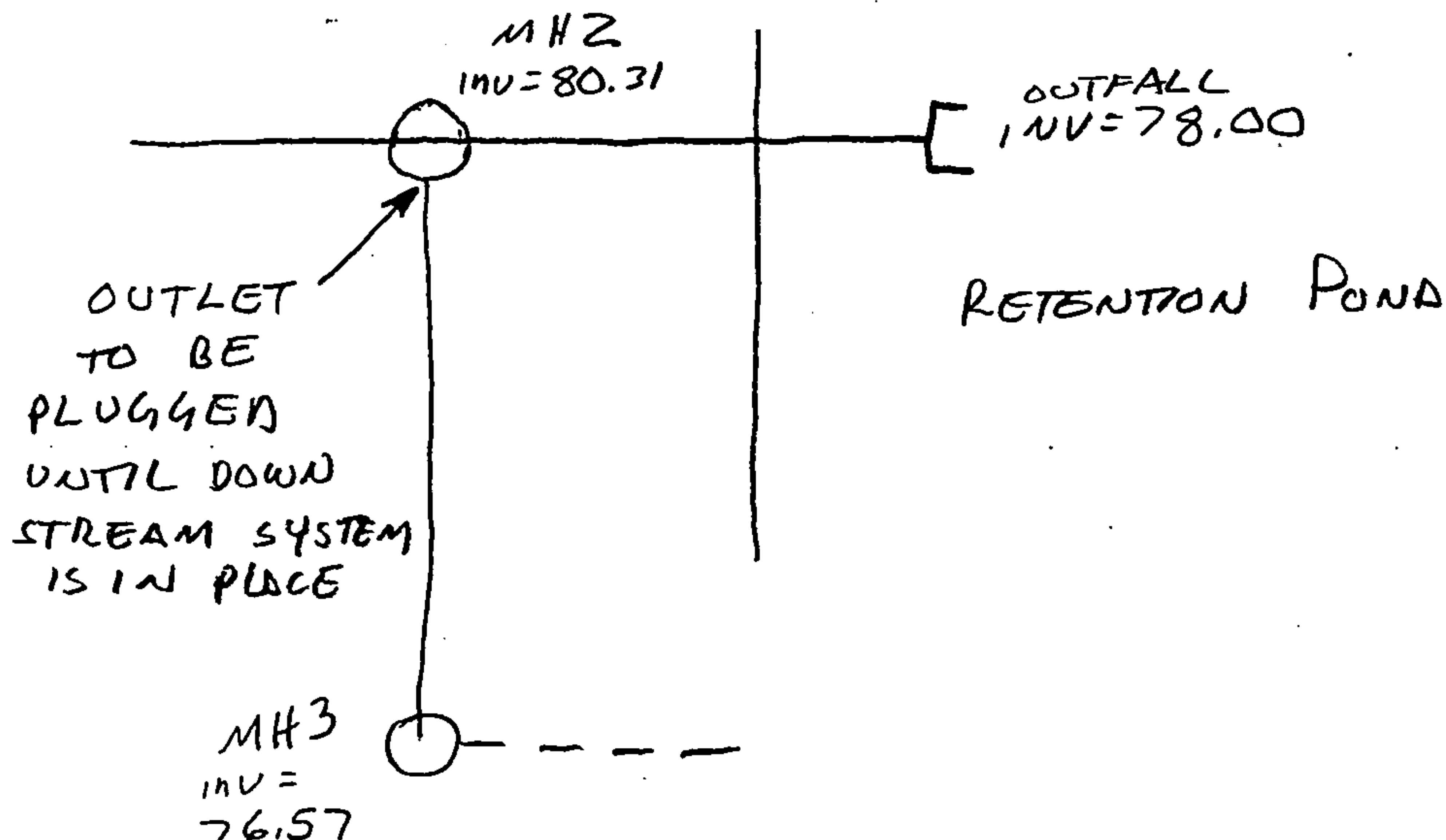
$$\begin{aligned} V_{100-100} &= 2.6199 + 12.105 \left(\frac{3.67 - 2.2}{12} \right) = V_6 + A_0 \left(\frac{P_{100} - P_6}{12} \right) \\ &= 2.6199 + 1.4829 \\ &= 4.1028 \text{ AC-FT} \end{aligned}$$

REQ. POND VOLUME = 178,716 CF

ELEV	AREA (SF)	VOLUME (CF)
78	$170 \times 70 = 11,900$	0
79	$176 \times 76 = 13,376$	12,638
80	$182 \times 82 = 14,924$	26,788
81	$188 \times 88 = 16,544$	42,522
82	$194 \times 94 = 18,236$	59,912
83	$200 \times 100 = 20,000$	79,030
84	$206 \times 106 = 21,836$	99,948
85	$212 \times 112 = 23,744$	122,738
86	$218 \times 118 = 25,724$	147,472
87	$224 \times 124 = 27,776$	174,222
88	$230 \times 130 = 29,900$	203,060

← WATER SURFACE ELEVATION
FOR 178,716 IS
= 87.16

THE 24" RCP WILL EXTEND ACROSS BENEVIDES
INTO THE POND





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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 8 OF _____

- SIZE TEMPORARY RETENTION POND FOR UNIT 1
(ON TRACT "B")

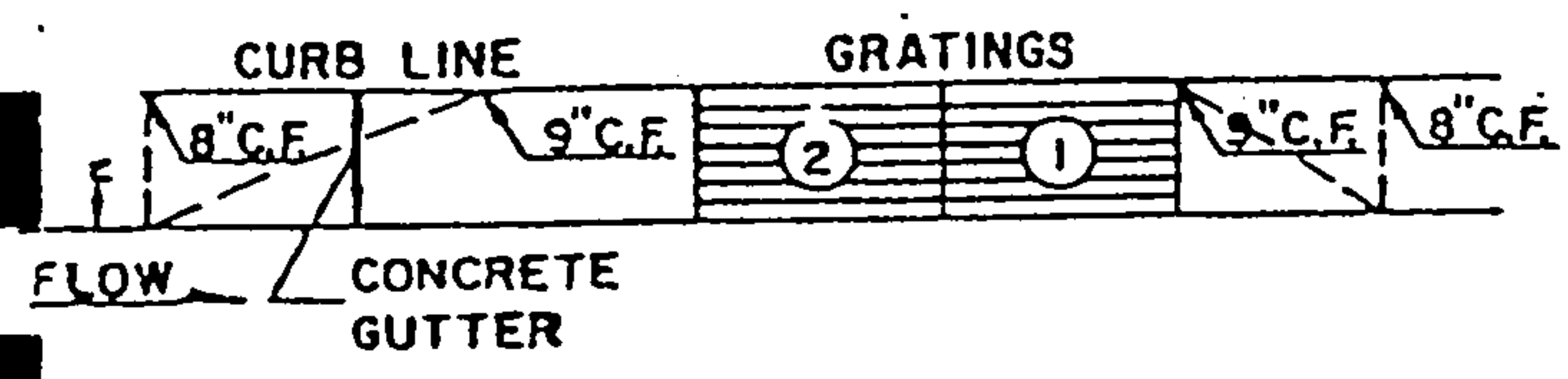
$$V = 63 \text{ LOTS} / 156 (4.1028 \text{ AC-FT})$$
$$= 1.6569 \text{ AC-FT}$$
$$= 72,175 \text{ CF}$$

ELEV	AREA (SF)	VOLUME (CF)	
97.00	170 x 70 = 11,900	0	
98.00	176 x 76 = 13,376	12,638	
99.00	182 x 82 = 14,924	26,788	
5/100.00	188 x 88 = 16,544	42,522	
01.00	194 x 94 = 18,236	59,912	← WATER SURFACE
02.00	200 x 100 = 20,000	79,030	ELEVATION
			FOR 72,175 CF
			IS 01.64

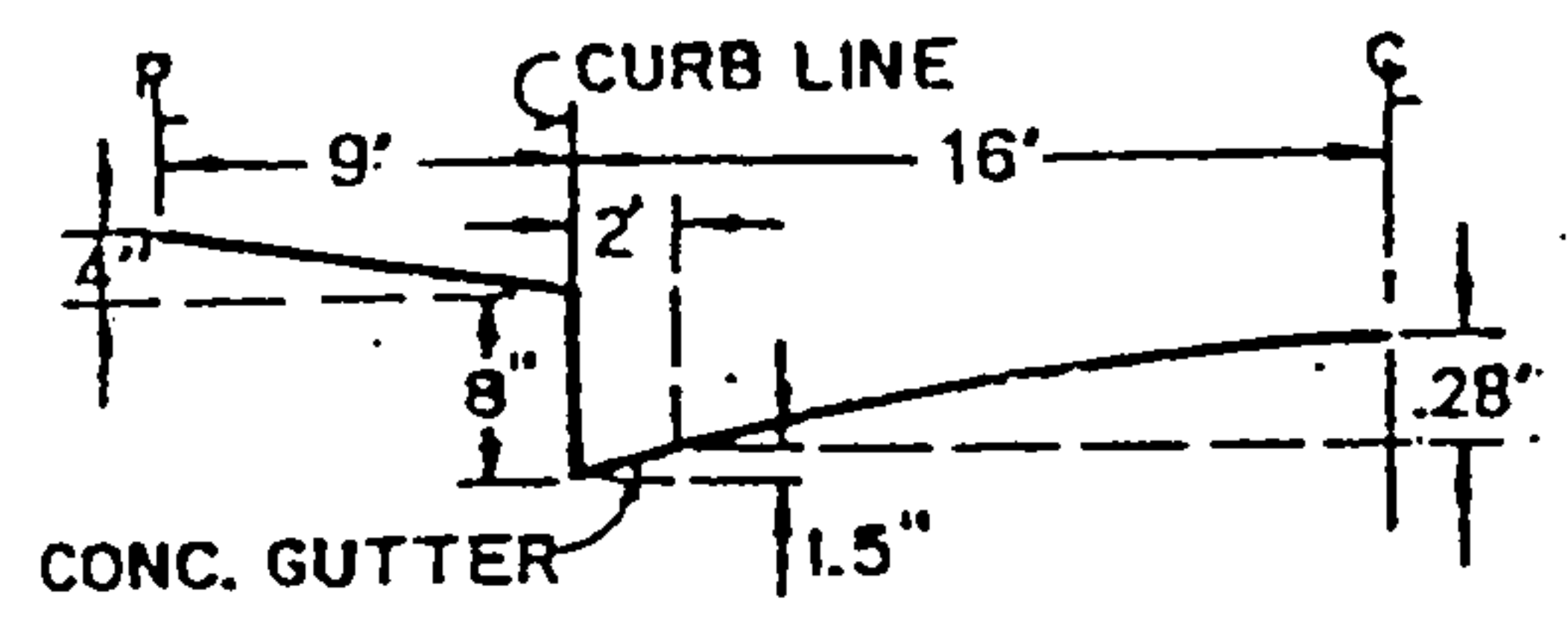
THIS POND IS ONLY FOR UNIT ONE
CONSTRUCTION.

WHEN UNIT 2 CONSTRUCTION OCCURS
THE POND WILL BE VACATED AND RELOCATED.

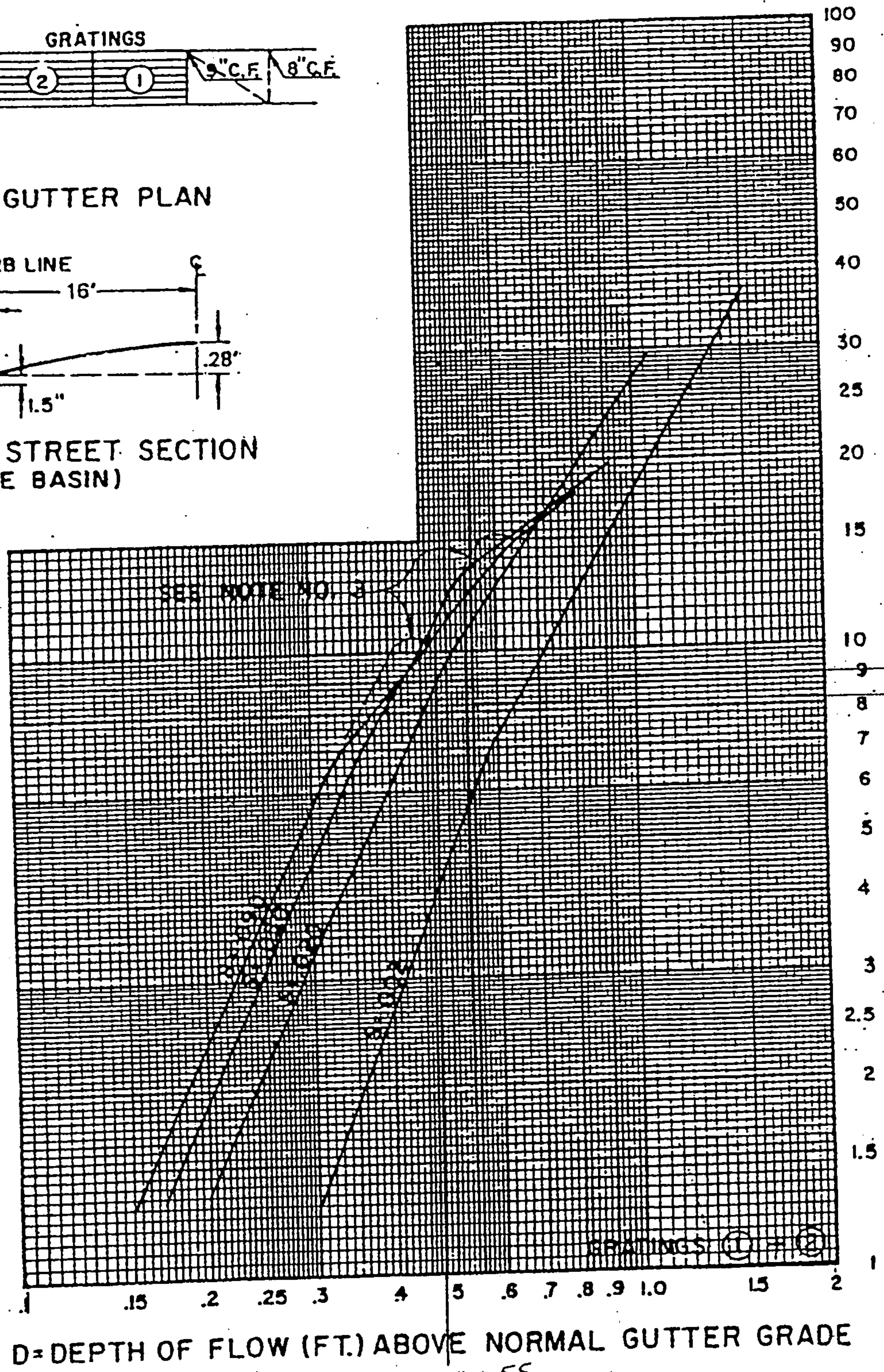
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



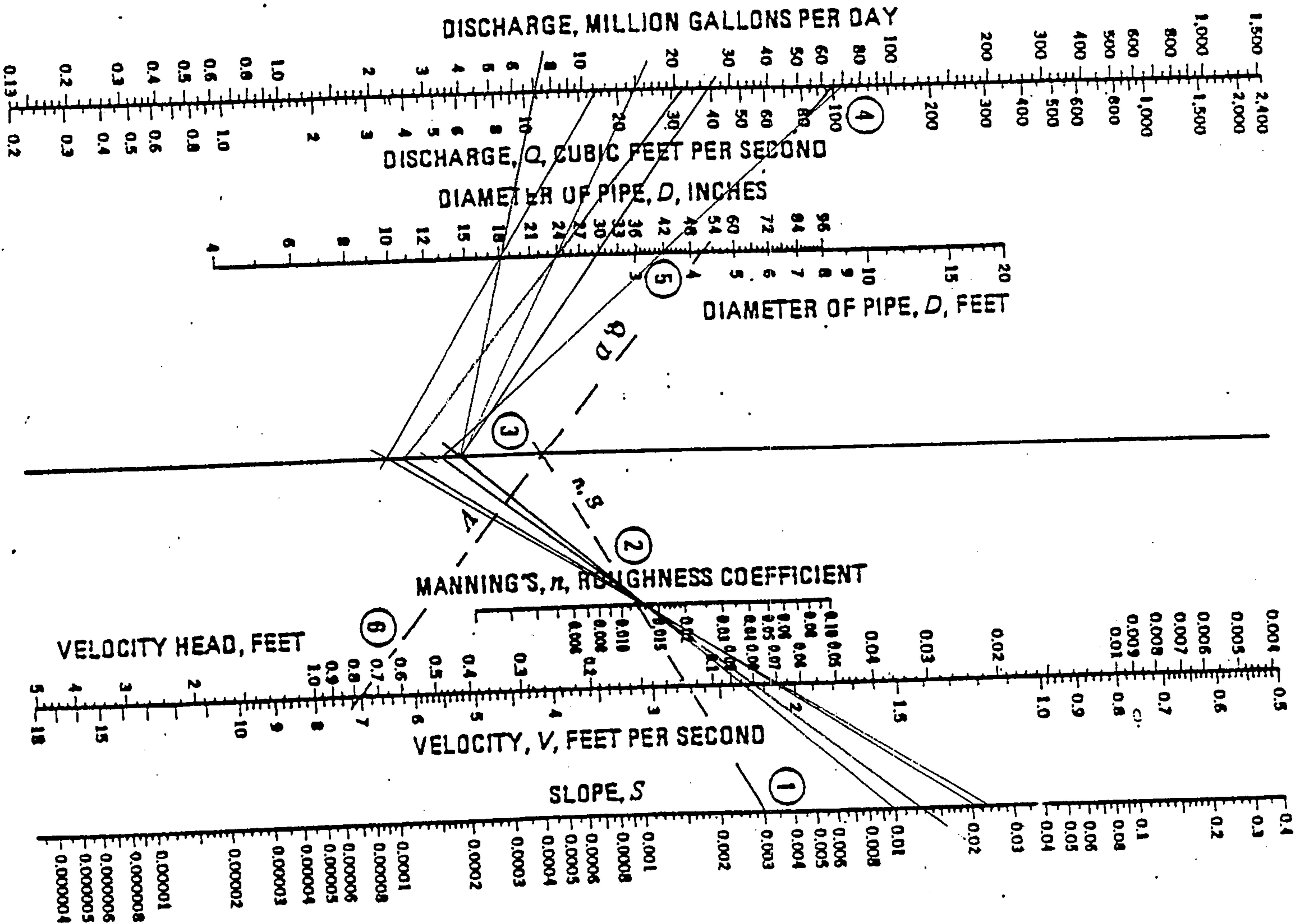
GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION (ABOVE BASIN)



Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

//

START TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO PER LOT RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.036431 SQ MI
PER A=0 B=48.08 C=0 D=51.92
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/04/2000
START TIME (HR:MIN:SEC) = 14:32:17 USER NO.= M_GOODWN.I01
INPUT FILE = centslvr.dat

START TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO PER LOT RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

DT =	.033330 HOURS			END TIME = 5.999400 HOURS		
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.036431 SQ MI
 PER A=0 B=48.08 C=0 D=51.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 74.677 CFS UNIT VOLUME = .9992 B = 526.28
AREA = .018915 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 43.041 CFS UNIT VOLUME = 1.000 B = 327.55
AREA = .017516 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

RUNOFF VOLUME = 1.34837 INCHES = 2.6199 ACRE-FEET
PEAK DISCHARGE RATE = 76.67 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:32:17

TART TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO 86TH & BARBADOS RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003529 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 11/24/1999
 START TIME (HR:MIN:SEC) = 13:19:07 USER NO.= M_GOODWN.I01
 INPUT FILE = CENOFF.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR CENTEX SILVERADO 86TH & BARBADOS RUNOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003529 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 11.146 CFS UNIT VOLUME = .9984 B = 526.28
 AREA = .002823 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.7343 CFS UNIT VOLUME = .9926 B = 327.55
 AREA = .000706 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.70931 INCHES = .3217 ACRE-FEET
PEAK DISCHARGE RATE = 8.95 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:19:08



City of Albuquerque

March 20, 2000

Gregory J. Krenik, P.E.
Mark Goodwin & Associates, PA
P. O. Box 90606
Albuquerque, New Mexico 87199

RE: Drainage Report and Grading and Drainage Plan for El Rancho Grande I Subdivision (M9/D19), Submitted for Preliminary Plat Approval and Grading Permit Approval, Engineer's Stamp Dated 2/18/00.

Dear Mr. Krenik:

Prior to approval for Preliminary Plat and Rough Grading Permit release for the above referenced subdivision, the following comments must be addressed:

1. The drainage report is very difficult to follow and review. Please provide one comprehensive master drainage report that covers both this subdivision and the Silverado Subdivision. After approval of the master plan for these developments, each subdivision plan and report will only need to address the drainage specific to that development.
2. Please provide overall on-site and off-site drainage basin maps identifying all sub-basins for each street. Clearly indicate where each basin is located and where they drain.
3. Please check the land treatments. Do the "per lot" land treatments take into account half of the adjacent street? Why is land treatment "B," for irrigated lawns, proposed for the public right-of-way?
4. The modified street section for Camino San Martin shown on Sheet 2 of the report is not acceptable. The allowable water depth cannot be above the top of curb. Is this existing or proposed? Since driveways are proposed along this street, inlets are required to lower the water depth. What is the width of the proposed pavement section without the crown?
5. Provide a detail for the proposed trench drains. Are these the same as cattle guard inlets? City standard inlets must be used. Curb openings will be required at the ends of these inlet structures. On the plans, show the locations of the proposed driveways in the vicinity of the inlets to demonstrate that there will be no conflicts.
6. The report states that runoff turns east into Tract E. Where is Tract E located? Is the proposed pond in Tract E to be privately maintained? If so, then this must be located within a public drainage easement with an Agreement and Covenant. The channel into the pond in Tract E must be designed to City standards, with the typical 10' bottom width.

7. With respect to the street calculations, the maximum allowable water depth is at the top of curb and the maximum EGL is at the elevation at the right-of-way limit. Typical cross slopes on sidewalks are at 2%. Therefore, the street calculations must be revised. Also, it does not appear that the calculations addressed the potential for hydraulic jumps at the T-intersections.
8. Street names were not provided on the grading plans, therefore the locations of the storm drain inlets cannot be determined. The calculations on Sheet 6 of the report are difficult to follow.
9. Type "A" and type "C" inlets are typically used instead of type "B." Sheet 8 in the report gives pipe capacities, but does not identify which pipes these capacities apply to.
10. Why is a pond to be imposed on Parcel 12? URS Greiner addressed this parcel in the Revised Rio Bravo Master Drainage Plan. Please reference the master plan and provide the pertinent information regarding this parcel.
11. The land treatments used for Gibson Boulevard seem low. Please provide a cross-section for this road to demonstrate how the treatments were determined. It appears that the proposed storm drain in Gibson needs to extend further west in the future to maintain the clear driving lanes.
12. With respect to the proposed sump inlets in Gibson and Unser, approval from City Transportation will be required for the proposed dip sections in these major arterial streets.
13. The pond located at Unser and Gibson will be maintained by the City, therefore, please show the proposed fencing and access ramps. How will City storm drain maintenance access this pond?
14. Per the previous Silverado plan, the outfall pipe from the Unser/Gibson pond drains east through the existing mobile home park, and has a very limited release rate. It appears that the proposed discharge of 98 cfs through this pipe will be too high.
15. Please provide only the pertinent information from the Silverado drainage plan, not the entire report.
16. The grading plan shows grading on the City's Well site. Grading is also shown south of the Gibson right-of-way. Written permission from adjacent property owners must be provided for all off-site grading prior to Preliminary Plat approval.
17. Provide the proposed ultimate street grades for Unser and Gibson on the plan.

Greg Krenik, P.E.
page 3

March 20, 2000

18. Provide the typical lot layout and cross-sections to show how the lots will be graded to drain to the front. Also provide the retaining wall section on the plan.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,



Susan M. Calongne, P.E.
City/County Floodplain Administrator

c: Bo Johnson, P.E., Curb Inc.

 File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: El Rancho Grande, Units 1 & 2 **ZONE ATLAS#:** M-9 / D019

DRB#: 00460-00000-00116 **EPC#** **WORKORDER#:**

LEGAL DESCRIPTION: Tracts C & D, ABQ South, Unit 4, and a portion of remaining parcel 12

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Curb, Inc.	CONTACT:	Chuck Haegelin
ADDRESS:	6301 Indian School Road NE	PHONE:	881-9190
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	
CONTACTOR:	N/A	CONTACT:	
ADDRESS:		PHONE:	

TYPE OF SUBMITTAL:

X	DRAINAGE REPORT
X	DRAINAGE PLAN
	CONCEPTUAL GRADING & DRAINAGE PLAN
X	GRADING PLAN
	EROSION CONTROL
	ENGINEER'S CERTIFICATION
	OTHER
	EASEMENT VACATION

PRE-DESIGN MEETING:

_____ YES
_____ NO
_____ COPY PROVIDED

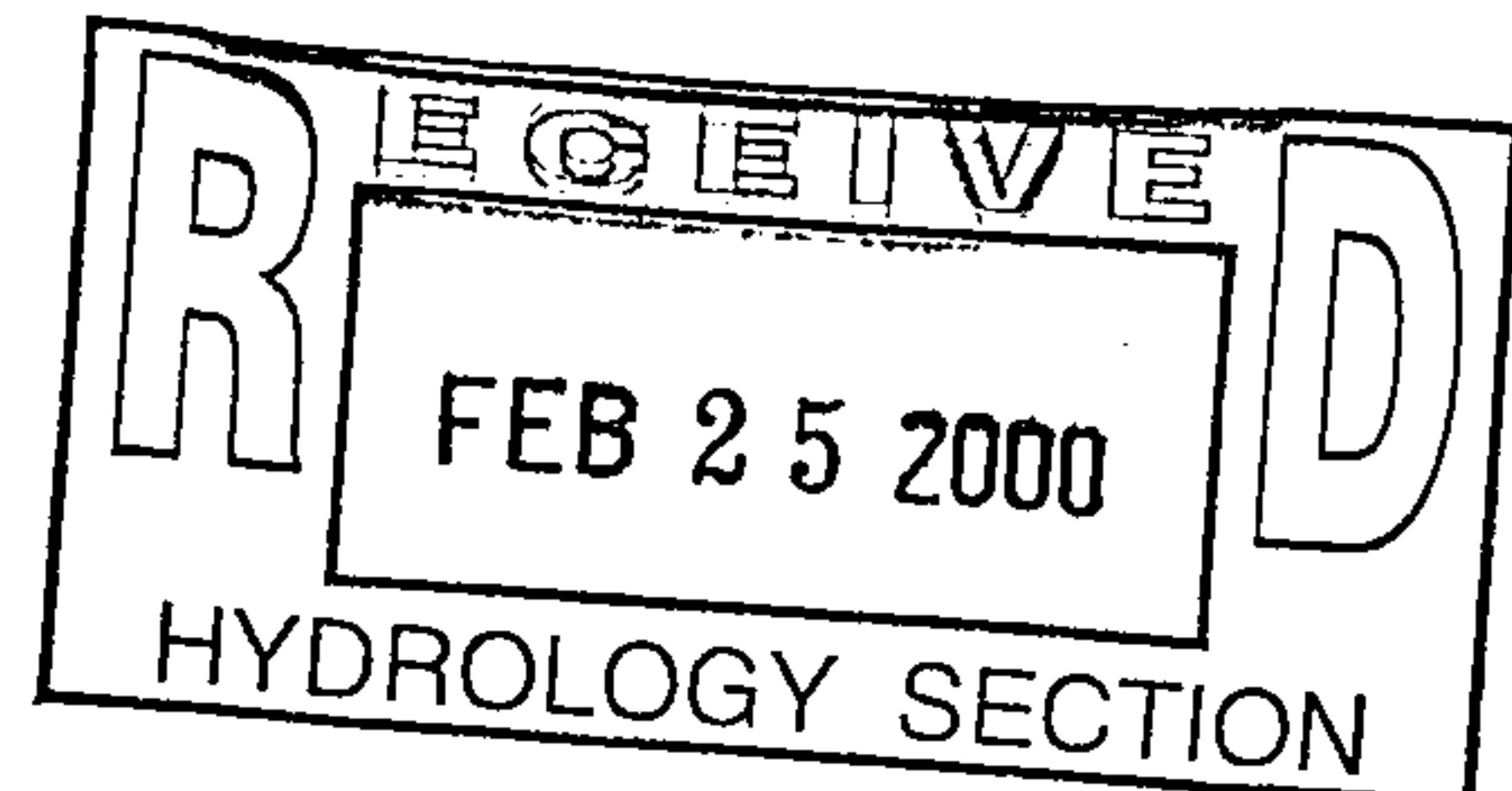
CHECK TYPE OF APPROVAL SOUGHT:

	SKETCH PLAT APPROVAL
X	PRELIMINARY PLAT APPROVAL
	S. DEV. PLAN FOR SUB'D APPROVAL
	S. DEV. PLAN FOR BLDG PERMIT APPROVAL
	SECTOR PLAN APPROVAL
	FINAL PLAT APPROVAL
	FOUNDATION PERMIT APPROVAL
	BUILDING PERMIT APPROVAL
	CERTIFICATION OF OCCUPANCY APPROVAL
X	GRADING PERMIT APPROVAL
	PAVING PERMIT APPROVAL
	S.A.D. DRAINAGE REPORT
	DRAINAGE REQUIREMENTS
	OTHER
	RELEASE OF FINANCIAL GUARANTY
	TRAFFIC CIRCULATION LAYOUT

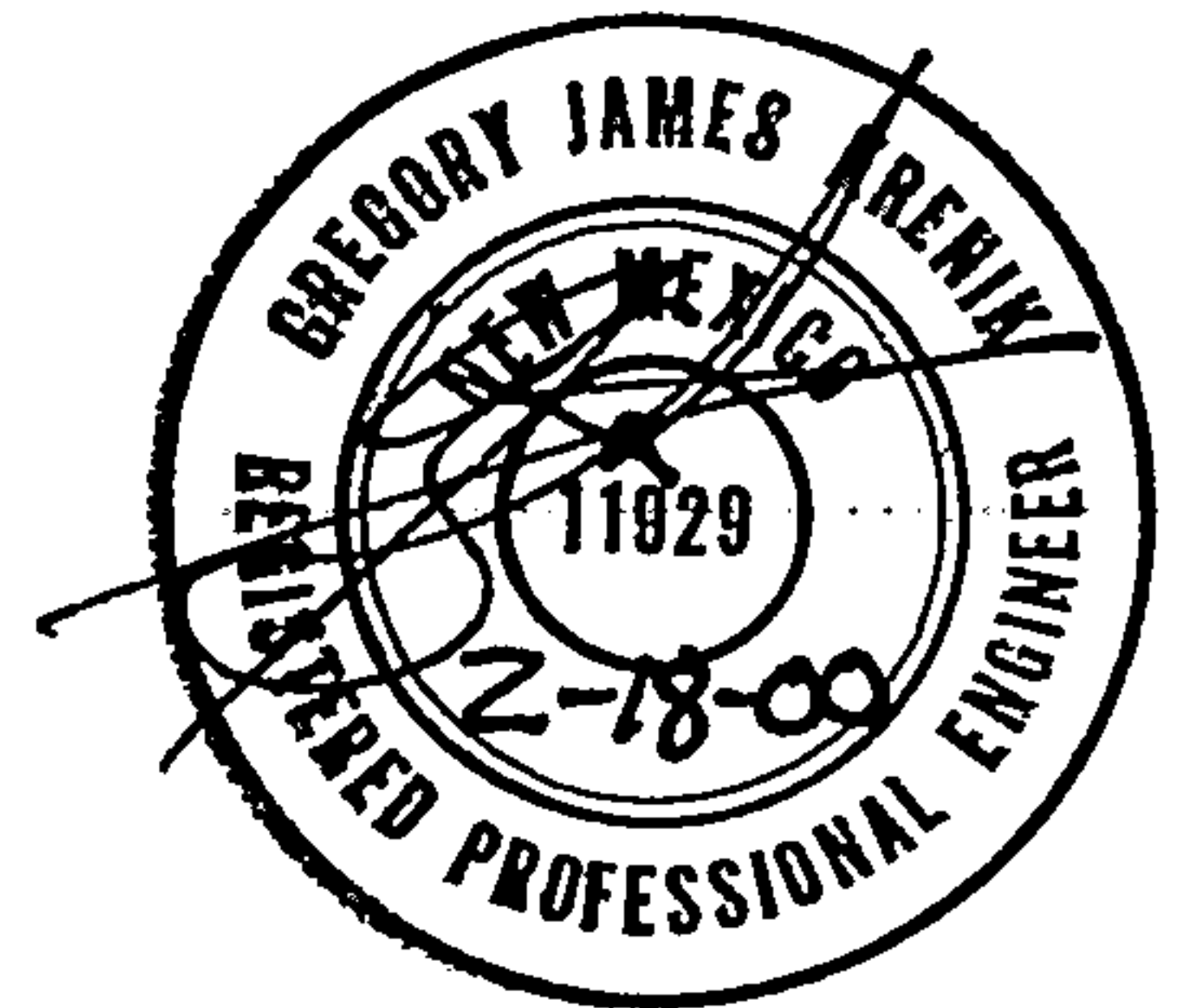
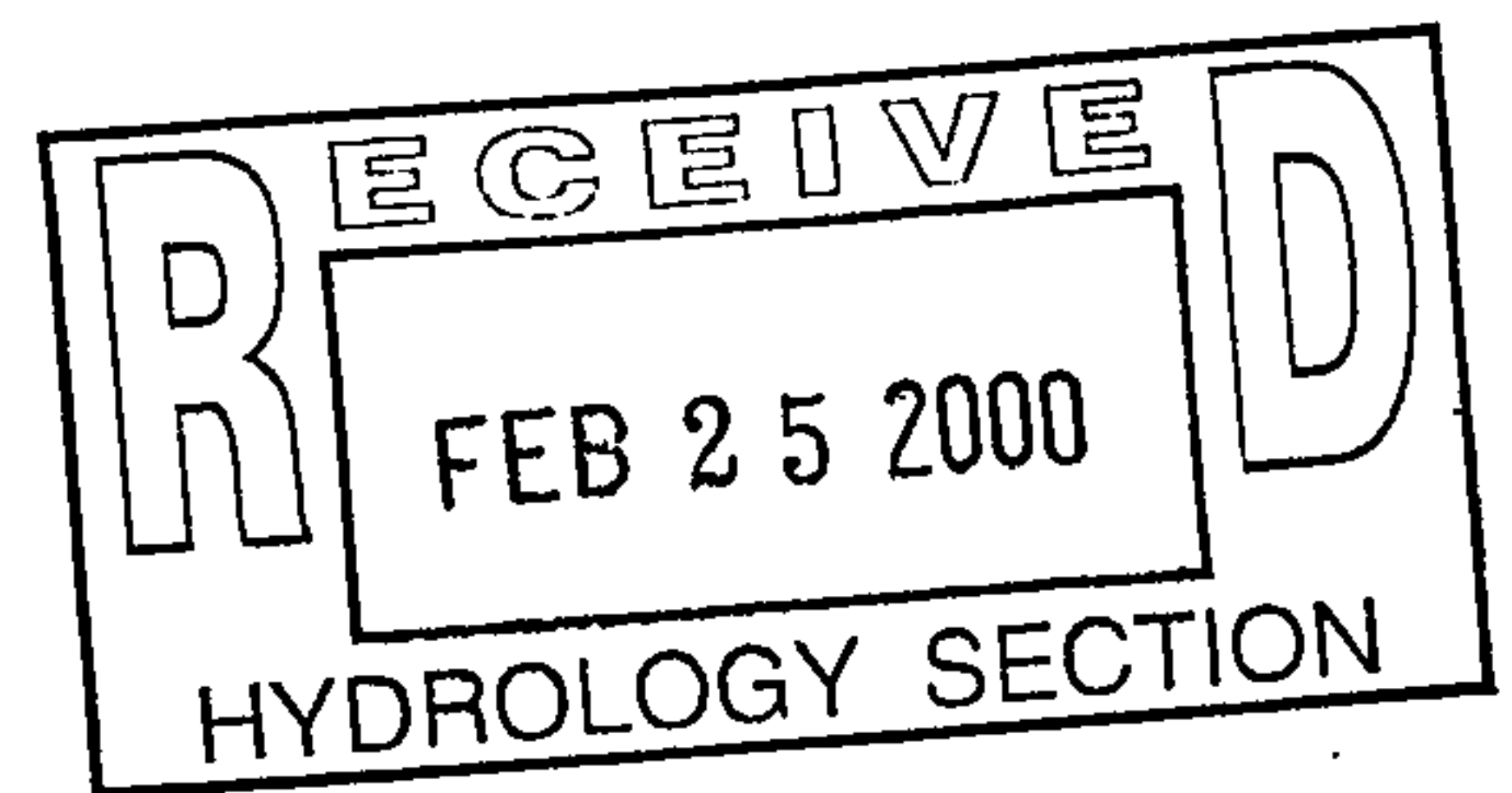
DATE SUBMITTED: / 2-23-00

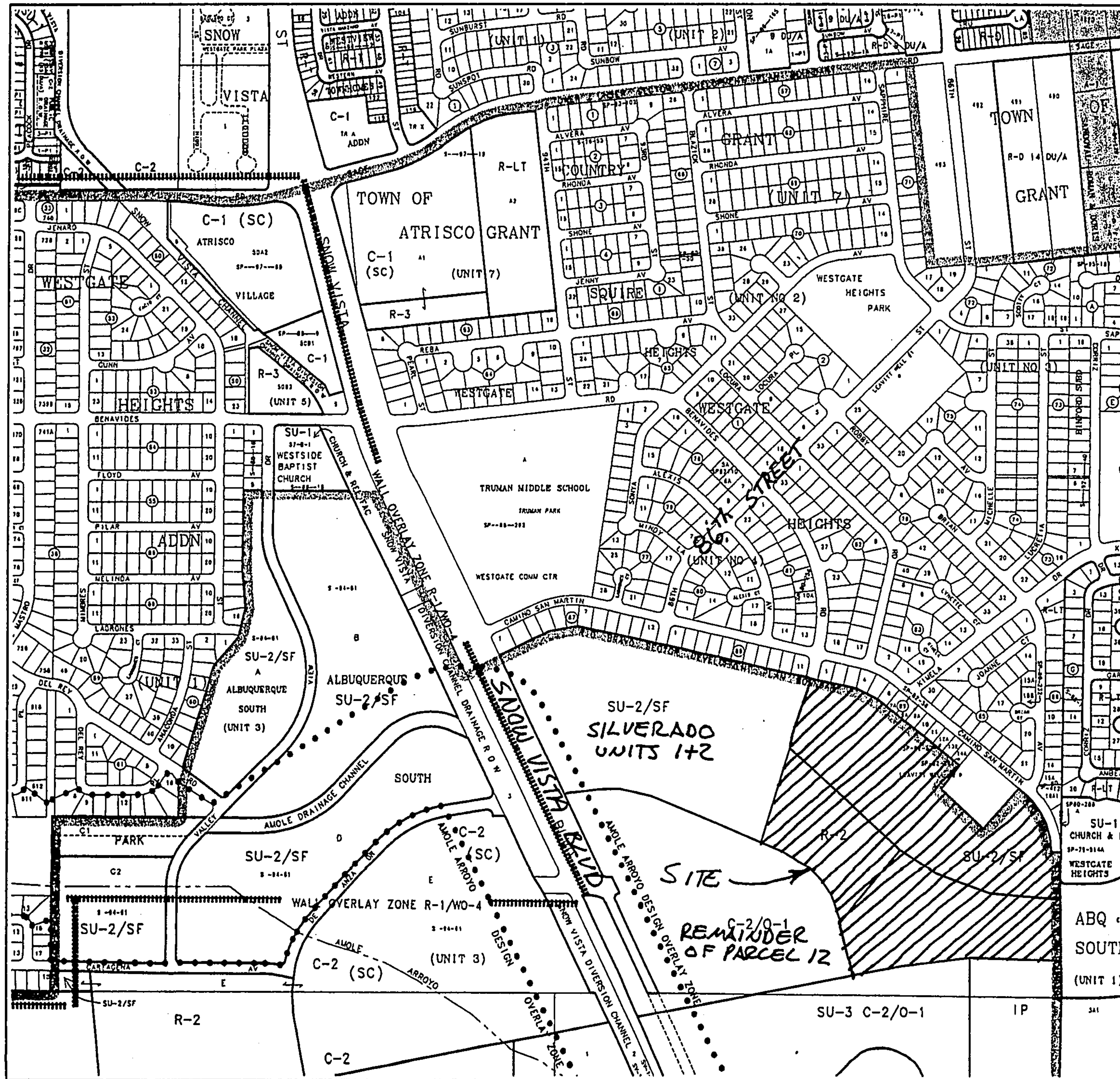
BY: [Signature]

~~Gregory J. Krenik PE~~



DRAINAGE REPORT
FOR
EL RANCHO GRANDE I
UNITS 1 & 2

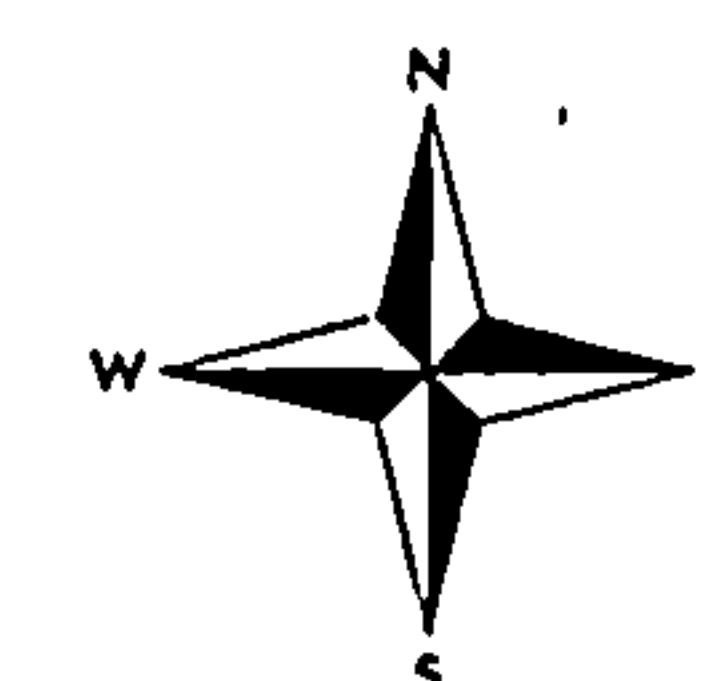




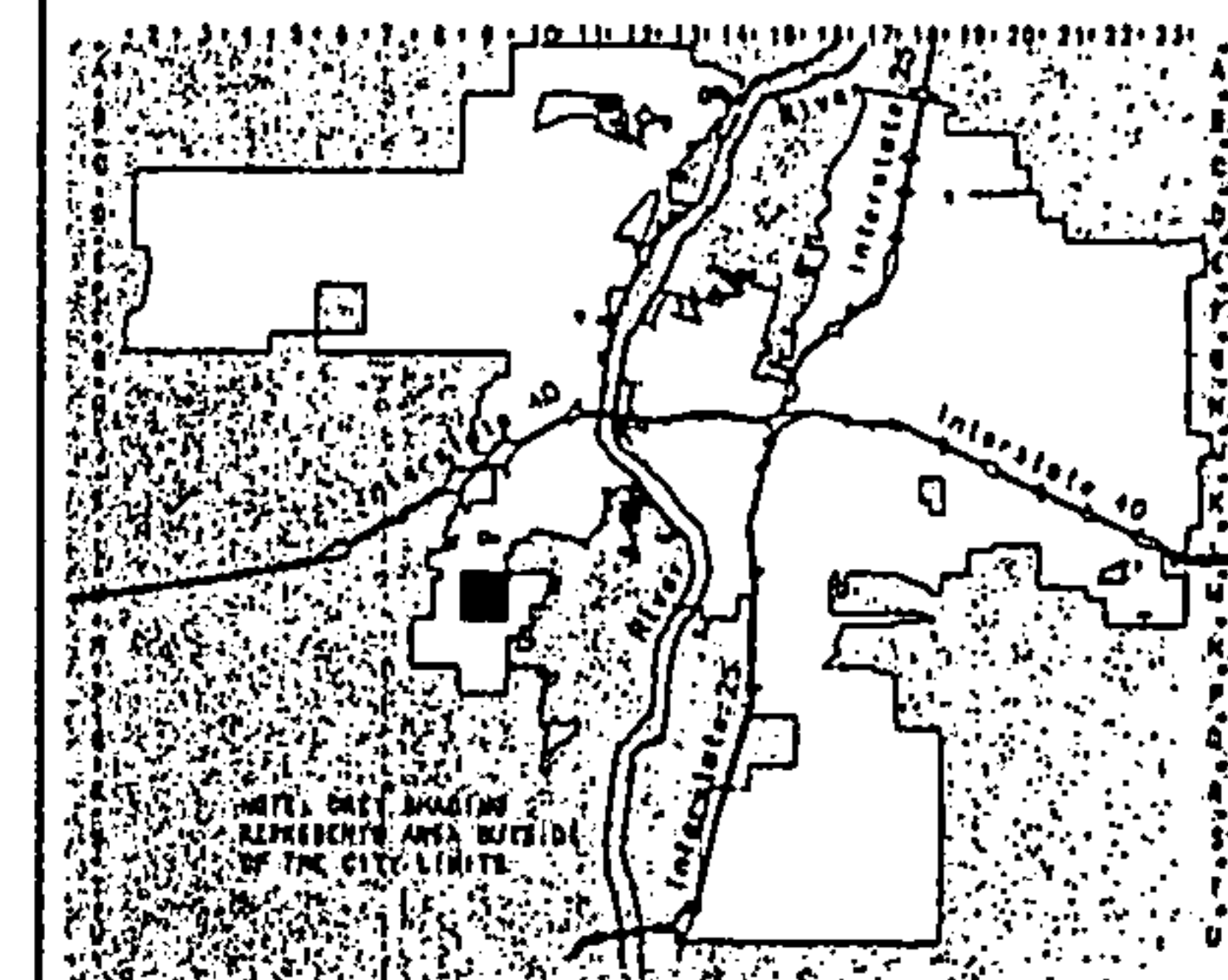
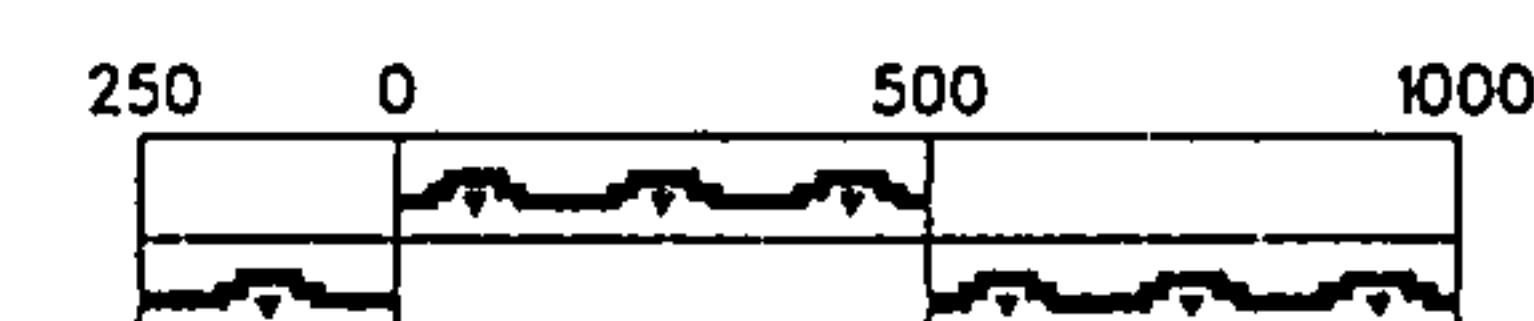
CITY OF
Albuquerque

Albuquerque Geographic Information System
PLANNING DEPARTMENT

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GRAPHIC SCALE IN FEET



Zone Atlas Page
M-9-Z

Map Amended through
December 10, 1998



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmgs@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 1 OF _____

- THIS PROJECT IS PART OF WHAT WAS KNOWN AS SILVERADO SUBDIVISION (M9/020). APPENDIX "A"
- THIS PROJECT WILL DESIGN THE DOWNSTREAM IMPROVEMENTS (ENLARGE DETENTION POND AND MASTER PLAN STORMDRAIN FOR AREA NORTH OF GIBSON BETWEEN 98TH AND UNSER)
- THIS PROJECT IS DOWNSTREAM OF CENTEX-SILVERADO (REPORT PREPARED BY MARK GOODWIN AND ASSOCIATES APPENDIX "B")
- THIS PROJECT CONSISTS OF UNITS 2 & 3 OF THE OLD SILVERADO SUBDIVISION REPORT PLUS THE UNPLATTED PORTION NORTH OF GIBSON BETWEEN BARBADOS AND CAMINO SAN MARTIN.

