M9/D020

#2
(NO PUBLIC EASEMENT)

DRAINAGE COVENANT (5/25/00) # 63308(

This Drainage Covenant, between 21 Housing Corporation ("Owner"), whose address is 3411 Candelaria, Suite J, Albuq., NM 87107, and the City of Albuquerque, New Mexico municipal corporation ("City"), whose address is P.O. Box 1293, Albuquerque, New Mexico 87103, is made in Albuquerque, Bernalillo County, New Mexico and is entered into as of the date Owner signs this Covenant.

1. Recital. Owner is the owner of certain real property described as:
Tract A & B, Albuquerque South, Unit 4
Recorded Oct. 8, 1999 in Book 99C Page 286 Bernalillo County Clerk's Office, N.M.

in Bernalillo County, New Mexico (the "Property"). (Give legal description and filing information.)

Pursuant to City ordinances, regulations and other applicable laws, the Owner is required to construct and maintain certain Drainage Facilities on the Property, and the parties wish to enter into this Agreement to establish the obligations and responsibilities of the parties.

2. Description and Construction of Drainage Facilities. Owner shall construct the following "Drainage Facility" within the Property at Owner's sole expense in accordance with the standard plans and specifications approved by the City pursuant to Drainage File No. M9/D20:
Temporary Retention Pond

The Drainage Facility is more particularly described in the attached Exhibit A. The Owner will not permit the Drainage Facility to constitute a hazard to the health or safety of the general public.

3. Maintenance of Drainage Facility. The Owner will maintain the Drainage Facility at Owner's cost in accordance with the approved Drainage Report and plans.

4. City's Right of Entry. The City has the right to enter upon the Property at any time and perform whatever inspection, maintenance or repair of the Drainage Facility it deems appropriate, without liability to the Owner.

5. Demand for Construction or Repair. The City may send written notice ("Notice") to the Owner requiring the Owner to construct or repair the Drainage Facility

Judy D. Woodward Bern. Co. COV R 19.00
2000051995
5373064
Page: 1 of 7
05/30/2000 10:20A
Bk-A6 Pg-1788

within 30 days ("Deadline") of receipt of the Notice, as provided in Section 11, and the Owner will comply promptly with the requirements of the Notice. The Owner will perform all required work by the Deadline, at Owner's sole expense.

6. Failure to Perform by Owner and Emergency Work by City. If the Owner fails to comply with the terms of the Notice by the Deadline, or if the City determines that an emergency condition exists, the City may perform the work itself. The City may assess the Owner for the cost of the work and for any other expenses or damages which result from Owner's failure to perform. The Owner agrees promptly to pay the City the amount assessed. If the Owner fails to pay the City within thirty (30) days after the City gives the Owner written notice of the amount due, the City may impose a lien against Owner's Property for the total resulting amount.

7. Liability of City for Repair after Notice or as a Result of Emergency. The City shall not be liable to the Owner for any damages resulting from the City's repair or maintenance following notice to the Owner as required in this agreement or in an emergency unless the damages are the result of the reckless conduct or gross negligence of the City.

8. Indemnification. Owner agrees to indemnify and save the City, its officials, agents and employees harmless from all claims, actions, suits and proceedings arising out of or resulting from the Owner's negligent maintenance, construction, repair or use of the Drainage Facility. To the extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

9. Cancellation of Agreement and Release of Covenant. This Agreement may be released if the Drainage Facility is no longer required for the protection of the public health, safety and welfare by the City filing "Notice of Release" with the Bernalillo County Clerk. The Notice of Release must be signed by the City's Chief Administrative Officer, or his designee, and the approval of the City Hydrologist must be endorsed thereon.

10. Assessment. Nothing in this agreement shall be construed to relieve the Owner, his heirs, assigns, and successors from an assessment against Owner's Property for improvements to the property under a duly authorized and approved Special Assessment District. The parties specifically agree that the value of the Drainage Facility will not reduce the amount assessed by the City.

2000051995
5373084
Page: 2 of 7
05/30/2000 10:20A
Judy D. Woodward Bern. Co. COV R 19.00 Bk-A6 Pg-1788

11. Notice. For purposes of given formal written notice to the Owner, Owner's address is:

21 Housing Corporation
3411 Candelaria, Suite J
Albuquerque, NM 87107

Notice may be given to the Owner either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the Owner within three days after the notice is mailed if there is no actual evidence of receipt. The Owner may change Owner's address by given written notice of the change by Certified Mail, return receipt requested, to the City Public Works Department, P.O. Box 1293, Albuquerque, New Mexico, 87103.