• TOTAL SITE = TRACT C + TRACT D + UNPLATTED PORTION
= 13.7159 + 8.7122 + 13.1206
= 35.5487 AC ~ 0.5100 AC (WIND TO PARK) = 35.0387

• NUMBER OF LOTS = 192

- where* {
- AREA THAT WILL BE SEPARATED OUT TO DETERMINE PER LOT RUNOFF. (BARBADOS + GIBSON R/W)

$A = 1.2644 + 2.2562 = 3.5206 \text{ AC NOT INCLUDED IN PER LOT A.}$

• PADS = $60 \times 35 = 2100$

• DRIVE PAD = $20 \times 20 = 400$

$2500 \times 192 = 11,0193 \text{ AC TYPE "D"}$

- AREA OF ROW IN SUBDIVISION

= 6.9480 AC 80% "D" = 5.5584 AC, 20% "B" = 1.3896 AC

TYPE "D"

11.0193 AC

5.5584 AC

16.5777 AC

-1.0078 AC

15.5699 AC

52.77 %

TYPE "B"

13.5508 AC = 24.5701

1.3896 AC = 6.9480

14.9404 AC = 31.5181 + 3.5206 = 35.0387

-1.0066 AC = -2.0144 AC - SEE SHEET 3

13.9338 AC = 29.5037 AC

47.23 %

FROM AH440 OUTPUT SHEETS 19-21

$Q = 97.62 \text{ CFS}$ 192-13 = 179 LOTS

$Q \text{ per lot} = 97.62 / 179 = 0.5454 \text{ CFS/LOT}$

irrigated lawn?



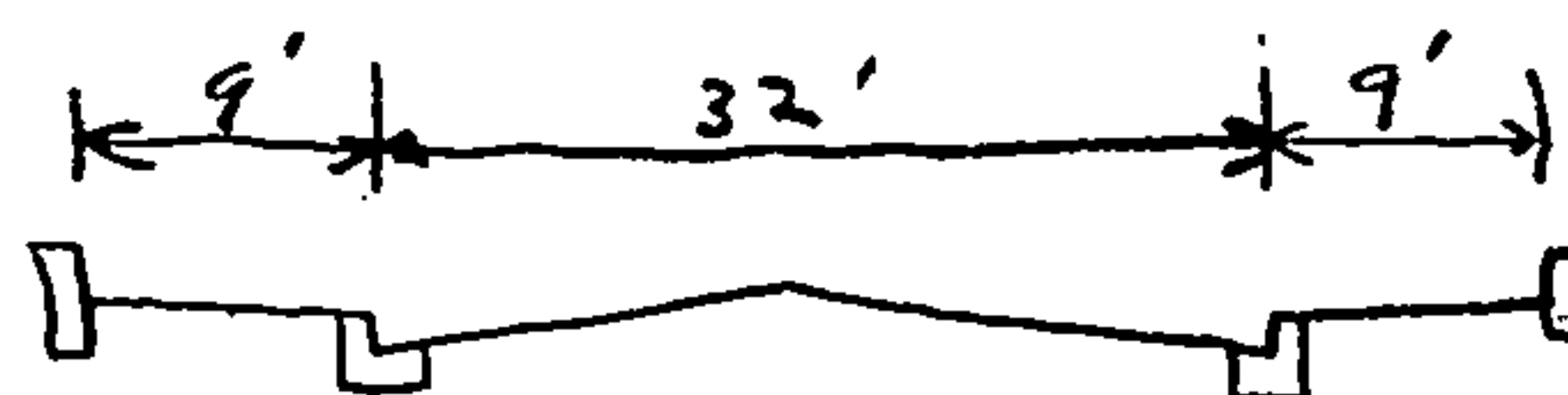
D. Mark Goodwin & Associates, P.A.
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e-mail: dmgs@swcp.com

PROJECT EL PASO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 2 OF _____

- FROM THE "ADDENDUM TO THE MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR PLAN" PREPARED BY MARK GOODWIN & ASSOCIATES - 9-21-98 (APPENDIX B) THE Q IN CAMINO SAN MARTIN IS 133.79 CFS AND THE CAPACITY OF THE EXISTING STREET IS 79.21 CFS.

- MODIFY STREET SECTION FROM BRIAN SOUTH TO END OF EXISTING PAVEMENT.



ADD 8" HEADER CURB
AT BACK OF SIDEWALKS

FIND NEW CAPACITY

$$d = 1.52 \quad S = 0.58\%$$

$$WP = 52.68$$

$$A = 54.65$$

$$V = 6.82 \text{ F/S}$$

$$Q = 372.82 \text{ CFS}$$

FIND d

$$d = 1.01$$

$$WP = 51.66$$

$$A = 29.15$$

$$V = 4.55 \text{ F/S}$$

$$Q = 132.51 \text{ CFS} \approx 133.79 \text{ OK}$$

$$\text{max } d = .61'$$

$$d + \frac{V^2}{2g} = 1.01 + 0.32 = 1.33 < 1.52 \text{ OK}$$

A 6" HEADER CURB
WILL WORK

- FIND CAPACITY OF CAMINO SAN MARTIN SOUTH OF EXISTING PAVEMENT.

NO CROWN

$$S = 1.9\%$$

$$d = .67$$

$$WP = 33.34$$

$$A = 21.44$$

$$V = 6.51 \text{ F/S}$$

$$Q = 139.63 \text{ CFS}$$

FIND d

$$d = 0.65$$

$$WP = 33.30$$

$$A = 20.80$$

$$V = 6.387 \text{ F/S}$$

$$Q = 132.86 \text{ CFS} \approx 133.79 \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.65 + 0.63 = 1.28 > 0.85$$

NEED INLETS OR
TRENCH DRAIN



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e-mail: dmgs@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 3 OF _____

- INSTALL A TRENCH PAVIN AT THE END OF THE EXISTING PAVEMENT.

- FIND RATIO OF FRONTAL FLOW INTERCEPTED TO TOTAL FRONTAL FLOW

$$R_g = 1 - 0.09(V - V_0) \quad \text{PER "DRAINAGE OF HIGHWAY PAVEMENTS" MANUAL PAGE 54}$$

V = Velocity in Gutter

V_0 = GUTTER VELOCITY WHERE SPLASH-OVER FIRST OCCURS

$$V = 4.55 \text{ F/S}$$

LENGTH OF GATE = 2.0'

USE 45° TILT-BAR GRATE

FROM CHART 7 SHEET 15

R_g IS OFF THE CHART INDICATING IT IS OVER 1.0 WHICH MEANS ALL THE WATER WHICH RUNS OVER THE GATE IS TAKEN IN BY THE GATE. SINCE THE STREET DOES NOT HAVE CAPACITY ONLY THE FLOW IN THE STREET ENTERS THE GATE.

$$Q_{\text{GATE}} = 133.79 \text{ (PERCENT IN STREET)}$$

$$\begin{aligned} d &= 1.01 \quad w = 32.0 \\ A &= 24.65 \end{aligned}$$

$$\text{AREA ROW} = 29.15 - \text{AREA STREET} = 24.65$$

$$\frac{24.65}{29.15} = 84.56\%$$

$$\begin{aligned} Q_{\text{gate}} &= 133.79 (.8456) \\ &= 113.14 \text{ CFS} \end{aligned}$$

- FIND Q THAT TURNS EAST INTO TRACTE ?

$$Q = 133.79 - 113.14 = 20.65 \text{ CFS}$$

- ADD Q FROM 13 LOTS FROM EL RANCHO GRANDE I — Basin ?

$$\text{ROW} = 14,250 \text{ SF} = 0.3271 \text{ AC}$$

$$0.2617 \text{ AC "D"} \quad 0.0654 \text{ AC "B"}$$

$$\text{LOTS} = 73,500 \text{ SF} = 1.6873 \text{ AC}$$

$$2500 \times 13 = 32,500 \text{ SF} = 0.7461 \text{ AC "D"}$$

TYPE D

TYPE B

$$0.2617$$

$$0.0654$$

$$0.7461$$

$$0.9412$$

$$1.0078 \text{ AC}$$

$$1.0066 \text{ AC} = 2.0144 \text{ AC}$$

$$50.03\%$$

$$49.97\%$$

FROM HYMO SHEET 22-24

$$Q = 6.55 \text{ CFS}$$



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PROJECT EL RUCHO GRANDE
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 4 OF _____

- ALLOWABLE DISCHARGE TO 24" STORM DRAIN IN UNSUB BLVD IS 24.5 CFS AT TRACT E

AREA TRACT E = 4.2103 AC

21 LOTS @ (35x60) + (20x20) = 52,500 SF = 1.2052 AC TYPE "D"

ROW AREA = 0.5756 AC

22.73% "B" 77.27% "D"

TYPE "B" = 2.4295 + 0.1308 = 2.5603 AC 60.81%

TYPE "D" = 1.2052 + 0.4448 = 1.6500 AC 39.19%

Q = 14.75 CFS

- SIZE POND ON TRACT E

A DETENTION POND WILL BE REQUIRED

USE 24" OUTFALL $A = 3.141593$ $Q = 0.64 \sqrt{2gh}$

ELEV	AREA(SF)	VOLUME(AC-FT)	OUTFLOW(CFS)
45.00	4007	0	0
46.00	5120	0.1048	4.78
47.00	6306	0.2359	15.12
48.00	7566	0.3951	21.42

FROM 1144 MO SHEETS 25-44

PEAK DISCHARGE = 19.712 CFS

MAX WATER SURFACE = 47.73

< 2 ac-ft
private pond?
public easement
w/ Agreement &
Covenant

- DETERMINE CAPACITY OF 44' R/W STREETS 26' F-F

S = 1%

n = 0.017

STD C+G

1' 12" 11"

d = 0.64

WP = 27.28

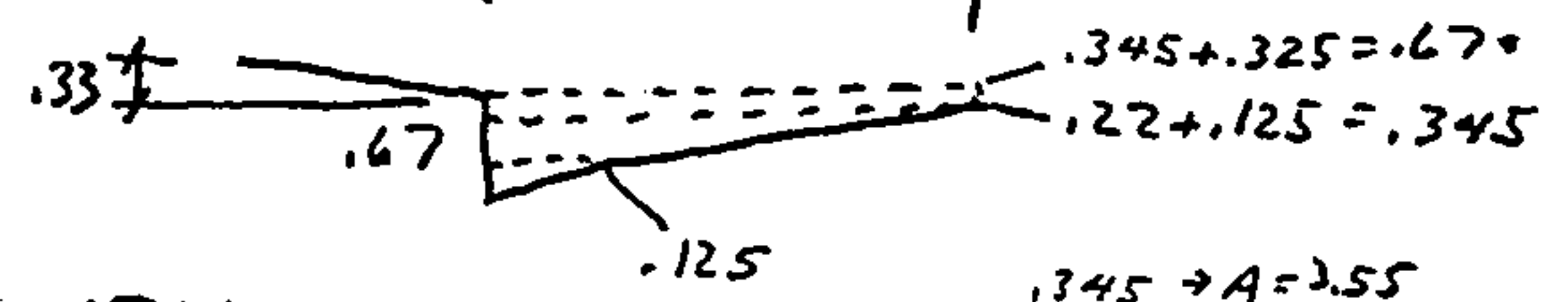
A = 11.22

V = 4.83 F/S

Q = 54.24 CFS

$$d + \frac{V^2}{2g} = 1.00 = 0.67 + 0.33 =$$

OK



- FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

$$54.24 / 0.5454 = 99.45 \text{ SAY } 99 \text{ LOTS}$$

- DETERMINE CAPACITY OF 44' R/W STREETS 26' F-F

$S = 1\%$ $n = 0.017$ MOUNTABLE C+G

$$d = 0.42$$

~~$\omega^p = 26.84$~~

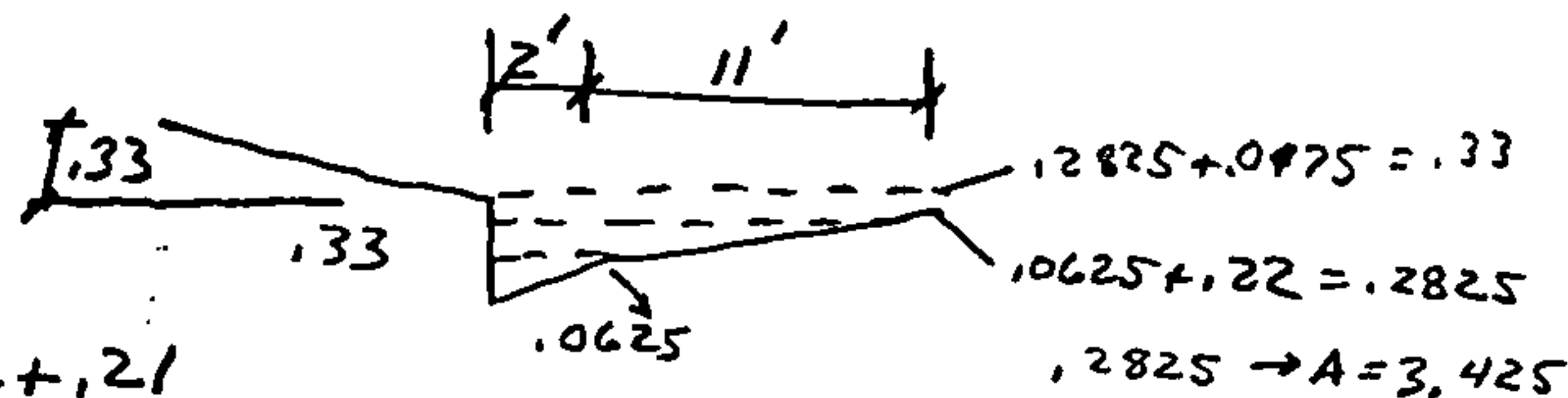
$$A = 7.22$$

$$v = 3.64 \text{ F/s}$$

$$Q = 26.30 \text{ CFS}$$

$$d + \frac{v^2}{2a} = .42 + .21$$

$$g = .63 \approx .33 + .33 \quad \Delta K$$



$$, 2825 \rightarrow A = 3,425$$

- FIND NUMBER OF LOTS THAT DRAIN TO STREET

$$26.30 / .5454 = 48.22 \text{ say } 48 \text{ LTS}$$

- DETERMINE CAPACITY OF 46' R/W STREETS 28' F-F

$$S = 2.36\% \quad n = 0.017 \quad STD \ C + G$$

$$d = 0.5$$

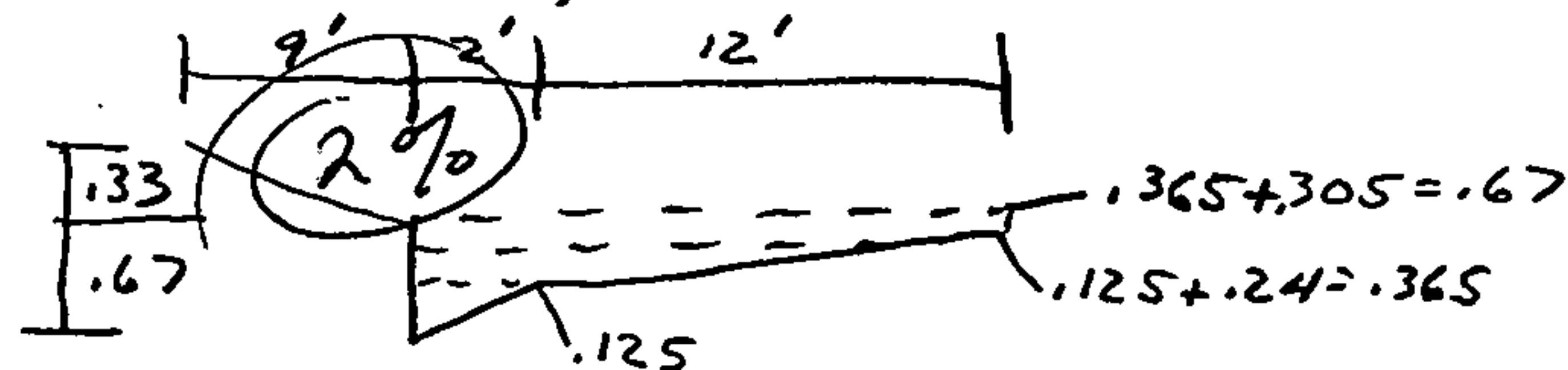
wp = 29.00

$$A = 7.87$$

$$V = 5.63 \text{ F/s}$$

$$Q = 44.30$$

$$\frac{d+V^2}{2g} = 0.99 \approx 1.67 + .33$$



$$.365 \rightarrow A = 1.09$$

over top of R/W elev.

- FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

$$44.30 / .5454 = 81.22 \text{ say } 81$$

- DETERMINE CAPACITY OF 46' R/W STREETS 28' F-F

$S = 3.0\%$ $n = 0.017$ MOUNT. C + G

$$d = .33$$

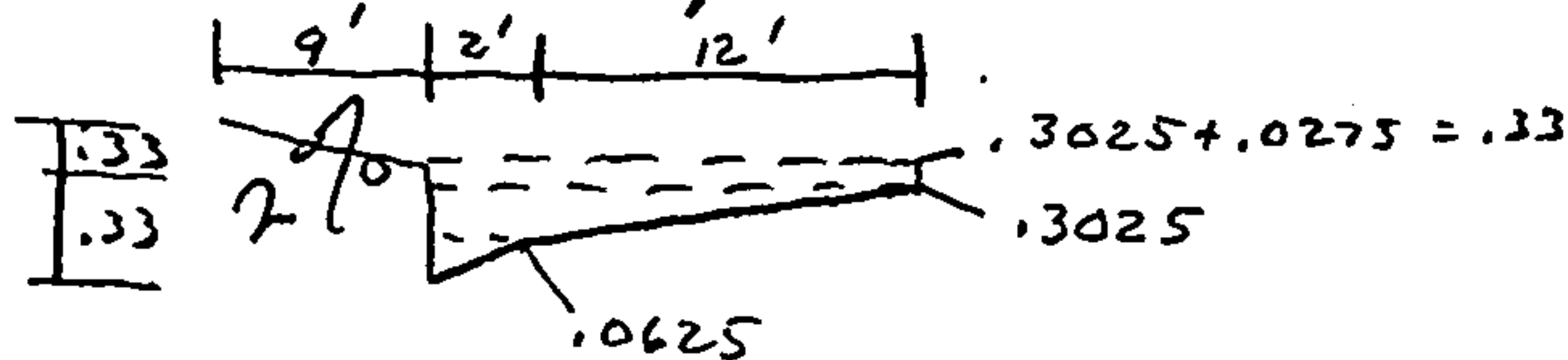
$$WP = 28.66$$

$$A = 4.735$$

$$V = 4.56 \text{ F/s}$$

$$Q = 21.58 \text{ CFs}$$

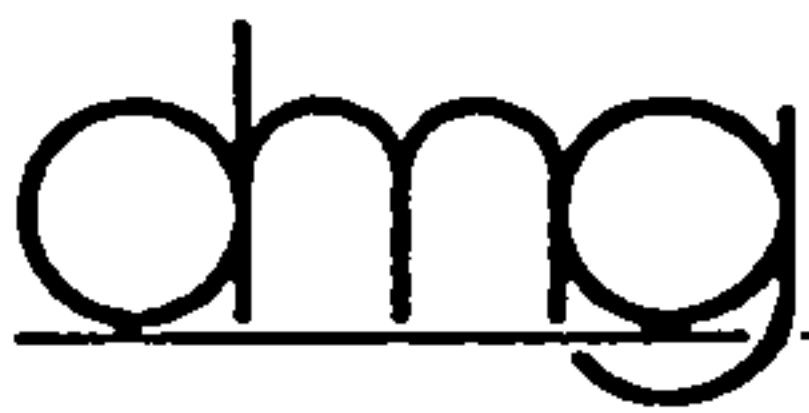
$$d + \frac{v^2}{2g} = .65 \times .33 + .33$$



$$.3025 \rightarrow A = 3.965$$

- FIND NUMBER OF LOTS THAT ADJACENT TO STREET

$$21.58 / .5454 = 39.57 \text{ say } 39 \text{ lots}$$



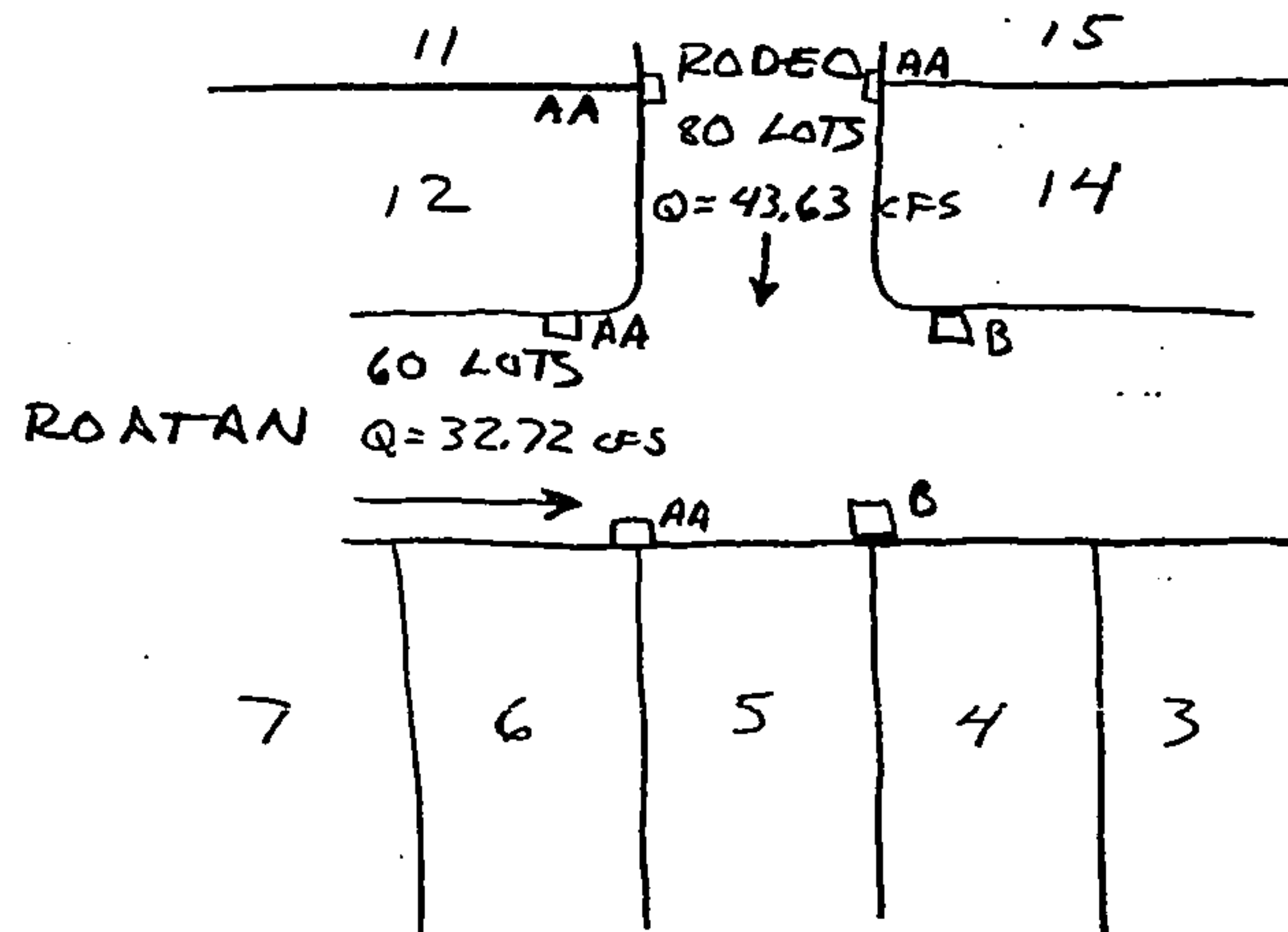
D. Mark Goodwin & Associates, P.A.
Consulting Engineers

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PROJECT EL PAUCHO GRADE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 6 OF _____

• DETERMINE INLET LOCATIONS

INLETS ARE REQUIRED AT THE INTERSECTION
OF RODEO AND ROATAN



INSTALL A DBL "A" INLET BETWEEN LOTS 14+15 AND
11+12 ON RODEO

• FIND d

$$\begin{aligned}d &= 0.59 \\ WP &= 27.18 \\ A &= 9.92 \\ U &= 4.46 \text{ F/S} \\ Q &= 44.29 \text{ cfs} \approx 43.63 \text{ cfs} \quad \text{OK}\end{aligned}$$

FROM NOMO SHEET 16

$$Q_{\text{gate}} = 9.4 \text{ cfs}$$

$$\begin{aligned}Q \text{ INTO ROATAN} &= 43.63 - 2(9.4) \\ &= 24.83 \text{ cfs}\end{aligned}$$

INSTALL A DBL "A" INLET BETWEEN LOTS 5+6 AND AT
THE RETURN OF LOT 12 ON ROATAN

• FIND d

$$\begin{aligned}d &= 0.45 \\ WP &= 28.90 \\ A &= 6.47 \\ U &= 4.95 \text{ F/S} \\ Q &= 32.03 \text{ cfs} \approx 32.72 \text{ cfs} \quad \text{OK}\end{aligned}$$

FROM NOMO SHEET 16

$$Q_{\text{gate}} = 5.5 \text{ cfs}$$

$$Q \text{ CONTINUING IN ROATAN} = 32.72 - 2(5.5) = 21.72 \text{ cfs}$$



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PROJECT EL PLUCHO GRADUO I

SUBJECT DRAINAGE CALCS

BY GJK DATE 12-13-99

CHECKED _____ DATE _____

SHEET 7 OF _____

- FIND Q IN ROATAN PAST INLETS

$$Q = 24.83 + 21.72 \\ = 46.55 \text{ CFS}$$

NUMBER OF LOTS

$$46.55 / .5454 = 85.35 > 81 \text{ NEED MORE INLETS}$$

INSTALL A TYPE "B" INLET BETWEEN LOTS 4+5
AND AT THE RETURN OF LOT 14 ON ROATAN

$$Q = 46.55 + .5454 \\ = 47.10 \text{ CFS}$$

$$d = 0.51 \\ WP = 29.02$$

$$A = 8.15$$

$$V = 5.76 \text{ F/S}$$

$$Q = 46.93 \text{ CFS} \approx 47.10 \text{ CFS} \text{ O.K.}$$

FROM NORD SHEET 17

$$Q_{\text{MTE}} = 14 \text{ CFS}$$

$$Q \text{ PAST INLETS} \\ = 47.10 - 2(14) \\ = 19.10 \text{ CFS}$$

- FIND Q IN ROATAN AT CAMINO SAN MARTIN

$$Q = 19.10 + 4(.5454) \\ = 21.28 \text{ CFS}$$

THIS FLOW WILL CROSS CAMINO SAN MARTIN
AN FLOW THROUGH TRACT E

- FIND TOTAL Q THAT ENTERS TRACT E

$$Q = 20.65 + 6.55 + 21.28 \\ = 48.48 \text{ CFS}$$

ADD TO TRACT E FLOW

$$Q \text{ THROUGH TRACT E} \\ = 48.48 + 14.75 \\ = 63.23 \text{ CFS}$$

- THIS WILL BE SURFACE FLOW THROUGH TRACT E.
- THE STREET WILL HAVE NO CROWN AND WILL ACT AS A CHANNEL.



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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 8 OF _____

• SIZE TRACT E STREET

44' R/W 26' F-F STD C+G

NO CROWN $S = 0.75\%$ $n = 0.017$

$$d = 0.5$$

$$WP = 27.00$$

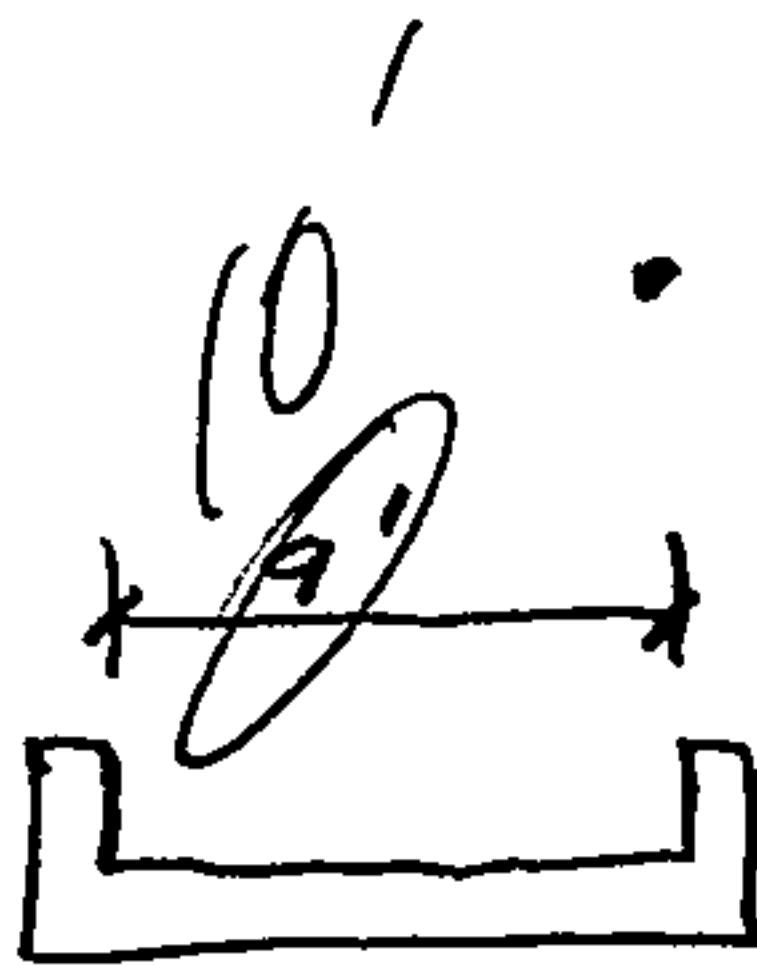
$$A = 13.50$$

$$V = 4.77 \text{ F/S}$$

$$Q = 64.38 \text{ CFS} \approx 63.23 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 0.85 < 0.67 + .33$$

OK



• SIZE CHANNEL INTO POND IN TRACT E

$S = 1.29\%$ $n = 0.013$

$$d = 0.74$$

$$WP = 10.48$$

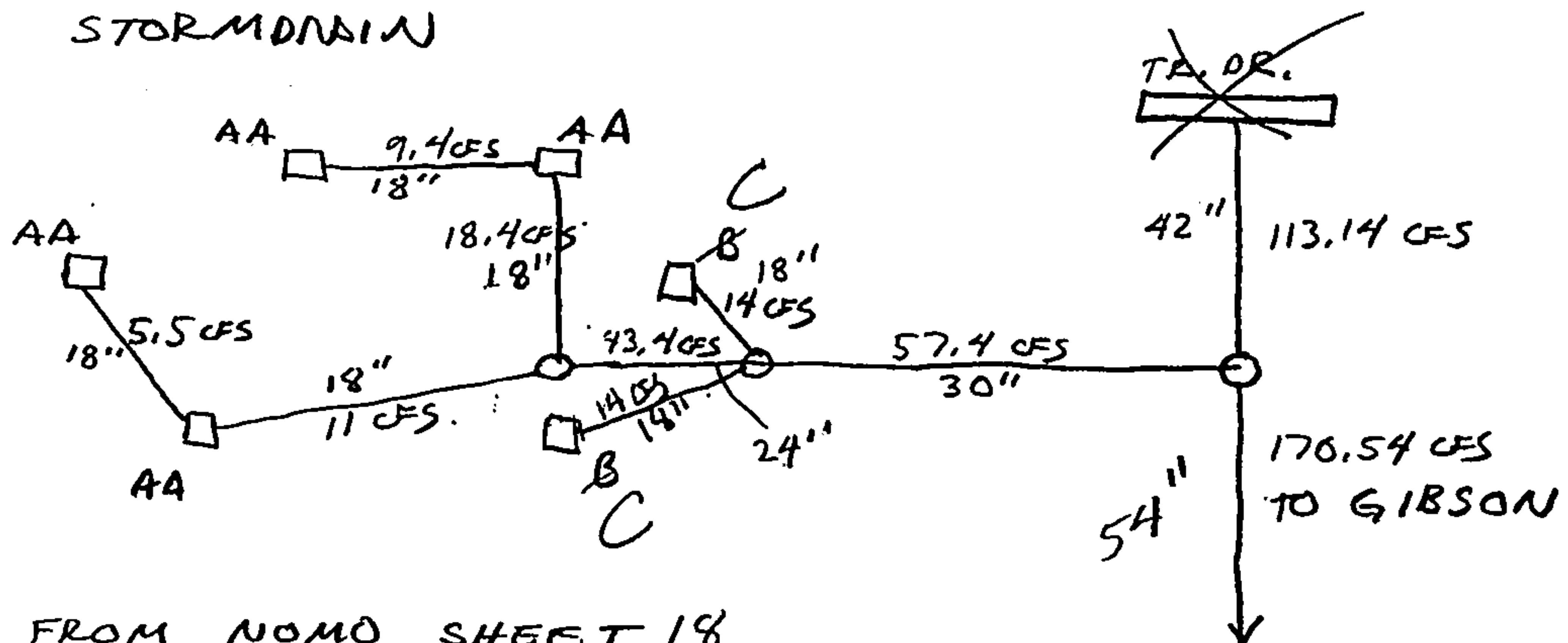
$$A = 6.66$$

$$V = 9.60 \text{ F/S}$$

$$Q = 63.91 \text{ CFS} \approx 63.23 \text{ CFS OK}$$

$$d + \frac{V^2}{2g} = 2.17' \text{ HEIGHT OF OUTSIDE CHANNEL WALL WHERE IT TURNS INTO POND.}$$

• SIZE STORM DRAIN



FROM NOMO SHEET 18

18" RCP AT 1%	CARRIES 10.5 CFS
18" RCP AT 2%	CARRIES 14.7 CFS
24" RCP AT 1%	CARRIES 22.2 CFS
27" RCP AT 2%	CARRIES 42.0 CFS
30" RCP AT 2%	CARRIES 55.0 CFS
42" RCP AT 1.35%	CARRIES 111.0 CFS
60" RCP AT 0.77%	CARRIES 210.0 CFS

Capacities?
for which pipes?



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PROJECT EL RANCHO GRANDE I

SUBJECT DRAINAGE CALCS

BY GSK DATE 12-13-99

CHECKED _____ DATE _____

SHEET 9 OF _____

- DETERMINE RUN OFF IN BARBADOS

$$A = 1.2644 \text{ AC}$$
$$80\% \text{ D } 20\% \text{ B}$$

FROM AHYMO OUTPUT SHEETS 45-47

$$Q = 5.02 \text{ CFS}$$

- ADD CENTEX SILVERADO RUNOFF

$$Q = 8.95 \text{ CFS} + 42.37 \text{ CFS}$$
$$= 51.32 \text{ CFS}$$

- FIND Q IN BARBADOS AT ROATAN

$$Q = 5.02 + 51.32$$
$$= 56.34 \text{ CFS}$$

- FIND $d = 0.50$ $S = 1\%$ $n = 0.017$ 48' F-F STD C+G

$$WP = 49.00$$

$$A = 14.57$$

$$V = 3.89 \text{ F/S}$$

$$Q = 56.74 \text{ CFS} \approx 56.34 \text{ CFS} \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.73 < 0.67 + 0.33 \text{ OK}$$

- FIND Q IN ROATAN AT BARBADOS

$$Q = 34 \times 0.5454$$
$$= 18.54 \text{ CFS}$$

- TOTAL Q IN BARBADOS BETWEEN ROATAN AND GIBSON

$$Q = 56.34 + 18.54$$
$$= 74.88 \text{ CFS}$$

NO CROWN $S = 1\%$

- FIND $d = 0.36$

$$WP = 48.72$$

$$A = 17.28$$

$$V = 4.38 \text{ F/S}$$

$$Q = 75.68 \text{ CFS} \approx 74.88 \text{ CFS} \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.66 < 0.67 + 0.33 \text{ OK}$$

- INSTALL TRENCH DRAIN MIDWAY BETWEEN ROATAN AND GIBSON. CROWN WILL BE TAKEN OUT OF ROAD

SAME TRENCH DRAIN AS SHEET 3

$$V = 4.38$$

Length of grate = 2'-0"

USE 45° TILT-BAR GRATE



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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 10 OF _____

Show drainage basins

- SIZE STORMDRAIN IN GIBSON

FOR THIS WE WILL DETERMINE RUNOFF FROM THE REMAINDER OF PARCEL 12.

LIMITS OF AREA FOR STORMDRAIN ARE NORTH OF AND INCLUDING GIBSON BLVD BETWEEN THE SNOW VISTA CHANNEL AND CAMINO SAN MARTIN.

- REMAINDER OF PARCEL 12 IS ZONED COMMERCIAL

? A POND WILL BE IMPOSED ON THIS PARCEL.

RUNOFF WILL BE LIMITED TO RESIDENTIAL DISCHARGE.

AREA = 25.7951 AC

LAND TREATMENTS WILL BE THE SAME AS EL RANCHO GRANDE I

TYPE "B" = 47.23 %

TYPE "D" = 52.77 %

FROM AHYMO OUTPUT SHEETS 48-50

$Q = 85.35$ CFS

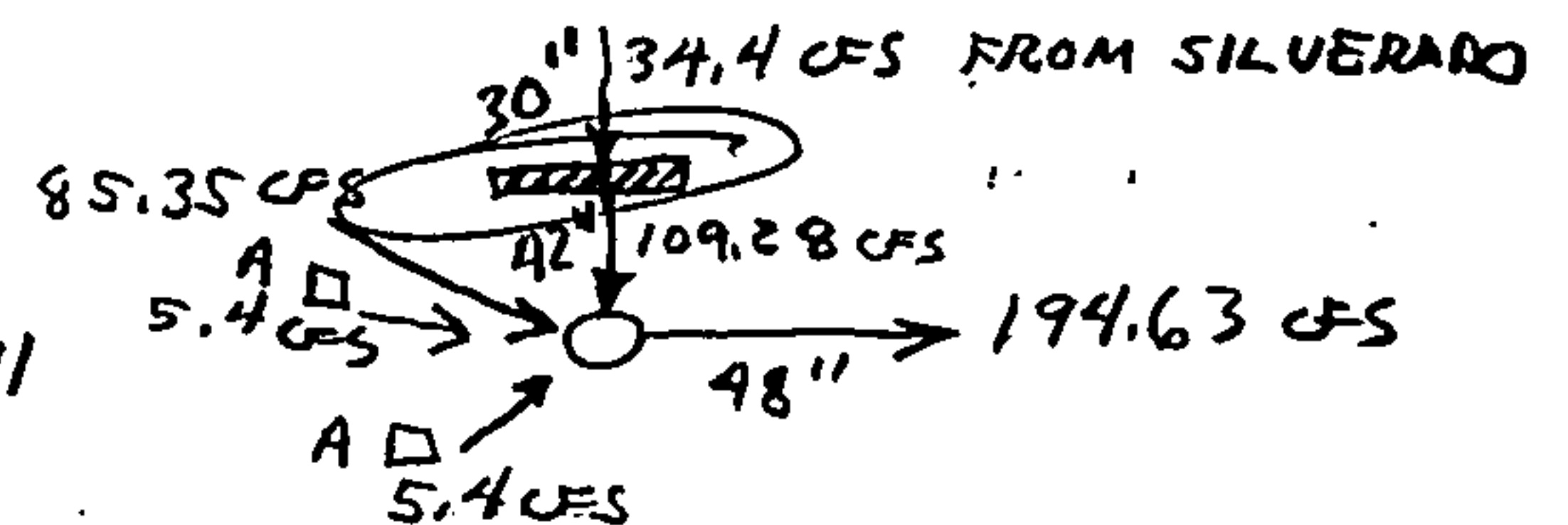
A DETENTION POND WITH 85.35 CFS WILL BE IMPOSED ON THE DEVELOPED PARCEL 12.

- FIND Q ENTERING GIBSON STORMDRAIN AT BARBADOS.

$$\begin{aligned} Q &= 85.35 + 74.88 + 2(5.4) \\ &= 171.03 \text{ CFS} + 34.4 \\ &= 194.63 \end{aligned}$$

SEE SHT 11

FROM NOMO SHEET 18



48" RCP AT 2% CARRIES 185 CFS

42" RCP AT 1% CARRIES 95 CFS

- FIND Q OF GIBSON BLVD

50% "B" 50% "D"

$A = 8.2185$ AC

FROM AHYMO OUTPUT SHEETS 51-53

$Q = 26.66$ CFS

$Q_{1/2} = 13.33$ CFS



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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 11 OF _____

• FIND CAPACITY OF ONE LANE OF GIBSON

$$S = 3.69\% \quad n = 0.017$$

$$d = 0.345$$

$$WP = 13.345$$

$$A = 1.775$$

$$V = 4.375 \text{ F/S}$$

$$Q = 7.77 \text{ CFS}$$

INSTALL A DBL "A" INLET ON EACH SIDE OF
GIBSON AT BARBADOS

FROM NOMO SHEET 16

$$Q_{\text{GATE}} = 5.40 \text{ CFS}$$

$Q_{1/2}$ AT BARBADOS IN GIBSON

$$Q = 13.33/2 = 6.67 \text{ CFS}$$

$$Q_{\text{PAST BARBADOS}} = 6.67 - 5.40 \\ = 1.27 \text{ CFS}$$

$Q_{1/2}$ AT CAMINO SAN MARTIN IN GIBSON

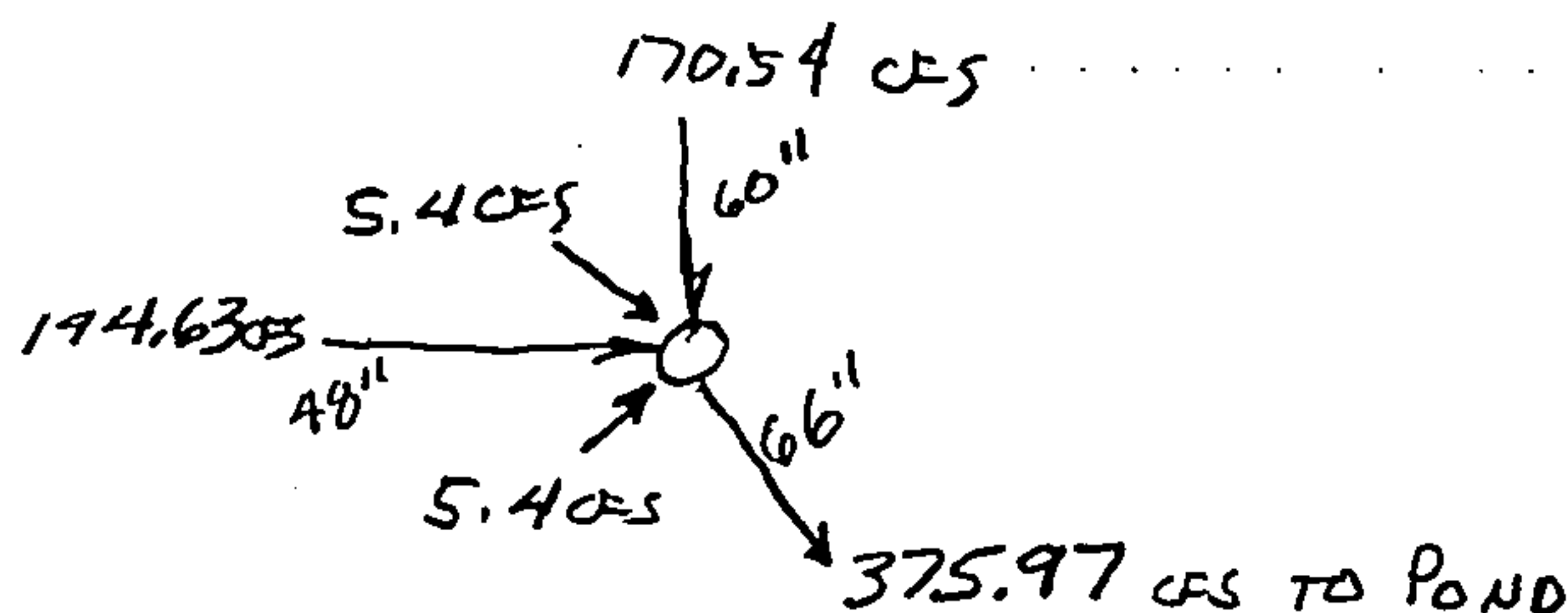
$$Q = 6.67 + 1.27 \\ = 7.94 \text{ CFS}$$

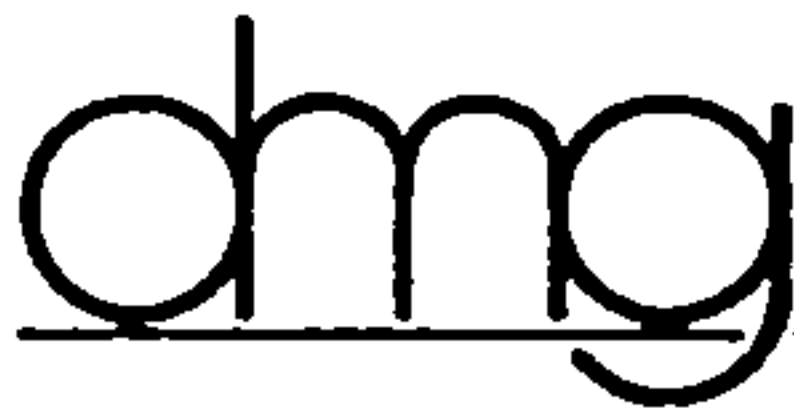
INSTALL A DBL "A" INLET ON EACH SIDE OF
GIBSON AT CAMINO SAN MARTIN

$Q_{\text{PAST CAMINO SAN MARTIN}}$

$$Q = 7.94 - 5.40 \\ = 2.54 \text{ CFS}$$

• FIND Q ENTERING GIBSON STORMDRAIN AT
CAMINO SAN MARTIN





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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 12 OF _____

- SIZE GIBSON POND USE EXISTING 42" RCP AS OUTFALL

ELEV	AREA (SF)	VOLUME (AC-FT)	OUTFLOW (CFS)
40	43810	0	0
41	49762	1.074	46.33
42	55899	2.287	65.51
43	62217	3.643	80.24
44	68717	5.146	92.65
45	75400	6.800	103.59

- ADD GIBSON R/W FROM CAMINO SAN MARTIN TO
UNSER AND UNSER R/S FROM NORTH HIGH POINT
TO SOUTH HIGH POINT.

$$A = 4.66 \text{ AC}$$

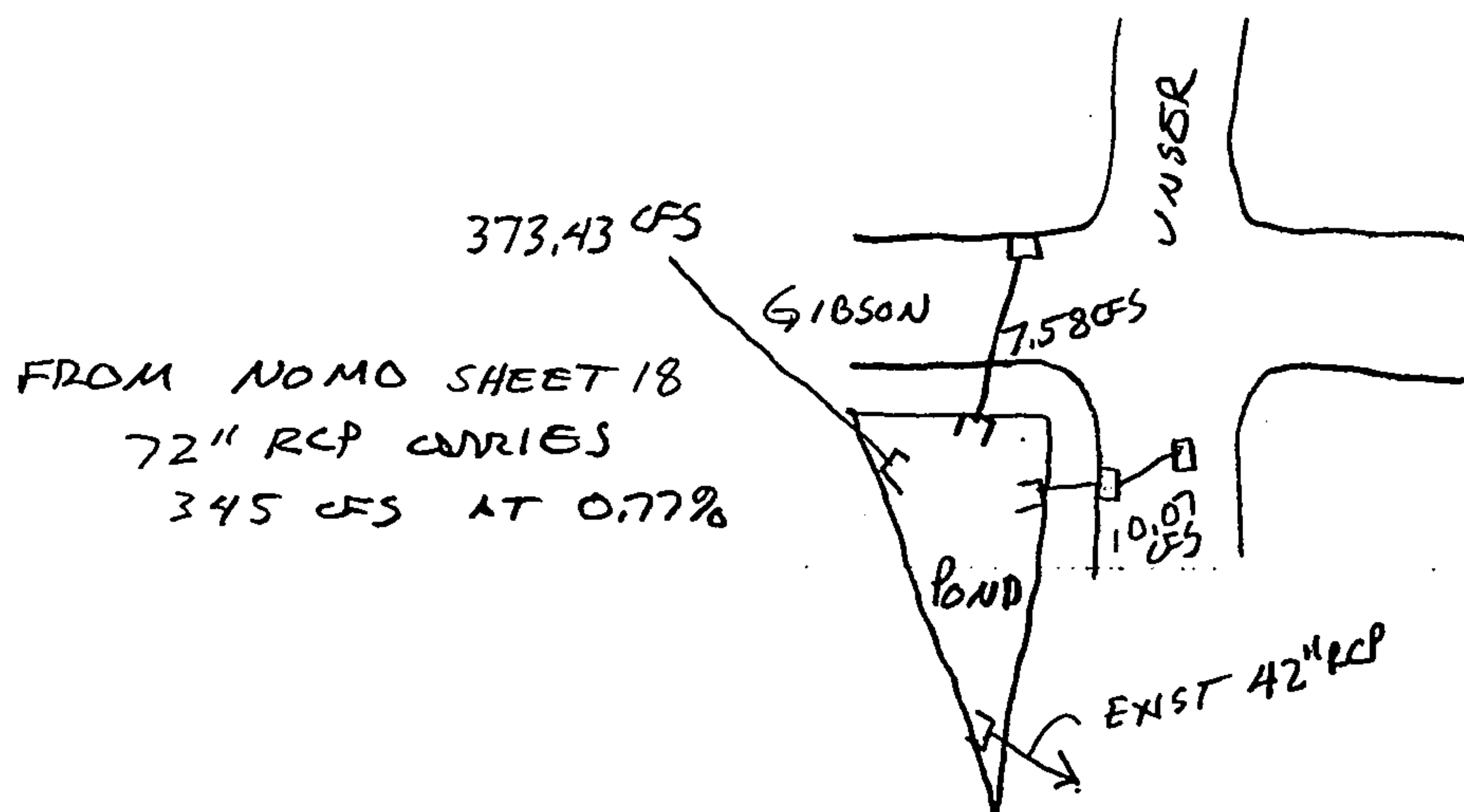
$$50\% \text{ "B" } 50\% \text{ "D"}$$

FROM AH4MO OUTPUT SHEETS 54-56

$$Q = 15.11 \text{ CFS}$$

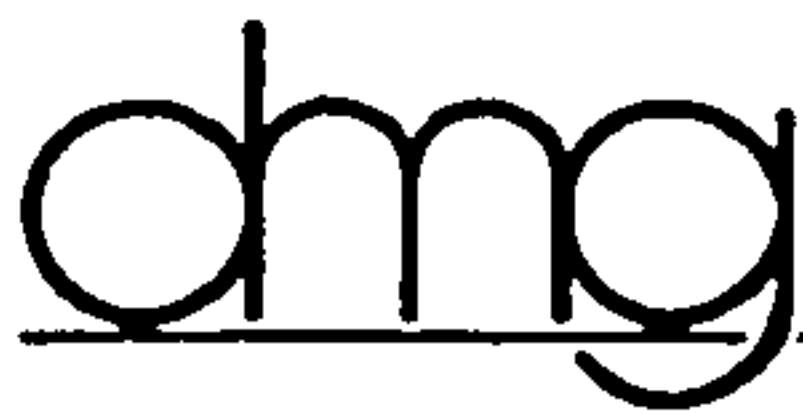
THIS FLOW WILL BE ADDED TO THE 2.54 CFS
THAT CONTINUED PAST CAMINO SAN MARTIN.

TOTAL $15.11 + 2.54 = 17.65 \text{ CFS}$ WILL BE
TAKEN BY 3 SINGLE "A" INLETS IN
SUMP CONDITION AROUND THE INTERSECTION



FROM AH4MO OUTPUT SHEETS 57-82

$$\text{PEAK DISCHARGE} = 97.93 \text{ CFS}$$
$$\text{MAX WATER SURFACE} = 44.48$$



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PROJECT EL RANCHO GRANDE

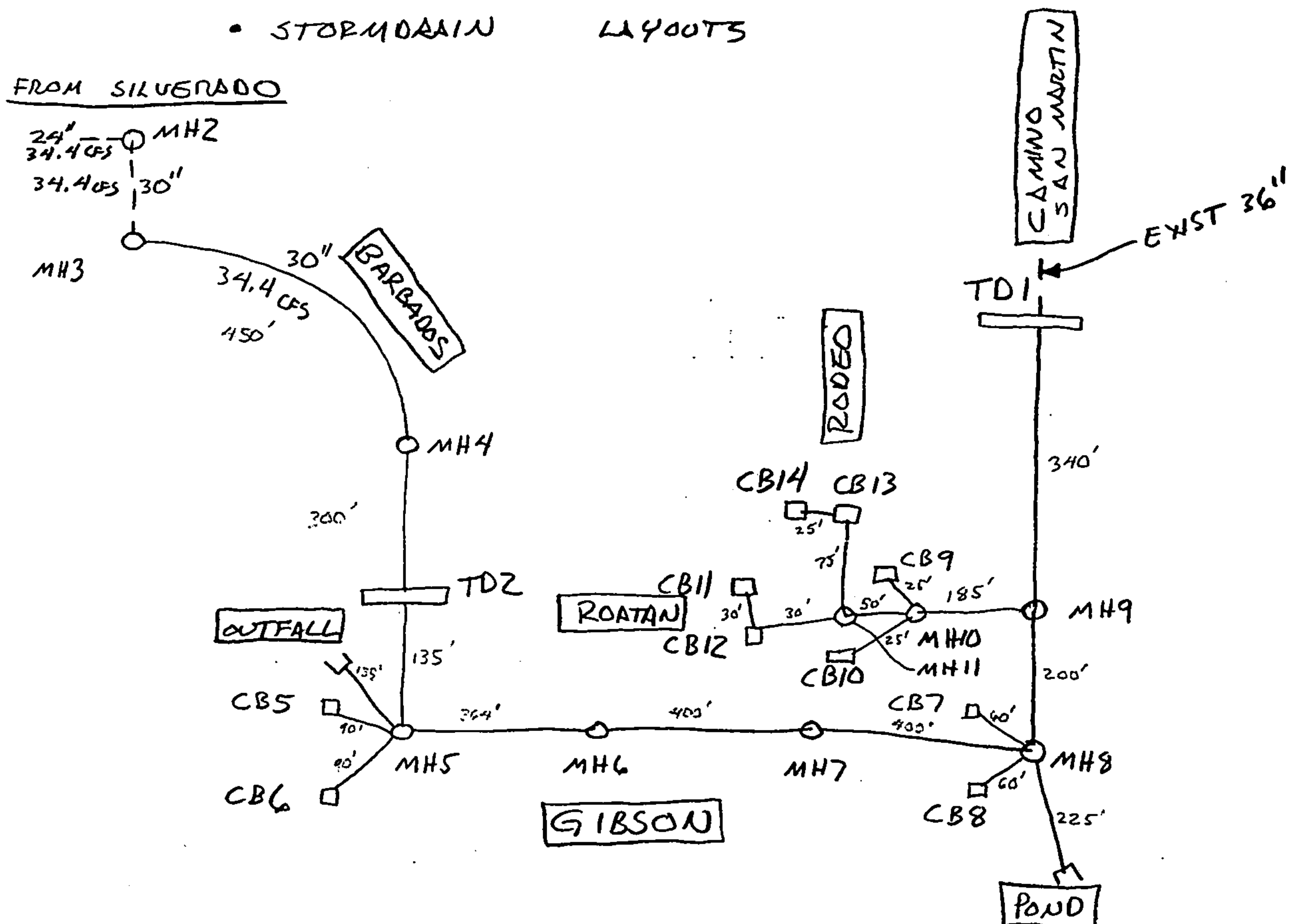
SUBJECT DRAINAGE CALCS

BY GSK DATE 12-13-99

CHECKED _____ DATE _____

SHEET 13 OF _____

• STORM DRAIN LAYOUTS



STRUCTURE	RIM/GRATE	INV.	PIPE SIZE LEAVING STRUCTURE
MH3	86.18	78.58	30" RCP
MH4	81.50	74.08	30" RCP
MH5	77.50	69.73	48" RCP
MH6	73.00	62.45	48" RCP
MH7	68.00	54.45	48" RCP
MH8	56.25	41.77	66" RCP
MH9	57.58	43.35	54" RCP
MH10	59.46	47.72	30" RCP
MH11	60.55	50.00	24" RCP
CB5	77.98	73.98	18" RCP
CB6	77.98	73.98	18" RCP
CB7	57.00	53.00	18" RCP
CB8	57.00	53.00	18" RCP
CB9	59.70	54.50	18" RCP
CB10	59.94	54.75	18" RCP
CB11	61.66	56.22	18" RCP
CB12	61.19	55.86	18" RCP
CB13	61.48	55.57	18" RCP
CB14	61.57	56.07	18" RCP



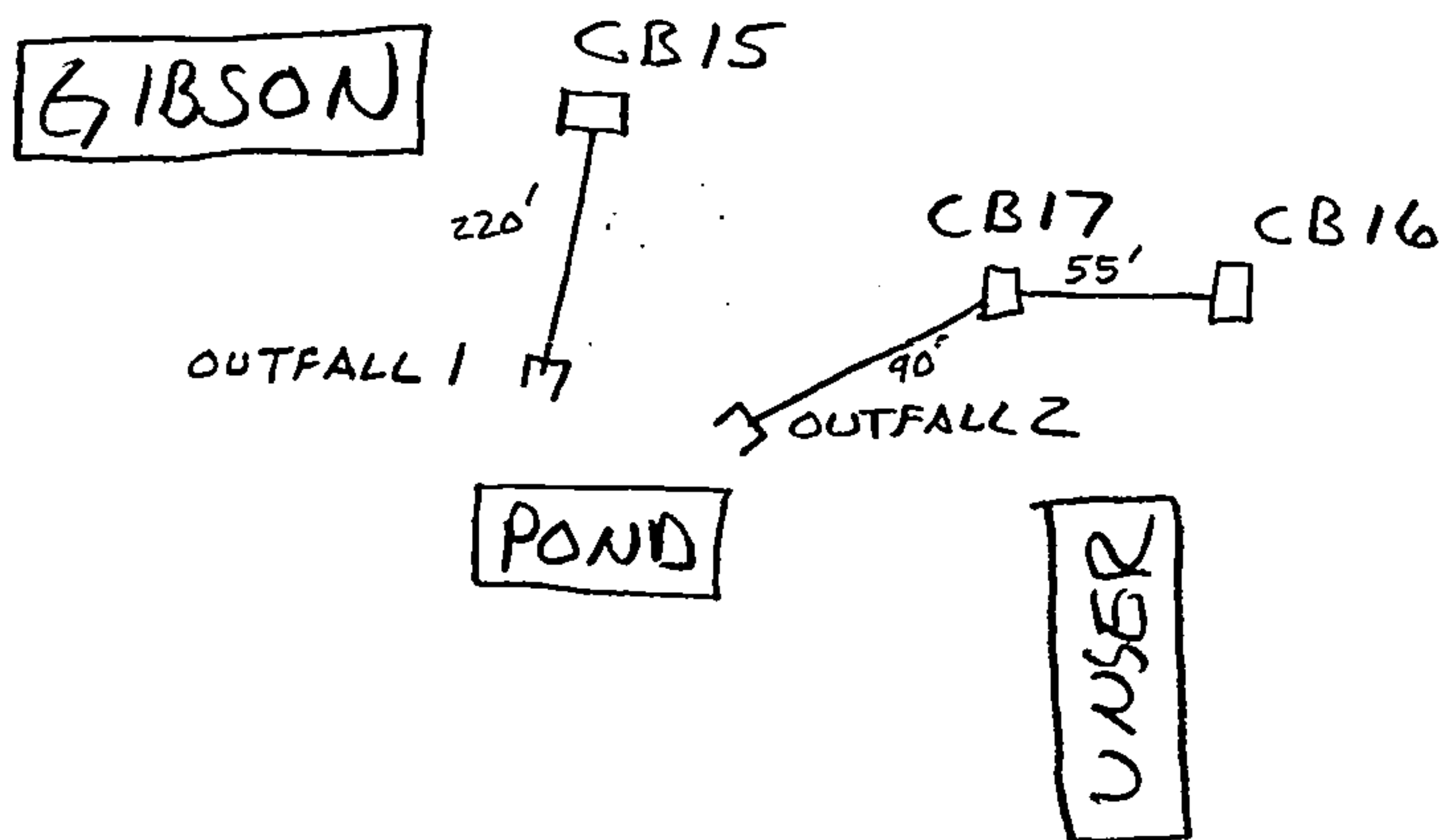
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PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 14 OF _____

STRUCTURE	RIM/GATE	INV.	PIPE SIZE LEAVING STRUCTURE
TD 1	56.56	47.77	42" RCP
TD 2	78.35	71.08	42" RCP
OUTFALL	N/A		
POND	N/A	40.00	N/A

SEE HYDRAULIC ANALYSIS FOR STORM DRAIN DESIGN
SHEETS 83-91



STRUCTURE	RIM/GATE	INV.	PIPE SIZE LEAVING STRUCTURE
CB15	46.00	42.50	18" RCP
CB16	45.00	42.50	18" RCP
CB17	45.00	42.00	24" RCP
OUTFALL 1	N/A	40.00	N/A
OUTFALL 2	N/A	40.00	N/A

EACH LINE IS SIZED FOR TWICE THE FLOW
SINCE ALL THREE INLETS ARE IN SUMP CONDITION.

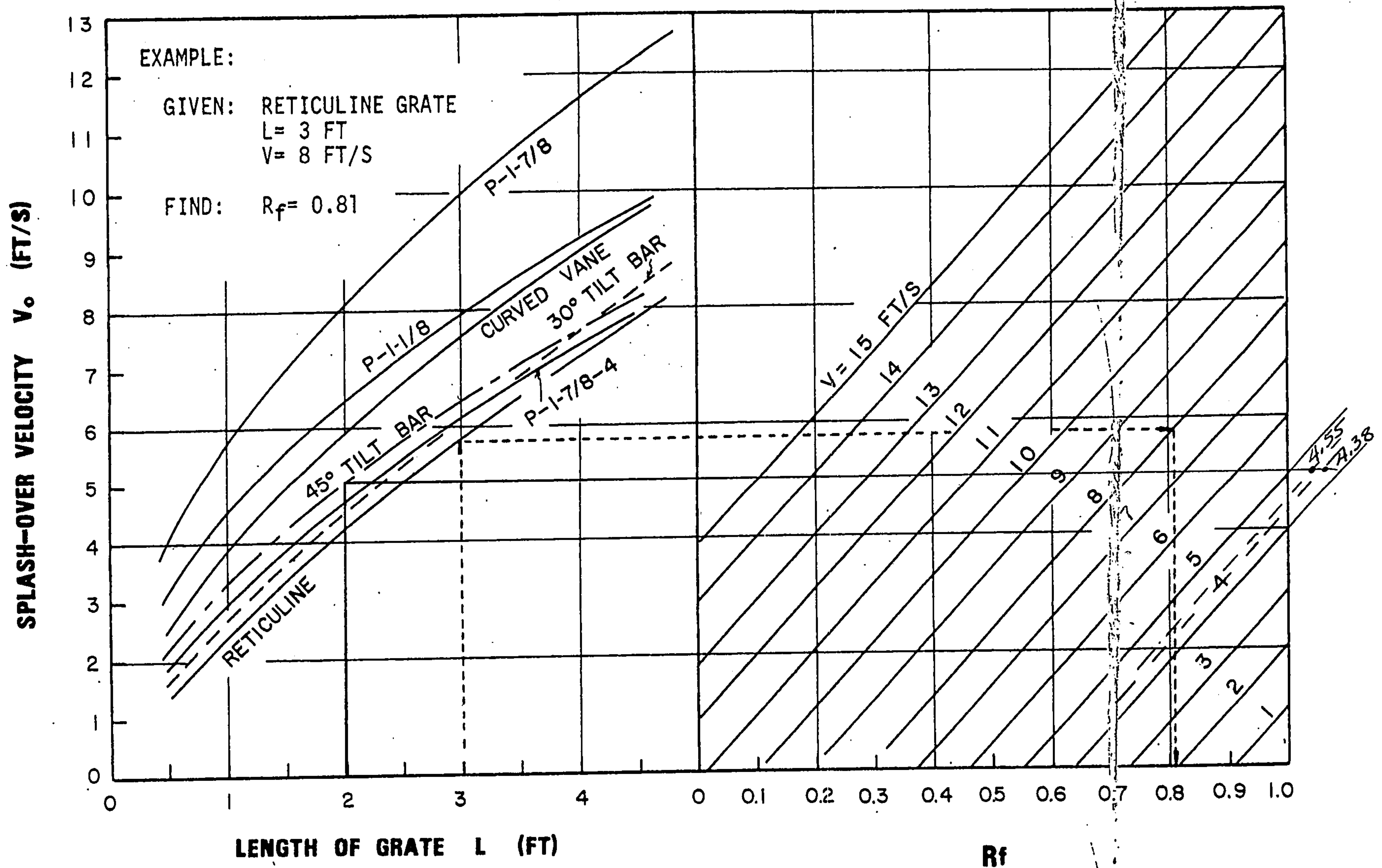
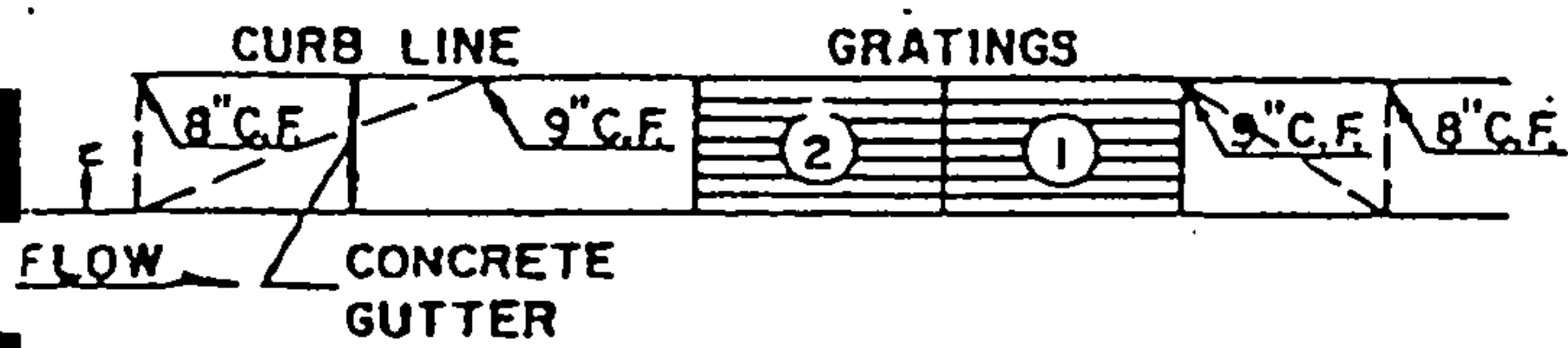
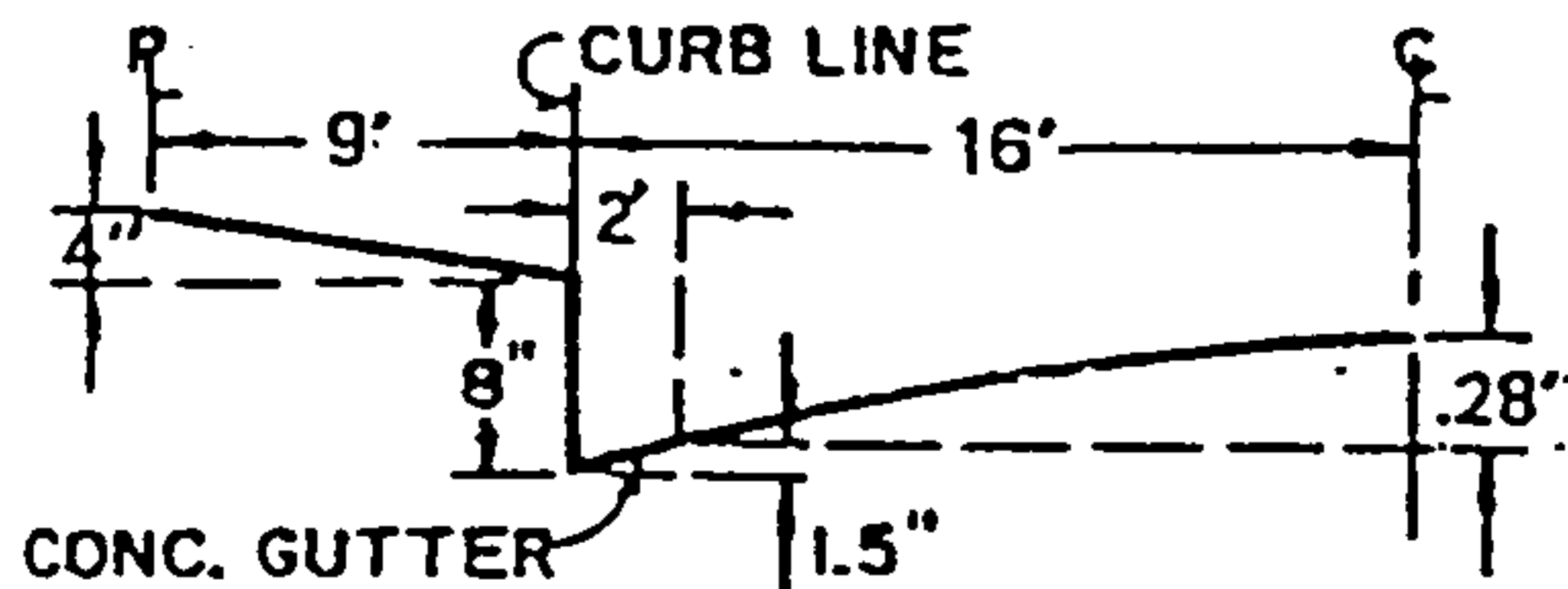
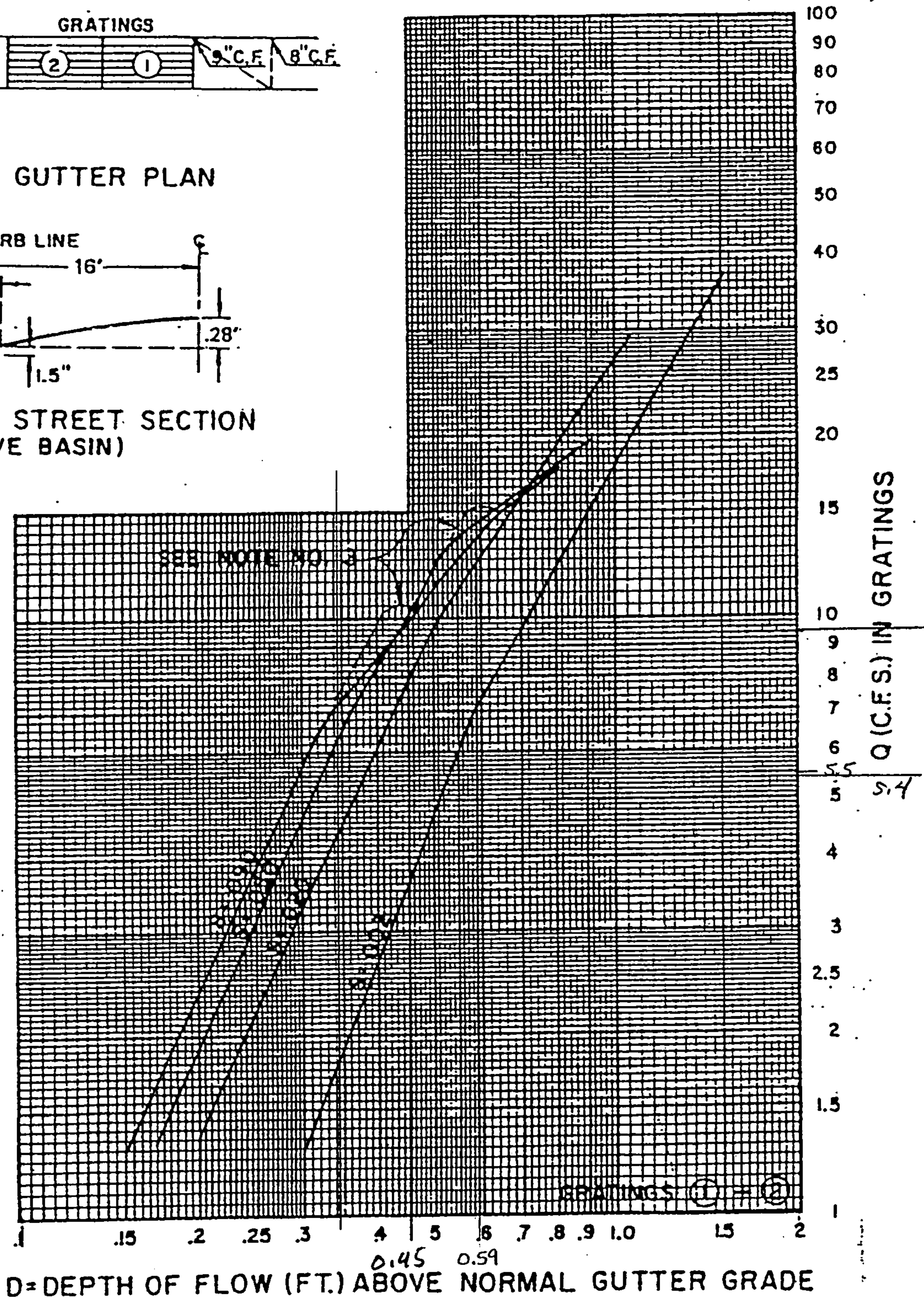


CHART 7. Grate inlet frontal flow interception efficiency.

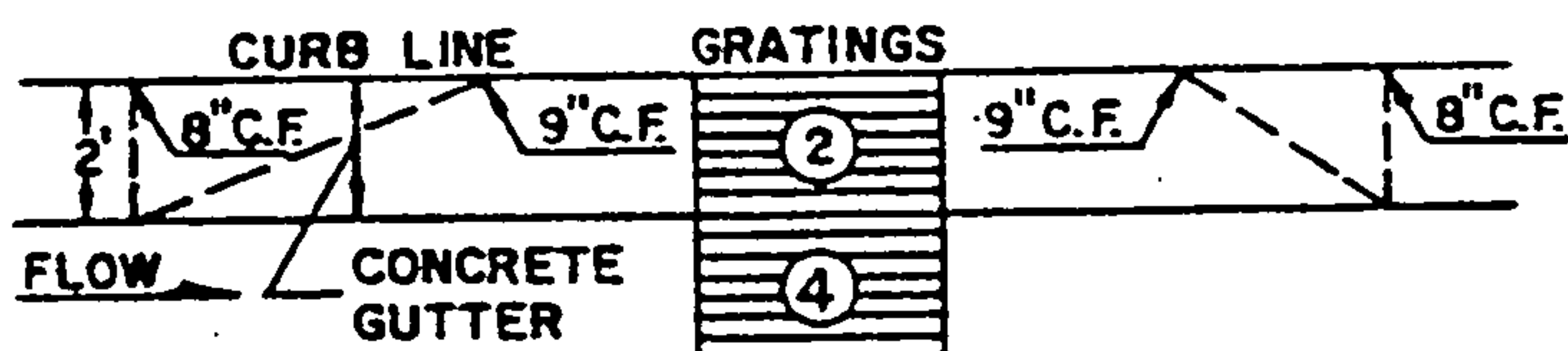
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



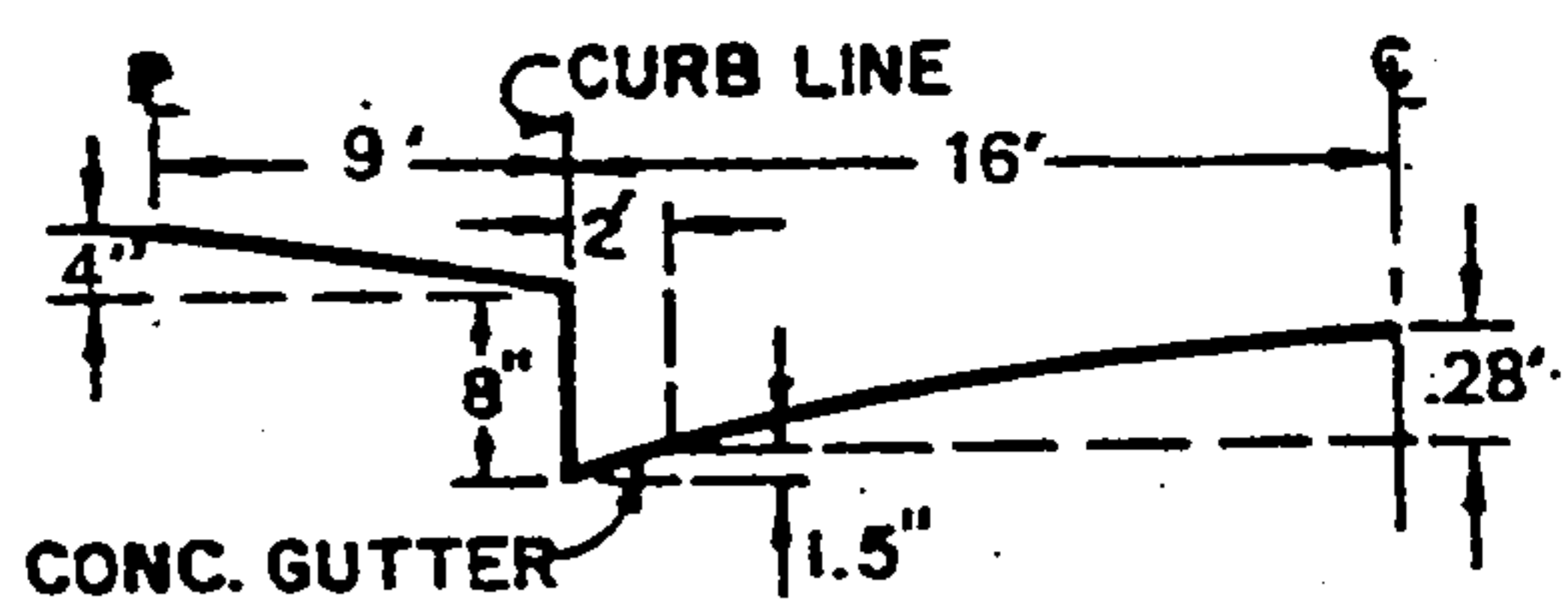
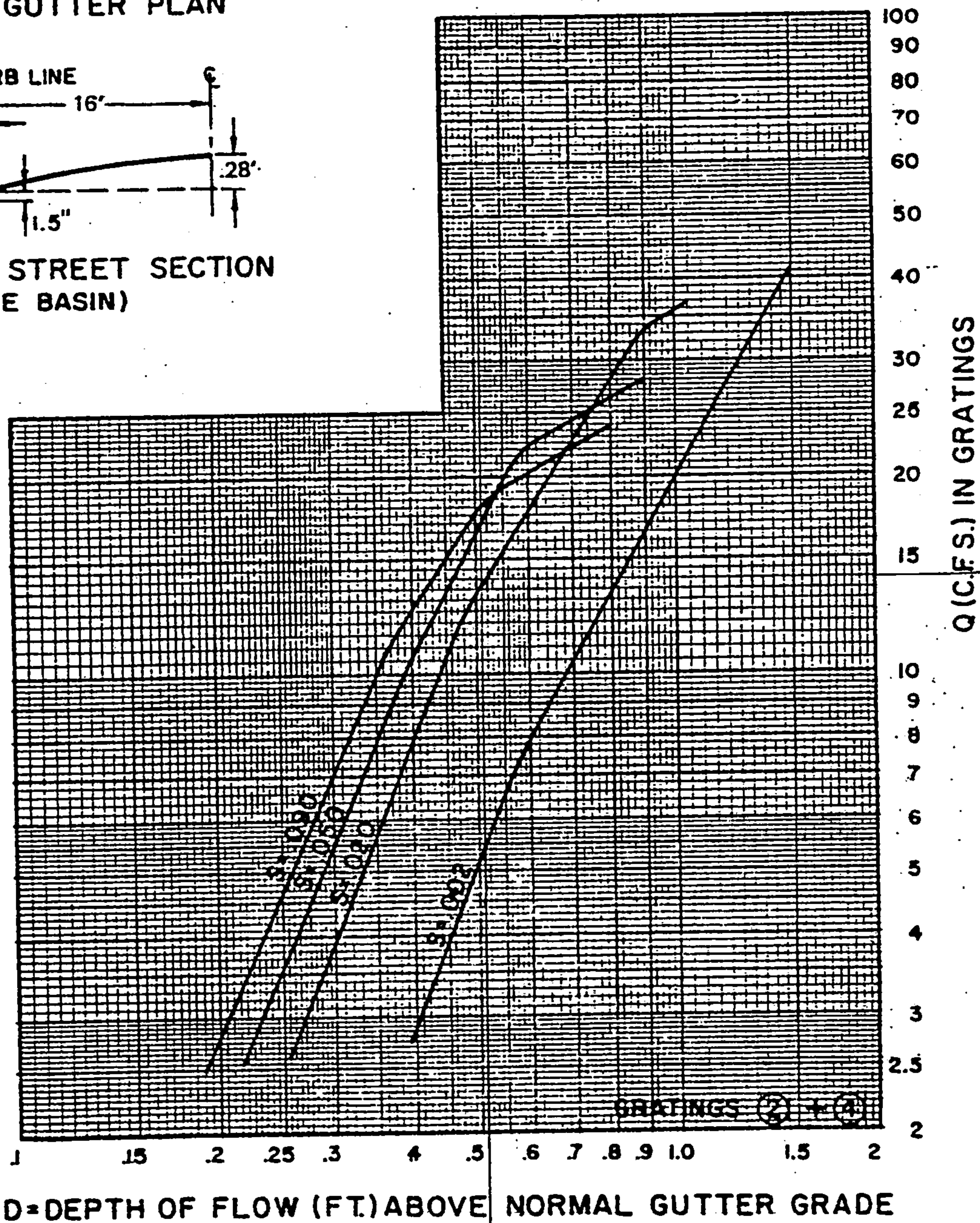
GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

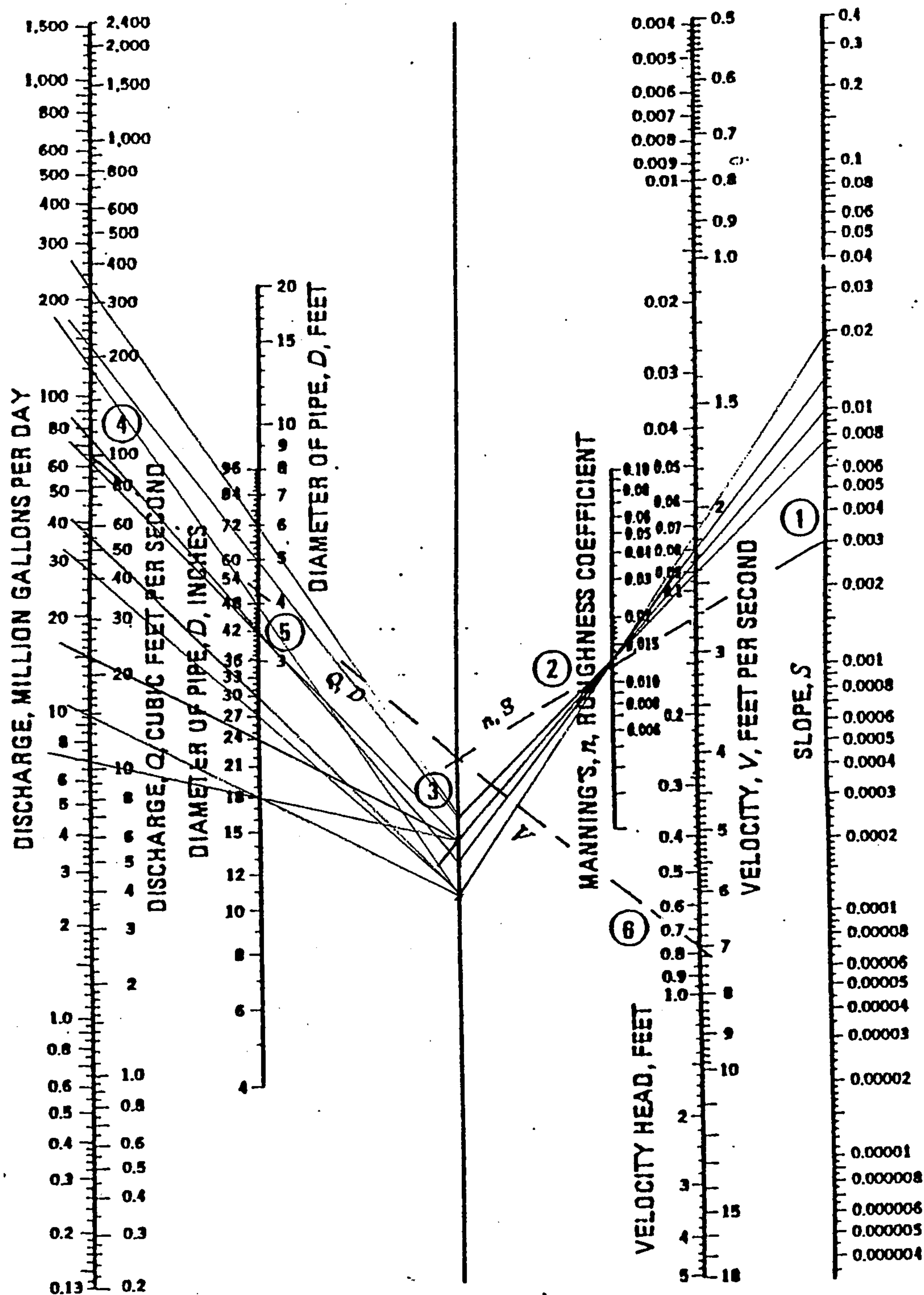
GRATING CAPACITIES FOR TYPE "B"



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

START

TIME=0.0

***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 PER LOT RUNOFF

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD

ID=1 HYD NO=101.1 AREA=0.046100 SQ MI

PER A=0 B=47.23 C=0 D=52.77

TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD

ID=1 CODE=1

FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 02/15/2000
 START TIME (HR:MIN:SEC) = 08:55:49 USER NO.= M_GOODWN.I01
 INPUT FILE = ERGI.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR EL RANDO GRANDE I UNITS 1 & 2 PER LOT RUNOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.046100 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B = 526.28
 AREA = .024327 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B = 327.55
 AREA = .021773 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

21

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FeET
PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:55:49

START TIME=0.0
***** HYDROGRAPH FOR 13 LOTS
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003148 SQ MI
PER A=0 B=49.97 C=0 D=50.03
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/14/2000
START TIME (HR:MIN:SEC) = 14:01:45 USER NO.= M_GOODWN.I01
INPUT FILE = 13lots.dat

START TIME=0.0
***** HYDROGRAPH FOR 13 LOTS
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2						
DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003148 SQ MI
 PER A=0 B=49.97 C=0 D=50.03
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 6.2180 CFS UNIT VOLUME = .9976 B = 526.28
AREA = .001575 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 3.8654 CFS UNIT VOLUME = .9967 B = 327.55
AREA = .001573 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

24
RUNOFF VOLUME = 1.32408 INCHES = .2223 ACRE-FeET
PEAK DISCHARGE RATE = 6.55 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:01:45

START

TIME=0.0

HYDROGRAPH FOR TRACT E POND

**BASIN A

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD

ID=1 HYD NO=101 AREA=0.015125 SQ MI
PER A=0 PER B=40 PER C=0 PER D=60
TP=0.1333 HR MASS RAINFALL=-1
ID=1 CODE=1

PRINT HYD

*

**BASIN B-1

COMPUTE NM HYD

ID=2 HYD NO=102 AREA=0.004391 SQ MI
PER A=0 PER B=38 PER C=0 PER D=62
TP=0.1333 HR MASS RAINFALL=-1
ID=2 CODE=1

PRINT HYD

*

**BASIN B-2

COMPUTE NM HYD

ID=3 HYD NO=103 AREA=0.001375 SQ MI
PER A=0 PER B=47 PER C=0 PER D=53
TP=0.1333 HR MASS RAINFALL=-1
ID=3 CODE=1

PRINT HYD

*

**BASIN B-3

COMPUTE NM HYD

ID=4 HYD NO=104 AREA=0.002469 SQ MI
PER A=0 PER B=54 PER C=0 PER D=46
TP=0.1333 HR MASS RAINFALL=-1
ID=4 CODE=1

PRINT HYD

*

**BASIN C-1

COMPUTE NM HYD

ID=5 HYD NO=105 AREA=0.0045 SQ MI
PER A=0 B=49 C=0 D=51
TP=0.1333 HR MASS RAINFALL=-1
ID=5 CODE=1

PRINT HYD

*

**BASIN C-2

COMPUTE NM HYD

ID=6 HYD NO=106 AREA=0.001047 SQ MI
PER A=0 PER B=89 PER C=0 PER D=11
TP=0.1333 HR MASS RAINFALL=-1
ID=6 CODE=1

PRINT HYD

*

**BASIN C-3

COMPUTE NM HYD

ID=7 HYD NO=107 AREA=0.001516 SQ MI
PER A=0 PER B=20 PER C=0 PER D=80
TP=0.1333 HR MASS RAINFALL=-1
ID=7 CODE=1

PRINT HYD

*

**BASIN C-4

COMPUTE NM HYD

ID=8 HYD NO=108 AREA=0.001422 SQ MI
PER A=0 PER B=52 PER C=0 PER D=48
TP=0.1333 HR MASS RAINFALL=-1
ID=8 CODE=1

PRINT HYD

*

**BASIN C-5

COMPUTE NM HYD

ID=9 HYD NO=109 AREA=0.003063 SQ MI
PER A=0 B=43 C=0 D=57
TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD

*

**BASIN C-6

COMPUTE NM HYD

ID=9 CODE=1

PRINT HYD

*

**BASIN C-7

COMPUTE NM HYD

ID=10 HYD NO=110 AREA=0.002016 SQ MI
PER A=0 PER B=43 PER C=0 PER D=57
TP=0.1333 HR MASS RAINFALL=-1
ID=10 CODE=1

PRINT HYD

*

**BASIN D-1

COMPUTE NM HYD

ID=11 HYD NO=111 AREA=0.002063 SQ MI
PER A=0 PER B=53 PER C=0 PER D=47
TP=0.1333 HR MASS RAINFALL=-1
ID=11 CODE=1

PRINT HYD

*

**BASIN D-2

COMPUTE NM HYD

ID=12 HYD NO=112 AREA=0.002844 SQ MI
PER A=0 PER B=49 PER C=0 PER D=51
TP=0.1333 HR MASS RAINFALL=-1
ID=12 CODE=1

PRINT HYD

*

**BASIN D-3

COMPUTE NM HYD

ID=13 HYD NO=113 AREA=0.000813 SQ MI
PER A=0 B=66 C=0 D=34
TP=0.1333 HR MASS RAINFALL=-1
ID=13 CODE=1

PRINT HYD

*

**BASIN E-1

COMPUTE NM HYD

ID=14 HYD NO=114 AREA=0.000828 SQ MI
PER A=0 PER B=62 PER C=0 PER D=38
TP=0.1333 HR MASS RAINFALL=-1
ID=14 CODE=1

PRINT HYD

*

**BASIN OS-1

COMPUTE NM HYD

ID=15 HYD NO=115 AREA=0.0015 SQ MI
PER A=0 PER B=44 PER C=0 PER D=56
TP=0.1333 HR MASS RAINFALL=-1
ID=15 CODE=1

PRINT HYD

*

**BASIN OS-2

COMPUTE NM HYD

ID=16 HYD NO=116 AREA=0.001196 SQ MI
PER A=0 PER B=78 PER C=0 PER D=22
TP=0.1333 HR MASS RAINFALL=-1
ID=16 CODE=1

PRINT HYD

**BASIN TMSB

COMPUTE NM HYD

ID=17 HYD NO=117 AREA=0.007484 SQ MI
PER A=0 B=30 C=0 D=70
TP=0.1333 HR MASS RAINFALL=-1
ID=17 CODE=1

PRINT HYD

*

**BASIN TMSC

COMPUTE NM HYD

ID=18 HYD NO=118 AREA=0.004453 SQ MI
PER A=38.61 B=5.07 C=0 D=56.32
TP=0.1333 HR MASS RAINFALL=-1
ID=18 CODE=1

PRINT HYD

ID=19 HYD NO=119 AREA=0.003891 SQ MI
PER A=4.15 B=50.6 C=0 D=45.25
TP=0.1333 HR MASS RAINFALL=-1
ID=19 CODE=1

*
**BASIN 13 LOTS

COMPUTE NM HYD

ID=38 HYD NO=138 AREA=0.003148 SQ MI
PER A=0 B=49.97 C=0 D=50.03
TP=0.1333 HR MASS RAINFALL=-1
ID=38 CODE=1

PRINT HYD

*
**BASIN TRACT E

COMPUTE NM HYD

ID=39 HYD NO=139 AREA=0.006579 SQ MI
PER A=0 B=39.19 C=0 D=60.81
TP=0.1333 HR MASS RAINFALL=-1
ID=39 CODE=1

PRINT HYD

*
**BASIN EL RANCHO GRANDE I

COMPUTE NM HYD

ID=42 HYD NO=142 AREA=0.046100 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1
ID=42 CODE=1

PRINT HYD

*
ADD HYD

ID=20 HYD NO=120 ID=1 ID=2
ID=20 CODE=1

PRINT HYD

*
ADD HYD

ID=21 HYD NO=121 ID=3 ID=4
ID=21 CODE=1

PRINT HYD

*
ADD HYD

ID=22 HYD NO=122 ID=5 ID=6
ID=22 CODE=1

PRINT HYD

*
ADD HYD

ID=23 HYD NO=123 ID=7 ID=8
ID=23 CODE=1

PRINT HYD

*
ADD HYD

ID=24 HYD NO=124 ID=9 ID=10
ID=24 CODE=1

PRINT HYD

*
ADD HYD

ID=25 HYD NO=125 ID=11 ID=12
ID=25 CODE=1

PRINT HYD

*
ADD HYD

ID=26 HYD NO=126 ID=13 ID=14
ID=26 CODE=1

PRINT HYD

*
ADD HYD

ID=27 HYD NO=127 ID=15 ID=16
ID=27 CODE=1

PRINT HYD

*
ADD HYD

ID=28 HYD NO=128 ID=17 ID=18
ID=28 CODE=1

PRINT HYD

*
ADD HYD

ID=29 HYD NO=129 ID=20 ID=21
ID=29 CODE=1

PRINT HYD

*
ADD HYD

ID=30 HYD NO=130 ID=22 ID=23
ID=30 CODE=1

PRINT HYD

*
ADD HYD

ID=31 HYD NO=131 ID=24 ID=25
ID=31 CODE=1

PRINT HYD

*
ADD HYD

ID=32 HYD NO=132 ID=26 ID=27
ID=32 CODE=1

PRINT HYD

*
ADD HYD

ID=33 HYD NO=133 ID=28 ID=19
ID=33 CODE=1

PRINT HYD


```
*
ADD HYD ID=34 HYD NO=134 ID=29 ID=30
PRINT HYD ID=34 CODE=1
*
ADD HYD ID=35 HYD NO=135 ID=31 ID=32
PRINT HYD ID=35 CODE=1
*
ADD HYD ID=36 HYD NO=136 ID=34 ID=35
PRINT HYD ID=36 CODE=1
*
ADD HYD ID=37 HYD NO=137 ID=33 ID=36
PRINT HYD ID=37 CODE=1
*
ADD HYD ID=40 HYD NO=140 ID=38 ID=39
PRINT HYD ID=40 CODE=1
*
ADD HYD ID=41 HYD NO=141 ID=37 ID=40
PRINT HYD ID=41 CODE=1
*
ADD HYD ID=43 HYD NO=143 ID=41 ID=42
PRINT HYD ID=43 CODE=1
*
*DIVIDE BY MAXIMUM FLOW RATE
DIVIDE HYD ID=43 Q=189.48 ID I=44 HYD NO=144
ID II=45 HYD NO=145
```

* ROUTING THROUGH POND

ROUTE RESERVOIR	ID=46 HYD NO=146	INFLOW ID=45 CODE=24	
	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
	0.0	0.0	45.0
	4.78	0.1048	46.0
	15.12	0.2359	47.0
	21.42	0.3951	48.0
PRINT HYD	ID=46 CODE=1		
FINISH			

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/15/2000
START TIME (HR:MIN:SEC) = 13:51:47 USER NO.= M_GOODWN.I01
INPUT FILE = TREPOND.DAT

START TIME=0.0

***** HYDROGRAPH FOR TRACT E POND

**BASIN A
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2						
DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101 AREA=0.015125 SQ MI
 PER A=0 PER B=40 PER C=0 PER D=60
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 35.829 CFS UNIT VOLUME = .9990 B = 526.28
AREA = .009075 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 14.866 CFS UNIT VOLUME = .9994 B = 327.55
AREA = .006050 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=1 CODE=1

30

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.45223 INCHES = 1.1715 ACRE-FEET
PEAK DISCHARGE RATE = 33.71 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN B-1

COMPUTE NM HYD

ID=2 HYD NO=102 AREA=0.004391 SQ MI
PER A=0 PER B=38 PER C=0 PER D=62
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 10.748 CFS UNIT VOLUME = .9982 B = 526.28
AREA = .002722 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 4.1001 CFS UNIT VOLUME = .9970 B = 327.55
AREA = .001669 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.47794 INCHES = .3461 ACRE-FEET
PEAK DISCHARGE RATE = 9.93 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN B-2

COMPUTE NM HYD

ID=3 HYD NO=103 AREA=0.001375 SQ MI
PER A=0 PER B=47 PER C=0 PER D=53
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 2.8771 CFS UNIT VOLUME = .9955 B = 526.28
AREA = .000729 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 1.5880 CFS UNIT VOLUME = .9919 B = 327.55
AREA = .000646 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.36226 INCHES = .0999 ACRE-FEET

PEAK DISCHARGE RATE = 2.93 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN B-3

COMPUTE NM HYD

ID=4 HYD NO=104 AREA=0.002469 SQ MI
PER A=0 PER B=54 PER C=0 PER D=46
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 4.4840 CFS UNIT VOLUME = .9969 B = 526.28
AREA = .001136 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 3.2762 CFS UNIT VOLUME = .9961 B = 327.55
AREA = .001333 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.27228 INCHES = .1675 ACRE-FEET
PEAK DISCHARGE RATE = 4.99 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-1

COMPUTE NM HYD

ID=5 HYD NO=105 AREA=0.0045 SQ MI
PER A=0 B=49 C=0 D=51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 9.0608 CFS UNIT VOLUME = .9981 B = 526.28
AREA = .002295 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 5.4182 CFS UNIT VOLUME = .9978 B = 327.55
AREA = .002205 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = 1.33655 INCHES = .3208 ACRE-FEET
PEAK DISCHARGE RATE = 9.42 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-2

COMPUTE NM HYD

ID=6 HYD NO=106 AREA=0.001047 SQ MI
PER A=0 PER B=89 PER C=0 PER D=11
TP=0.1333 HR MASS RAINFALL=-1

32

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = .45470 CFS UNIT VOLUME = .9751 B = 526.28
AREA = .000115 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 2.2897 CFS UNIT VOLUME = .9943 B = 327.55
AREA = .000932 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = .82240 INCHES = .0459 ACRE-Feet
PEAK DISCHARGE RATE = 1.56 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-3

COMPUTE NM HYD

ID=7 HYD NO=107 AREA=0.001516 SQ MI
PER A=0 PER B=20 PER C=0 PER D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 4.7882 CFS UNIT VOLUME = .9969 B = 526.28
AREA = .001213 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = .74504 CFS UNIT VOLUME = .9822 B = 327.55
AREA = .000303 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.70931 INCHES = .1382 ACRE-Feet
PEAK DISCHARGE RATE = 3.86 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-4

COMPUTE NM HYD

ID=8 HYD NO=108 AREA=0.001422 SQ MI
PER A=0 PER B=52 PER C=0 PER D=48
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 2.6948 CFS UNIT VOLUME = .9949 B = 526.28

AREA = .000683 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.8170 CFS UNIT VOLUME = .9926 B = 327.55
 AREA = .000739 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.29799 INCHES = .0984 ACRE-FEET
 PEAK DISCHARGE RATE = 2.92 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-5

COMPUTE NM HYD ID=9 HYD NO=109 AREA=0.003063 SQ MI
 PER A=0 B=43 C=0 D=57
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.8929 CFS UNIT VOLUME = .9978 B = 526.28
 AREA = .001746 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 3.2364 CFS UNIT VOLUME = .9961 B = 327.55
 AREA = .001317 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 109.00

RUNOFF VOLUME = 1.41367 INCHES = .2309 ACRE-FEET
 PEAK DISCHARGE RATE = 6.70 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-6

COMPUTE NM HYD ID=10 HYD NO=110 AREA=0.002016 SQ MI
 PER A=0 PER B=43 PER C=0 PER D=57
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 4.5368 CFS UNIT VOLUME = .9969 B = 526.28
 AREA = .001149 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 2.1301 CFS UNIT VOLUME = .9938 B = 327.55

34

AREA = .000867 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.41367 INCHES = .1520 ACRE-Feet
PEAK DISCHARGE RATE = 4.41 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN C-7

COMPUTE NM HYD ID=11 HYD NO=111 AREA=0.002063 SQ MI
PER A=0 PER B=53 PER C=0 PER D=47
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 3.8281 CFS UNIT VOLUME = .9965 B = 526.28
AREA = .000970 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 2.6867 CFS UNIT VOLUME = .9953 B = 327.55
AREA = .001093 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 111.00

RUNOFF VOLUME = 1.28513 INCHES = .1414 ACRE-Feet
PEAK DISCHARGE RATE = 4.20 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN D-1

COMPUTE NM HYD ID=12 HYD NO=112 AREA=0.002844 SQ MI
PER A=0 PER B=49 PER C=0 PER D=51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 5.7264 CFS UNIT VOLUME = .9973 B = 526.28
AREA = .001450 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 3.4243 CFS UNIT VOLUME = .9964 B = 327.55
AREA = .001394 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 112.00

RUNOFF VOLUME = 1.33655 INCHES = .2027 ACRE-FEET
 PEAK DISCHARGE RATE = 5.96 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN D-2

COMPUTE NM HYD

ID=13 HYD NO=113 AREA=0.000813 SQ MI
 PER A=0 B=66 C=0 D=34
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 1.0913 CFS UNIT VOLUME = .9881 B = 526.28
 AREA = .000276 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.3185 CFS UNIT VOLUME = .9903 B = 327.55
 AREA = .000537 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=13 CODE=1

PARTIAL HYDROGRAPH 113.00

RUNOFF VOLUME = 1.11804 INCHES = .0485 ACRE-FEET
 PEAK DISCHARGE RATE = 1.50 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN D-3

COMPUTE NM HYD

ID=14 HYD NO=114 AREA=0.000828 SQ MI
 PER A=0 PER B=62 PER C=0 PER D=38
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 1.2422 CFS UNIT VOLUME = .9897 B = 526.28
 AREA = .000315 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.2615 CFS UNIT VOLUME = .9894 B = 327.55
 AREA = .000513 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=14 CODE=1

PARTIAL HYDROGRAPH 114.00

RUNOFF VOLUME = 1.16945 INCHES = .0516 ACRE-FEET
 PEAK DISCHARGE RATE = 1.58 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN E-1

COMPUTE NM HYD

ID=15 HYD NO=115 AREA=0.0015 SQ MI
 PER A=0 PER B=44 PER C=0 PER D=56
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 3.3164 CFS UNIT VOLUME = .9961 B = 526.28
 AREA = .000840 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 1.6218 CFS UNIT VOLUME = .9919 B = 327.55
 AREA = .000660 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=15 CODE=1

PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = 1.40082 INCHES = .1121 ACRE-FEET
 PEAK DISCHARGE RATE = 3.27 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN OS-1

COMPUTE NM HYD

ID=16 HYD NO=116 AREA=0.001196 SQ MI
 PER A=0 PER B=78 PER C=0 PER D=22
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 1.0388 CFS UNIT VOLUME = .9881 B = 526.28
 AREA = .000263 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 2.2923 CFS UNIT VOLUME = .9943 B = 327.55
 AREA = .000933 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=16 CODE=1

PARTIAL HYDROGRAPH 116.00

RUNOFF VOLUME = .96379 INCHES = .0615 ACRE-FEET
 PEAK DISCHARGE RATE = 1.99 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN OS-2

COMPUTE NM HYD

ID=17 HYD NO=117 AREA=0.007484 SQ MI
 PER A=0 B=30 C=0 D=70
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 20.683 CFS UNIT VOLUME = .9988 B = 526.28
 AREA = .005239 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 5.5170 CFS UNIT VOLUME = .9978 B = 327.55
 AREA = .002245 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=17 CODE=1

PARTIAL HYDROGRAPH 117.00

RUNOFF VOLUME = 1.58077 INCHES = .6310 ACRE-FEET
 PEAK DISCHARGE RATE = 17.83 CFS AT 1.500 HOURS BASIN AREA =

**BASIN TMSB
 COMPUTE NM HYD

ID=18 HYD NO=118 AREA=0.004453 SQ MI
 PER A=38.61 B=5.07 C=0 D=56.32
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 9.9014 CFS UNIT VOLUME = .9982 B = 526.28
 AREA = .002508 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .159194HR TP = .133300HR K/TP RATIO = 1.194252 SHAPE
 UNIT PEAK = 4.0816 CFS UNIT VOLUME = .9961 B = 279.72
 AREA = .001945 SQ MI IA = .63259 INCHES INF = 1.62125 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=18 CODE=1

PARTIAL HYDROGRAPH 118.00

RUNOFF VOLUME = 1.31369 INCHES = .3120 ACRE-FEET
 PEAK DISCHARGE RATE = 8.84 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN TMSC
 COMPUTE NM HYD

ID=19 HYD NO=119 AREA=0.003891 SQ MI
 PER A=4.15 B=50.6 C=0 D=45.25
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.9512 CFS UNIT VOLUME = .9978 B = 526.28
 AREA = .001761 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .133199HR TP = .133300HR K/TP RATIO = .999241 SHAPE
 UNIT PEAK = 5.1577 CFS UNIT VOLUME = .9977 B = 322.73
 AREA = .002130 SQ MI IA = .51137 INCHES INF = 1.28184 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=19 CODE=1

PARTIAL HYDROGRAPH 119.00

RUNOFF VOLUME = 1.25155 INCHES = .2597 ACRE-FEET
 PEAK DISCHARGE RATE = 7.72 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN 13 LOTS

COMPUTE NM HYD

ID=38 HYD NO=138 AREA=0.003148 SQ MI
 PER A=0 B=49.97 C=0 D=50.03
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.2180 CFS UNIT VOLUME = .9976 B = 526.28
 AREA = .001575 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 3.8654 CFS UNIT VOLUME = .9967 B = 327.55
 AREA = .001573 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=38 CODE=1

PARTIAL HYDROGRAPH 138.00

RUNOFF VOLUME = 1.32408 INCHES = .2223 ACRE-FEET
 PEAK DISCHARGE RATE = 6.55 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN TRACT E

COMPUTE NM HYD

ID=39 HYD NO=139 AREA=0.006579 SQ MI
 PER A=0 B=39.19 C=0 D=60.81
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 15.795 CFS UNIT VOLUME = .9987 B = 526.28
 AREA = .004001 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 6.3356 CFS UNIT VOLUME = .9982 B = 327.55
 AREA = .002578 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD

ID=39 CODE=1

PARTIAL HYDROGRAPH 139.00

RUNOFF VOLUME = 1.46264 INCHES = .5132 ACRE-FEET
 PEAK DISCHARGE RATE = 14.75 CFS AT 1.500 HOURS BASIN AREA =

*

**BASIN EL RANCHO GRANDE I

COMPUTE NM HYD ID=42 HYD NO=142 AREA=0.046100 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B = 526.28
 AREA = .024327 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B = 327.55
 AREA = .021773 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=42 CODE=1

PARTIAL HYDROGRAPH 142.00

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FEET
 PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD ID=20 HYD NO=120 ID=1 ID=2
 PRINT HYD ID=20 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 1.45799 INCHES = 1.5175 ACRE-FEET
 PEAK DISCHARGE RATE = 43.64 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD ID=21 HYD NO=121 ID=3 ID=4
 PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 121.00

RUNOFF VOLUME = 1.30432 INCHES = .2674 ACRE-FEET
 PEAK DISCHARGE RATE = 7.92 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=22 HYD NO=122 ID=5 ID=6
ID=22 CODE=1

40

PARTIAL HYDROGRAPH 122.00

RUNOFF VOLUME = 1.23942 INCHES = .3667 ACRE-Feet
PEAK DISCHARGE RATE = 10.99 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=23 HYD NO=123 ID=7 ID=8
ID=23 CODE=1

PARTIAL HYDROGRAPH 123.00

RUNOFF VOLUME = 1.51002 INCHES = .2366 ACRE-Feet
PEAK DISCHARGE RATE = 6.78 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=24 HYD NO=124 ID=9 ID=10
ID=24 CODE=1

PARTIAL HYDROGRAPH 124.00

RUNOFF VOLUME = 1.41356 INCHES = .3829 ACRE-Feet
PEAK DISCHARGE RATE = 11.11 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=25 HYD NO=125 ID=11 ID=12
ID=25 CODE=1

PARTIAL HYDROGRAPH 125.00

RUNOFF VOLUME = 1.31482 INCHES = .3441 ACRE-Feet
PEAK DISCHARGE RATE = 10.16 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=26 HYD NO=126 ID=13 ID=14
ID=26 CODE=1

PARTIAL HYDROGRAPH 126.00

RUNOFF VOLUME = 1.14369 INCHES = .1001 ACRE-Feet
PEAK DISCHARGE RATE = 3.09 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=27 HYD NO=127 ID=15 ID=16
ID=27 CODE=1

PARTIAL HYDROGRAPH 127.00

RUNOFF VOLUME = 1.20675 INCHES = .1735 ACRE-Feet
PEAK DISCHARGE RATE = 5.25 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=28 HYD NO=128 ID=17 ID=18
ID=28 CODE=1

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = 1.48109 INCHES = .9429 ACRE-Feet
PEAK DISCHARGE RATE = 26.67 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=29 HYD NO=129 ID=20 ID=21
ID=29 CODE=1

PARTIAL HYDROGRAPH 129.00

RUNOFF VOLUME = 1.43270 INCHES = 1.7849 ACRE-Feet
PEAK DISCHARGE RATE = 51.56 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=30 HYD NO=130 ID=22 ID=23
ID=30 CODE=1

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.33312 INCHES = .6033 ACRE-Feet
PEAK DISCHARGE RATE = 17.77 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=31 HYD NO=131 ID=24 ID=25
ID=31 CODE=1

PARTIAL HYDROGRAPH 131.00

RUNOFF VOLUME = 1.36504 INCHES = .7270 ACRE-Feet
PEAK DISCHARGE RATE = 21.27 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=32 HYD NO=132 ID=26 ID=27
ID=32 CODE=1

PARTIAL HYDROGRAPH 132.00

RUNOFF VOLUME = 1.18289 INCHES = .2736 ACRE-Feet
PEAK DISCHARGE RATE = 8.34 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=33 HYD NO=133 ID=28 ID=19
ID=33 CODE=1

PARTIAL HYDROGRAPH 133.00

RUNOFF VOLUME = 1.42465 INCHES = 1.2026 ACRE-Feet
PEAK DISCHARGE RATE = 34.39 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=34 HYD NO=134 ID=29 ID=30
ID=34 CODE=1

PARTIAL HYDROGRAPH 134.00

RUNOFF VOLUME = 1.40617 INCHES = 2.3882 ACRE-Feet
PEAK DISCHARGE RATE = 69.32 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=35 HYD NO=135 ID=31 ID=32
ID=35 CODE=1

PARTIAL HYDROGRAPH 135.00

RUNOFF VOLUME = 1.30988 INCHES = 1.0006 ACRE-Feet
PEAK DISCHARGE RATE = 29.61 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=36 HYD NO=136 ID=34 ID=35
ID=36 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = 1.37630 INCHES = 3.3888 ACRE-Feet
PEAK DISCHARGE RATE = 98.94 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=37 HYD NO=137 ID=33 ID=36
ID=37 CODE=1

43

PARTIAL HYDROGRAPH 137.00

RUNOFF VOLUME = 1.38864 INCHES = 4.5915 ACRE-Feet
PEAK DISCHARGE RATE = 133.32 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=40 HYD NO=140 ID=38 ID=39
ID=40 CODE=1

PARTIAL HYDROGRAPH 140.00

RUNOFF VOLUME = 1.41774 INCHES = .7355 ACRE-Feet
PEAK DISCHARGE RATE = 21.30 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=41 HYD NO=141 ID=37 ID=40
ID=41 CODE=1

PARTIAL HYDROGRAPH 141.00

RUNOFF VOLUME = 1.39259 INCHES = 5.3269 ACRE-Feet
PEAK DISCHARGE RATE = 154.62 CFS AT 1.500 HOURS BASIN AREA =

*

ADD HYD
PRINT HYD

ID=43 HYD NO=143 ID=41 ID=42
ID=43 CODE=1

PARTIAL HYDROGRAPH 143.00

RUNOFF VOLUME = 1.37956 INCHES = 8.6690 ACRE-Feet
PEAK DISCHARGE RATE = 252.24 CFS AT 1.500 HOURS BASIN AREA =

*

*DIVIDE BY MAXIMUM FLOW RATE
DIVIDE HYD

ID=43 Q=189.48 ID I=44 HYD NO=144
ID II=45 HYD NO=145

* ROUTING THROUGH POND

*

ROUTE RESERVOIR

ID=46 HYD NO=146	INFLOW ID=45 CODE=24	
OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0	0.0	45.0
4.78	0.1048	46.0
15.12	0.2359	47.0
21.42	0.3951	48.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	45.00	.000	.00
.80	.00	45.00	.000	.00

PEAK DISCHARGE = 19.712 CFS - PEAK OCCURS AT HOUR 1.57
 MAXIMUM WATER SURFACE ELEVATION = 47.729
 MAXIMUM STORAGE = .3519 AC-FT INCREMENTAL TIME= .033330HR

PRINT HYD ID=46 CODE=1

PARTIAL HYDROGRAPH 146.00

RUNOFF VOLUME = 1.37956 INCHES = .4949 ACRE-Feet
 PEAK DISCHARGE RATE = 19.71 CFS AT 1.567 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:51:48

START

TIME=0.0

***** HYDROGRAPH FOR EL RANCHO GRANDE I BARBADOS RUOFF

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD

ID=1 HYD NO=101.1 AREA=0.001976 SQ MI

PER A=0 B=20 C=0 D=80

PRINT HYD

TP=0.1333 HR MASS RAINFALL=-1

FINISH

ID=1 CODE=1

45

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 02/15/2000
 START TIME (HR:MIN:SEC) = 09:02:22 USER NO.= M_GOODWN.I01
 INPUT FILE = ERGIBAR.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR EL RANCHO GRANDE I BARBADOS RUOFF
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

DT = .033330 HOURS				END TIME = 5.999400 HOURS		
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.001976 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
 UNIT PEAK = 6.2411 CFS UNIT VOLUME = .9976 B = 526.28
 AREA = .001581 SQ MI IA = .10000 INCHES INF = .04000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
 UNIT PEAK = .97111 CFS UNIT VOLUME = .9863 B = 327.55
 AREA = .000395 SQ MI IA = .50000 INCHES INF = 1.25000 I
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

RUNOFF VOLUME = 1.70931 INCHES = .1801 ACRE-FEET
PEAK DISCHARGE RATE = 5.02 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 09:02:22

START TIME=0.0
***** HYDROGRAPH FOR REMAINDER OF PARCEL 12 RUNOFF (PER EL RANCHO TREATMENTS)
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.040305 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/15/2000
START TIME (HR:MIN:SEC) = 16:32:15 USER NO.= M_GOODWN.I01
INPUT FILE = PAR12R.DAT

START TIME=0.0
***** HYDROGRAPH FOR REMAINDER OF PARCEL 12 RUNOFF (PER EL RANCHO TREATMENT
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2						
DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.040305 SQ MI
 PER A=0 B=47.23 C=0 D=52.77
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 83.971 CFS UNIT VOLUME = .9992 B = 526.28
AREA = .021269 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 46.776 CFS UNIT VOLUME = 1.000 B = 327.55
AREA = .019036 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

50

RUNOFF VOLUME = 1.35930 INCHES = 2.9219 ACRE-FeET
PEAK DISCHARGE RATE = 85.35 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 16:32:15

START TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.012841 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

1994 AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,

RUN DATE (MON/DAY/YR) = 02/16/2000

START TIME (HR:MIN:SEC) = 10:15:12

USER NO.=

M_GOODWN.I01

INPUT FILE = ERGIGIB.DAT

START

TIME=0.0

***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON RUNOFF

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

ATLAS 2 - PEAK AT 1.40 HR. COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA

DT = .033330 HOURS END TIME = 5.999400

HOURS						
	.0000	.0013	.0027	.0041	.0055	.0069
.0084						
	.0099	.0115	.0131	.0147	.0164	.0181
.0199						
	.0217	.0236	.0256	.0276	.0296	.0318
.0340						
	.0363	.0387	.0412	.0438	.0465	.0493
.0523						
	.0554	.0587	.0622	.0675	.0731	.0791
.0920						
	.1208	.1651	.2289	.3159	.4302	.5759
.7574						
	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.5201						
	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.8130						
	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
1.9736						
	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0059						
	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0308						
	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0514						
	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0690						
	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0846						
	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.0985						
	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1112						
	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1229						
	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1337						
	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
2.1439						
	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520
2.1533						
	2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
2.1623						
	2.1635	2.1648	2.1660	2.1672	2.1684	2.1696

2.1708
 2.1789
 2.1866
 2.1939

2.1720	2.1731	2.1743	2.1754	2.1766	2.1777
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.012841 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 25.348 CFS UNIT VOLUME = .9989 B =
 526.28 P60 = 1.9000
 AREA = .006421 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 15.777 CFS UNIT VOLUME = .9995 B =
 327.55 P60 = 1.9000
 AREA = .006421 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.32370 INCHES = .9065 ACRE-FEET
 PEAK DISCHARGE RATE = 26.66 CFS AT 1.500 HOURS BASIN
 AREA = .0128 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 10:15:13


```

START                TIME=0.0
***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON/UNSER RUNOFF
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.007274 SQ MI
                     PER A=0 B=50 C=0 D=50
                     TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
FINISH

```


1994 AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,

RUN DATE (MON/DAY/YR) = 02/16/2000

START TIME (HR:MIN:SEC) = 14:29:46

USER NO. =

M_GOODWN.I01

INPUT FILE = GIBUNS.DAT

START

TIME=0.0

***** HYDROGRAPH FOR EL RANCHO GRANDE I GIBSON/UNSER RUNOFF

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

ATLAS 2 - PEAK AT 1.40 HR. COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA

DT = .033330 HOURS END TIME = 5.999400

HOURS						
.0084	.0000	.0013	.0027	.0041	.0055	.0069
.0199	.0099	.0115	.0131	.0147	.0164	.0181
.0340	.0217	.0236	.0256	.0276	.0296	.0318
.0523	.0363	.0387	.0412	.0438	.0465	.0493
.0920	.0554	.0587	.0622	.0675	.0731	.0791
.7574	.1208	.1651	.2289	.3159	.4302	.5759
1.5201	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.8130	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.9736	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
2.0059	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0308	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0514	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0690	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0846	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0985	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.1112	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1229	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1337	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1439	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
2.1533	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520
2.1623	2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
	2.1635	2.1648	2.1660	2.1672	2.1684	2.1696

2.1708
 2.1789
 2.1866
 2.1939
 2.1720 2.1731 2.1743 2.1754 2.1766 2.1777
 2.1800 2.1811 2.1822 2.1833 2.1844 2.1855
 2.1876 2.1887 2.1897 2.1908 2.1918 2.1929
 2.1949 2.1960 2.1970 2.1980 2.1990 2.2000

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.007274 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1
 K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 14.359 CFS UNIT VOLUME = .9985 B =
 526.28 P60 = 1.9000
 AREA = .003637 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 8.9370 CFS UNIT VOLUME = .9988 B =
 327.55 P60 = 1.9000
 AREA = .003637 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=1 CODE=1
 PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.32370 INCHES = .5135 ACRE-FEET
 PEAK DISCHARGE RATE = 15.11 CFS AT 1.500 HOURS BASIN
 AREA = .0073 SQ. MI.

FINISH
 NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:29:47


```

START                                TIME=0.0
*****
*****  HYDROGRAPH FOR GIBSON POND
*****
**BASIN A
RAINFALL                            TYPE=1 RAIN QUARTER=0.0 IN
                                      RAIN ONE=1.90 IN RAIN SIX=2.20 IN
                                      RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTE NM HYD                      ID=1 HYD NO=101 AREA=0.015125 SQ MI
                                      PER A=0 PER B=40 PER C=0 PER D=60
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=1 CODE=1
*
**BASIN B-1
COMPUTE NM HYD                      ID=2 HYD NO=102 AREA=0.004391 SQ MI
                                      PER A=0 PER B=38 PER C=0 PER D=62
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=2 CODE=1
*
**BASIN B-2
COMPUTE NM HYD                      ID=3 HYD NO=103 AREA=0.001375 SQ MI
                                      PER A=0 PER B=47 PER C=0 PER D=53
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=3 CODE=1
*
**BASIN B-3
COMPUTE NM HYD                      ID=4 HYD NO=104 AREA=0.002469 SQ MI
                                      PER A=0 PER B=54 PER C=0 PER D=46
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=4 CODE=1
*
**BASIN C-1
COMPUTE NM HYD                      ID=5 HYD NO=105 AREA=0.0045 SQ MI
                                      PER A=0 B=49 C=0 D=51
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=5 CODE=1
*
**BASIN C-2
COMPUTE NM HYD                      ID=6 HYD NO=106 AREA=0.001047 SQ MI
                                      PER A=0 PER B=89 PER C=0 PER D=11
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=6 CODE=1
*
**BASIN C-3
COMPUTE NM HYD                      ID=7 HYD NO=107 AREA=0.001516 SQ MI
                                      PER A=0 PER B=20 PER C=0 PER D=80
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=7 CODE=1
*
**BASIN C-4
COMPUTE NM HYD                      ID=8 HYD NO=108 AREA=0.001422 SQ MI
                                      PER A=0 PER B=52 PER C=0 PER D=48
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=8 CODE=1
*
**BASIN C-5
COMPUTE NM HYD                      ID=9 HYD NO=109 AREA=0.003063 SQ MI
                                      PER A=0 B=43 C=0 D=57
                                      TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD                           ID=9 CODE=1

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*
**BASIN C-6
COMPUTE NM HYD      ID=10 HYD NO=110 AREA=0.002016 SQ MI
                     PER A=0 PER B=43 PER C=0 PER D=57
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=10 CODE=1
PRINT HYD
*
**BASIN C-7
COMPUTE NM HYD      ID=11 HYD NO=111 AREA=0.002063 SQ MI
                     PER A=0 PER B=53 PER C=0 PER D=47
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=11 CODE=1
PRINT HYD
*
**BASIN D-1
COMPUTE NM HYD      ID=12 HYD NO=112 AREA=0.002844 SQ MI
                     PER A=0 PER B=49 PER C=0 PER D=51
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=12 CODE=1
PRINT HYD
*
**BASIN D-2
COMPUTE NM HYD      ID=13  HYD NO=113  AREA=0.000813 SQ MI
                     PER A=0 B=66 C=0 D=34
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=13 CODE=1
PRINT HYD
*
**BASIN D-3
COMPUTE NM HYD      ID=14 HYD NO=114 AREA=0.000828 SQ MI
                     PER A=0 PER B=62 PER C=0 PER D=38
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=14 CODE=1
PRINT HYD
*
**BASIN E-1
COMPUTE NM HYD      ID=15 HYD NO=115 AREA=0.0015 SQ MI
                     PER A=0 PER B=44 PER C=0 PER D=56
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=15 CODE=1
PRINT HYD
*
**BASIN OS-1
COMPUTE NM HYD      ID=16 HYD NO=116 AREA=0.001196 SQ MI
                     PER A=0 PER B=78 PER C=0 PER D=22
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=16 CODE=1
PRINT HYD
*
**BASIN OS-2
COMPUTE NM HYD      ID=17  HYD NO=117  AREA=0.007484 SQ MI
                     PER A=0 B=30 C=0 D=70
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=17 CODE=1
PRINT HYD
**BASIN TMSB
COMPUTE NM HYD      ID=18  HYD NO=118  AREA=0.004453 SQ MI
                     PER A=38.61 B=5.07 C=0 D=56.32
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=18 CODE=1
PRINT HYD
*
**BASIN TMSC
COMPUTE NM HYD      ID=19  HYD NO=119  AREA=0.003891 SQ MI
                     PER A=4.15 B=50.6 C=0 D=45.25
                     TP=0.1333 HR MASS RAINFALL=-1
                     ID=19 CODE=1
PRINT HYD
*
**BASIN 13 LOTS

```



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COMPUTE NM HYD      ID=38  HYD NO=138  AREA=0.003148 SQ MI
                    PER A=0 B=49.97 C=0 D=50.03
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=38 CODE=1
*
**BASIN PARCEL 12
COMPUTE NM HYD      ID=39  HYD NO=139  AREA=0.040305 SQ MI
                    PER A=0 B=47.23 C=0 D=52.77
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=39 CODE=1
*
**BASIN EL RANCHO GRANDE I
COMPUTE NM HYD      ID=42  HYD NO=142  AREA=0.046100 SQ MI
                    PER A=0 B=47.23 C=0 D=52.77
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=42 CODE=1
*
**BASIN SILVERADO SUBDIVISION UNITS 1&2
COMPUTE NM HYD      ID=43  HYD NO=143  AREA=0.036431 SQ MI
                    PER A=0 B=48.08 C=0 D=51.92
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=43 CODE=1
*
**BASIN GIBSON BLVD
COMPUTE NM HYD      ID=44  HYD NO=144  AREA=0.012841 SQ MI
                    PER A=0 B=50 C=0 D=50
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=44 CODE=1
*
**BASIN GIBSON/UNSER RUNOFF
COMPUTE NM HYD      ID=48  HYD NO=148  AREA=.007274 SQ MI
                    PER A=0 B=50 C=0 D=50
                    TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=48 CODE=1
*
ADD HYD              ID=20  HYD NO=120  ID=1  ID=2
PRINT HYD           ID=20 CODE=1
*
ADD HYD              ID=21  HYD NO=121  ID=3  ID=4
PRINT HYD           ID=21 CODE=1
*
ADD HYD              ID=22  HYD NO=122  ID=5  ID=6
PRINT HYD           ID=22 CODE=1
*
ADD HYD              ID=23  HYD NO=123  ID=7  ID=8
PRINT HYD           ID=23 CODE=1
*
ADD HYD              ID=24  HYD NO=124  ID=9  ID=10
PRINT HYD           ID=24 CODE=1
*
ADD HYD              ID=25  HYD NO=125  ID=11 ID=12
PRINT HYD           ID=25 CODE=1
*
ADD HYD              ID=26  HYD NO=126  ID=13 ID=14
PRINT HYD           ID=26 CODE=1
*
ADD HYD              ID=27  HYD NO=127  ID=15 ID=16
PRINT HYD           ID=27 CODE=1
*
ADD HYD              ID=28  HYD NO=128  ID=17 ID=18
PRINT HYD           ID=28 CODE=1

```



```
*
ADD HYD          ID=29 HYD NO=129  ID=20  ID=21
PRINT HYD        ID=29 CODE=1
*
ADD HYD          ID=30 HYD NO=130  ID=22  ID=23
PRINT HYD        ID=30 CODE=1
*
ADD HYD          ID=31 HYD NO=131  ID=24  ID=25
PRINT HYD        ID=31 CODE=1
*
ADD HYD          ID=32 HYD NO=132  ID=26  ID=27
PRINT HYD        ID=32 CODE=1
*
ADD HYD          ID=33 HYD NO=133  ID=28  ID=19
PRINT HYD        ID=33 CODE=1
*
ADD HYD          ID=34 HYD NO=134  ID=29  ID=30
PRINT HYD        ID=34 CODE=1
*
ADD HYD          ID=35 HYD NO=135  ID=31  ID=32
PRINT HYD        ID=35 CODE=1
*
ADD HYD          ID=36 HYD NO=136  ID=34  ID=35
PRINT HYD        ID=36 CODE=1
*
ADD HYD          ID=37 HYD NO=137  ID=33  ID=36
PRINT HYD        ID=37 CODE=1
*
ADD HYD          ID=40 HYD NO=140  ID=38  ID=39
PRINT HYD        ID=40 CODE=1
*
ADD HYD          ID=41 HYD NO=141  ID=37  ID=40
PRINT HYD        ID=41 CODE=1
*
ADD HYD          ID=45 HYD NO=145  ID=41  ID=42
PRINT HYD        ID=45 CODE=1
*
ADD HYD          ID=46 HYD NO=146  ID=43  ID=44
PRINT HYD        ID=46 CODE=1
*
ADD HYD          ID=47 HYD NO=147  ID=45  ID=46
PRINT HYD        ID=47 CODE=1
*
ADD HYD          ID=49 HYD NO=149  ID=47  ID=48
PRINT HYD        ID=49 CODE=1
*
*DIVIDE BY MAXIMUM FLOW RATE
DIVIDE HYD        ID=49  Q=48.48  ID I=50  HYD NO=150
                                     ID II=51  HYD NO=151
* ROUTING THROUGH POND
*
ROUTE RESERVOIR  ID=52 HYD NO=152  INFLOW ID=51 CODE=24
OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
      0.0          0.0             40.0
      46.33        1.174           41.0
      65.51        2.187           42.0
      80.24        3.643           43.0
      92.65        5.146           44.0
     103.59        6.800           45.0
PRINT HYD        ID=52 CODE=1
FINISH
```


AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994

RUN DATE (MON/DAY/YR) = 02/16/2000

START TIME (HR:MIN:SEC) = 14:44:39

USER NO.=

M_GOODWN.I01

INPUT FILE = GIBPOND.DAT

START TIME=0.0

***** HYDROGRAPH FOR GIBSON POND

**BASIN A

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA
ATLAS 2 - PEAK AT 1.40 HR.

DT = .033330 HOURS END TIME = 5.999400

HOURS

.0084	.0000	.0013	.0027	.0041	.0055	.0069
.0199	.0099	.0115	.0131	.0147	.0164	.0181
.0340	.0217	.0236	.0256	.0276	.0296	.0318
.0523	.0363	.0387	.0412	.0438	.0465	.0493
.0920	.0554	.0587	.0622	.0675	.0731	.0791
.7574	.1208	.1651	.2289	.3159	.4302	.5759
1.5201	.9790	1.1846	1.2704	1.3429	1.4074	1.4661
1.8130	1.5702	1.6171	1.6610	1.7023	1.7413	1.7781
1.9736	1.8460	1.8774	1.9071	1.9353	1.9621	1.9681
2.0059	1.9789	1.9839	1.9887	1.9932	1.9976	2.0018
2.0308	2.0098	2.0136	2.0172	2.0208	2.0242	2.0275
2.0514	2.0339	2.0370	2.0400	2.0430	2.0458	2.0486
2.0690	2.0540	2.0567	2.0592	2.0617	2.0642	2.0666
2.0846	2.0714	2.0737	2.0759	2.0781	2.0803	2.0825
2.0985	2.0867	2.0887	2.0907	2.0927	2.0947	2.0966
2.1112	2.1004	2.1023	2.1041	2.1059	2.1077	2.1095
2.1229	2.1130	2.1147	2.1164	2.1180	2.1197	2.1213
2.1337	2.1245	2.1261	2.1277	2.1292	2.1307	2.1322
2.1439	2.1352	2.1367	2.1382	2.1396	2.1410	2.1425
	2.1452	2.1466	2.1480	2.1494	2.1507	2.1520

2.1533		2.1547	2.1560	2.1572	2.1585	2.1598	2.1611
2.1623		2.1635	2.1648	2.1660	2.1672	2.1684	2.1696
2.1708		2.1720	2.1731	2.1743	2.1754	2.1766	2.1777
2.1789		2.1800	2.1811	2.1822	2.1833	2.1844	2.1855
2.1866		2.1876	2.1887	2.1897	2.1908	2.1918	2.1929
2.1939		2.1949	2.1960	2.1970	2.1980	2.1990	2.2000

COMPUTE NM HYD

ID=1 HYD NO=101 AREA=0.015125 SQ MI
 PER A=0 PER B=40 PER C=0 PER D=60
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 35.829 CFS UNIT VOLUME = .9990 B =
 526.28 P60 = 1.9000
 AREA = .009075 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 14.866 CFS UNIT VOLUME = .9994 B =
 327.55 P60 = 1.9000
 AREA = .006050 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD

ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.45223 INCHES = 1.1715 ACRE-FEET
 PEAK DISCHARGE RATE = 33.71 CFS AT 1.500 HOURS BASIN
 AREA = .0151 SQ. MI.

*

**BASIN B-1

COMPUTE NM HYD

ID=2 HYD NO=102 AREA=0.004391 SQ MI
 PER A=0 PER B=38 PER C=0 PER D=62
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 10.748 CFS UNIT VOLUME = .9982 B =
 526.28 P60 = 1.9000
 AREA = .002722 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 4.1001 CFS UNIT VOLUME = .9970 B =
 327.55 P60 = 1.9000
 AREA = .001669 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.47794 INCHES = .3461 ACRE-FEET
 PEAK DISCHARGE RATE = 9.93 CFS AT 1.500 HOURS BASIN
 AREA = .0044 SQ. MI.

*

**BASIN B-2

COMPUTE NM HYD

ID=3 HYD NO=103 AREA=0.001375 SQ MI
 PER A=0 PER B=47 PER C=0 PER D=53
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 2.8771 CFS UNIT VOLUME = .9955 B =
 526.28 P60 = 1.9000
 AREA = .000729 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.5880 CFS UNIT VOLUME = .9919 B =
 327.55 P60 = 1.9000
 AREA = .000646 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.36226 INCHES = .0999 ACRE-FEET
 PEAK DISCHARGE RATE = 2.93 CFS AT 1.500 HOURS BASIN
 AREA = .0014 SQ. MI.

*

**BASIN B-3

COMPUTE NM HYD

ID=4 HYD NO=104 AREA=0.002469 SQ MI

64

PER A=0 PER B=54 PER C=0 PER D=46
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.4840 CFS UNIT VOLUME = .9969 B =
526.28 P60 = 1.9000
AREA = .001136 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 3.2762 CFS UNIT VOLUME = .9961 B =
327.55 P60 = 1.9000
AREA = .001333 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.27228 INCHES = .1675 ACRE-FEET
PEAK DISCHARGE RATE = 4.99 CFS AT 1.500 HOURS BASIN
AREA = .0025 SQ. MI.

*

**BASIN C-1

COMPUTE NM HYD

ID=5 HYD NO=105 AREA=0.0045 SQ MI

PER A=0 B=49 C=0 D=51

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.0608 CFS UNIT VOLUME = .9981 B =
526.28 P60 = 1.9000
AREA = .002295 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 5.4182 CFS UNIT VOLUME = .9978 B =
327.55 P60 = 1.9000
AREA = .002205 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

65

RUNOFF VOLUME = 1.33655 INCHES = .3208 ACRE-FEET
PEAK DISCHARGE RATE = 9.42 CFS AT 1.500 HOURS BASIN
AREA = .0045 SQ. MI.

*

**BASIN C-2

COMPUTE NM HYD

ID=6 HYD NO=106 AREA=0.001047 SQ MI
PER A=0 PER B=89 PER C=0 PER D=11
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .45470 CFS UNIT VOLUME = .9751 B =
526.28 P60 = 1.9000
AREA = .000115 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 2.2897 CFS UNIT VOLUME = .9943 B =
327.55 P60 = 1.9000
AREA = .000932 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = .82240 INCHES = .0459 ACRE-FEET
PEAK DISCHARGE RATE = 1.56 CFS AT 1.500 HOURS BASIN
AREA = .0010 SQ. MI.

*

**BASIN C-3

COMPUTE NM HYD

ID=7 HYD NO=107 AREA=0.001516 SQ MI
PER A=0 PER B=20 PER C=0 PER D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.7882 CFS UNIT VOLUME = .9969 B =
526.28 P60 = 1.9000
AREA = .001213 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950

SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = .74504 CFS UNIT VOLUME = .9822 B =
 327.55 P60 = 1.9000
 AREA = .000303 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.70931 INCHES = .1382 ACRE-FEET
 PEAK DISCHARGE RATE = 3.86 CFS AT 1.500 HOURS BASIN
 AREA = .0015 SQ. MI.

*

**BASIN C-4

COMPUTE NM HYD

ID=8 HYD NO=108 AREA=0.001422 SQ MI
 PER A=0 PER B=52 PER C=0 PER D=48
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 2.6948 CFS UNIT VOLUME = .9949 B =
 526.28 P60 = 1.9000
 AREA = .000683 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.8170 CFS UNIT VOLUME = .9926 B =
 327.55 P60 = 1.9000
 AREA = .000739 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.29799 INCHES = .0984 ACRE-FEET
 PEAK DISCHARGE RATE = 2.92 CFS AT 1.500 HOURS BASIN
 AREA = .0014 SQ. MI.

*

**BASIN C-5

COMPUTE NM HYD

ID=9 HYD NO=109 AREA=0.003063 SQ MI
 PER A=0 B=43 C=0 D=57
 TP=0.1333 HR MASS RAINFALL=-1

67

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 6.8929 CFS UNIT VOLUME = .9978 B =
 526.28 P60 = 1.9000
 AREA = .001746 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 3.2364 CFS UNIT VOLUME = .9961 B =
 327.55 P60 = 1.9000
 AREA = .001317 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 109.00

RUNOFF VOLUME = 1.41367 INCHES = .2309 ACRE-FEET
 PEAK DISCHARGE RATE = 6.70 CFS AT 1.500 HOURS BASIN
 AREA = .0031 SQ. MI.

*

**BASIN C-6

COMPUTE NM HYD

ID=10 HYD NO=110 AREA=0.002016 SQ MI
 PER A=0 PER B=43 PER C=0 PER D=57
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 4.5368 CFS UNIT VOLUME = .9969 B =
 526.28 P60 = 1.9000
 AREA = .001149 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 2.1301 CFS UNIT VOLUME = .9938 B =
 327.55 P60 = 1.9000
 AREA = .000867 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.41367 INCHES = .1520 ACRE-FEET

PEAK DISCHARGE RATE = 4.41 CFS AT 1.500 HOURS BASIN
AREA = .0020 SQ. MI.

*

**BASIN C-7

COMPUTE NM HYD

ID=11 HYD NO=111 AREA=0.002063 SQ MI
PER A=0 PER B=53 PER C=0 PER D=47
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.8281 CFS UNIT VOLUME = .9965 B =
526.28 P60 = 1.9000
AREA = .000970 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 2.6867 CFS UNIT VOLUME = .9953 B =
327.55 P60 = 1.9000
AREA = .001093 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 111.00

RUNOFF VOLUME = 1.28513 INCHES = .1414 ACRE-FEET
PEAK DISCHARGE RATE = 4.20 CFS AT 1.500 HOURS BASIN
AREA = .0021 SQ. MI.

*

**BASIN D-1

COMPUTE NM HYD

ID=12 HYD NO=112 AREA=0.002844 SQ MI
PER A=0 PER B=49 PER C=0 PER D=51
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.7264 CFS UNIT VOLUME = .9973 B =
526.28 P60 = 1.9000
AREA = .001450 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 3.4243 CFS UNIT VOLUME = .9964 B =
327.55 P60 = 1.9000

AREA = .001394 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 112.00

RUNOFF VOLUME = 1.33655 INCHES = .2027 ACRE-FEET
 PEAK DISCHARGE RATE = 5.96 CFS AT 1.500 HOURS BASIN
 AREA = .0028 SQ. MI.

*

**BASIN D-2

COMPUTE NM HYD

ID=13 HYD NO=113 AREA=0.000813 SQ MI

PER A=0 B=66 C=0 D=34

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 1.0913 CFS UNIT VOLUME = .9881 B =
 526.28 P60 = 1.9000
 AREA = .000276 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.3185 CFS UNIT VOLUME = .9903 B =
 327.55 P60 = 1.9000
 AREA = .000537 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 113.00

RUNOFF VOLUME = 1.11804 INCHES = .0485 ACRE-FEET
 PEAK DISCHARGE RATE = 1.50 CFS AT 1.500 HOURS BASIN
 AREA = .0008 SQ. MI.

*

**BASIN D-3

COMPUTE NM HYD

ID=14 HYD NO=114 AREA=0.000828 SQ MI

PER A=0 PER B=62 PER C=0 PER D=38

TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 1.2422 CFS UNIT VOLUME = .9897 B =

526.28 P60 = 1.9000
 AREA = .000315 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.2615 CFS UNIT VOLUME = .9894 B =
 327.55 P60 = 1.9000
 AREA = .000513 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 114.00

RUNOFF VOLUME = 1.16945 INCHES = .0516 ACRE-FEET
 PEAK DISCHARGE RATE = 1.58 CFS AT 1.500 HOURS BASIN
 AREA = .0008 SQ. MI.

*

**BASIN E-1

COMPUTE NM HYD

ID=15 HYD NO=115 AREA=0.0015 SQ MI
 PER A=0 PER B=44 PER C=0 PER D=56
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 3.3164 CFS UNIT VOLUME = .9961 B =
 526.28 P60 = 1.9000
 AREA = .000840 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 1.6218 CFS UNIT VOLUME = .9919 B =
 327.55 P60 = 1.9000
 AREA = .000660 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = 1.40082 INCHES = .1121 ACRE-FEET
 PEAK DISCHARGE RATE = 3.27 CFS AT 1.500 HOURS BASIN
 AREA = .0015 SQ. MI.

*

**BASIN OS-1

COMPUTE NM HYD

ID=16 HYD NO=116 AREA=0.001196 SQ MI
PER A=0 PER B=78 PER C=0 PER D=22
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.0388 CFS UNIT VOLUME = .9881 B =
526.28 P60 = 1.9000
AREA = .000263 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 2.2923 CFS UNIT VOLUME = .9943 B =
327.55 P60 = 1.9000
AREA = .000933 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=16 CODE=1

PARTIAL HYDROGRAPH 116.00

RUNOFF VOLUME = .96379 INCHES = .0615 ACRE-FEET
PEAK DISCHARGE RATE = 1.99 CFS AT 1.500 HOURS BASIN
AREA = .0012 SQ. MI.

*

**BASIN OS-2

COMPUTE NM HYD

ID=17 HYD NO=117 AREA=0.007484 SQ MI
PER A=0 B=30 C=0 D=70
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 20.683 CFS UNIT VOLUME = .9988 B =
526.28 P60 = 1.9000
AREA = .005239 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 5.5170 CFS UNIT VOLUME = .9978 B =
327.55 P60 = 1.9000
AREA = .002245 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER

METHOD - DT = .033330

PRINT HYD

ID=17 CODE=1

PARTIAL HYDROGRAPH 117.00

RUNOFF VOLUME = 1.58077 INCHES = .6310 ACRE-FEET
PEAK DISCHARGE RATE = 17.83 CFS AT 1.500 HOURS BASIN
AREA = .0075 SQ. MI.

**BASIN TMSB

COMPUTE NM HYD

ID=18 HYD NO=118 AREA=0.004453 SQ MI
PER A=38.61 B=5.07 C=0 D=56.32
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.9014 CFS UNIT VOLUME = .9982 B =
526.28 P60 = 1.9000
AREA = .002508 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .159194HR TP = .133300HR K/TP RATIO = 1.194252
SHAPE CONSTANT, N = 2.974290
UNIT PEAK = 4.0816 CFS UNIT VOLUME = .9961 B =
279.72 P60 = 1.9000
AREA = .001945 SQ MI IA = .63259 INCHES INF =
1.62125 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=18 CODE=1

PARTIAL HYDROGRAPH 118.00

RUNOFF VOLUME = 1.31369 INCHES = .3120 ACRE-FEET
PEAK DISCHARGE RATE = 8.84 CFS AT 1.500 HOURS BASIN
AREA = .0045 SQ. MI.

*

**BASIN TMSC

COMPUTE NM HYD

ID=19 HYD NO=119 AREA=0.003891 SQ MI
PER A=4.15 B=50.6 C=0 D=45.25
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 6.9512 CFS UNIT VOLUME = .9978 B =
526.28 P60 = 1.9000
AREA = .001761 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER

METHOD - DT = .033330

K = .133199HR TP = .133300HR K/TP RATIO = .999241
 SHAPE CONSTANT, N = 3.533011
 UNIT PEAK = 5.1577 CFS UNIT VOLUME = .9977 B =
 322.73 P60 = 1.9000
 AREA = .002130 SQ MI IA = .51137 INCHES INF =
 1.28184 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=19 CODE=1

PARTIAL HYDROGRAPH 119.00

RUNOFF VOLUME = 1.25155 INCHES = .2597 ACRE-FEET
 PEAK DISCHARGE RATE = 7.72 CFS AT 1.500 HOURS BASIN
 AREA = .0039 SQ. MI.

*

**BASIN 13 LOTS
 COMPUTE NM HYD

ID=38 HYD NO=138 AREA=0.003148 SQ MI
 PER A=0 B=49.97 C=0 D=50.03
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 6.2180 CFS UNIT VOLUME = .9976 B =
 526.28 P60 = 1.9000
 AREA = .001575 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 3.8654 CFS UNIT VOLUME = .9967 B =
 327.55 P60 = 1.9000
 AREA = .001573 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=38 CODE=1

PARTIAL HYDROGRAPH 138.00

RUNOFF VOLUME = 1.32408 INCHES = .2223 ACRE-FEET
 PEAK DISCHARGE RATE = 6.55 CFS AT 1.500 HOURS BASIN
 AREA = .0031 SQ. MI.

*

**BASIN PARCEL 12

COMPUTE NM HYD

ID=39 HYD NO=139 AREA=0.040305 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 83.971 CFS UNIT VOLUME = .9992 B =
526.28 P60 = 1.9000
AREA = .021269 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 46.776 CFS UNIT VOLUME = 1.000 B =
327.55 P60 = 1.9000
AREA = .019036 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=39 CODE=1

PARTIAL HYDROGRAPH 139.00

RUNOFF VOLUME = 1.35930 INCHES = 2.9219 ACRE-FEET
PEAK DISCHARGE RATE = 85.35 CFS AT 1.500 HOURS BASIN
AREA = .0403 SQ. MI.

*

**BASIN EL RANCHO GRANDE I

COMPUTE NM HYD

ID=42 HYD NO=142 AREA=0.046100 SQ MI
PER A=0 B=47.23 C=0 D=52.77
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 96.044 CFS UNIT VOLUME = .9993 B =
526.28 P60 = 1.9000
AREA = .024327 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 53.502 CFS UNIT VOLUME = 1.000 B =
327.55 P60 = 1.9000
AREA = .021773 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD

ID=42 CODE=1

PARTIAL HYDROGRAPH 142.00

RUNOFF VOLUME = 1.35930 INCHES = 3.3420 ACRE-FEET
 PEAK DISCHARGE RATE = 97.62 CFS AT 1.500 HOURS BASIN
 AREA = .0461 SQ. MI.

*

**BASIN SILVERADO SUBDIVISION UNITS 1&2
 COMPUTE NM HYD ID=43 HYD NO=143 AREA=0.036431 SQ MI
 PER A=0 B=48.08 C=0 D=51.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 74.677 CFS UNIT VOLUME = .9992 B =
 526.28 P60 = 1.9000
 AREA = .018915 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
 SHAPE CONSTANT, N = 3.599930
 UNIT PEAK = 43.041 CFS UNIT VOLUME = 1.000 B =
 327.55 P60 = 1.9000
 AREA = .017516 SQ MI IA = .50000 INCHES INF =
 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

PRINT HYD ID=43 CODE=1

PARTIAL HYDROGRAPH 143.00

RUNOFF VOLUME = 1.34837 INCHES = 2.6199 ACRE-FEET
 PEAK DISCHARGE RATE = 76.67 CFS AT 1.500 HOURS BASIN
 AREA = .0364 SQ. MI.

*

**BASIN GIBSON BLVD
 COMPUTE NM HYD ID=44 HYD NO=144 AREA=0.012841 SQ MI
 PER A=0 B=50 C=0 D=50
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 25.348 CFS UNIT VOLUME = .9989 B =
 526.28 P60 = 1.9000
 AREA = .006421 SQ MI IA = .10000 INCHES INF =
 .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
 METHOD - DT = .033330

76

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 15.777 CFS UNIT VOLUME = .9995 B =
327.55 P60 = 1.9000
AREA = .006421 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=44 CODE=1

PARTIAL HYDROGRAPH 144.00

RUNOFF VOLUME = 1.32370 INCHES = .9065 ACRE-FEET
PEAK DISCHARGE RATE = 26.66 CFS AT 1.500 HOURS BASIN
AREA = .0128 SQ. MI.

*
**BASIN GIBSON/UNSER RUNOFF
COMPUTE NM HYD ID=48 HYD NO=148 AREA=.007274 SQ MI
PER A=0 B=50 C=0 D=50
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.359 CFS UNIT VOLUME = .9985 B =
526.28 P60 = 1.9000
AREA = .003637 SQ MI IA = .10000 INCHES INF =
.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950
SHAPE CONSTANT, N = 3.599930
UNIT PEAK = 8.9370 CFS UNIT VOLUME = .9988 B =
327.55 P60 = 1.9000
AREA = .003637 SQ MI IA = .50000 INCHES INF =
1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER
METHOD - DT = .033330

PRINT HYD ID=48 CODE=1

PARTIAL HYDROGRAPH 148.00

RUNOFF VOLUME = 1.32370 INCHES = .5135 ACRE-FEET
PEAK DISCHARGE RATE = 15.11 CFS AT 1.500 HOURS BASIN
AREA = .0073 SQ. MI.

*
ADD HYD ID=20 HYD NO=120 ID=1 ID=2
PRINT HYD ID=20 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 1.45799 INCHES = 1.5175 ACRE-FEET
 PEAK DISCHARGE RATE = 43.64 CFS AT 1.500 HOURS BASIN
 AREA = .0195 SQ. MI.

*
 ADD HYD ID=21 HYD NO=121 ID=3 ID=4
 PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 121.00

RUNOFF VOLUME = 1.30432 INCHES = .2674 ACRE-FEET
 PEAK DISCHARGE RATE = 7.92 CFS AT 1.500 HOURS BASIN
 AREA = .0038 SQ. MI.

*
 ADD HYD ID=22 HYD NO=122 ID=5 ID=6
 PRINT HYD ID=22 CODE=1

PARTIAL HYDROGRAPH 122.00

RUNOFF VOLUME = 1.23942 INCHES = .3667 ACRE-FEET
 PEAK DISCHARGE RATE = 10.99 CFS AT 1.500 HOURS BASIN
 AREA = .0055 SQ. MI.

*
 ADD HYD ID=23 HYD NO=123 ID=7 ID=8
 PRINT HYD ID=23 CODE=1

PARTIAL HYDROGRAPH 123.00

RUNOFF VOLUME = 1.51002 INCHES = .2366 ACRE-FEET
 PEAK DISCHARGE RATE = 6.78 CFS AT 1.500 HOURS BASIN
 AREA = .0029 SQ. MI.

*
 ADD HYD ID=24 HYD NO=124 ID=9 ID=10
 PRINT HYD ID=24 CODE=1

PARTIAL HYDROGRAPH 124.00

RUNOFF VOLUME = 1.41356 INCHES = .3829 ACRE-FEET
 PEAK DISCHARGE RATE = 11.11 CFS AT 1.500 HOURS BASIN
 AREA = .0051 SQ. MI.

*

ADD HYD ID=25 HYD NO=125 ID=11 ID=12
 PRINT HYD ID=25 CODE=1

PARTIAL HYDROGRAPH 125.00

RUNOFF VOLUME = 1.31482 INCHES = .3441 ACRE-FEET
 PEAK DISCHARGE RATE = 10.16 CFS AT 1.500 HOURS BASIN
 AREA = .0049 SQ. MI.

*
 ADD HYD ID=26 HYD NO=126 ID=13 ID=14
 PRINT HYD ID=26 CODE=1

PARTIAL HYDROGRAPH 126.00

RUNOFF VOLUME = 1.14369 INCHES = .1001 ACRE-FEET
 PEAK DISCHARGE RATE = 3.09 CFS AT 1.500 HOURS BASIN
 AREA = .0016 SQ. MI.

*
 ADD HYD ID=27 HYD NO=127 ID=15 ID=16
 PRINT HYD ID=27 CODE=1

PARTIAL HYDROGRAPH 127.00

RUNOFF VOLUME = 1.20675 INCHES = .1735 ACRE-FEET
 PEAK DISCHARGE RATE = 5.25 CFS AT 1.500 HOURS BASIN
 AREA = .0027 SQ. MI.

*
 ADD HYD ID=28 HYD NO=128 ID=17 ID=18
 PRINT HYD ID=28 CODE=1

PARTIAL HYDROGRAPH 128.00

RUNOFF VOLUME = 1.48109 INCHES = .9429 ACRE-FEET
 PEAK DISCHARGE RATE = 26.67 CFS AT 1.500 HOURS BASIN
 AREA = .0119 SQ. MI.

*
 ADD HYD ID=29 HYD NO=129 ID=20 ID=21
 PRINT HYD ID=29 CODE=1

PARTIAL HYDROGRAPH 129.00

RUNOFF VOLUME = 1.43270 INCHES = 1.7849 ACRE-FEET
 PEAK DISCHARGE RATE = 51.56 CFS AT 1.500 HOURS BASIN
 AREA = .0234 SQ. MI.

*

ADD HYD
PRINT HYD

ID=30 HYD NO=130 ID=22 ID=23
ID=30 CODE=1

PARTIAL HYDROGRAPH 130.00

RUNOFF VOLUME = 1.33312 INCHES = .6033 ACRE-FEET
PEAK DISCHARGE RATE = 17.77 CFS AT 1.500 HOURS BASIN
AREA = .0085 SQ. MI.

*

ADD HYD
PRINT HYD

ID=31 HYD NO=131 ID=24 ID=25
ID=31 CODE=1

PARTIAL HYDROGRAPH 131.00

RUNOFF VOLUME = 1.36504 INCHES = .7270 ACRE-FEET
PEAK DISCHARGE RATE = 21.27 CFS AT 1.500 HOURS BASIN
AREA = .0100 SQ. MI.

*

ADD HYD
PRINT HYD

ID=32 HYD NO=132 ID=26 ID=27
ID=32 CODE=1

PARTIAL HYDROGRAPH 132.00

RUNOFF VOLUME = 1.18289 INCHES = .2736 ACRE-FEET
PEAK DISCHARGE RATE = 8.34 CFS AT 1.500 HOURS BASIN
AREA = .0043 SQ. MI.

*

ADD HYD
PRINT HYD

ID=33 HYD NO=133 ID=28 ID=19
ID=33 CODE=1

PARTIAL HYDROGRAPH 133.00

RUNOFF VOLUME = 1.42465 INCHES = 1.2026 ACRE-FEET
PEAK DISCHARGE RATE = 34.39 CFS AT 1.500 HOURS BASIN
AREA = .0158 SQ. MI.

*

ADD HYD
PRINT HYD

ID=34 HYD NO=134 ID=29 ID=30
ID=34 CODE=1

PARTIAL HYDROGRAPH 134.00

RUNOFF VOLUME = 1.40617 INCHES = 2.3882 ACRE-FEET
 PEAK DISCHARGE RATE = 69.32 CFS AT 1.500 HOURS BASIN
 AREA = .0318 SQ. MI.

*

ADD HYD ID=35 HYD NO=135 ID=31 ID=32
 PRINT HYD ID=35 CODE=1

PARTIAL HYDROGRAPH 135.00

RUNOFF VOLUME = 1.30988 INCHES = 1.0006 ACRE-FEET
 PEAK DISCHARGE RATE = 29.61 CFS AT 1.500 HOURS BASIN
 AREA = .0143 SQ. MI.

*

ADD HYD ID=36 HYD NO=136 ID=34 ID=35
 PRINT HYD ID=36 CODE=1

PARTIAL HYDROGRAPH 136.00

RUNOFF VOLUME = 1.37630 INCHES = 3.3888 ACRE-FEET
 PEAK DISCHARGE RATE = 98.94 CFS AT 1.500 HOURS BASIN
 AREA = .0462 SQ. MI.

*

ADD HYD ID=37 HYD NO=137 ID=33 ID=36
 PRINT HYD ID=37 CODE=1

PARTIAL HYDROGRAPH 137.00

RUNOFF VOLUME = 1.38864 INCHES = 4.5915 ACRE-FEET
 PEAK DISCHARGE RATE = 133.32 CFS AT 1.500 HOURS BASIN
 AREA = .0620 SQ. MI.

*

ADD HYD ID=40 HYD NO=140 ID=38 ID=39
 PRINT HYD ID=40 CODE=1

PARTIAL HYDROGRAPH 140.00

RUNOFF VOLUME = 1.35674 INCHES = 3.1442 ACRE-FEET
 PEAK DISCHARGE RATE = 91.90 CFS AT 1.500 HOURS BASIN
 AREA = .0435 SQ. MI.

*

ADD HYD ID=41 HYD NO=141 ID=37 ID=40

PRINT HYD

ID=41 CODE=1

PARTIAL HYDROGRAPH 141.00

RUNOFF VOLUME = 1.37549 INCHES = 7.7357 ACRE-FEET
 PEAK DISCHARGE RATE = 225.22 CFS AT 1.500 HOURS BASIN
 AREA = .1054 SQ. MI.

*

ADD HYD
PRINT HYD

ID=45 HYD NO=145 ID=41 ID=42
ID=45 CODE=1

PARTIAL HYDROGRAPH 145.00

RUNOFF VOLUME = 1.37057 INCHES = 11.0777 ACRE-FEET
 PEAK DISCHARGE RATE = 322.84 CFS AT 1.500 HOURS BASIN
 AREA = .1515 SQ. MI.

*

ADD HYD
PRINT HYD

ID=46 HYD NO=146 ID=43 ID=44
ID=46 CODE=1

PARTIAL HYDROGRAPH 146.00

RUNOFF VOLUME = 1.34193 INCHES = 3.5264 ACRE-FEET
 PEAK DISCHARGE RATE = 103.33 CFS AT 1.500 HOURS BASIN
 AREA = .0493 SQ. MI.

*

ADD HYD
PRINT HYD

ID=47 HYD NO=147 ID=45 ID=46
ID=47 CODE=1

PARTIAL HYDROGRAPH 147.00

RUNOFF VOLUME = 1.36354 INCHES = 14.6041 ACRE-FEET
 PEAK DISCHARGE RATE = 426.18 CFS AT 1.500 HOURS BASIN
 AREA = .2008 SQ. MI.

*

ADD HYD
PRINT HYD

ID=49 HYD NO=149 ID=47 ID=48
ID=49 CODE=1

PARTIAL HYDROGRAPH 149.00

RUNOFF VOLUME = 1.36215 INCHES = 15.1176 ACRE-FEET
 PEAK DISCHARGE RATE = 441.28 CFS AT 1.500 HOURS BASIN
 AREA = .2081 SQ. MI.

*
 *DIVIDE BY MAXIMUM FLOW RATE
 DIVIDE HYD ID=49 Q=48.48 ID I=50 HYD NO=150
 ID II=51 HYD NO=151
 * ROUTING THROUGH POND
 *

ROUTE RESERVOIR	ID=52 HYD NO=152 OUTFLOW(CFS)	INFLOW ID=51 CODE=24 STORAGE (AC-FT)
ELEVATION(FT)		
	0.0	0.0
40.0		
	46.33	1.174
41.0		
	65.51	2.187
42.0		
	80.24	3.643
43.0		
	92.65	5.146
44.0		
	103.59	6.800
45.0		

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	40.00	.000	.00
.80	.00	40.00	.000	.00
1.60	268.89	43.80	4.840	90.13
2.40	.00	42.49	2.897	72.70
3.20	.00	40.23	.267	10.53
4.00	.00	40.02	.020	.77
4.80	.00	40.00	.001	.06
5.60	.00	40.00	.000	.00
PEAK DISCHARGE = 97.931 CFS - PEAK OCCURS AT HOUR 1.80				
MAXIMUM WATER SURFACE ELEVATION = 44.483				
MAXIMUM STORAGE = 5.9444 AC-FT INCREMENTAL TIME=				
.033330HRS				

PRINT HYD ID=52 CODE=1

PARTIAL HYDROGRAPH 152.00

RUNOFF VOLUME = 1.36215 INCHES = 10.0316 ACRE-FEET
 PEAK DISCHARGE RATE = 97.93 CFS AT 1.800 HOURS BASIN
 AREA = .1381 SQ. MI.

FINISH

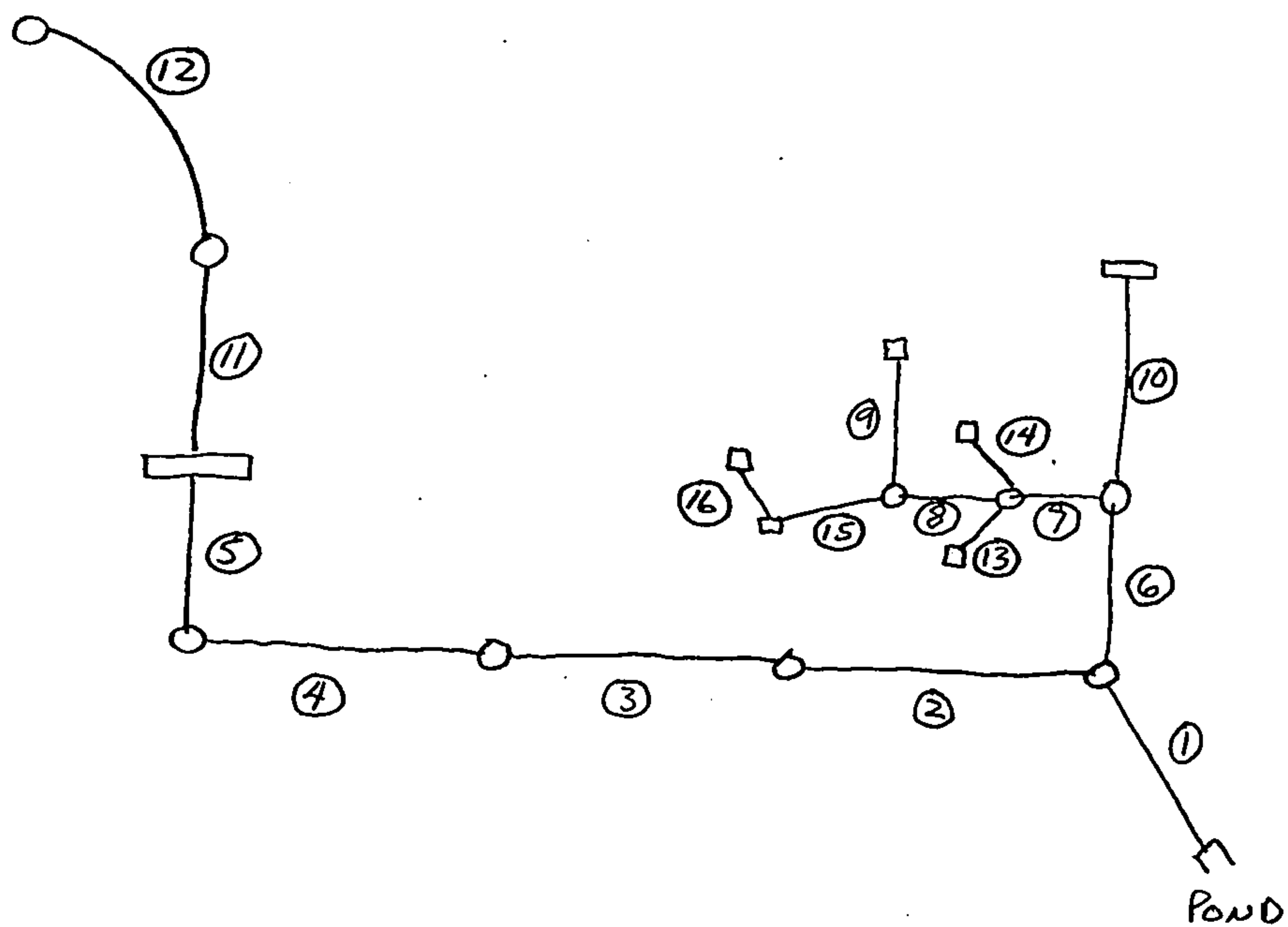
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 14:44:41

HYDRAULIC REPORT FOR

EL RANCHO GRANDE I

GIBSON BLVD STORMDRAIN

INTERIOR STORMDRAIN



Run date: 02-17-2000
File: ELRANCHO.ST3

Return Period = 100 Yrs
Rainfall file: Your_County

LINE 1 / Q = 376.0 / HT = 66 / WID = 66 / N = .013 / L = 225 / JLC = .25
1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.17	62.09	40.00	16.11	49.20	28.21	4.5	23.34
UPSTRM	47.95	66.00	41.77	15.82	51.84	0.00	8.97	23.76

Drainage area (ac)	=	0	Slope of invert (%)	=	0.787
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.170
Time of conc (min)	=	11	Critical depth (in)	=	62.09
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	344.5
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	98.9
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	375.9	Confluence angle (deg)	=	45
Default Q (cfs)	=	375.97	Natural ground elev (ft)	=	56.25
Line capac. (cfs)	=	297.9	Line storage (cuft)	=	5299

LINE 2 / Q = 194.6 / HT = 48 / WID = 48 / N = .013 / L = 400 / JLC = .25
2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	48.92	48.00	42.77	15.49	52.65	0.00	9.47	12.56
UPSTRM	58.34	46.65	54.45	15.61	62.12	15.85	9.54	12.47

Drainage area (ac)	=	0	Slope of invert (%)	=	2.920
Runoff coefficient	=	0	Slope energy grade line (%)	=	2.369
Time of conc (min)	=	9	Critical depth (in)	=	46.61
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	178.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	51.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	194.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	194.63	Natural ground elev (ft)	=	68
Line capac. (cfs)	=	245.5	Line storage (cuft)	=	5006

LINE 3 / Q = 194.6 / HT = 48 / WID = 48 / N = .013 / L = 400 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	59.28	48.00	54.45	15.49	63.01	0.00	9.54	12.56
UPSTRM	66.43	47.81	62.45	15.49	70.16	6.06	6.54	12.56

Drainage area (ac)	=	0	Slope of invert (%)	=	2.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.788
Time of conc (min)	=	7	Critical depth (in)	=	46.61
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	178.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	51.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	194.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	194.63	Natural ground elev (ft)	=	73
Line capac. (cfs)	=	203.1	Line storage (cuft)	=	5025

LINE 4 / Q = 194.6 / HT = 48 / WID = 48 / N = .013 / L = 364 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	67.37	48.00	62.45	15.49	71.09	0.00	6.54	12.56
UPSTRM	73.64	46.88	69.73	15.58	77.41	14.49	3.76	12.49

Drainage area (ac)	=	0	Slope of invert (%)	=	2.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.735
Time of conc (min)	=	5	Critical depth (in)	=	46.61
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	178.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	51.2
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	194.6	Confluence angle (deg)	=	0
Default Q (cfs)	=	194.63	Natural ground elev (ft)	=	77.5
Line capac. (cfs)	=	203.1	Line storage (cuft)	=	4560

LINE 5 / Q = 109.3 / HT = 42 / WID = 42 / N = .013 / L = 135 / JLC = .25
 5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	74.58	42.00	69.73	11.36	76.58	0.00	4.26	9.62
UPSTRM	76.17	42.00	71.08	11.36	78.18	0.00	3.76	9.62

Drainage area (ac)	=	0	Slope of invert (%)	=	1.000
Runoff coefficient	=	0	Slope energy grade line (%)	=	1.180
Time of conc (min)	=	4	Critical depth (in)	=	38.43
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	100.1
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	28.7
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	109.2	Confluence angle (deg)	=	90
Default Q (cfs)	=	109.28	Natural ground elev (ft)	=	78.35
Line capac. (cfs)	=	100.6	Line storage (cuft)	=	1299

LINE 6 / Q = 170.5 / HT = 54 / WID = 54 / N = .013 / L = 200 / JLC = .25
 6 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	48.92	54.00	41.77	10.72	50.70	0.00	9.97	15.90
UPSTRM	50.42	54.00	43.35	10.72	52.21	0.00	9.73	15.90

Drainage area (ac)	=	0	Slope of invert (%)	=	0.790
Runoff coefficient	=	0	Slope energy grade line (%)	=	0.752
Time of conc (min)	=	2	Critical depth (in)	=	44.94
Inlet time (min)	=	0	Req'd length curb inlet (ft)	=	156.3
Intensity (in/hr)	=	0.00	Req'd grate area (sf)	=	44.9
Cumulative C*A	=	0.0	Depth at inlet opening (in)	=	6
Flow contrib (cfs)	=	170.5	Confluence angle (deg)	=	-45
Default Q (cfs)	=	170.54	Natural ground elev (ft)	=	57.58
Line capac. (cfs)	=	174.8	Line storage (cuft)	=	3181

LINE 7 / Q = 57.4 / HT = 30 / WID = 30 / N = .013 / L = 185 / JLC = .25
 7 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.87	30.00	43.35	11.70	52.99	0.00	11.73	4.91
UPSTRM	54.50	30.00	47.72	11.69	56.62	0.00	9.23	4.91

Drainage area (ac) =	0	Slope of invert (%) =	2.362
Runoff coefficient =	0	Slope energy grade line (%) =	1.959
Time of conc (min) =	1	Critical depth (in) =	28.86
Inlet time (min) =	0	Req'd length curb inlet (ft) =	52.6
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	15.1
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	57.4	Confluence angle (deg) =	90
Default Q (cfs) =	57.4	Natural ground elev (ft) =	59.46
Line capac. (cfs) =	63.0	Line storage (cuft) =	908

LINE 8 / Q = 43.4 / HT = 24 / WID = 24 / N = .013 / L = 50 / JLC = .25

8 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.03	24.00	48.22	13.82	57.99	0.00	9.23	3.14
UPSTRM	56.87	24.00	50.00	13.81	59.83	0.00	8.7	3.14

Drainage area (ac) =	0	Slope of invert (%) =	3.560
Runoff coefficient =	0	Slope energy grade line (%) =	3.683
Time of conc (min) =	0	Critical depth (in) =	23.78
Inlet time (min) =	0	Req'd length curb inlet (ft) =	39.8
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	11.4
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	43.4	Confluence angle (deg) =	0
Default Q (cfs) =	43.4	Natural ground elev (ft) =	60.71
Line capac. (cfs) =	42.7	Line storage (cuft) =	157

LINE 9 / Q = 18.4 / HT = 18 / WID = 18 / N = .013 / L = 75 / JLC = .25

9 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	57.61	18.00	50.50	10.41	59.29	0.00	8.7	1.77
UPSTRM	60.33	18.00	55.57	10.41	62.02	0.00	4.4	1.77

Drainage area (ac) =	0	Slope of invert (%) =	6.760
Runoff coefficient =	0	Slope energy grade line (%) =	3.632
Time of conc (min) =	0	Critical depth (in) =	17.62
Inlet time (min) =	0	Req'd length curb inlet (ft) =	16.9
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	4.8
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	18.3	Confluence angle (deg) =	90
Default Q (cfs) =	18.4	Natural ground elev (ft) =	61.48
Line capac. (cfs) =	27.3	Line storage (cuft) =	133

LINE 10 / Q = 113.1 / HT = 42 / WID = 42 / N = .013 / L = 340 / JLC = .25

10 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	50.87	42.00	43.35	11.76	53.02	0.00	10.73	9.62
UPSTRM	55.71	42.00	47.77	11.76	57.86	0.00	5.29	9.62

Drainage area (ac) =	0	Slope of invert (%) =	1.300
Runoff coefficient =	0	Slope energy grade line (%) =	1.423
Time of conc (min) =	0	Critical depth (in) =	38.99
Inlet time (min) =	0	Req'd length curb inlet (ft) =	103.7
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	29.8
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	113.1	Confluence angle (deg) =	0
Default Q (cfs) =	113.14	Natural ground elev (ft) =	56.56
Line capac. (cfs) =	114.7	Line storage (cuft) =	3271

LINE 11 / Q = 34.4 / HT = 30 / WID = 30 / N = .013 / L = 300 / JLC = .25

11 / DNLN = 5

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	76.67	30.00	71.08	7.01	77.44	0.00	4.76	4.91
UPSTRM	78.79	30.00	74.08	7.01	79.55	0.00	4.91	4.91

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.704
Time of conc (min) =	3	Critical depth (in) =	23.52
Inlet time (min) =	0	Req'd length curb inlet (ft) =	31.5
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	9.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	34.4	Confluence angle (deg) =	0
Default Q (cfs) =	34.4	Natural ground elev (ft) =	81.5
Line capac. (cfs) =	41.0	Line storage (cuft) =	1472

LINE 12 / Q = 34.4 / HT = 30 / WID = 30 / N = .013 / L = 450 / JLC = .25

12 / DNLN = 11

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	78.98	30.00	74.08	7.01	79.74	0.00	4.91	4.91
UPSTRM	82.33	30.00	78.58	7.01	83.10	0.00	5.09	4.91

Drainage area (ac) =	0	Slope of invert (%) =	1.000
Runoff coefficient =	0	Slope energy grade line (%) =	0.746
Time of conc (min) =	0	Critical depth (in) =	23.52
Inlet time (min) =	0	Req'd length curb inlet (ft) =	31.5
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	9.0
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	34.4	Confluence angle (deg) =	45
Default Q (cfs) =	34.4	Natural ground elev (ft) =	86.18
Line capac. (cfs) =	41.0	Line storage (cuft) =	2209

LINE 13 / Q = 14.0 / HT = 18 / WID = 18 / N = .013 / L = 25 / JLC = .25

13 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.31	13.35	54.20	9.96	56.85	15.76	3.75	1.41
UPSTRM	56.25	13.35	54.75	9.96	57.79	15.76	3.68	1.41

Drainage area (ac)	= 0	Slope of invert (%)	= 2.200
Runoff coefficient	= 0	Slope energy grade line (%)	= 3.742
Time of conc (min)	= 0	Critical depth (in)	= 16.71
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 12.8
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 3.7
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 6
Flow contrib (cfs)	= 14	Confluence angle (deg)	= 45
Default Q (cfs)	= 14	Natural ground elev (ft)	= 59.94
Line capac. (cfs)	= 15.6	Line storage (cuft)	= 35

LINE 14 / Q = 14.0 / HT = 18 / WID = 18 / N = .013 / L = 25 / JLC = .25

14 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.59	16.71	54.20	8.18	56.63	9.28	3.75	1.71
UPSTRM	56.32	18.00	54.50	7.92	57.29	0.00	3.7	1.77

Drainage area (ac)	= 0	Slope of invert (%)	= 1.200
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.632
Time of conc (min)	= 0	Critical depth (in)	= 16.71
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 12.8
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 3.7
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 6
Flow contrib (cfs)	= 14	Confluence angle (deg)	= -45
Default Q (cfs)	= 14	Natural ground elev (ft)	= 59.7
Line capac. (cfs)	= 11.5	Line storage (cuft)	= 43

LINE 15 / Q = 11.0 / HT = 18 / WID = 18 / N = .013 / L = 30 / JLC = .25

15 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	57.61	18.00	55.10	6.23	58.21	0.00	4.11	1.77
UPSTRM	57.94	18.00	55.86	6.22	58.54	0.00	3.82	1.77

Drainage area (ac) =	0	Slope of invert (%) =	2.533
Runoff coefficient =	0	Slope energy grade line (%) =	1.097
Time of conc (min) =	0	Critical depth (in) =	15.19
Inlet time (min) =	0	Req'd length curb inlet (ft) =	10.1
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	2.9
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	11	Confluence angle (deg) =	0
Default Q (cfs) =	11	Natural ground elev (ft) =	61.19
Line capac. (cfs) =	16.7	Line storage (cuft) =	53

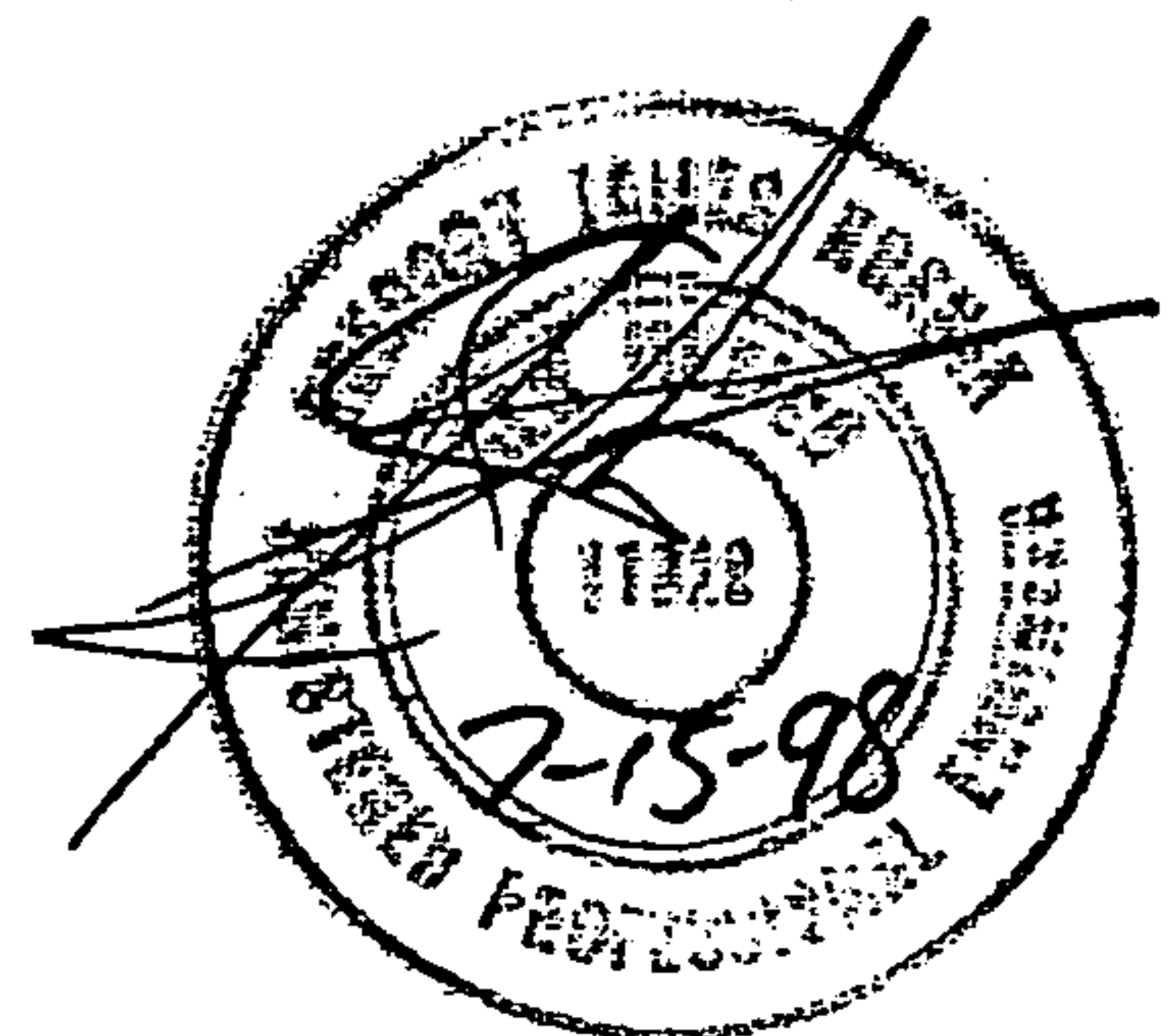
LINE 16 / Q = 5.5 / HT = 18 / WID = 18 / N = .013 / L = 30 / JLC = .25

16 / DNLN = 15

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	58.09	18.00	55.86	3.11	58.24	0.00	3.82	1.77
UPSTRM	58.21	18.00	56.22	3.11	58.36	0.00	3.93	1.77

Drainage area (ac) =	0	Slope of invert (%) =	1.200
Runoff coefficient =	0	Slope energy grade line (%) =	0.274
Time of conc (min) =	0	Critical depth (in) =	10.74
Inlet time (min) =	0	Req'd length curb inlet (ft) =	5.0
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	1.4
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	5.5	Confluence angle (deg) =	90
Default Q (cfs) =	5.5	Natural ground elev (ft) =	61.66
Line capac. (cfs) =	11.5	Line storage (cuft) =	53

DRAINAGE CALCULATIONS
FOR
SILVERADO SUBDIVISION

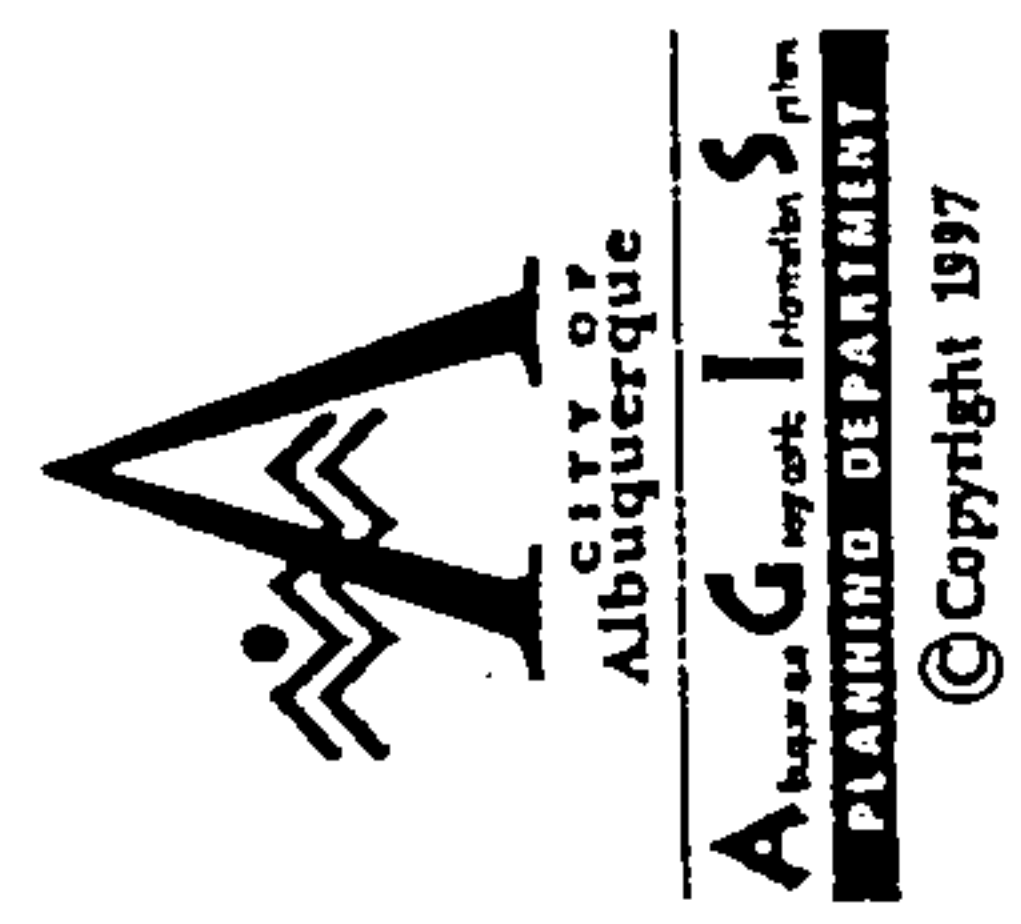
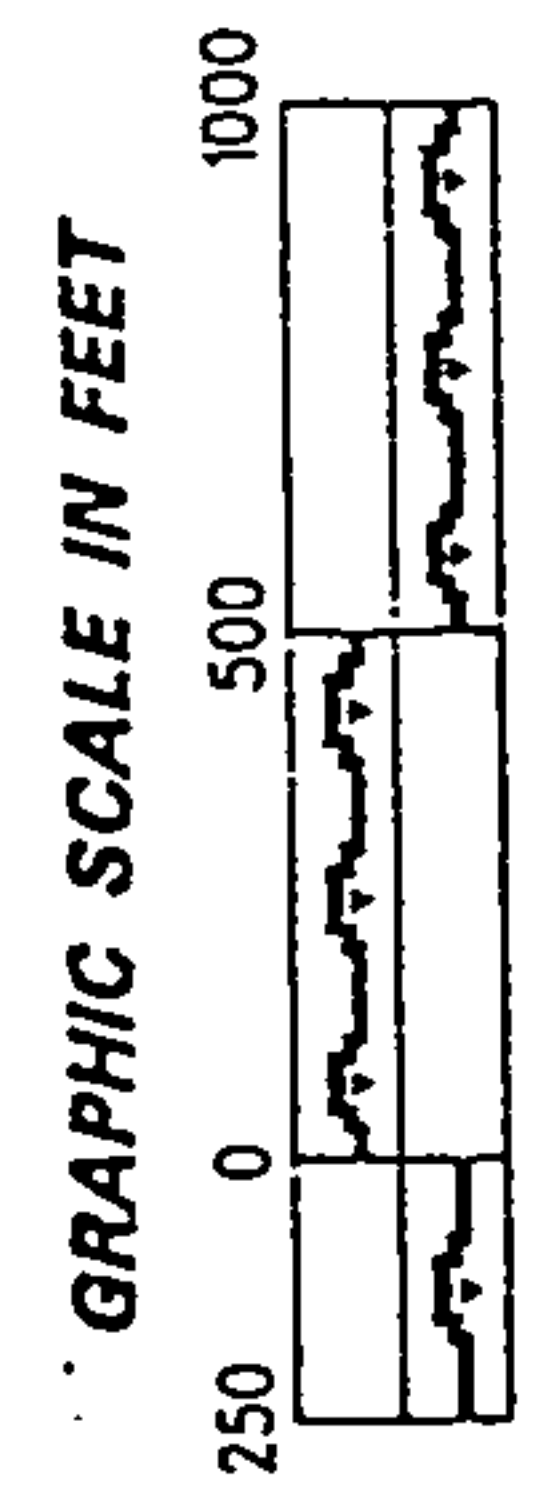
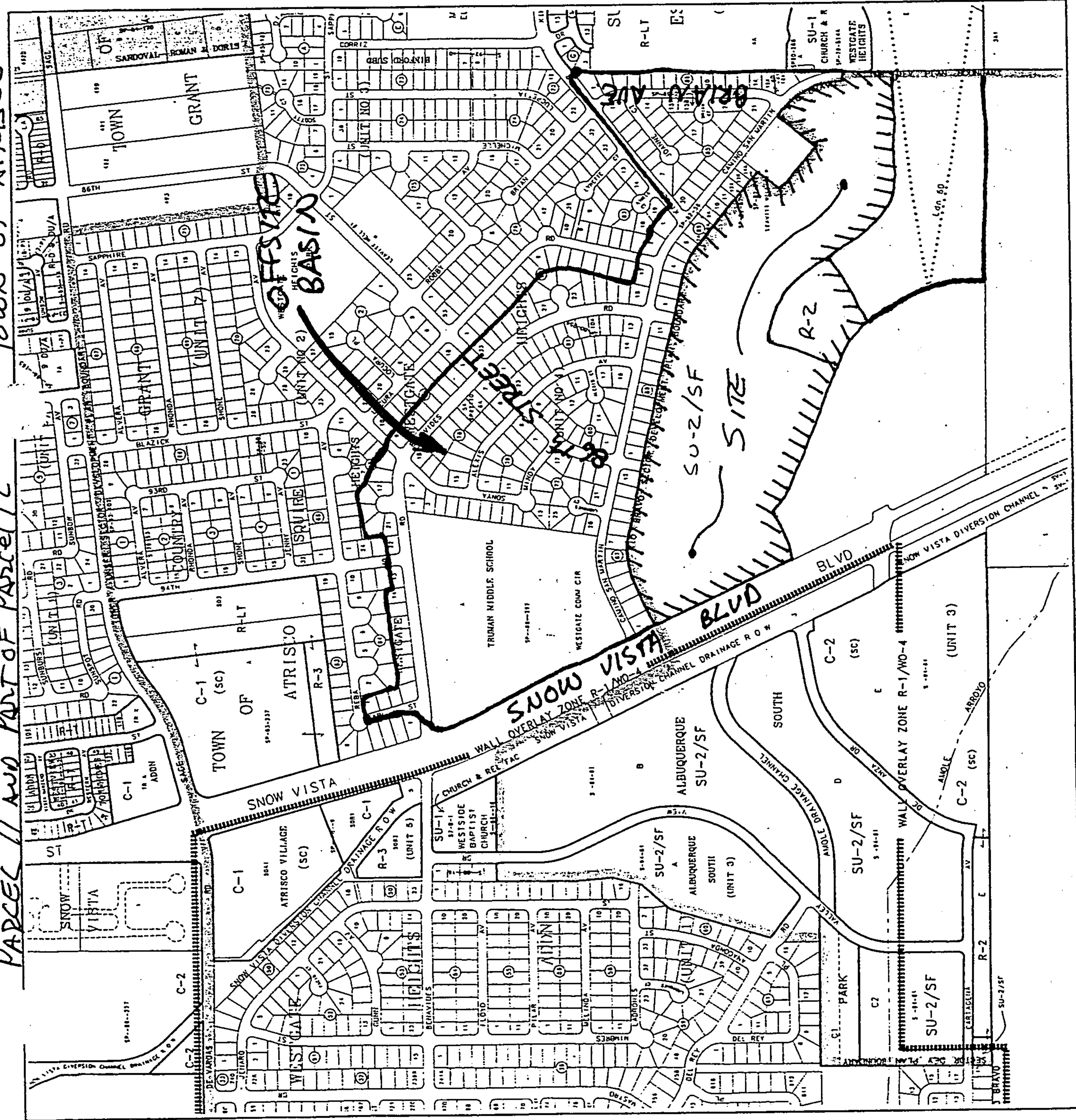


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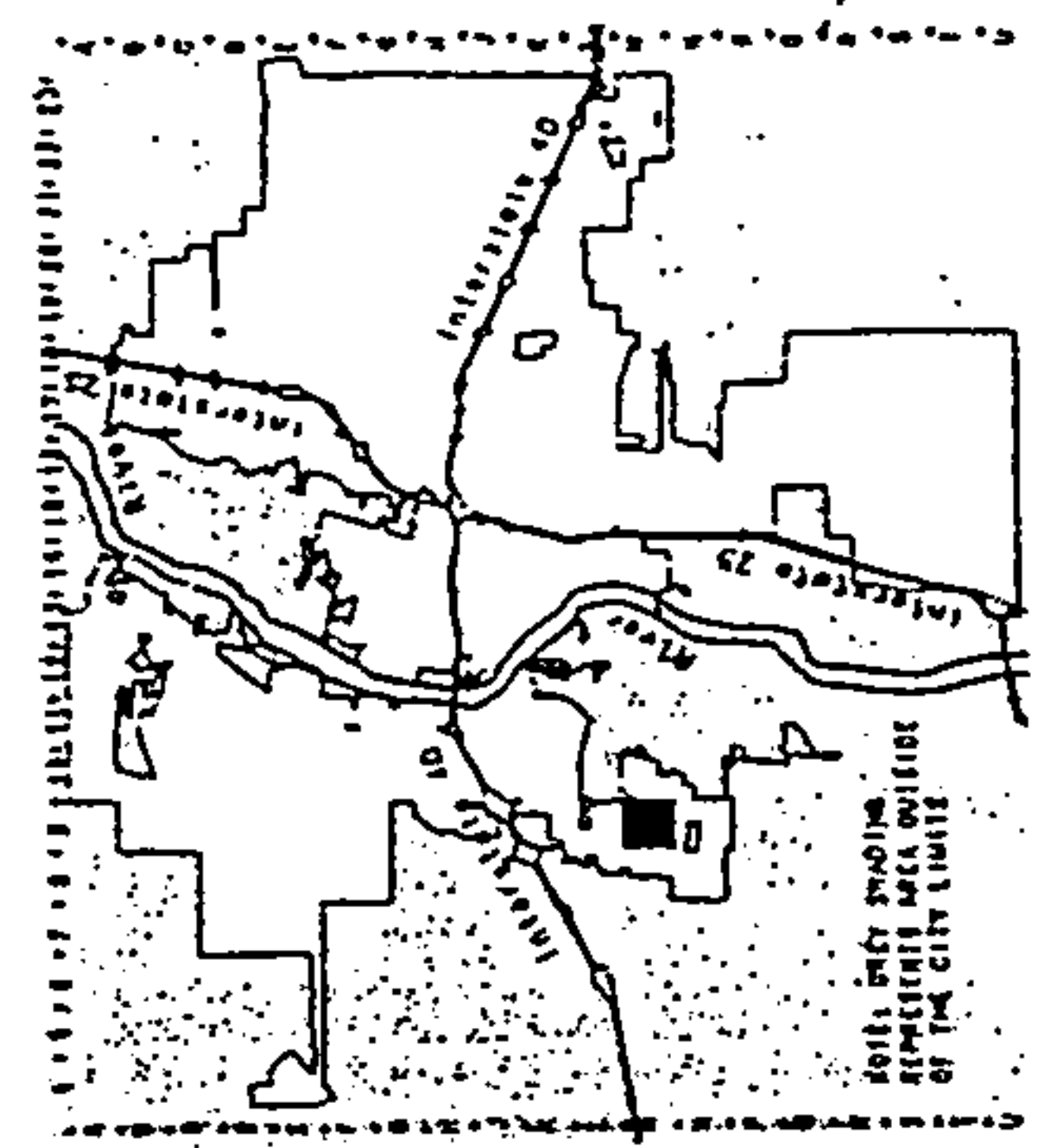
8-25-98

9-30-98

PARCEL 11 AND PART OF PARCEL 12 TOWN OF ATRISCO



Map Amended through February 17, 1997



LEGAL DESCRIPTION
T10N
R2E
SEC 33

UNIFORM PROPERTY CODE
1-000-085

M-9-Z



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT SILVERADO SUBDIVISION

SUBJECT DRAINAGE CALCS

BY GJK DATE 6-25-98

CHECKED _____ DATE _____

SHEET 1 OF _____

REVISED 8-5-98

- SITE IS PART OF THE RIO BRAVO SECTOR PLAN.
- SITE IS NOT IN A 100 YR FLOOD ZONE.
- OFFSITE FLOWS COULD IMPACT THE SITE BUT DEPENDS ON THE DESIGN OF SNOW VISTA AND THE FUTURE 98th STREET. A WORST CASE WOULD BE THE AREA BETWEEN THE ROW AND OUR SITE WOULD DRAIN TOWARD OUR LOTS BUT COULD EASILY BE DIVERTED IN A SWALE AND DISCHARGE TO THE SNOW VISTA CHANNEL. WE WILL ASSUME FOR THIS REPORT THAT OFFSITE FLOWS DO NOT IMPACT THE SITE.

• TOTAL SITE = 48.9141 AC + 0.2146 + 86th ST ROW AT WEST END

• NUMBER OF RESIDENTIAL LOTS = 241 (SU-2/SF)

$$\text{PAD SIZE} = 56' \times 28' = 1568$$

$$\text{DRIVE PAD} = 20' \times 20' = 400$$

$$\frac{1968}{1968} \times 241 = 474,288 \text{ sq ft} = 10.8882 \text{ AC.}$$

"TYPE D"

- THE SITE IS SPLIT INTO TWO DIFFERENT ZONING DESIGNATIONS THE BULK OF THE SITE IS SU-2/SF WHICH IS THE SINGLE FAMILY LOTS INDICATED ABOVE. THE REMAINING PORTION IS ZONED R-2 (SEE MAP)

$$\text{AREA SU-2/SF} = 45.3723 \text{ AC}$$

TRACT "A" → AREA R-2 = 3.5418 AC WILL DRAIN INTO THE SU-2/SF AREA
ROW AT WEST END OF 86th = 0.2146 AC USE 20% B 80% D
AREA OF ROW IN SU-2/SF = 13.4793 AC USE 20% B 80% D

- FIND RUNOFF

SU-2/SF

TYPE "D"

$$10.8882 + 0.8(0.2146 + 13.4793) =$$

$$10.8882 + 10.9551 = 21.8433 \text{ AC}$$

$$\frac{21.8433}{45.3723 - 0.2146} = 47.92\%$$

R-2

USE 80% "D" 2.8334 AC

TYPE "B"

$$(45.3723 - 13.4793)$$

$$(31.8930 - 10.8882) +$$

$$0.2(0.2146 + 13.4793) =$$

$$21.0048 + 2.7388 = 23.7436$$

$$52.08\%$$

USE 20% "B" 0.7084 AC

$$P_1 = 1.90 \text{ in}$$

$$P_6 = 2.2 \text{ in}$$

$$P_{24} = 2.7 \text{ in}$$

CONT. ON SHEET 3



D. Mark Goodwin & Associates, P.A.
Consulting Engineers and Surveyors

PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 8-21-98
CHECKED _____ DATE _____
SHEET 2 OF _____

REVISED 9-22-98

- THIS SITE IS ADJACENT TO SNOW VISTA BLVD R.O.W.
- FINAL GRADES FOR SNOW VISTA ARE SHOWN ON THE G+D PLAN. THESE GRADES WILL BE USED AS A BASE WITH WHICH TO DESIGN THE INTERSECTION WITH 86TH WHICH IS NOT PART OF THIS PROJECT
- THE SNOW VISTA CHANNEL IS A DIRT CHANNEL TO THE VICINITY TO DE ANZA DR. FROM THIS POINT IT FOLLOWS AN EXISTING ARROYO TO THE AMOLE DETENTION BASIN. THE PLANS FOR LINING AND SETTING THE ALIGNMENT FOR THE CHANNEL IS UNKNOWN AT THIS TIME. AND IT FOLLOWS THAT THE CROSSING STRUCTURES ARE ALSO UNKNOWN AT THIS TIME. SEE MASTER PLAN FOR RIO BLVD.
- PER THE TRANSPORTATION DEPARTMENT WE WILL BE REQUIRED TO INSTALL A PERMANENT PAVEMENT SECTION IN SNOW VISTA. THIS WILL BE DONE WITH TEMP. PAVEMENT IN UNIT 1 AND PERM. IN UNIT 4.
- AS PART OF THIS DESIGN IT WILL BE NECESSARY TO GRADE IN THE SNOW VISTA ROW AND THE PNM EASEMENT TO DISCHARGE ROW WATER TO THE SNOW VISTA CHANNEL. WE WILL TENTATIVELY SET GRADE ON THE PROPOSED ALIGNMENT OF SNOW VISTA / 98TH STREET TO GIVE A BASE FOR THE ACTUAL DESIGN OF THIS AREA. GRADING IN PNM'S ROW IS ALLOWED JUST SO THE INTEGRITY OF THE POLES IS NOT COMPROMISED. THE GRADING IN THE ROW AND DISCHARGE TO SNOW VISTA CHANNEL IS NECESSARY TO PREVENT ROW WATER FROM ENTERING THE HOMES BACK YARDS.
- FOR THIS REPORT A DETENTION POND WILL BE REQUIRED. PER A MEETING WITH SUSAN CALONGUE, FRED AGUIRRE, LISA MURWILL (AMAFCA), FRED ARFMAN (DETENTION POND ENGINEER) AND GREG KRENK (MGA) IT WAS DECIDED TO BASE THIS REPORT ON USING THE PROPOSED DETENTION POND THAT WILL BE CONSTRUCTED ON CITY PROPERTY.
- THIS REPORT WILL ADDRESS THE FINAL BUILD OUT WHICH WILL USE THE DETENTION POND AS WELL AS THE PHASING OF THE PROJECT. PHASE I WILL INCORPORATE A TEMP. RETENTION POND. PHASE II WILL INCORPORATE A TEMP. RETENTION POND AND DO A CLOSURE ON PHASE I POND. PHASE III WILL CONNECT TO THE PERMANENT DETENTION POND AND DO A CLOSURE ON PHASE II POND. PHASE III HAS NO STORM MAIN IMPROVEMENTS. TO HANDLE THE RUNOFF ON BARBADOS AVE A SEPARATE FINANCIAL GUARANTEE WILL BE DONE TO DEFER CONSTRUCTION UNTIL THE CONNECTION THROUGH ADJACENT PROPERTY CAN BE MADE TO THE DETENTION POND VIA GIBSON. GRADES FOR THIS CONNECTION ARE SHOWN ON THE GRADING PLANS.



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PROJECT SILVERADO SUBDIVISION

SUBJECT DRAINAGE CALCS

BY GSK DATE 6-25-98

CHECKED _____ DATE _____

SHEET 3 OF _____

REVISED 8-5-98

FROM HYDRO SHEETS 15-20

$$Q_{SURF} = 145.59 \text{ CFS} \quad V = 5.0742 \text{ AC-FT}$$

$$Q_{R-2} = 14.03 \text{ CFS} \quad V = 0.5045 \text{ AC-FT}$$

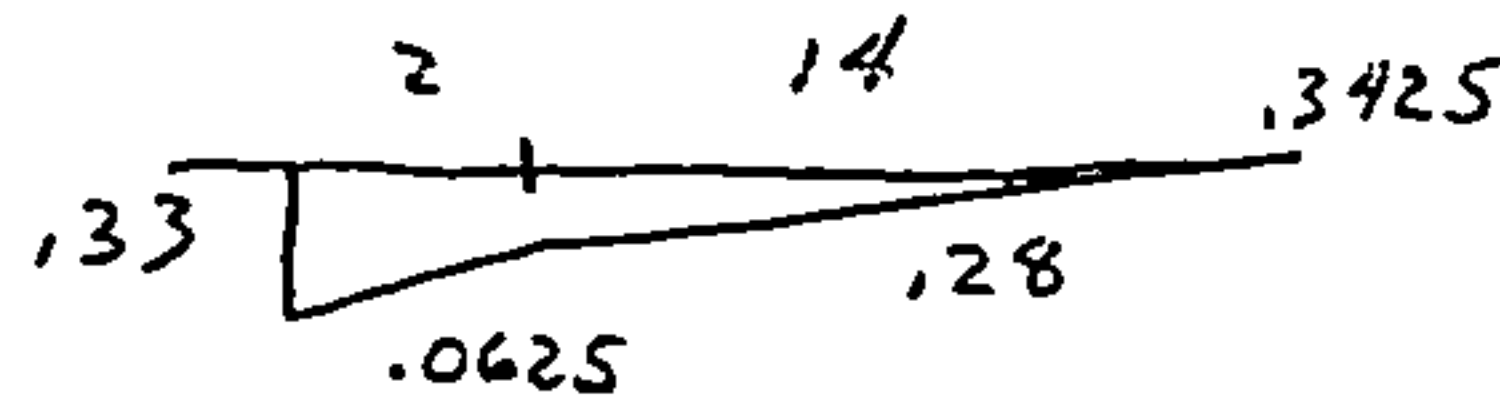
- FIND CFS PER LOT

$$145.59 / 241 = 0.6041 \text{ CFS/LOT}$$

- FIND STREET CAPACITY

MOUNTABLE CURB AT 2%

$$\begin{aligned} d &= .33 \\ WP_{1/2} &= 15.705 \\ A_{1/2} &= 2.3864 \\ V_{1/2} &= 3.52 \text{ F/S} \\ Q_{1/2} &= 8.4 \text{ CFS} \end{aligned}$$



$$d + V^2/2g = 0.52 < 0.53 \text{ OK}$$

$$\text{TOTAL } Q \text{ IN STREET} = 2 \times 8.4 = 16.8 \text{ CFS}$$

- No. of Lots which can drain to street

$$16.8 / 0.6041 = 27.81$$

MOUNTABLE CURB AT 1%

$$\begin{aligned} d &= .33 \\ WP &= 15.705 \\ A &= 2.3864 \\ V_{1/2} &= 2.489 \text{ F/S} \\ Q_{1/2} &= 5.94 \text{ CFS} \end{aligned}$$

$$d + V^2/2g = 0.43 < 0.53 \text{ OK}$$

$$\text{TOTAL } Q = 2 \times 5.94 = 11.88 \text{ CFS}$$

- No. of Lots to drain

$$11.88 / 0.6041 = 19.67$$

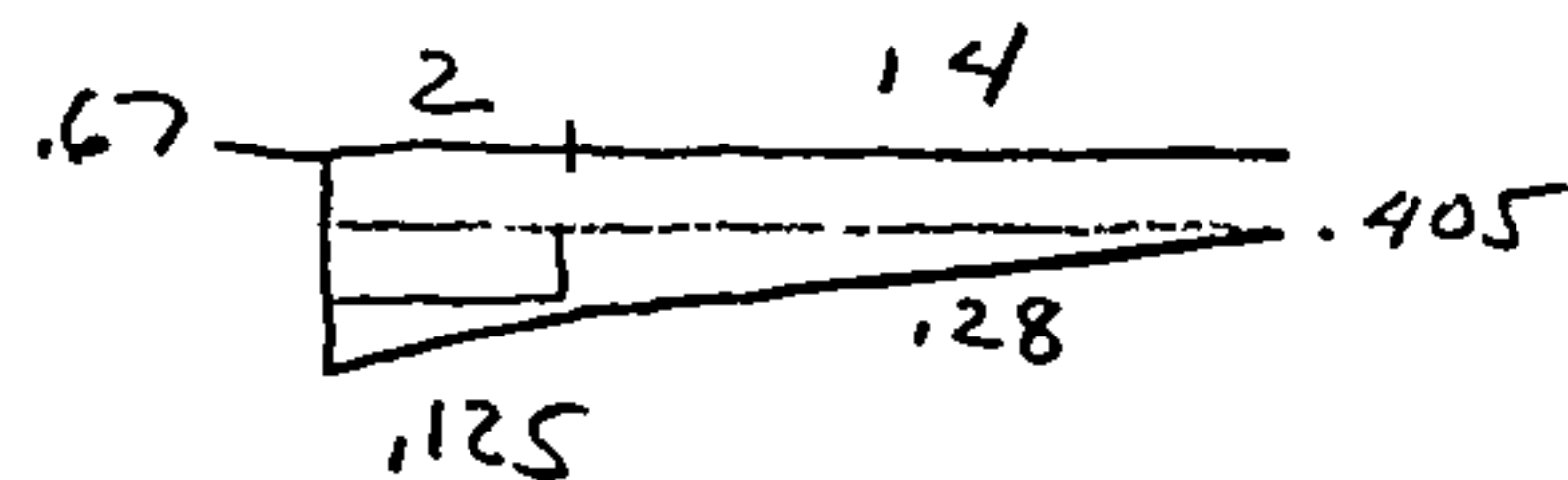


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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 4 OF _____
REVISED 8-5-98

STANDARD C+G AT 1%₀

$$\begin{aligned}d &= .59 \\WP &= 33.18 \\A &= 11.21 \\V &= 4.24 \text{ F/S} \\Q &= 47.53 \text{ CFS}\end{aligned}$$



$$d + V^2/2g = 0.87 = 0.87 \text{ OK}$$

NO. OF LOTS TO DRAIN
 $47.53 / 0.6041 = 78.68$

STANDARD C+G AT 1.67%₀

$$\begin{aligned}d &= 0.52 \\WP &= 33.04 \\A &= 8.97 \\V &= 4.736 \text{ F/S} \\Q &= 42.48 \text{ CFS}\end{aligned}$$

$$d + V^2/2g = 0.87 = 0.87 \text{ OK}$$

NO. OF LOTS TO DRAIN
 $42.48 / 0.6041 = 70.32$

INLETS REQUIRED AT THIS POINT
BETWEEN LOTS 7 & 8 BLOCK 3 - RODEO AVE
BETWEEN LOTS 21 & 22 BLOCK 4 - RODEO AVE
USE "DOUBLE A" INLETS

FROM SHEET 11

$$Q_{\text{GATE}} = 9.4 \text{ CFS}$$

$$71 \times 0.6041 = 42.89$$

$$\begin{aligned}Q_{\text{IN STREET}} &= 42.89 - 2(9.4) \\&= 24.09 \text{ CFS}\end{aligned}$$

- FIND d ON WATERS OR AT RODEO AVE

$$Q = 32.02 \text{ CFS} \quad S = 1\% \quad 53 \text{ LOTS}$$

$$\begin{aligned}d &= 0.51 \\WP &= 33.02 \\A &= 8.65 \\V &= 3.58 \text{ F/S} \\Q &= 30.96 \text{ CFS} \approx 32.02 \text{ CFS}\end{aligned}$$

$$d + V^2/2g = 0.71 < 0.87 \text{ OK}$$

USE 2 - "DBL A" INLETS



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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
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SHEET 5 OF _____

FROM SHEET 11

$$Q_{\text{gate}} = 7.0 \text{ cfs}$$

Q INTO INTERSECTION

$$32.02 - 2(7) = 18.02 \text{ cfs}$$

- FIND d ON ROdeo AT WATERS

$$24.09 + 10(0.6041) = 30.13$$

$$Q = 29.63 \text{ cfs} \quad S = 1.67\%$$

$$d = 0.47$$

$$WP = 32.94$$

$$A = 7.37$$

$$V = 4.16 \text{ f/s}$$

$$Q = 30.68 \text{ cfs} \approx 30.13 \text{ OK}$$

$$d + \frac{V^2}{2g} = 0.74 < 0.87 \text{ OK}$$

- INSTALL 2 "B" INLETS BEFORE INTERSECTION
FROM SHEET 12

$$Q_{\text{gate}} = 10.0 \text{ cfs}$$

Q INTO INTERSECTION

$$30.13 - 2(10) = 10.13 \text{ cfs}$$

- TOTAL Q PAST INTERSECTION

$$Q = 18.02 + 10.13 \\ = 28.15 \text{ cfs}$$

- FIND CAPACITY OF MOUNTABLE CURB AT 32

$$d = 0.29$$

$$WP = 13.665$$

$$A = 1.8114$$

$$V_{1/2} = 3.936 \text{ f/s}$$

$$Q_{1/2} = 7.13 \text{ cfs}$$

$$d + \frac{V^2}{2g} = 0.53 = 0.53 \text{ OK}$$

$$\text{TOTAL } Q = 2 \times 7.13 = 14.26$$

- NO. OF LOTS TO DRAIN

$$14.26 / 0.6041 = 23.61$$



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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 6 OF _____
REVISED 8-5-98

- FIND CAPACITY OF STD C+G AT 2%

$$d = 0.49$$

$$w_p = 32.98$$

$$A = 8.01$$

$$V = 4.812 \text{ F/s}$$

$$Q = 38.545 \text{ cfs}$$

$$d + V^2/2g = 0.85 < 0.87 \text{ O.K.}$$

FIND LOCATION OF NEXT INLETS ON RODEO.

$$Q \text{ OF STREET} = 38.55 \text{ cfs}$$

$$Q \text{ past Benewides} = 28.15 + 3(0.6041) = 29.96$$

$$Q = 38.55 - 29.96 = 8.59 \text{ cfs}$$

$$\text{No. of Lots} = 8.59 / 0.6041 = 14.22 \text{ USE 14 lots}$$

$$Q = 14 \times 0.6041 + 29.96 = 38.42$$

- ADD two "B" inlets here

FROM sheet 12

$$Q_{\text{gate}} = 12.75 \text{ cfs}$$

$$Q \text{ PAST INLETS}$$

$$= 38.42 - 2(12.75)$$

$$= 12.92 \text{ cfs}$$

- ADD 2 SGL "A" INLETS ON THE WEST SIDE OF NEVIS EAST ON JEREMIAH

$$\text{NO. LOTS} = 19 \times 0.6041 = 11.48 \text{ cfs}$$

$$\text{PLUS FLOW FROM R-2} = 14.03 \text{ cfs}$$

$$Q = 25.51 \text{ cfs} \quad S = 3\%$$

$$d = .415$$

$$w_p = 32.83$$

$$A = 5.61$$

$$V = 4.66 \text{ F/s}$$

$$Q = 26.16 \text{ cfs} \approx 25.51 \text{ cfs}$$

$$d + V^2/2g = 0.75 < .85 \text{ OK}$$

$$Q_{\text{gate}} = 6.6 \text{ cfs FROM SHEET 13}$$

$$Q_{\text{past inlets}} = 25.51 - 2(6.6) = 12.31 \text{ cfs}$$

- ADD 2 "B" INLETS ON SABA JUST NORTH OF JEREMIAH

$$Q = 35(0.6041) + 12.31 = 33.45 \text{ cfs} \quad S = 1\%$$

$$d = 0.52$$

$$w_p = 33.04$$

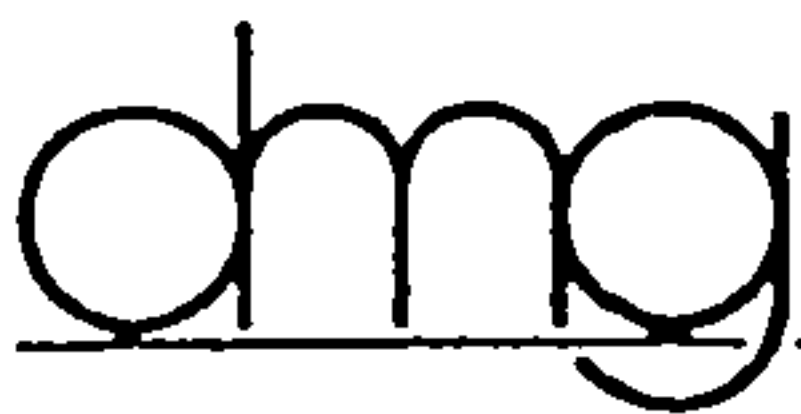
$$A = 8.97$$

$$V = 3.66 \text{ F/s}$$

$$Q = 32.87 \text{ cfs} \approx 33.45 \text{ O.K.}$$

$$\text{FROM SHEET 12 } Q_{\text{gate}} = 9.0 \text{ cfs}$$

$$Q_{\text{past inlets}} = 33.45 - 2(9) = 15.45 \text{ cfs}$$



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PROJECT Silverado Subdivision
SUBJECT Drainage Calcs
BY GSK DATE 6-25-98
CHECKED _____ DATE _____

REVISED 8-5-98 SHEET 7 OF _____

- FIND Q AT ROTARY 1/2 SAINT KITTS

$$Q = 15.45 + 29(0.6041) \\ = 32.97 \text{ CFS}$$

PUT 2 "DBL A" IN SUMP

$$P = 34$$

$$Q/P = 3.0 H^{1.5}$$

$$H = 0.47 < 0.67 \text{ OK}$$

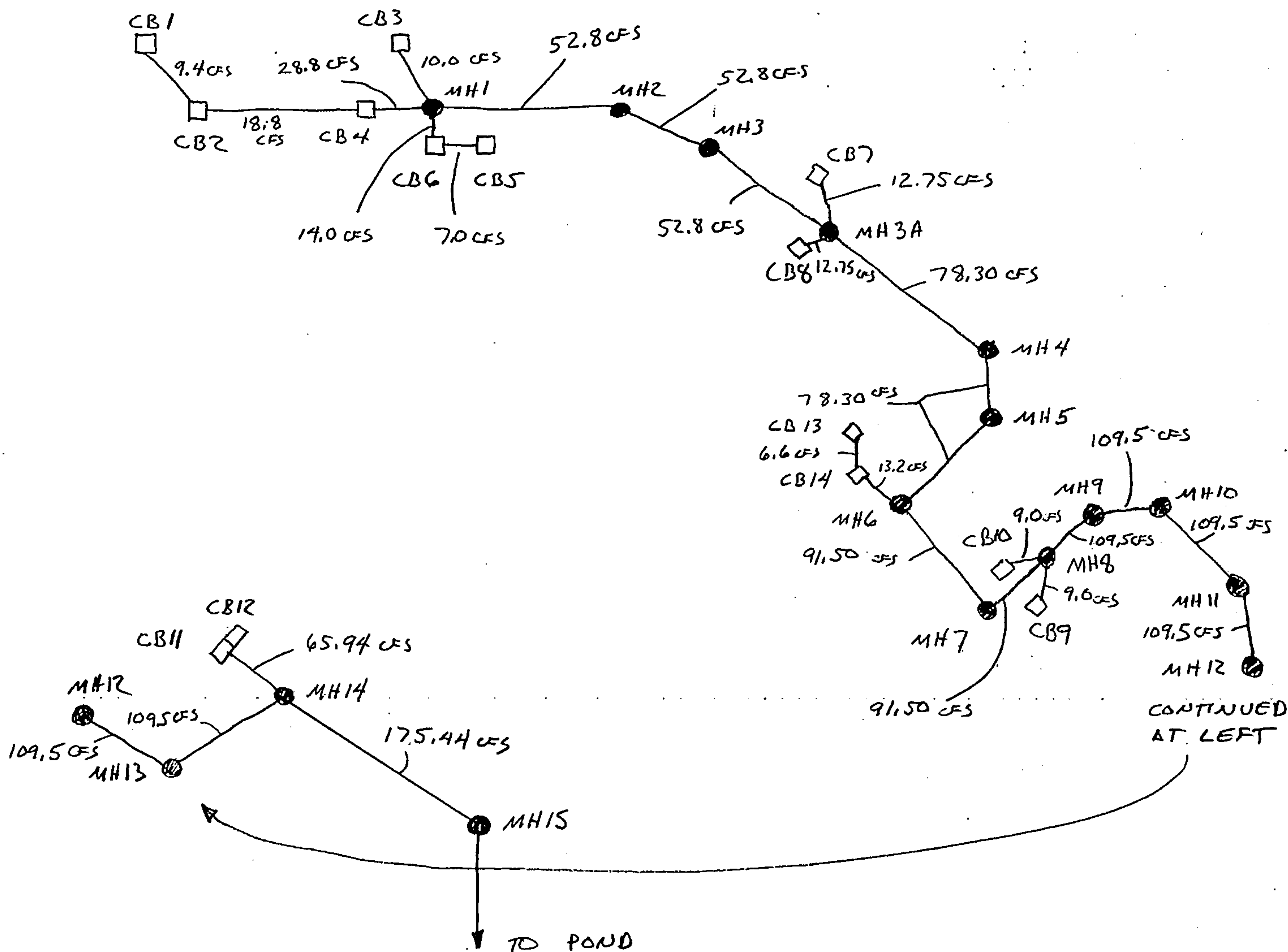
FIND H WITH 2-100yr STORMS

$$H = 0.65 < 0.67$$

WATER SURFACE WILL ALWAYS BE BELOW CURB.

SINCE WE HAVE A SUMP CONDITION THE PIPE NEEDS TO BE SIZED FOR $2 \times 32.97 \text{ CFS} = 65.94 \text{ CFS}$.

- REMAINING 9 LOTS ADJACENT TO CAMINO SAN MARTIN $Q = 7 \times 0.6041 = 4.23 \text{ CFS}$





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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____

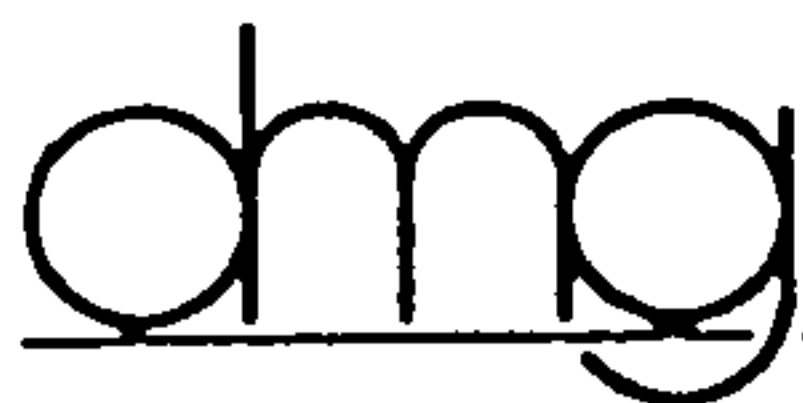
REVISED 8-5-98

SHEET 8 OF _____

STRUCTURE	RIM / GATE	INV	TYPE
CB1	96.98	93.48	OBL A
CB2	96.80	93.18	OBL A
CB3	91.15	87.65	B
CB4	91.25	87.15	B
CB5	91.25	87.75	OBL A
CB6	91.25	87.45	OBL A
CB7	82.54	79.04	B
CB8	82.10	78.60	B
CB9	69.52	66.02	B
CB10	69.52	66.02	B
CB11	61.60	57.10	OBL A
CB12	61.60	57.10	OBL A
MH1	91.04	86.70	
MH2	86.29	79.14	
MH3	84.33	77.70	
MH4	77.67	72.67	
MH5	75.07	70.07	
MH6	72.21	67.21	
MH7	69.94	64.44	
MH8	69.47	63.84	
MH9	68.27	62.59	
MH10	67.17	61.67	
MH11	65.96	59.32	
MH12	64.61	58.22	
MH13	63.60	57.62	
MH14	62.30	56.12/55.62	
MH15	57.00	50.00	
MH3A	82.21	75.72	

• SIZE INTERIOR STORM DRAIN
FROM NOMO SHEET 14

18" RCP	@	1%	CARRIES	10.5 CFS
" "	@	3%	"	18.0 CFS
	@	11.1%	"	30.0 CFS
24" RCP	@	1.8%	"	30.0 CFS
30" RCP	@	1.8%	"	54.0 CFS
" "	@	2.8%	"	63.0 CFS
36" RCP	@	1.42%	"	76.0 CFS
" "	@	2.74%	"	104.0 CFS
42" RCP	@	1.0%	"	98.0 CFS
48" RCP	@	3.4%	"	240.0 CFS



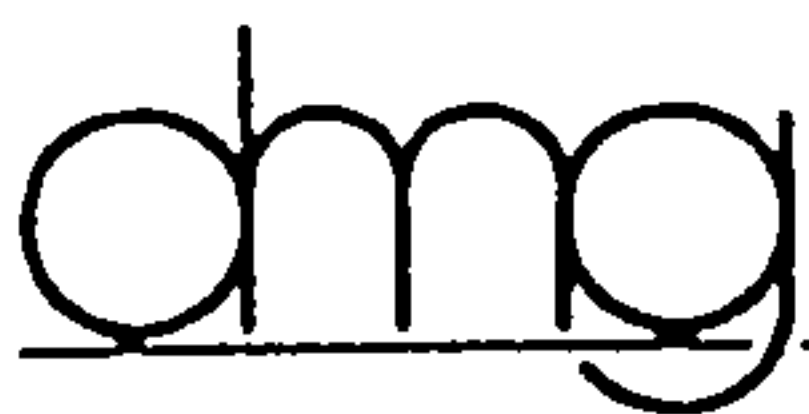
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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____

SHEET 9 OF _____

REVISED 8-5-98

PIPE RUN	Q(CFS)	SLOPE(%)	SIZE	L
CB13-CB14	6.6	1.0	18"	60'
CB14-MH6	13.2	3.0	18"	45'
CB1-CB2	9.4	1.0	18"	30'
CB2-CB4	18.8	1.8	24"	335'
CB4-MH1	28.8	1.8	24"	25'
CB3-MH1	10.0	1.0	18"	25'
CB5-CB-6	7.0	1.0	18"	30'
CB6-MH1	14.0	3.0	18"	25'
MH1-MH2	52.8	1.8	30"	420'
MH2-MH3	52.8	1.8	30"	80'
MH3-MH3A	52.8	1.8	30"	110'
CB7-MH3A	12.75	11.1	18"	30'
CB8-MH3A	12.75	57.6	18"	5'
MH3A-MH4	78.30	1.42	36"	215'
MH4-MH5	78.30	2.74	36"	95'
MH5-MH6	78.30	1.26	42"	265'
MH6-MH7	91.50	1.13	42"	245'
MH7-MH8	91.50	1.0	42"	60'
CB9-MH8	9.0	1.0	18"	10'
CB10-MH8	9.0	1.0	18"	15'
MH8-MH9	109.5	1.0	42"	125'
MH9-MH10	109.5	1.53	42"	60'
MH10-MH11	109.5	1.0	42"	235'
MH11-MH12	109.5	1.0	42"	110'
MH12-MH13	109.5	1.0	42"	60'
MH13-MH14	109.5	1.0	42"	150'
CB11/CB12-MH14	65.94	2.8	2-30"	35'
MH14-MH15	175.44	3.4	48"	165'



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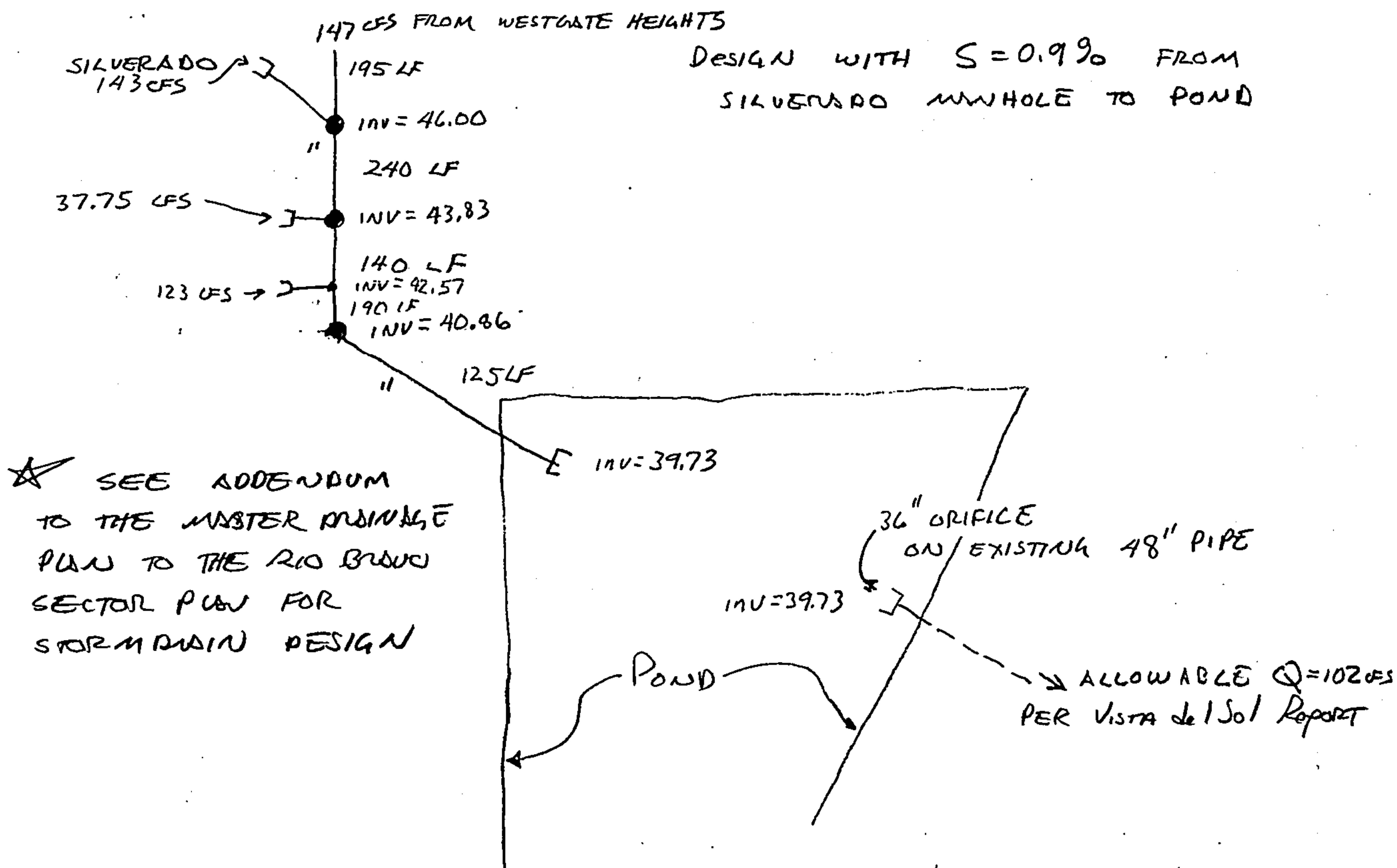
PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____
REVISED 8-5-98 SHEET 10 OF _____

FROM HYDRO OUTPUT SHEETS 21-25

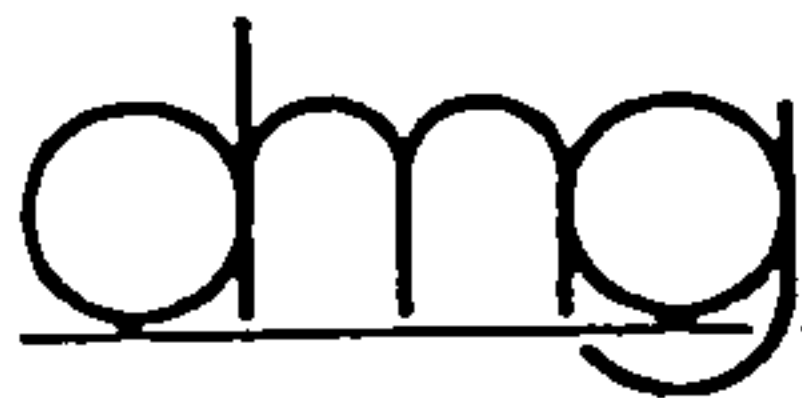
$Q_{max} = 101.48$ CFS < 102 ALLOWABLE PER " MASTER DRAINAGE
PLAN FOR RIO BRAVO SECTOR PLAN
WATER SURFACE = 48.62

APPENDUM TO THE

• SIZE STORM DRAIN



- FROM THE HYDRAULIC REPORT IN THE ADDENDUM TO THE MASTER DRAINAGE PLAN FOR THE RIO BRAVO SECTOR PLAN THE PORTION REQUIRED FROM THE SILVERADO SUBDIVISION TO THE POND IS 66" x 72' RCP SHOWN ABOVE.



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PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 9-22-98
CHECKED _____ DATE _____
SHEET 10A OF _____

- THE SITE WILL BE DEVELOPED INTO 4 UNITS.
 - UNIT 1 WILL HAVE A TEMPORARY RETENTION POND.
 - UNIT 2 WILL CLOSE THE UNIT 1 POND AND HAVE A NEW LARGER POND TO HANDLE BOTH UNITS 1 & 2
 - UNIT 3 WILL CLOSE THE UNIT 2 POND AND CONNECT TO THE STORMMAIN SYSTEM.
 - UNIT 4 HAS NO STORMMAIN IMPROVEMENTS AND DRAINS INTO UNIT 1. A TEMP POND WILL BE NEEDED TO POND EXISTING RUNOFF UNTIL UNIT 4 IS DEVELOPED
- SIZE TEMP. RETENTION POND FOR UNIT 1

78 LOTS

SEE SHEET 4 OF 5

VOLUME PER LOT

FIND 100 yr 10600

$$V_{100} = 5.5742 + 21.8433 \left(\frac{3.67-2.2}{12} \right)$$

$$= 7.75 \text{ AC-FT}$$

$$V/\text{LOT} = 7.75/241$$

$$= 0.032158 \text{ AC-F}$$

$$= 1400.79 \text{ CF/LOT}$$

POND VOL Req.

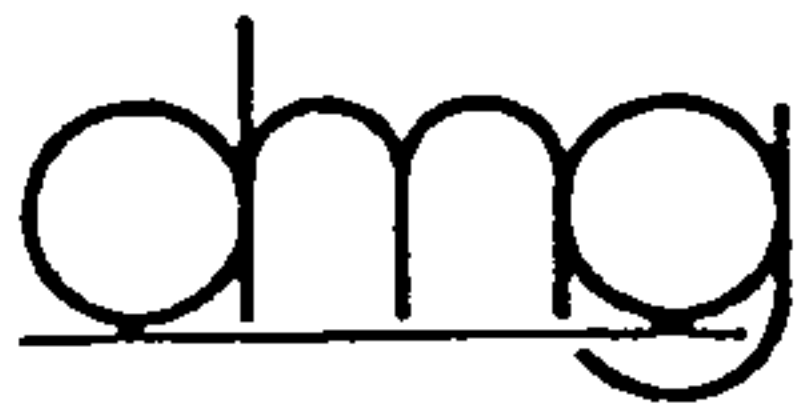
$$= 78 \times 1400.79$$

$$= 109,262 \text{ CF}$$

- SIZE POND

ELEV	AREA(SF)	VOLUME (CF)	
82	186 x 34 = 6324	0	
83	192 x 40 = 7680	7002	
84	199 x 46 = 9108	15396	
85	204 x 52 = 10608	25254	
86	210 x 58 = 12180	36648	
87	216 x 64 = 13824	49650	
88	222 x 70 = 15540	64332	
89	228 x 76 = 17328	80766	
90	234 x 82 = 19188	99024	WATER SURFACE = 90.51
91	240 x 88 = 21120	119178	

EMERGENCY SPILLWAY WILL PUMP ONTO RODEO AVE
AND BENEVIDES INTERSECTION.



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PROJECT SILVERADO SUBDIVISION
SUBJECT ORDINANCE CALCS
BY GSK DATE 9-22-98
CHECKED _____ DATE _____
SHEET 10B OF _____

• SIZE POND ON UNIT 4

100% A A = 10.684 AC
FROM HYDRO OUT PUT sheets 33-35

$$Q = 14.17 \text{ CFS}$$

$$V = 0.3998 \text{ AC-FT} \\ = 17,415 \text{ CF}$$

$$V_{100 \text{ day}} = 0.3998 + 0 \left(\frac{3.67-2.2}{12} \right) \\ = 0.3998$$

ELEV	AREA (SF)	VOLUME (CF)	
6.0	10,384	0	
7.0	11,656	11,020	water surface = 7.48
8.0	13,000	23,348	

EMERGENCY SPILLWAY WILL DUMP ONTO 86TH STREET.

• SIZE POND ON UNIT 2

78 LOTS + 54 LOTS + TRACT "A"

SEE SHEET 5 OF 5

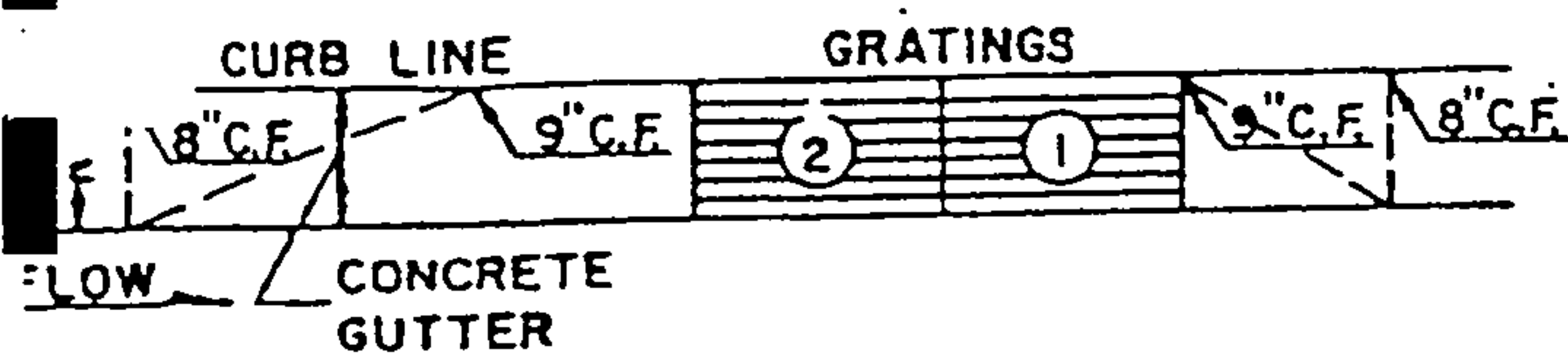
$$V = (132 \times 1400.79) + 0.5045 \text{ AC-FT see sheet 3} \\ = 206,880 \text{ CF}$$

ELEV	AREA (SF)	VOLUME (CF)	
64	236 x 66 = 15,576	0.0	
65	242 x 72 = 17,424	16,500	
66	248 x 78 = 19,344	34,884	
67	254 x 84 = 21,336	55,224	
68	260 x 90 = 23,400	77,592	
69	266 x 96 = 25,536	102,060	
70	272 x 102 = 27,744	128,700	
71	278 x 108 = 30,024	157,584	
72	284 x 114 = 32,376	188,784	WATER SURFACE = 72.46
73	290 x 120 = 34,800	222,372	

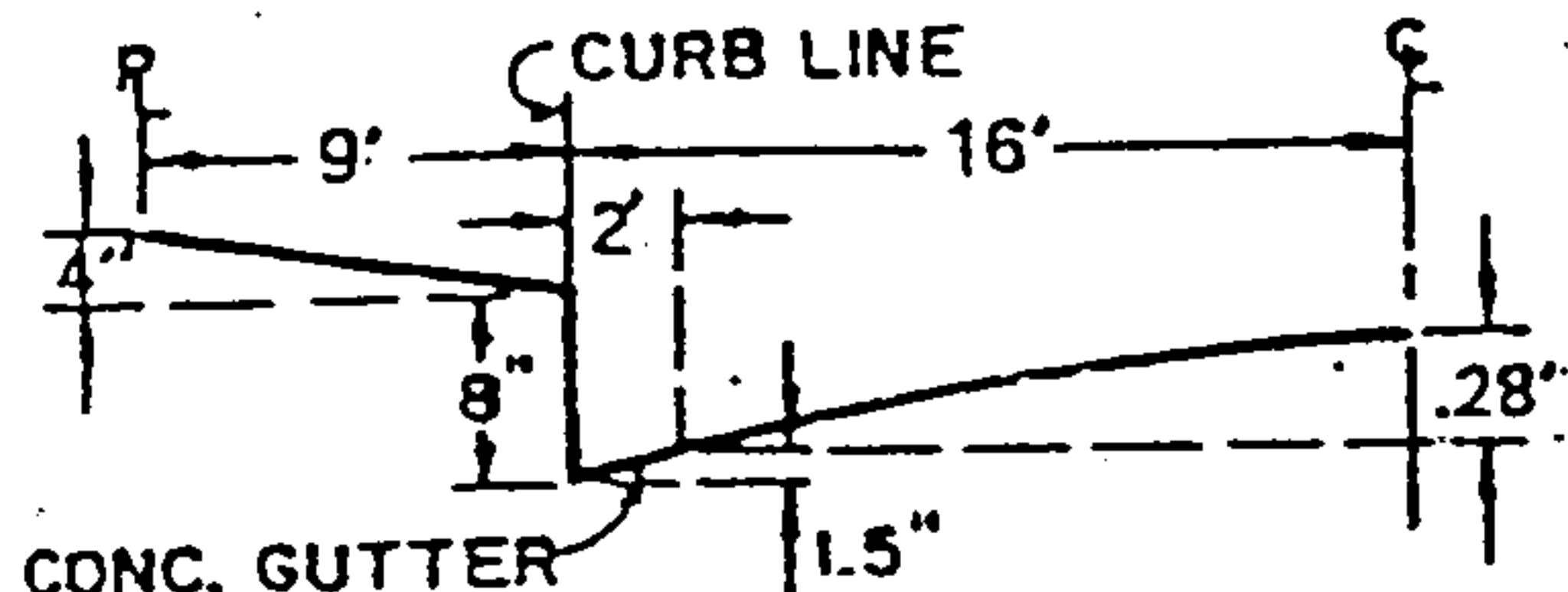
EMERGENCY SPILLWAY WILL DUMP ON TO JEREMIAH PL.

- A BUCKET DRAINAGE BASEMENT WILL BE SHOWN ON THE PLOTS FOR UNIT 1 AND UNIT 2 SO THE WATER FROM THE SPILLWAYS CAN FOLLOW HISTORIC PATHS UNTIL UNIT 3 CONNECTS TO THE STORM DRAIN AND PERMANENT DETENTION POND.

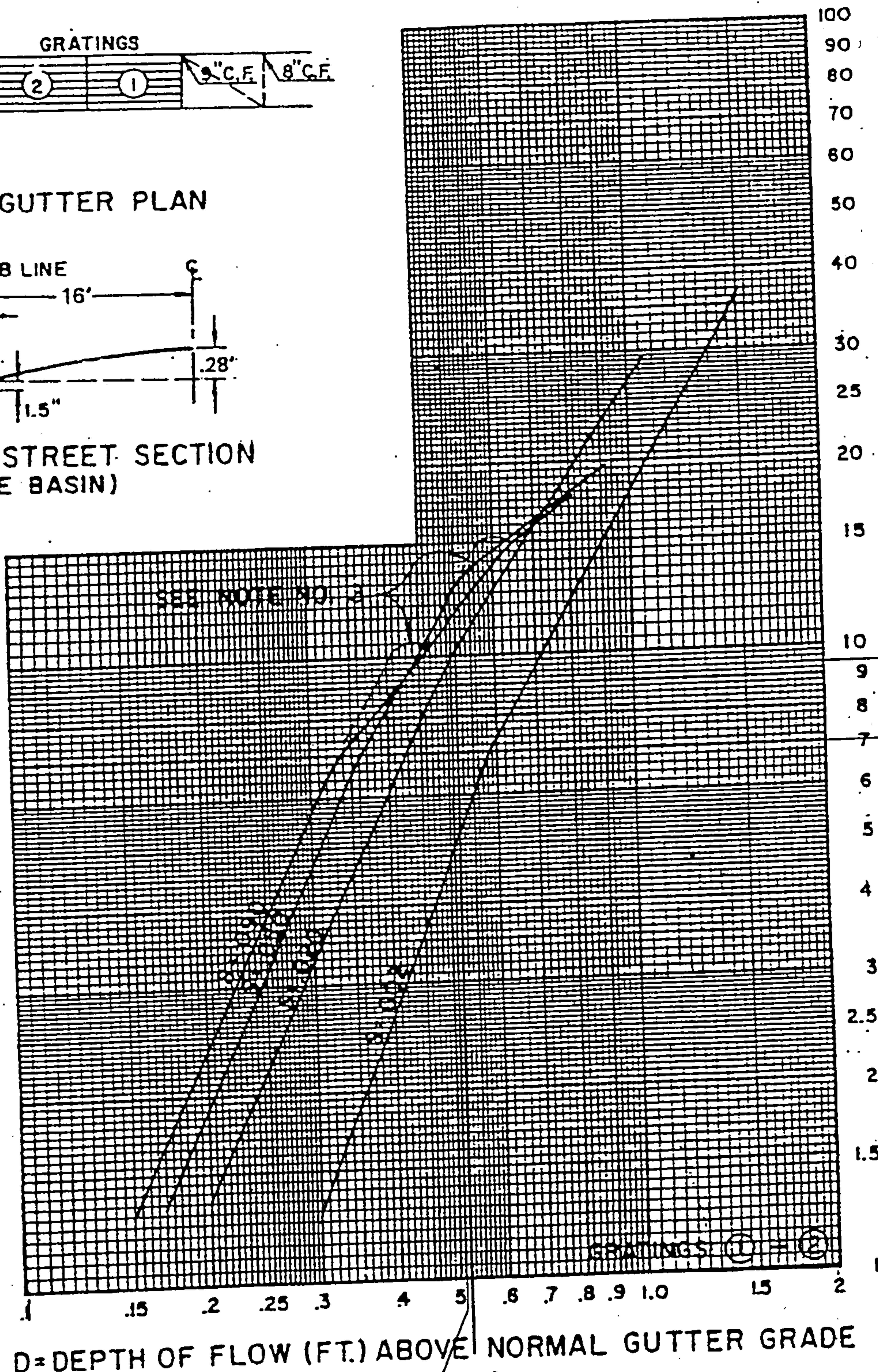
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION (ABOVE BASIN)



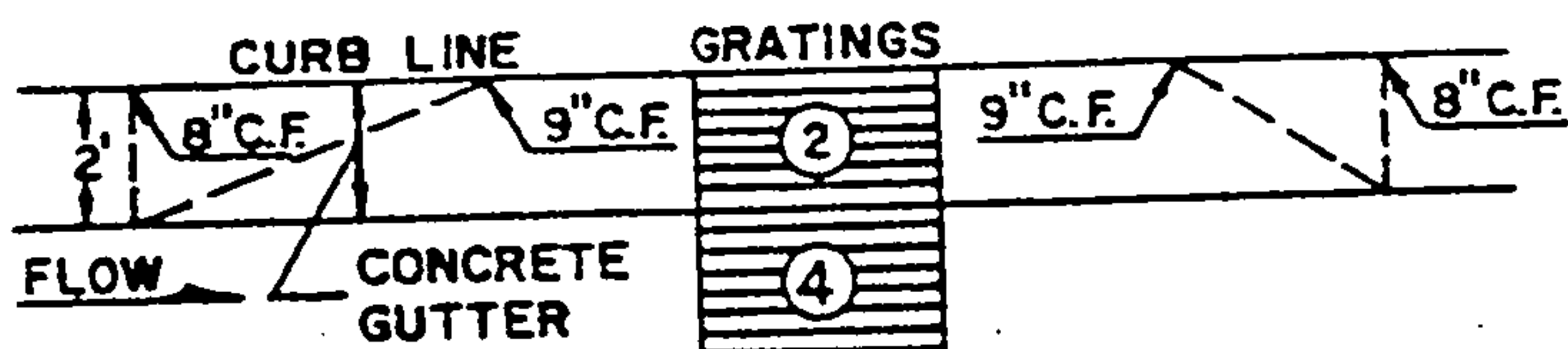
Q (C.F.S.) IN GRATINGS

9.4

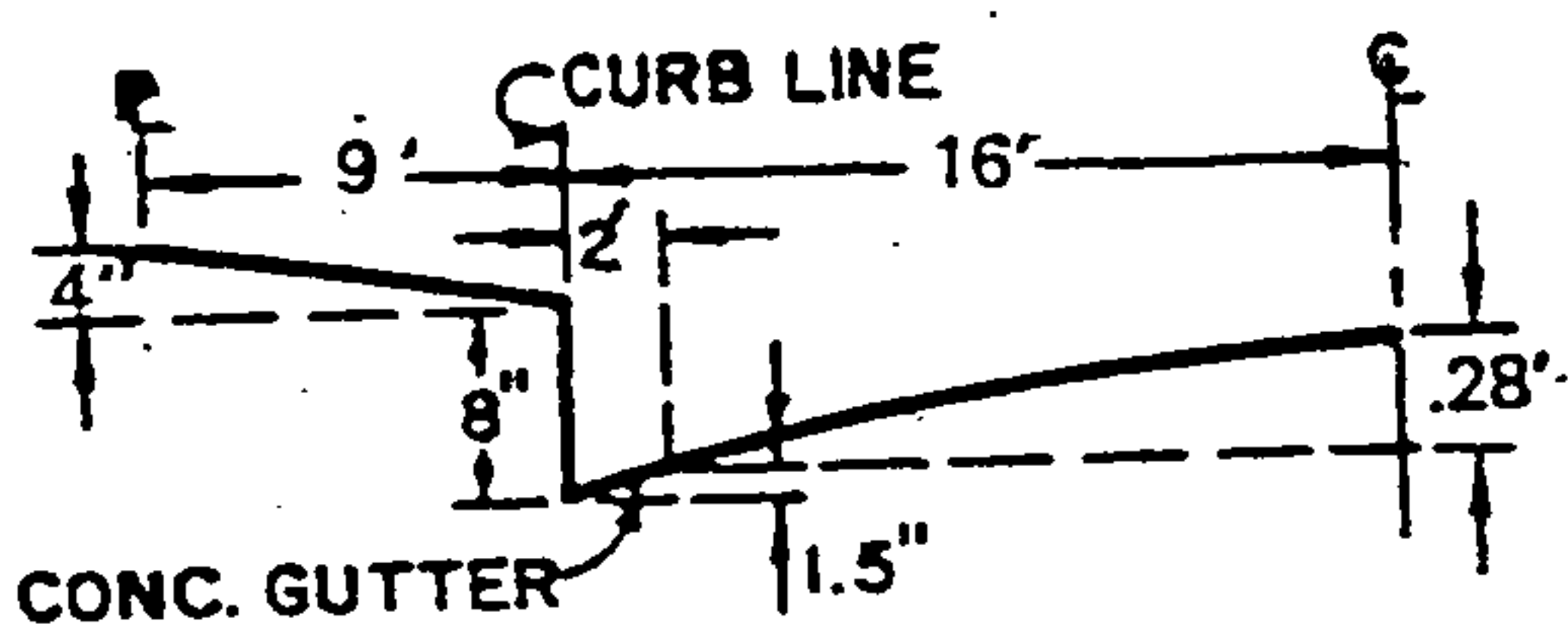
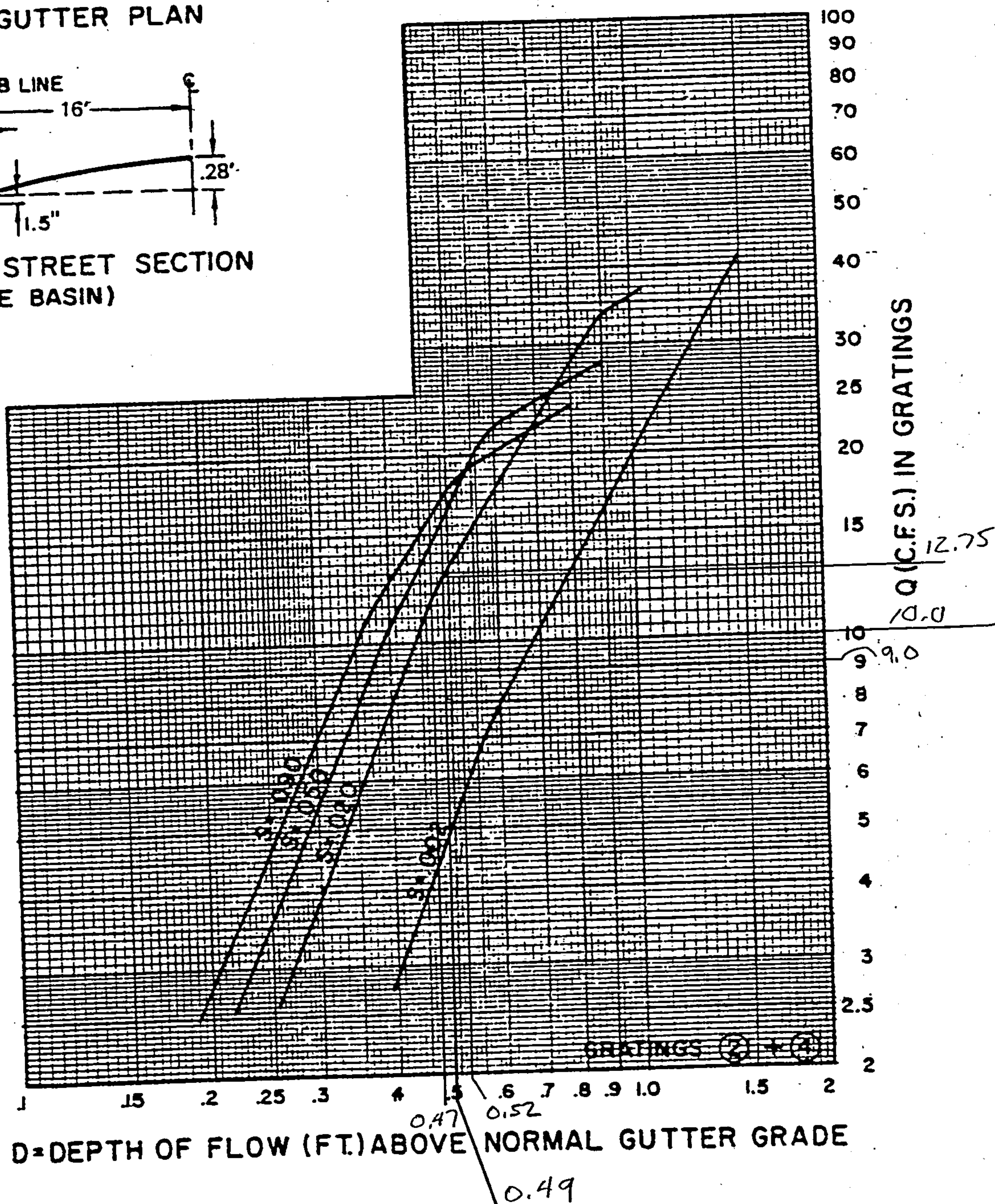
7.0

0.52
0.51

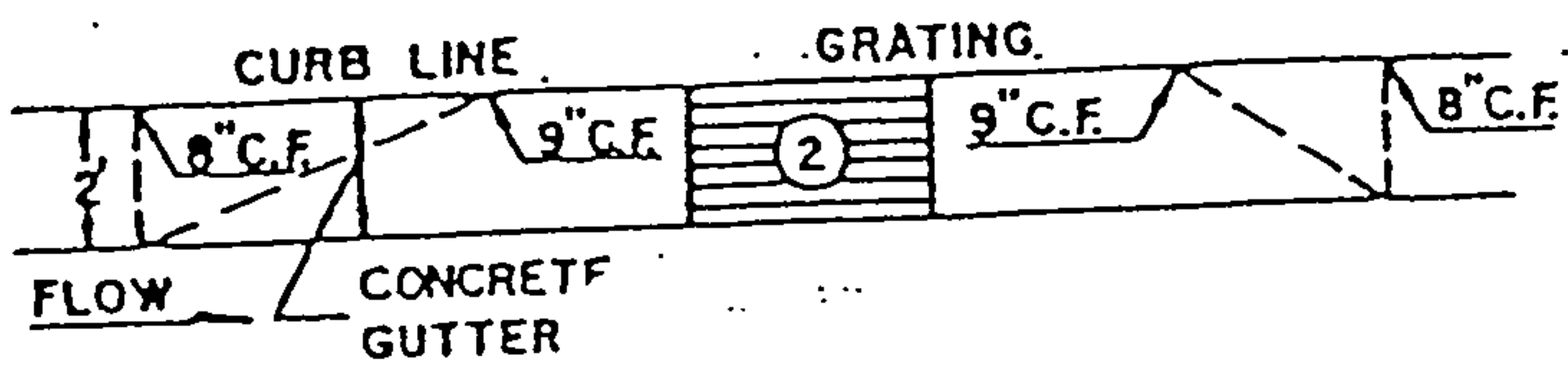
GRATING CAPACITIES FOR TYPE "B"



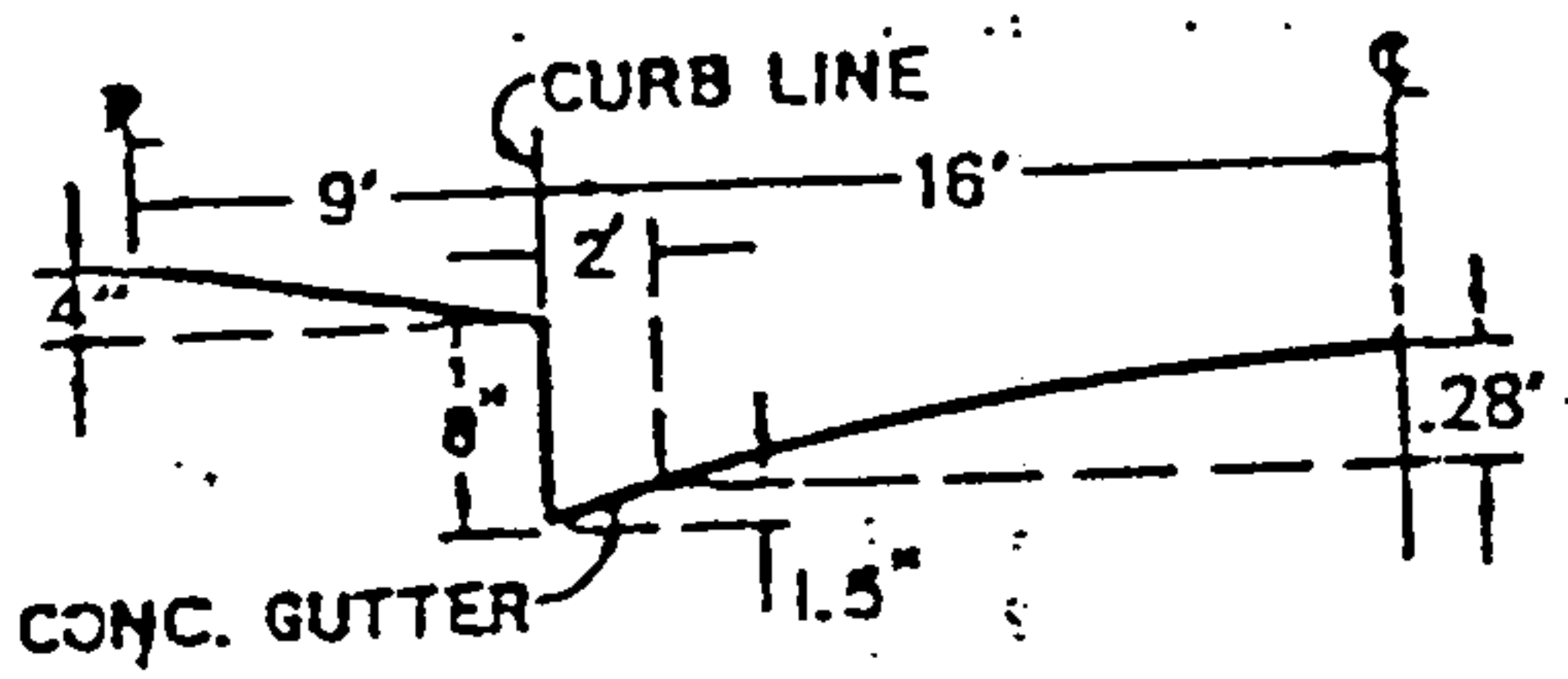
GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

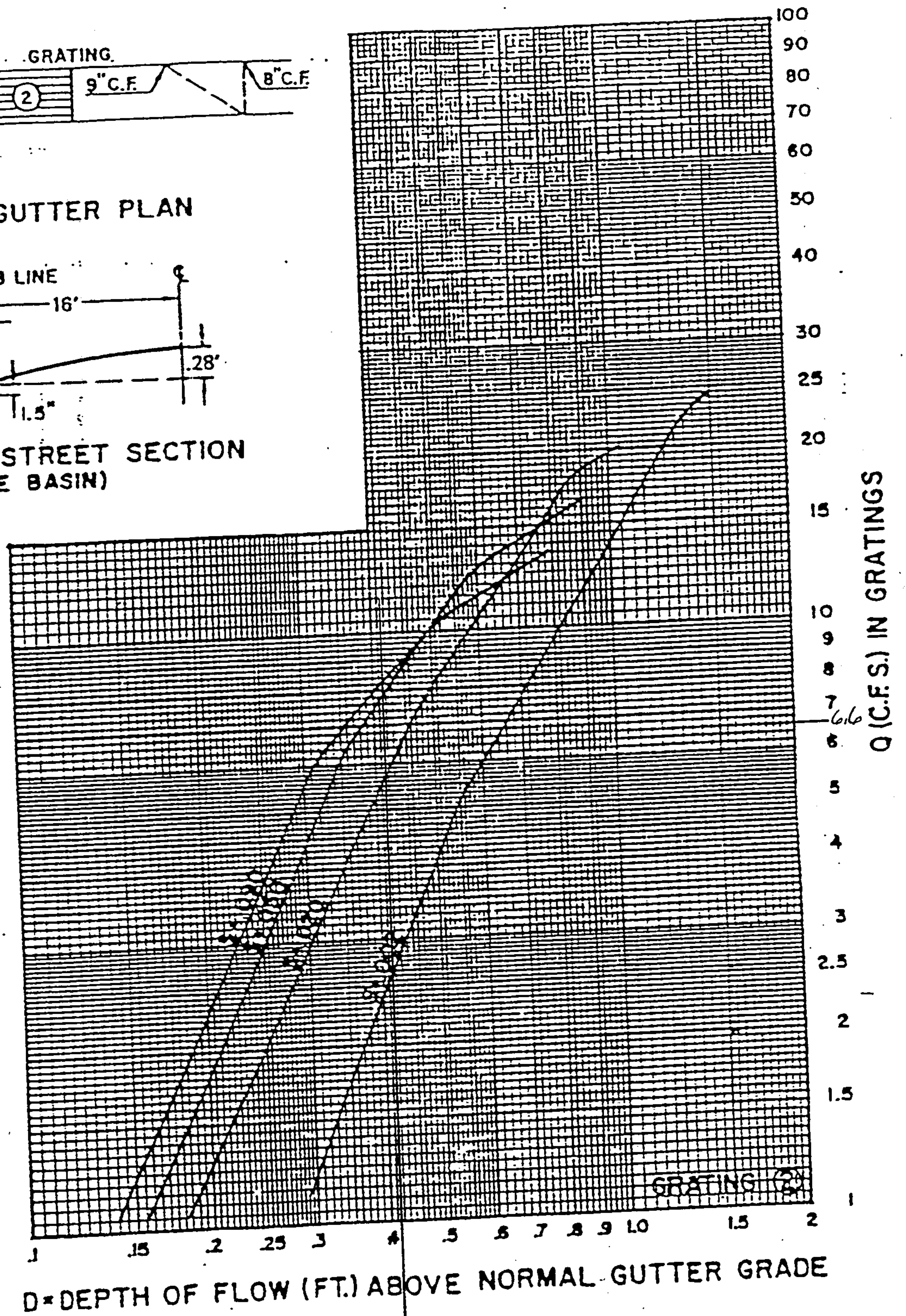
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



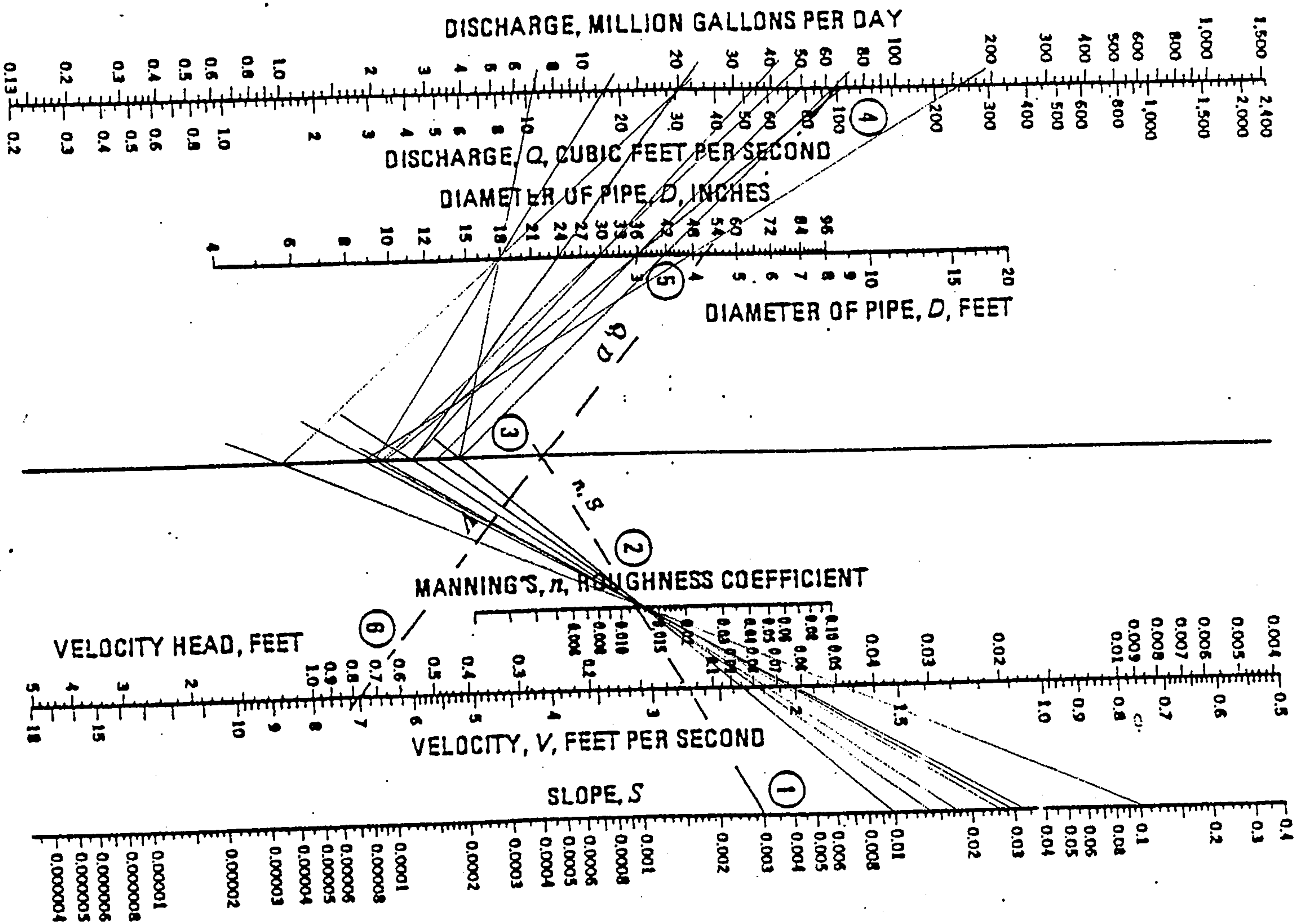
GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION RESIDENTIAL
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.07123 SQ MI
PER A=0 B=52.08 C=0 D=47.92
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

16

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 08/06/1998
 START TIME (HR:MIN:SEC) = 07:32:40 USER NO.= M_GOODWN.I01
 INPUT FILE = slvrres.dat

START TIME=0.0
 ***** HYDROGRAPH FOR SILVERADO SUBDIVISION RESIDENTIAL
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.07123 SQ MI
 PER A=0 B=52.08 C=0 D=47.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072786HR TP = .133300HR K/TP RATIO = .546033 SHAPE CONSTANT, N =
 UNIT PEAK = 134.55 CFS UNIT VOLUME = .9993 B = 525.47 P60 = 1.90
 AREA = .034133 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130328HR TP = .133300HR K/TP RATIO = .977702 SHAPE CONSTANT, N =
 UNIT PEAK = 91.399 CFS UNIT VOLUME = 1.000 B = 328.42 P60 = 1.90
 AREA = .037097 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

17
RUNOFF VOLUME = 1.29696 INCHES = 4.9270 ACRE-FEET
PEAK DISCHARGE RATE = 145.59 CFS AT 1.500 HOURS BASIN AREA = .0712 SQ. MI.

FINISH

COMMAND NOT IN TABLE

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 07:32:40

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION MULTI-FAMILY
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.005534 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

19

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 06/25/1998
 START TIME (HR:MIN:SEC) = 14:41:23 USER NO.= M_GOODWN.I01
 INPUT FILE = SLVRMUL.DAT

START TIME=0.0
 ***** HYDROGRAPH FOR SILVERADO SUBDIVISION MULTI-FAMILY
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
 DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.005534 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
 UNIT PEAK = 17.479 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.90
 AREA = .004427 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
 UNIT PEAK = 2.7197 CFS UNIT VOLUME = .9953 B = 327.55 P60 = 1.90
 AREA = .001107 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.70931 INCHES = .5045 ACRE-FEET
PEAK DISCHARGE RATE = 14.03 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:41:30

START TIME=0.0

***** HYDROGRAPH FOR SILVERADO POND

*SILVERADO SUBDIVISIION AND WESTGATE HEIGHTS

RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR

*SILVERADO SUBDIVISION RESIDENTIAL

COMPUTE NM HYD ID=1 HYD NO=101 AREA=0.07123 SQ MI
PER A=0 B=52.08 C=0 D=47.92
TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=1 CODE=1

*SILVERADO SUBDIVISIION MUTI-FAMILY

COMPUTE NM HYD ID=2 HYD NO=102 AREA=0.005534 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=2 CODE=1

*WESTGATE HEIGHTS

COMPUTE NM HYD ID=3 HYD NO=103 AREA=0.061996 SQ MI
PER A=3.03 B=0 C=41.34 D=55.63
TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=3 CODE=1

*UNDEVELOPED AREA SOUTH OF SILVERADO

COMPUTE NM HYD ID=4 HYD NO=104 AREA=0.020292
PER A=0 B=15 C=0 D=85
TP=0.1333 HR MASS RAINFALL=-1

PRINT HYD ID=4 CODE=1

ADD HYD ID=5 HYD NO=105 ID=1 ID=2

PRINT HYD ID=5 CODE=1

ADD HYD ID=6 HYD NO=106 ID=3 ID=4

PRINT HYD ID=6 CODE=1

ADD HYD ID=7 HYD NO=107 ID=5 ID=6

PRINT HYD ID=7 CODE=1

*

* ROUTING THROUGH POND

*

ROUTE RESERVOIR	ID=8 HYD NO=108	INFLOW ID=7 CODE=24	
	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
	0.0	0.0	51.0
	34.03	1.12	52.0
	48.13	2.30	53.0
	58.95	3.54	54.0
	68.07	4.86	55.0
	76.10	6.24	56.0
	83.37	7.69	57.0
	90.05	9.22	58.0

PRINT HYD ID=8 CODE=1

FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
 RUN DATE (MON/DAY/YR) = 08/07/1998
 START TIME (HR:MIN:SEC) = 09:41:48 USER NO.= M_GOODWN.I01
 INPUT FILE = slvrpond.dat

START TIME=0.0

***** HYDROGRAPH FOR SILVERADO POND

*SILVERADO SUBDIVISION AND WESTGATE HEIGHTS

RAINFALL

TYPE=1 RAIN QUARTER=0.0 IN

RAIN ONE=1.90 IN RAIN SIX=2.20 IN

RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H

DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

*SILVERADO SUBDIVISION RESIDENTIAL

COMPUTE NM HYD ID=1 HYD NO=101 AREA=0.07123 SQ MI
 PER A=0 B=52.08 C=0 D=47.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072786HR TP = .133300HR K/TP RATIO = .546033 SHAPE CONSTANT, N =
 UNIT PEAK = 134.55 CFS UNIT VOLUME = .9993 B = 525.47 P60 = 1.90
 AREA = .034133 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130328HR TP = .133300HR K/TP RATIO = .977702 SHAPE CONSTANT, N =
 UNIT PEAK = 91.399 CFS UNIT VOLUME = 1.000 B = 328.42 P60 = 1.90
 AREA = .037097 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=1 CODE=1

23

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.29696 INCHES = 4.9270 ACRE-FEET
PEAK DISCHARGE RATE = 145.59 CFS AT 1.500 HOURS BASIN AREA = .0712 SQ. MI.

*SILVERADO SUBDIVISIION MUTI-FAMILY

COMPUTE NM HYD ID=2 HYD NO=102 AREA=0.005534 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 17.479 CFS UNIT VOLUME = .9988 B = 526.28 P60 = 1.90
AREA = .004427 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
UNIT PEAK = 2.7197 CFS UNIT VOLUME = .9953 B = 327.55 P60 = 1.90
AREA = .001107 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.70931 INCHES = .5045 ACRE-FEET
PEAK DISCHARGE RATE = 14.03 CFS AT 1.500 HOURS BASIN AREA = .0055 SQ. MI.

*WESTGATE HEIGHTS

COMPUTE NM HYD ID=3 HYD NO=103 AREA=0.061996 SQ MI
PER A=3.03 B=0 C=41.34 D=55.63
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
UNIT PEAK = 136.16 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.90
AREA = .034488 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .110079HR TP = .133300HR K/TP RATIO = .825797 SHAPE CONSTANT, N =
UNIT PEAK = 77.620 CFS UNIT VOLUME = 1.000 B = 376.14 P60 = 1.90
AREA = .027508 SQ MI IA = .37049 INCHES INF = .88736 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.51951 INCHES = 5.0241 ACRE-FEET
PEAK DISCHARGE RATE = 146.77 CFS AT 1.500 HOURS BASIN AREA = .0620 SQ. MI.

*UNDEVELOPED AREA SOUTH OF SILVERADO

COMPUTE NM HYD ID=4 HYD NO=104 AREA=0.020292
 PER A=0 B=15 C=0 D=85
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N =
 UNIT PEAK = 68.097 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 1.90
 AREA = .017248 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE CONSTANT, N =
 UNIT PEAK = 7.4794 CFS UNIT VOLUME = .9985 B = 327.55 P60 = 1.90
 AREA = .003044 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.77358 INCHES = 1.9194 ACRE-FEET
 PEAK DISCHARGE RATE = 52.96 CFS AT 1.500 HOURS BASIN AREA = .0203 SQ. MI.

ADD HYD ID=5 HYD NO=105 ID=1 ID=2
 PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = 1.32668 INCHES = 5.4315 ACRE-FEET
 PEAK DISCHARGE RATE = 159.62 CFS AT 1.500 HOURS BASIN AREA = .0768 SQ. MI.

ADD HYD ID=6 HYD NO=106 ID=3 ID=4
 PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = 1.58215 INCHES = 6.9435 ACRE-FEET
 PEAK DISCHARGE RATE = 199.73 CFS AT 1.500 HOURS BASIN AREA = .0823 SQ. MI.

ADD HYD ID=7 HYD NO=107 ID=5 ID=6
 PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.45885 INCHES = 12.3750 ACRE-FEET
 PEAK DISCHARGE RATE = 359.36 CFS AT 1.500 HOURS BASIN AREA = .1591 SQ. MI.

25

*
* ROUTING THROUGH POND
*

ROUTE RESERVOIR ID=8 HYD NO=108 INFLOW ID=7 CODE=24
OUTFLOW(CFS) STORAGE(AC-FT) ELEVATION(FT)
0.0 0.0 51.0
34.03 1.12 52.0
48.13 2.30 53.0
58.95 3.54 54.0
68.07 4.86 55.0
76.10 6.24 56.0
83.37 7.69 57.0
90.05 9.22 58.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	51.00	.000	.00
.80	.00	51.00	.000	.00
1.60	256.28	55.15	5.063	69.25
2.40	13.60	55.50	5.553	72.10
3.20	2.32	52.77	2.023	44.83
4.00	1.27	51.31	.347	10.55
4.80	1.25	51.07	.082	2.48
5.60	1.50	51.05	.051	1.54
6.40	.14	51.03	.031	.94
7.20	.00	51.00	.005	.14
8.00	.00	51.00	.001	.02
8.80	.00	51.00	.000	.00

PEAK DISCHARGE = 79.460 CFS - PEAK OCCURS AT HOUR 1.97
MAXIMUM WATER SURFACE ELEVATION = 56.462
MAXIMUM STORAGE = 6.9101 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.45885 INCHES = 12.3750 ACRE-FEET
PEAK DISCHARGE RATE = 79.46 CFS AT 1.966 HOURS BASIN AREA = .1591 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 09:41:49

1
0
HYDRAULIC REPORT FOR

SILVERADO SUBDIVISION

STORM DRAIN DESIGN

1
0

Run date: 08-07-1998
File: silver.ST3

Return Period = 100 Yrs
Rainfall file: Your_County

LINE 1 / Q = 102.0 / HT = 48 / WID = 48 / N = .013 / L = 228 / JLC = .25

1 / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	43.68	47.40	39.73	8.13	44.71	9.14	5.56	12.55
UPSTRM	44.80	35.91	41.81	10.12	46.39	41.67	5.31	10.08

Drainage area (ac) =	0	Slope of invert (%) =	0.912
Runoff coefficient =	0	Slope energy grade line (%) =	0.739
Time of conc (min) =	4	Critical depth (in) =	35.83
Inlet time (min) =	0	Req'd length curb inlet (ft) =	93.5
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	26.8
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	102	Confluence angle (deg) =	-45
Default Q (cfs) =	102	Natural ground elev (ft) =	51.13
Line capac. (cfs) =	137.2	Line storage (cuft) =	2580

LINE 2 / Q = 102.0 / HT = 48 / WID = 48 / N = .013 / L = 327 / JLC = .25

2 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	45.20	40.68	41.81	8.95	46.44	34.15	5.31	11.40
UPSTRM	46.81	43.23	43.21	8.56	47.95	28.73	7.61	11.92

Drainage area (ac) =	0	Slope of invert (%) =	0.428
Runoff coefficient =	0	Slope energy grade line (%) =	0.461
Time of conc (min) =	2	Critical depth (in) =	35.83
Inlet time (min) =	0	Req'd length curb inlet (ft) =	93.5
Intensity (in/hr) =	0.00	Req'd grate area (sf) =	26.8
Cumulative C*A =	0.0	Depth at inlet opening (in) =	6
Flow contrib (cfs) =	102	Confluence angle (deg) =	-45
Default Q (cfs) =	102	Natural ground elev (ft) =	54.82
Line capac. (cfs) =	94.0	Line storage (cuft) =	3812

LINE 3 / Q = 102.0 / HT = 48 / WID = 48 / N = .013 / L = 37 / JLC = .25

3 / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	47.10	46.64	43.21	8.16	48.13	13.80	7.61	12.50
UPSTRM	47.23	45.49	43.44	8.28	48.30	21.38	7.12	12.32

Drainage area (ac) = 0	Slope of invert (%) = 0.622
Runoff coefficient = 0	Slope energy grade line (%) = 0.447
Time of conc (min) = 2	Critical depth (in) = 35.83
Inlet time (min) = 0	Req'd length curb inlet (ft) = 93.5
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 26.8
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 102	Confluence angle (deg) = -45
Default Q (cfs) = 102	Natural ground elev (ft) = 54.56
Line capac. (cfs) = 113.3	Line storage (cuft) = 459

LINE 4 / Q = 80.0 / HT = 36 / WID = 36 / N = .013 / L = 324 / JLC = .25

4 / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	47.50	36.00	43.44	11.32	49.49	0.00	8.12	7.07
UPSTRM	52.16	36.00	45.34	11.32	54.15	0.00	10.65	7.07

Drainage area (ac) = 0	Slope of invert (%) = 0.586
Runoff coefficient = 0	Slope energy grade line (%) = 1.439
Time of conc (min) = 0	Critical depth (in) = 33.87
Inlet time (min) = 0	Req'd length curb inlet (ft) = 73.3
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 21.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 80	Confluence angle (deg) = 0
Default Q (cfs) = 80	Natural ground elev (ft) = 59
Line capac. (cfs) = 51.1	Line storage (cuft) = 2290

LINE 5 / Q = 80.0 / HT = 36 / WID = 36 / N = .013 / L = 45 / JLC = .25

5 / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.66	36.00	45.34	11.32	54.65	0.00	10.65	7.07
UPSTRM	54.35	33.91	51.00	11.59	56.43	16.83	4	6.90

Drainage area (ac) = 0	Slope of invert (%) = 12.578
Runoff coefficient = 0	Slope energy grade line (%) = 2.808
Time of conc (min) = 0	Critical depth (in) = 33.87
Inlet time (min) = 0	Req'd length curb inlet (ft) = 73.3
Intensity (in/hr) = 0.00	Req'd grate area (sf) = 21.0
Cumulative C*A = 0.0	Depth at inlet opening (in) = 6
Flow contrib (cfs) = 80	Confluence angle (deg) = 90
Default Q (cfs) = 80	Natural ground elev (ft) = 58
Line capac. (cfs) = 236.5	Line storage (cuft) = 314

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION UNIT 4 EXISTING
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.016690 SQ MI
PER A=100 B=0 C=0 D=0
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

34

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 09/23/1998
START TIME (HR:MIN:SEC) = 10:40:18 USER NO.= M_GOODWN.I01
INPUT FILE = SLVR4.DAT

START TIME=0.0
***** HYDROGRAPH FOR SILVERADO SUBDIVISION UNIT 4 EXISTING
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 H
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.016690 SQ MI
 PER A=100 B=0 C=0 D=0
 TP=0.1333 HR MASS RAINFALL=-1

K = .162928HR TP = .133300HR K/TP RATIO = 1.222262 SHAPE CONSTANT, N =
UNIT PEAK = 34.377 CFS UNIT VOLUME = .9993 B = 274.56 P60 = 1.90
AREA = .016690 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = .44920 INCHES = .3998 ACRE-FEET
PEAK DISCHARGE RATE = 14.17 CFS AT 1.533 HOURS BASIN AREA = .0167 SQ. MI.

FINISH

COMMAND NOT IN TABLE

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 10:40:18

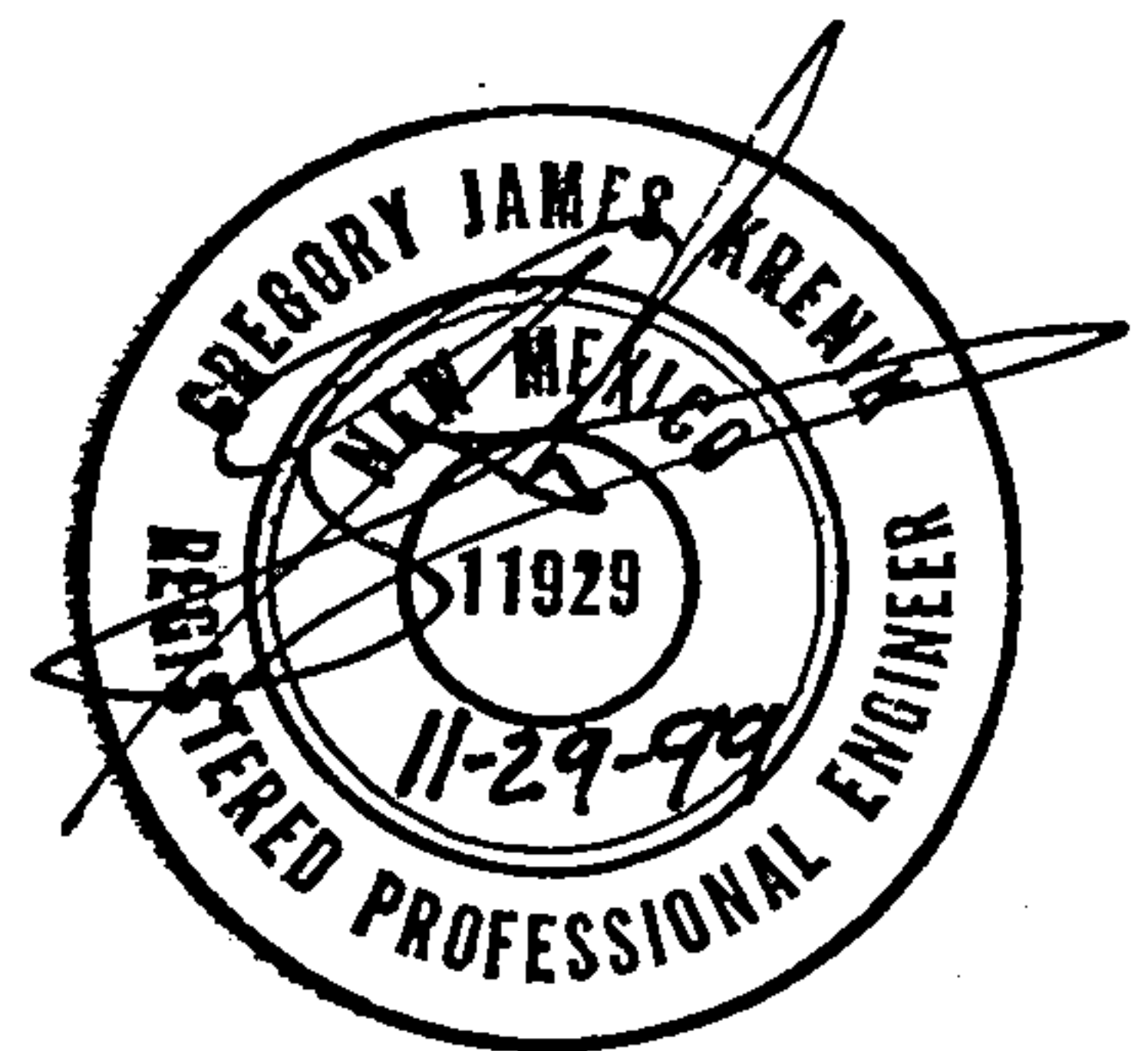
APPENDIX B

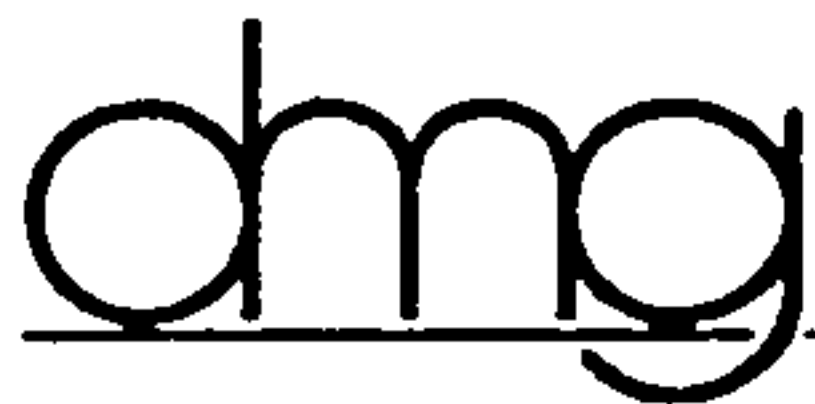
DRAINAGE REPORT
for
CENTEX — SILVERADO

Prepared By

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

November 1999



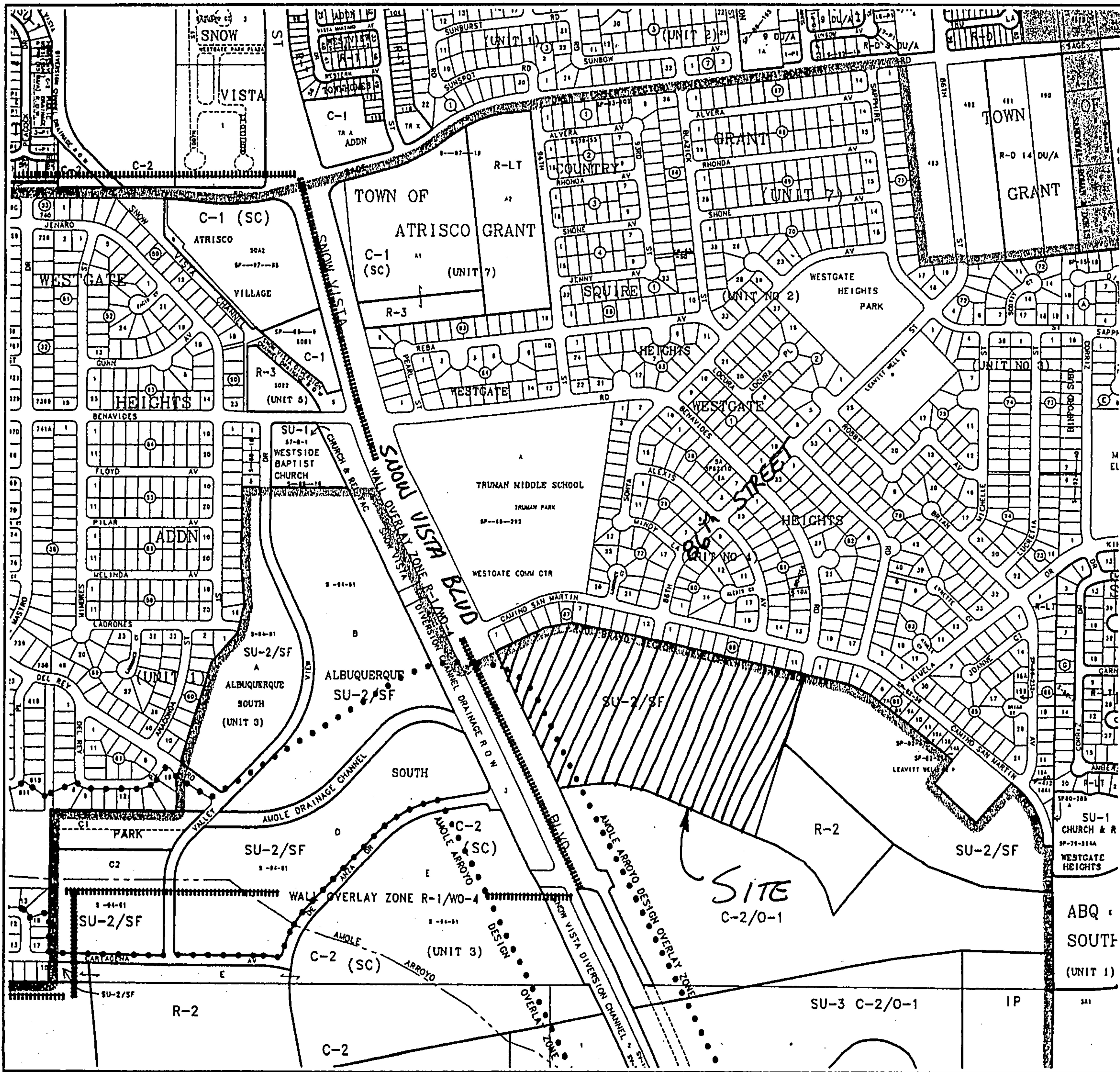


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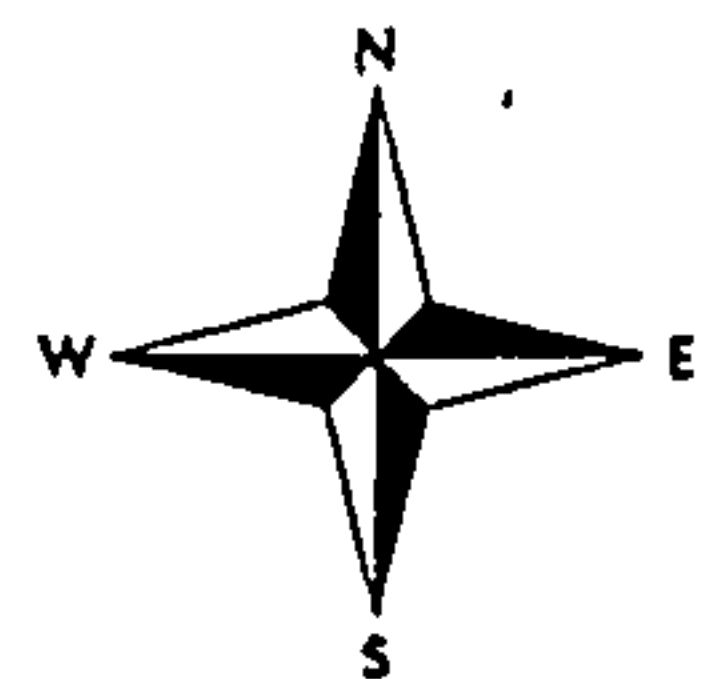
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e-mail: dmgs@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET INTRO OF _____

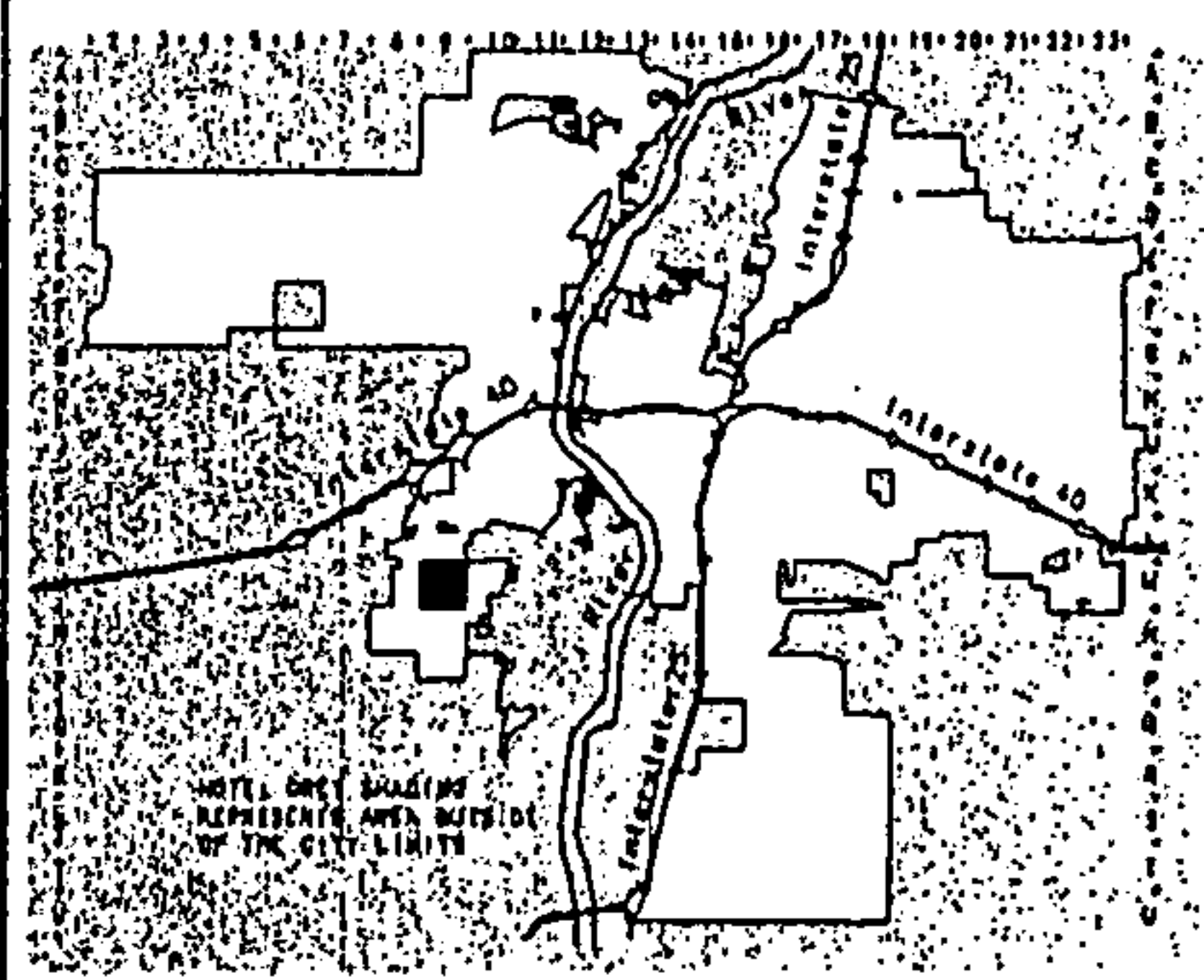
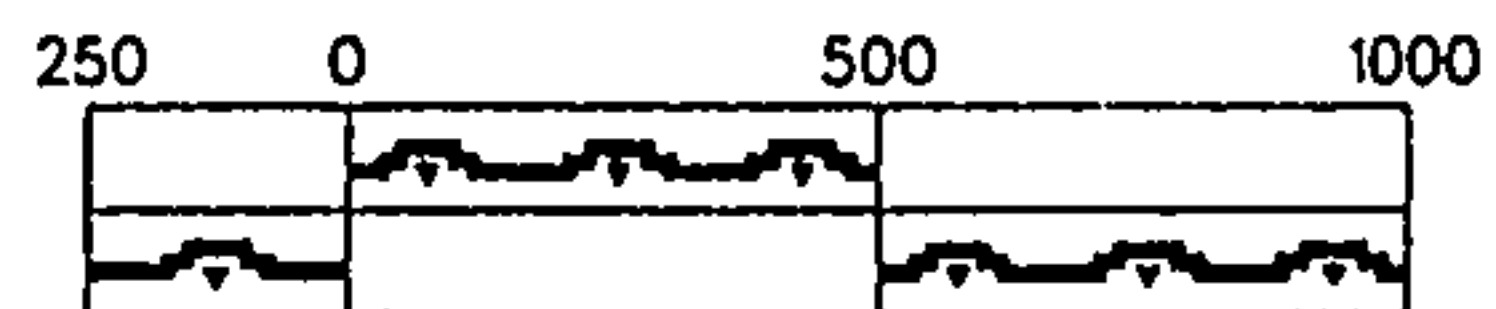
- THIS PROJECT IS PART OF WHAT WAS KNOWN AS SILVERADO SUBDIVISION (M9/D20). APPENDIX "A"
- WHAT HAS OCCURRED SINCE THE PRELIMINARY PLAT APPROVAL ON OCT. 26, 1998 IS THAT THE PROPERTY HAS BEEN SOLD AND A BULK PLAT WAS COMPLETED. THERE ARE NOW TWO OWNERS. CENTEX PURCHASED UNITS 1 & 4 AND CURB INC. UNITS 2 & 3 PLUS THE 10 ACRES TO THE SOUTH ALONG WITH TRACT E.
- SINCE THE SCOPE OF THESE PROJECTS HAS INCREASED IT WILL BE NECESSARY TO DESIGN THEM TOGETHER BUT EACH WILL BE SUBMITTED SEPARATELY. WITH THIS IN MIND A REALIGNMENT OF GIBSON WILL OCCUR BETWEEN 98th AND UNSER. TRANSPORTATION IS AWARE OF THIS.
A REDESIGN OF THE STORMDRAIN SYSTEM FOR THIS AREA WILL BE DONE TO MINIMIZE SIZE AND LENGTH OF PIPE WHICH DRAINS TO THE DETENTION POND.
- FOR THIS REPORT, THE TWO UNITS HAVE BEEN REGRADED TO BALANCE THE EARTHWORK, MINIMIZE RETAINING WALLS AND REDESIGN STORMDRAIN TO WORK WITH THE NEW LAYOUT TO THE SOUTH AND EAST OF THE PROPERTY.
- CENTEX WILL CONSTRUCT FIRST. AS PART OF THE BULK PLAT DRAINAGE EASEMENTS ARE IN PLACE FOR TEMPORARY PONDING UNTIL DOWNSTREAM IMPROVEMENTS ARE CONSTRUCTED BY CURB INC.



CITY OF
Albuquerque
Geographic Information System
PLANNING DEPARTMENT
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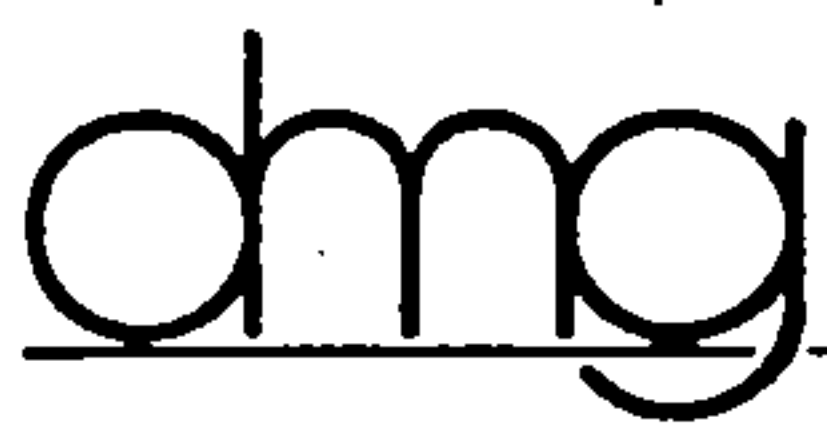


GRAPHIC SCALE IN FEET



Zone Atlas Page **M-9-Z**

Map Amended through
December 10, 1998



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 1 OF _____

THIS IS AN ADDENDUM TO THE DRAINAGE
REPORT OF SILVERADO SUBDIVISION PREPARED
BY MARK GOODWIN & ASSOCIATES (APPENDIX "A")

THIS ADDENDUM IS FOR THE TWO TRACTS BETWEEN
SNOW VISTA BLVD. AND BENEVIDES ROAD,

• TOTAL SITE = 10.6771 AC + 15.8089 AC
= 26.4860 AC

• NUMBER OF LOTS = 156

- AREA THAT WILL BE SEPARATED OUT TO DETERMINE PER
LOT RUNOFF. (THIS RUNOFF FOLLOWS BARBADOS DOWN TO GIBSON)

BARBADOS AVE AND 86TH BETWEEN SNOW VISTA & BARBADOS
AND BENEVIDES (THIS RUNOFF FOLLOWS THE STREETS TO THE
EAST OF BENEVIDES)

A = 1.4000 + 0.2107 + 0.5592
= 2.1699 AC

- FIND PER LOT RUNOFF

$26.4860 - 2.1699 = 23.3161 \text{ AC}$

PAD SIDE = $56' \times 28' = 1568$

DRIVE PAD = $20' \times 20' = 400$

$1968 \times 156 = 7.0479 \text{ AC TYPE "D"}$

- AREA OF ROW WITHIN SUBDIVISION

A = 6.3214 AC

80% D 20% B

TYPE D

TYPE B

7.0479 AC

19.9468 AC

INTERIOR

5.0571 AC

1.2643 AC

ROW

12.1050 AC

+

11.2111 AC

= 23.3161 AC

= 51.92%

= 48.08%

FROM HYMO OUTPUT SHEETS 11-13

Q = 76.76 CFS

Q PER LOT = $76.76 / 156 = 0.4921 \text{ CFS}$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CACS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 2 OF _____

PER SHEET 3 OF SILVERADO SUBDIVISION REPORT (SSR)

- MOUNTABLE C+G CAPACITY AT 2%

$$Q_{1/2} = 8.4 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 8.4 \times 2 / .4921 = 34.14$$

- MOUNTABLE C+G CAPACITY AT 1%

$$Q_{1/2} = 5.94 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 5.94 \times 2 / .4921 = 24.14$$

PER SHEET 4 OF THE SSR

- STD C+G CAPACITY AT 1%

$$Q = 47.53 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 47.53 / .4921 = 96.59$$

PER SHEET 6 OF THE SSR

- STD C+G CAPACITY AT 2%

$$Q = 38.545 \text{ CFS}$$

$$\text{NO. OF LOTS THAT DRAIN} = 38.545 / .4921 = 78.33$$

- DETERMINE INLET LOCATIONS

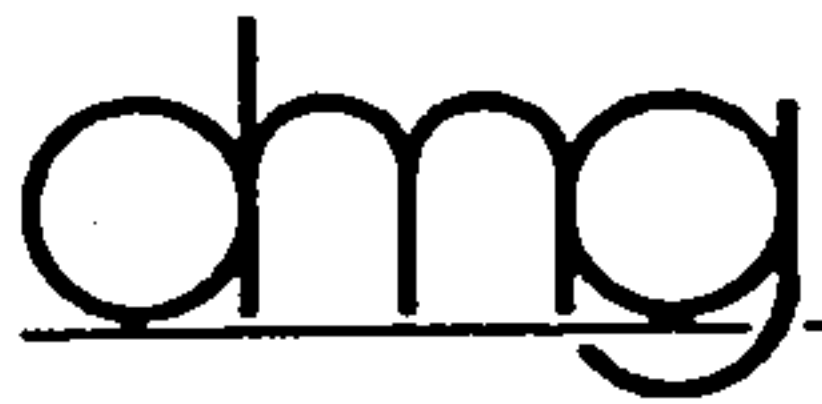
INLETS ARE REQUIRED AT THE INTERSECTION
OF SILVERADO AVE & WATERS DRIVE

71.5 LOTS ON SILVERADO (2%) LOT 19 BLOCK 5

78.5 LOTS ON WATERS (1%) LOT 27 BLOCK 4

$$Q \text{ ON SILVERADO} = 71.5 \times 0.4921 = 35.19 \text{ CFS}$$

$$Q \text{ ON WATERS} = 78.5 \times 0.4921 = 38.63 \text{ CFS}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 3 OF _____

• FIND d ON SILVERADO

$$Q = 35.19 \text{ cfs} \quad S = 2.0\%$$

$$d = 0.48$$

$$NP = 32.96$$

$$A = 7.69$$

$$V = 4.685 \text{ F/S}$$

$$Q = 36.03 \text{ cfs} \approx 35.19 \text{ cfs} \quad \text{OK}$$

• USE 2 "DBL A" INLETS

FROM NOMO SHEET 9

$$Q = 9.0 \text{ cfs}$$

Q PAST INLETS

$$35.19 - 2(9.0) = 17.19 \text{ cfs}$$

• FIND d ON WATERS

$$Q = 38.63 \text{ cfs} \quad S = 1.0\%$$

$$d = 0.55$$

$$NP = 33.10$$

$$A = 9.93$$

$$V = 3.917 \text{ F/S}$$

$$Q = 38.90 \text{ cfs} \approx 38.63 \text{ cfs} \quad \text{OK}$$

• USE 2 "DBL A" INLETS

FROM NOMO SHEET 9

$$Q = 8.2 \text{ cfs}$$

Q PAST INLETS

$$38.63 - 2(8.2) = 22.23 \text{ cfs}$$

• FIND Q AT SILVERADO AND BENVENIDEZ

$$Q = 17.19 + 22.23 + 6(0.4921)$$

$$= 42.37 \text{ cfs}$$

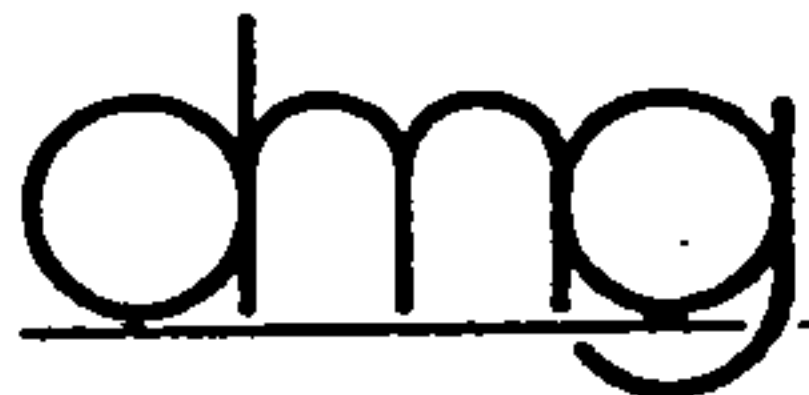
• FIND $d = 0.56$ $S = 1.0\%$

$$NP = 33.12$$

$$A = 10.33$$

$$V = 4.02 \text{ F/S}$$

$$Q = 41.53 \text{ cfs} \approx 42.37 \text{ cfs} \quad \text{OK}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 4 OF _____

THIS WATER WILL TURN ON BENEVIDEZ AND
FLOW TO BARBADOS AND DOWN BARBADOS
TO GIBSON.

THIS CONTINUATION IS SHOWN IN
THE EL RANCHO GRANDE I DRAINAGE
REPORT (APPENDIX "B")

- DETERMINE RUNOFF IN BARBADOS (BOTH SIDES ARE BUILT)
WE WILL HAVE TO ADD AREA OUTSIDE OF
THE LIMITS OF THIS PROJECT

86TH STREET FROM THE SNOW VISTA CHANNEL
TO BARBADOS WILL BE ADDED.

AREA OF 86TH = 0.8586 AC (0.2407 AC IS PART OF THIS PROJECT)
AREA OF BARBADOS = 1.4000 AC

TOTAL = 2.2586 AC

80% D 20% B

FROM AH4MO OUTPUT SHEETS 14-16

$Q = 8.95$ CFS

- FIND d IN BARBADOS AT BENEVIDEZ

$S = 3.3\%$

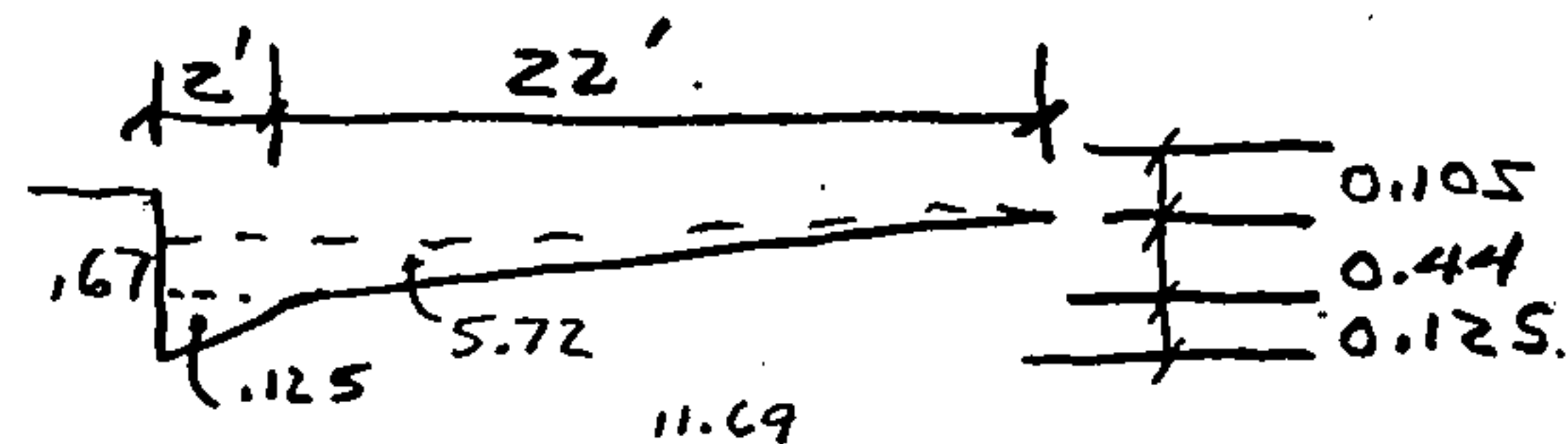
$d = 0.30$

$wp = 11.05$

$A = 1.25$

$V_{1/2} = 3.714$ F/S

$Q_{1/2} = 4.61$ CFS $\approx 8.95/2 = 4.475$ CFS OK



- FIND d IN BARBADOS JUST PAST BENEVIDEZ

$Q = 8.95 + 42.37 = 51.32$ CFS $S = 1.0\%$

$d = 0.48$

$wp = 48.96$

$A = 13.61$

$V = 3.723$ F/S

$Q = 50.67$ CFS ≈ 51.32 OK

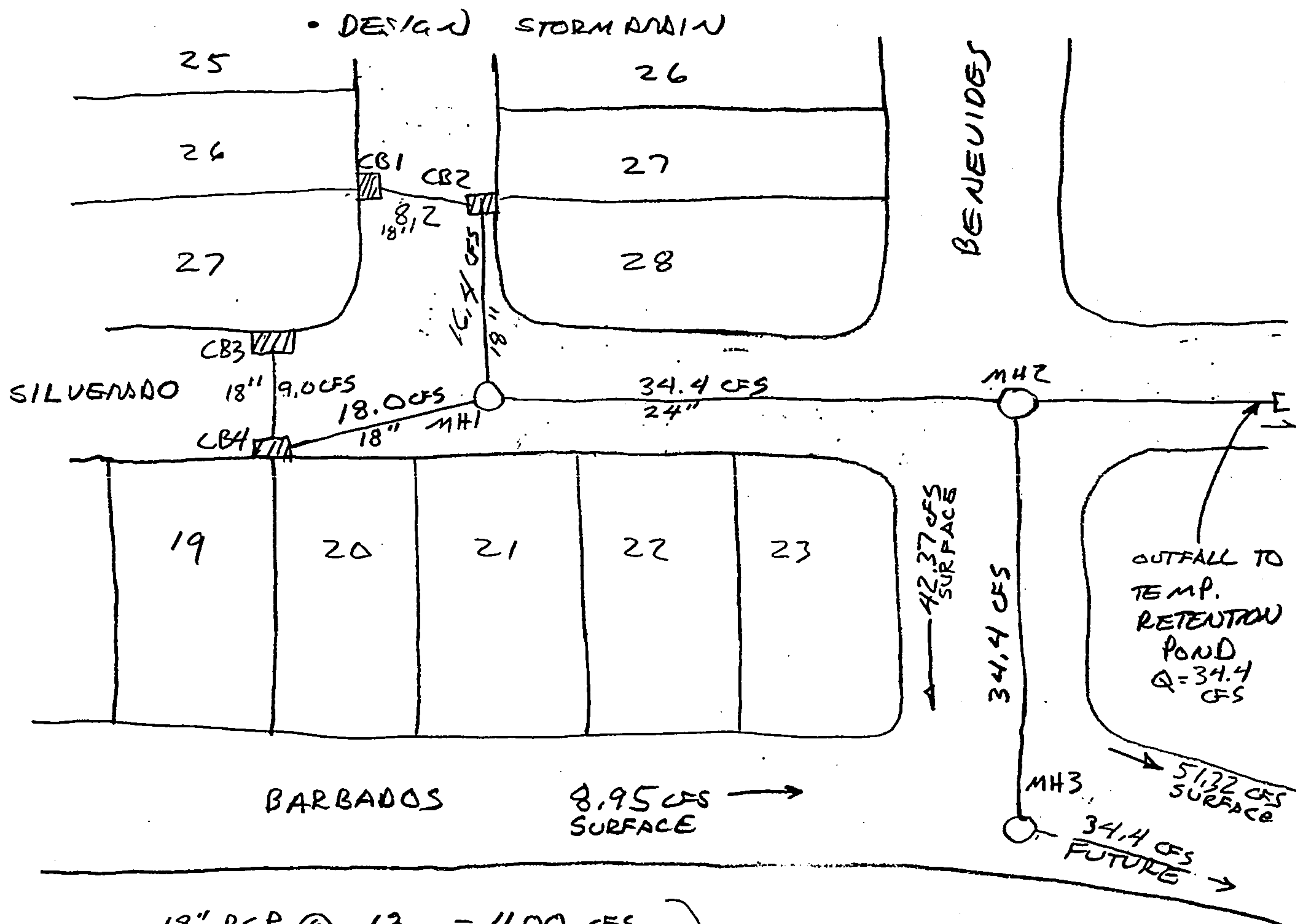
$d + \frac{V^2}{2g} = 0.70 < 0.67 + 0.33$ OK



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 5 OF _____



18" RCP @ 12 = 11.00 CFS

18" RCP @ 2.4% = 17.5 CFS

24" RCP @ 2.2% = 33 CFS

30" RCP @ 1.0% = 40 CFS

SEE NOMO SHEET 10

STRUCTURE	RIM/GRATE	INV	PIPE SIZE LEAVING STRUCTURE
CB1	89.55	86.05	18" RCP
CB2	89.55	85.77	18" RCP
CB3	89.22	85.72	18" RCP
CB4	89.22	85.44	18" RCP
MH1	88.90	83.61	24" RCP
MH2	87.89	80.31	30" RCP
MH3	86.18	78.58	30" RCP



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 6 OF _____

- DESIGN CHANNEL FROM SILVER SKY CT TO GOLDEN VIEW DRIVE.

$$Q = 3 \times 0.5068 \\ = 1.52 \text{ CFS}$$

- SIZE WIER

$$Q = 2.95 L H^{1.5}$$

$$H = 4''$$

$$L = 2.68'$$

USE 5'

- SIZE CHANNEL

$$S = 4\%$$

$$n = 0.013$$

TRY 3' WIDE, 4" TALL

$$d = .33$$

$$WP = 3.67$$

$$A = 1.0$$

$$V = 9.61 \text{ F/S}$$

$$Q = 9.61 \text{ CFS} = \text{CAPACITY}$$

FIND ACTUAL d

$$d = 0.104$$

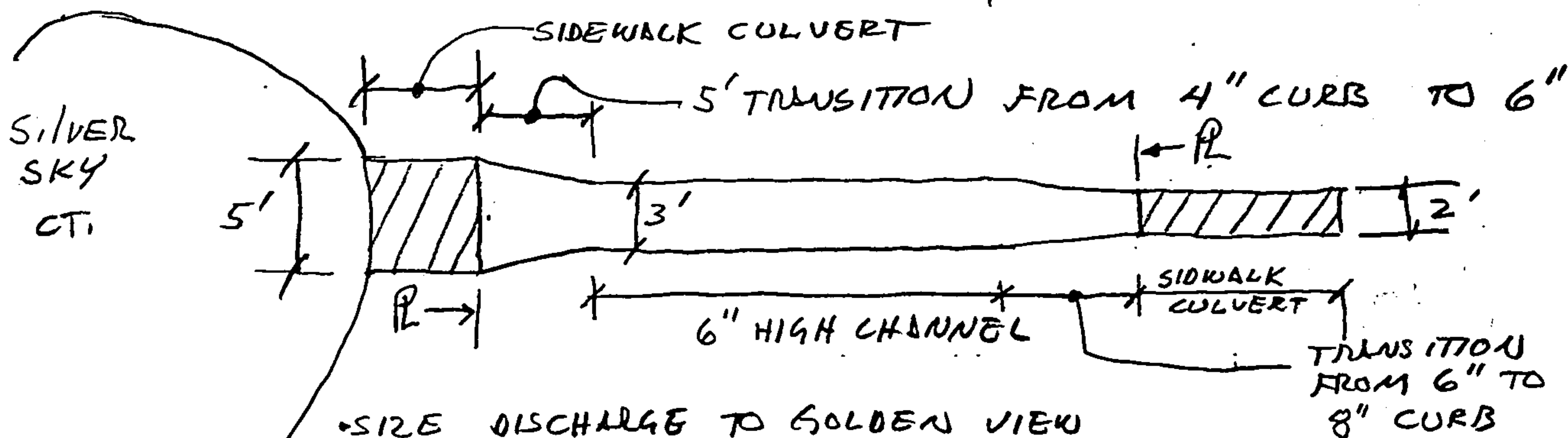
$$WP = 3.208$$

$$A = 0.3125$$

$$V = 4.84 \text{ F/S}$$

$$Q = 1.51 \text{ CFS} \approx 1.52 \text{ CFS OK}$$

$$\frac{V^2}{2g} = 0.47 > 0.33 \text{ USE 6" TALL CHANNEL}$$



- SIZE DISCHARGE TO GOLDEN VIEW

$$d = 0.18$$

$$WP = 2.36$$

$$A = 0.36$$

$$V = 4.615 \text{ F/S}$$

$$Q = 1.66 \text{ CFS} \approx 1.52 \text{ CFS OK}$$

$$\frac{V^2}{2g} = 0.51 \text{ USE 8" CURB}$$



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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 7 OF _____

- SIZE TEMPORARY RETENTION POND FOR UNITS 1 + 2
FROM AHYMO OUTPUT (ON TRACT "C")
 $V = 2.6199 \text{ AC-FT}$

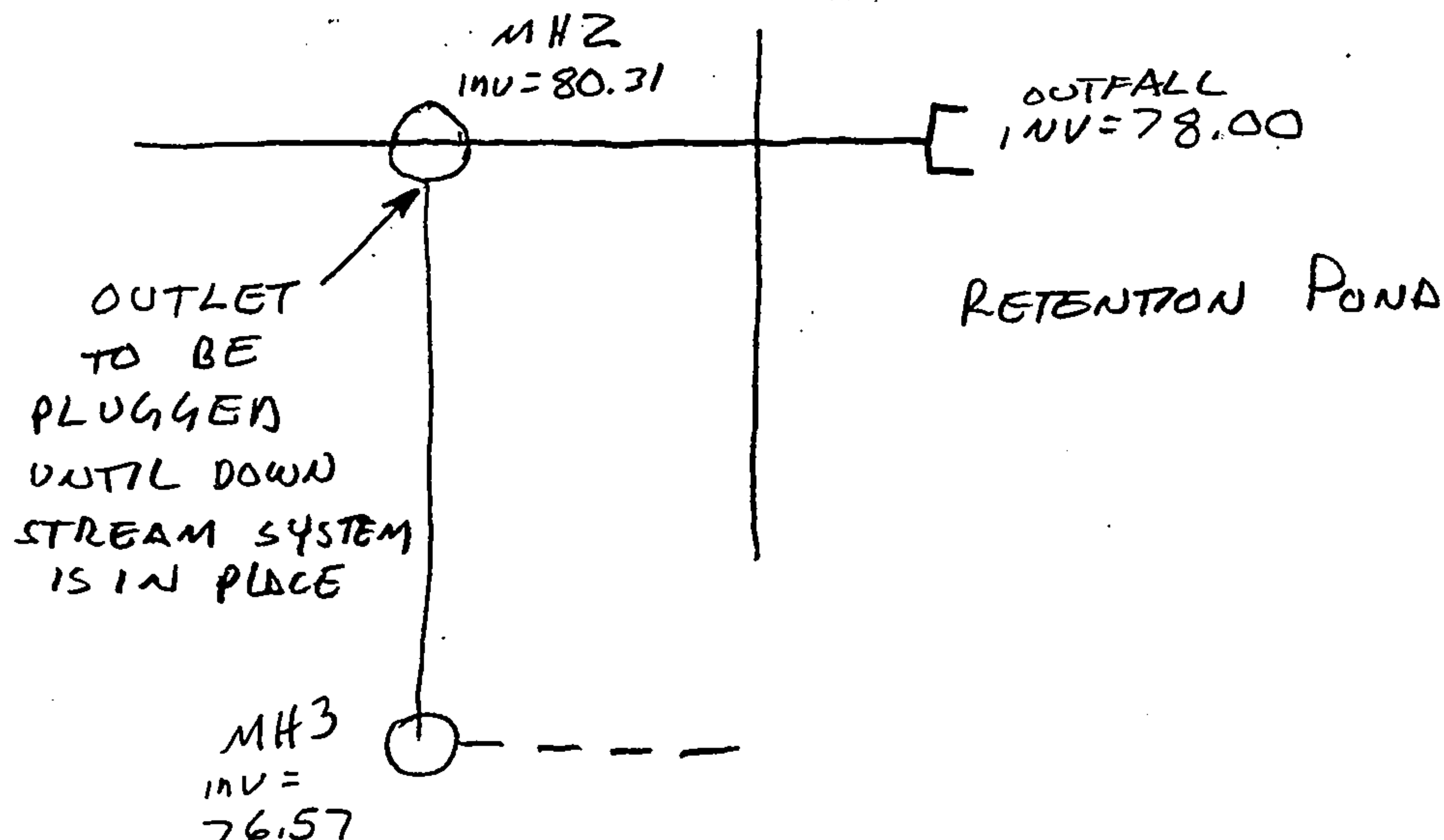
$$\begin{aligned} V_{100-100} &= 2.6199 + 12.105 \left(\frac{3.67 - 2.2}{12} \right) = V_6 + A_0 \left(\frac{P_{100} - P_6}{12} \right) \\ &= 2.6199 + 1.4829 \\ &= 4.1028 \text{ AC-FT} \end{aligned}$$

REQ. POND VOLUME = 178,716 CF

ELEV	AREA (SF)	VOLUME (CF)
78	$170 \times 70 = 11,900$	0
79	$176 \times 76 = 13,376$	12,638
80	$182 \times 82 = 14,924$	26,788
81	$188 \times 88 = 16,544$	42,522
82	$194 \times 94 = 18,236$	59,912
83	$200 \times 100 = 20,000$	79,030
84	$206 \times 106 = 21,836$	99,948
85	$212 \times 112 = 23,744$	122,738
86	$218 \times 118 = 25,724$	147,472
87	$224 \times 124 = 27,776$	174,222
88	$230 \times 130 = 29,900$	203,060

← WATER SURFACE ELEVATION
FOR 178,716 IS
= 87.16

THE 24" RCP WILL EXTEND ACROSS BENEVIDES
INTO THE POND





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PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 8 OF _____

- SIZE TEMPORARY RETENTION POND FOR UNIT 1
(ON TRACT "B")

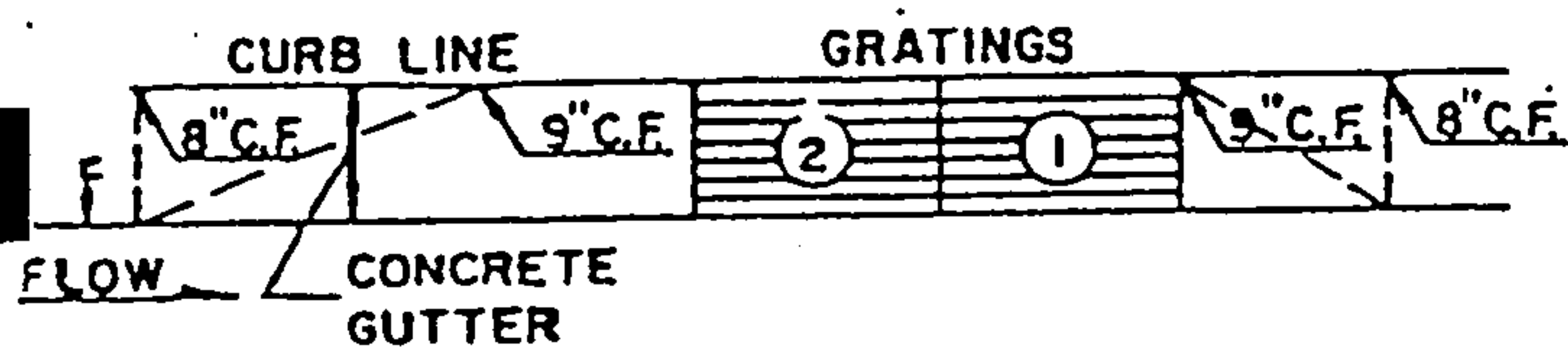
$$V = 63 \text{ LBS/156} (4.1028 \text{ AC-FT})$$
$$= 1.6569 \text{ AC-FT}$$
$$= 72,175 \text{ CF}$$

ELEV	AREA (SF)	VOLUME (CF)	
97.00	170 x 70 = 11,900	0	
98.00	176 x 76 = 13,376	12,638	
99.00	182 x 82 = 14,924	26,788	
5/00.00	188 x 88 = 16,544	42,522	
01.00	194 x 94 = 18,236	59,912	← WATER SURFACE
02.00	200 x 100 = 20,000	79,030	ELEVATION
			FOR 72,175 CF
			IS 01.64

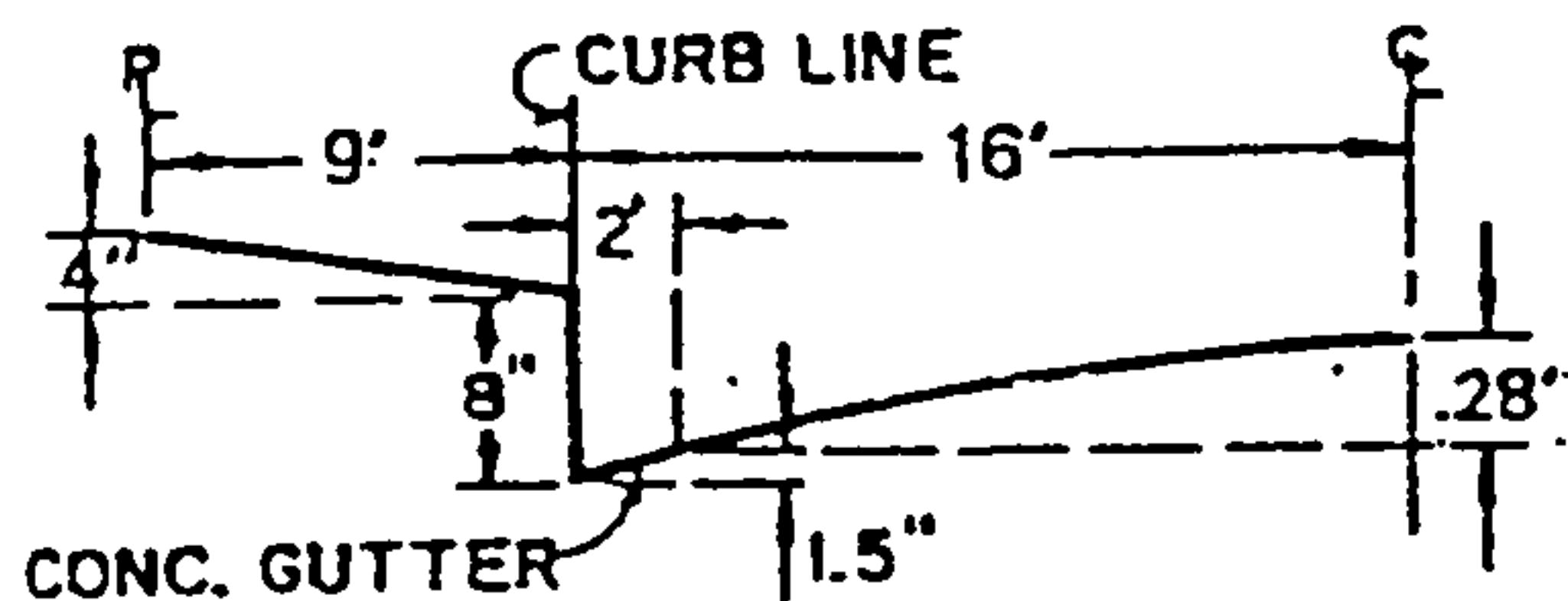
THIS POND IS ONLY FOR UNIT ONE
CONSTRUCTION.

WHEN UNIT 2 CONSTRUCTION OCCURS
THE POND WILL BE VACATED AND RELOCATED.

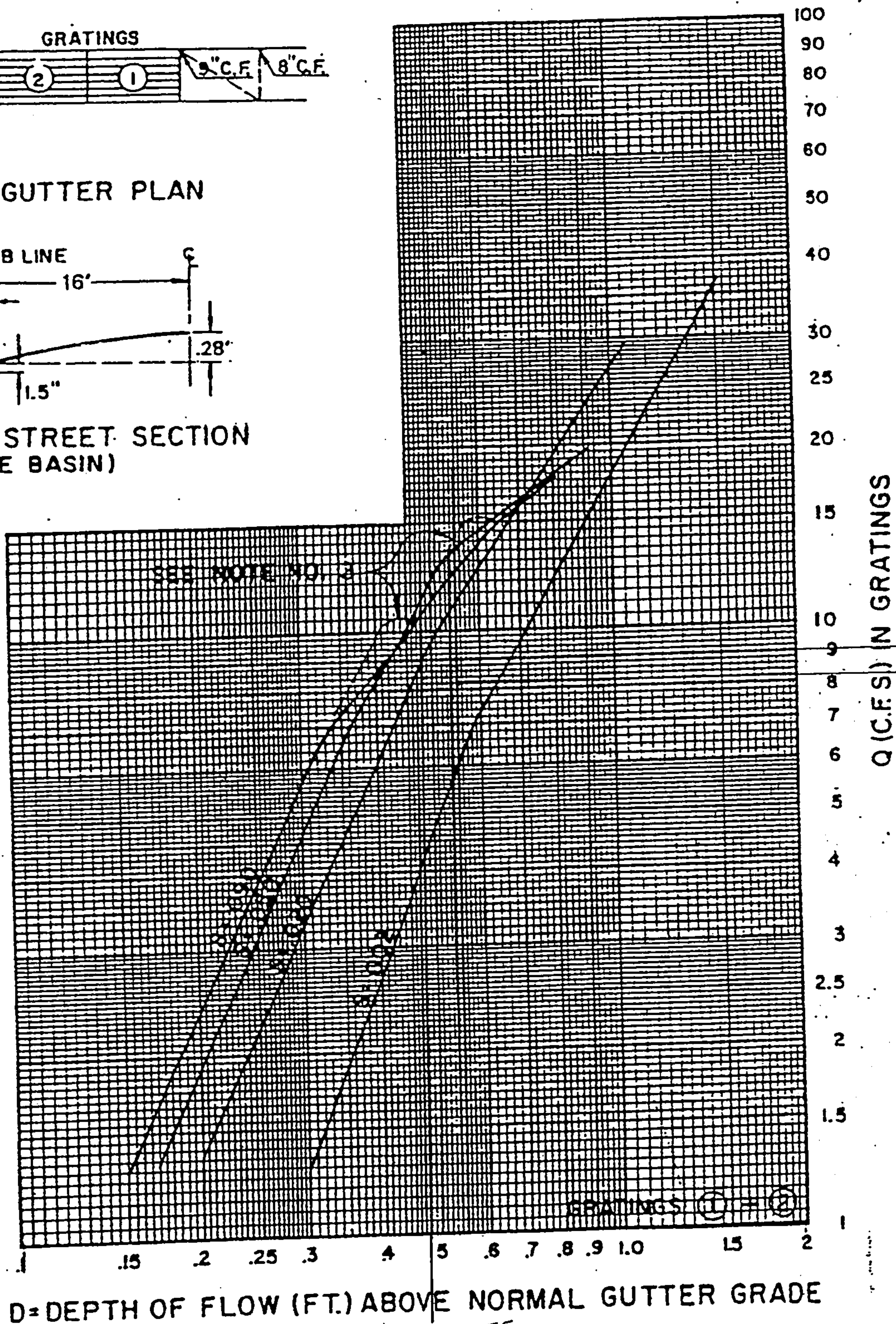
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



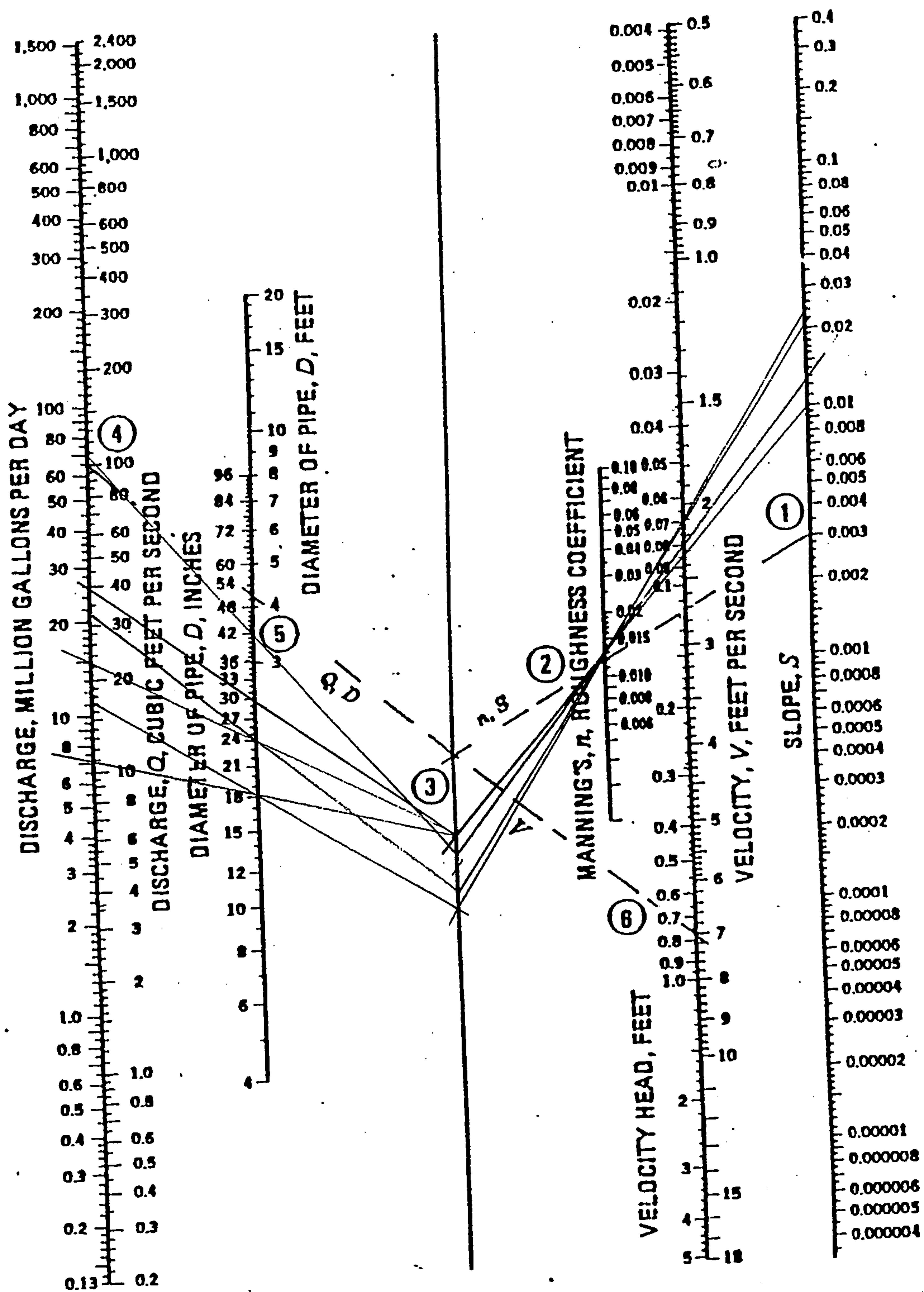
GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)



Reference: American Concrete Pipe Association (1980).



B) Circular Pipe Solution

11

START TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO PER LOT RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.036431 SQ MI
PER A=0 B=48.08 C=0 D=51.92
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

12

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 02/04/2000
START TIME (HR:MIN:SEC) = 14:32:17 USER NO.= M_GOODWN.I01
INPUT FILE = centslvr.dat

START TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO PER LOT RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.036431 SQ MI
 PER A=0 B=48.08 C=0 D=51.92
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 74.677 CFS UNIT VOLUME = .9992 B = 526.28
AREA = .018915 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 43.041 CFS UNIT VOLUME = 1.000 B = 327.55
AREA = .017516 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.10

RUNOFF VOLUME = 1.34837 INCHES = 2.6199 ACRE-FEET
PEAK DISCHARGE RATE = 76.67 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 14:32:17

TART TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO 86TH & BARBADOS RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.90 IN RAIN SIX=2.20 IN
RAIN DAY=2.70 IN DT=0.03333 HR
COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003529 SQ MI
PER A=0 B=20 C=0 D=80
TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD ID=1 CODE=1
FINISH

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 11/24/1999
START TIME (HR:MIN:SEC) = 13:19:07 USER NO.= M_GOODWN.I01
INPUT FILE = CENOFF.DAT

START TIME=0.0
***** HYDROGRAPH FOR CENTEX SILVERADO 86TH & BARBADOS RUNOFF
RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.90 IN RAIN SIX=2.20 IN
 RAIN DAY=2.70 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2

DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0013	.0027	.0041	.0055	.0069	.0084
.0099	.0115	.0131	.0147	.0164	.0181	.0199
.0217	.0236	.0256	.0276	.0296	.0318	.0340
.0363	.0387	.0412	.0438	.0465	.0493	.0523
.0554	.0587	.0622	.0675	.0731	.0791	.0920
.1208	.1651	.2289	.3159	.4302	.5759	.7574
.9790	1.1846	1.2704	1.3429	1.4074	1.4661	1.5201
1.5702	1.6171	1.6610	1.7023	1.7413	1.7781	1.8130
1.8460	1.8774	1.9071	1.9353	1.9621	1.9681	1.9736
1.9789	1.9839	1.9887	1.9932	1.9976	2.0018	2.0059
2.0098	2.0136	2.0172	2.0208	2.0242	2.0275	2.0308
2.0339	2.0370	2.0400	2.0430	2.0458	2.0486	2.0514
2.0540	2.0567	2.0592	2.0617	2.0642	2.0666	2.0690
2.0714	2.0737	2.0759	2.0781	2.0803	2.0825	2.0846
2.0867	2.0887	2.0907	2.0927	2.0947	2.0966	2.0985
2.1004	2.1023	2.1041	2.1059	2.1077	2.1095	2.1112
2.1130	2.1147	2.1164	2.1180	2.1197	2.1213	2.1229
2.1245	2.1261	2.1277	2.1292	2.1307	2.1322	2.1337
2.1352	2.1367	2.1382	2.1396	2.1410	2.1425	2.1439
2.1452	2.1466	2.1480	2.1494	2.1507	2.1520	2.1533
2.1547	2.1560	2.1572	2.1585	2.1598	2.1611	2.1623
2.1635	2.1648	2.1660	2.1672	2.1684	2.1696	2.1708
2.1720	2.1731	2.1743	2.1754	2.1766	2.1777	2.1789
2.1800	2.1811	2.1822	2.1833	2.1844	2.1855	2.1866
2.1876	2.1887	2.1897	2.1908	2.1918	2.1929	2.1939
2.1949	2.1960	2.1970	2.1980	2.1990	2.2000	

COMPUTE NM HYD ID=1 HYD NO=101.1 AREA=0.003529 SQ MI
 PER A=0 B=20 C=0 D=80
 TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE
UNIT PEAK = 11.146 CFS UNIT VOLUME = .9984 B = 526.28
AREA = .002823 SQ MI IA = .10000 INCHES INF = .04000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

K = .130761HR TP = .133300HR K/TP RATIO = .980950 SHAPE
UNIT PEAK = 1.7343 CFS UNIT VOLUME = .9926 B = 327.55
AREA = .000706 SQ MI IA = .50000 INCHES INF = 1.25000 I
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT

PRINT HYD ID=1 CODE=1

RUNOFF VOLUME = 1.70931 INCHES = .3217 ACRE-FEET
PEAK DISCHARGE RATE = 8.95 CFS AT 1.500 HOURS BASIN AREA =

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 13:19:08