12. Term. This Agreement shall continue until terminated by the City pursuant to Section 9 above.

13. Binding on Owner's Property. The covenants and obligations of the Owner said forth herein shall be binding on Owner, its heirs, personal representatives, assigns and successors and on Owner's Property and shall constitute covenants running the Owner's Property until released by the City.

14. Entire Agreement. This Agreement contains the entire agreement of the parties and supersedes any and all other agreements or understanding, oral or written, whether previous to the execution hereof or contemporaneous herewith regarding this subject matter.

15. Changes to Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning of construction of any of its provisions.

Judy D. Woodward Bern. Co. COV R 19.00
2000051995
5373064
Page: 3 of 7
05/30/2000 10:20A
Bk-A6 Pg-1788

CITY OF ALBUQUERQUE:

By: _____
Lawrence Rael
Chief Administrative Officer
Dated: 5-25-00

OWNER:

By: _____
Its: Vice President
Dated: 5-10-2000

APPROVED:

_____ 5/25/00
Director, Public Works Dept.

REVIEWED BY:

_____ 5/25/00
City Engineer

10 STEW

OWNERS ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on May 10, 2000, ~~199~~, by WALTER A. TILLEY, VICE PRESIDENT OF 21 HOUSING CROP a NEVADA corporation, on behalf of the corporation.

_____
Notary Public

My Commission Expires:

9-3-00

OFFICIAL SEAL
SUSAN BARROR
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 9-3-00

Judy D. Woodward Bern. Co. COV R 19.00

2000051995
5373064
Page: 4 of 7
05/30/2000 10:20A
Bk-A6 Pg-1788

CITY'S **ACKNOWLEDGMENT**

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

This instrument was acknowledged before me on May 25 ~~19~~ 2000, by Fred J. Aguirre, City Engineer for the City of Albuquerque, a New Mexico municipal corporation on behalf of the corporation.

Gloria D. Saavedra
Notary Public

My Commission Expires:

11-15-2003

Judy D. Woodward Bern. Co. COV R 19.00

2000051995
5373064
Page: 5 of 7
05/30/2000 10:20A
Bk-A6 Pg-1788

ADDENDUM TO COVER PAGE

5-12-00
(Date)

TO: Kevin Curran, Assistant City Attorney, Legal Department

FROM: Project Administrator, Project Review Sec., PWD

SUBJECT: PROJECT TITLE: SILVARADO SUBD UNIT 1 PROJECT # 633081

The attached documents have been review, approved, initialed and/or signed by the DRC Chairman and are submitted for your action as noted.

ITEM	ACTION: Review & Approval	ACTION: Reference
Procedure "A"		
Procedure "B"		
Procedure "B" Modified Non Work Order		
Procedure "C"		
Procedure "C" Modified		
Special Agreement		
Sidewalk Deferral Agreement		
Amendment		
Financial Guarantee		
Construction Paperwork:		
Contractors Proposal		
Performance/Warranty Bonds		
Labor/Material Bonds		
Certificate of Insurance		
Engineers Cost Estimate		
Extension		
Release/Agreement		
Release/Financial Guarantee		
Calling Notice		
Letter of Commitment		
Reduction Letter		
License Agreement		
Easement		
Monitoring Well Permit		
Agreement & Covenant		
Drainage Covenant	✓	
Revocable Permit		
Encroachment		
Permanent Easement		

Other:
1
2
3

Please Call Terri at 924-3997 if you have any questions regarding the above or when the documents are ready to be picked up.

ATTACHMENTS (1)

CONTRACT CONTROL FORM

PRELIMINARY REVIEW

Project # 633081

CCN # 200001177

~~New~~ or Ext. #

Contact Person Terri

Phone No. 924-3997

Type of Agreement : DRAINAGE COVENANT

Description/Project: SILVARADO SUBD UNIT 1

Public Works/Div.: PROJECT REVIEW SECTION

Developer: 21 HOUSING CORP.

Contract Amount $ —

Contract Amount $

SIA Contract Period: 5-25-00 - Perm.

SW'S Contract Period: -

Project Completed Date:

DRAFT CONTRACT:

Rec'd by Legal: Rejected/Returned to Dept.: 5/19/00 / KJC

Returned to Legal: 5-23-00 / Approved: Initials:

FINANCIAL GUARANTY:

Letter of Credit No.: Date: Attached: Yes No Initial

Other: Type Date: Attached: Yes No Initial

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept.	Approved By	Approval Date:
~~Purchasing:~~ HYDRO:	5-12-00		SMC	5-18-00
Asst. City Attorney:	5-19-00		KJC	5/23/00
CIP:				
City Attorney:				
CAO:				
Other:				
Council:	EC No.:	Approved:		Date:

DISTRIBUTION:

	Date:	By:
User Department	5-30-00	
Vendor		
City Clerk	5-30-00	
Treasury		

Revised 9/6/95 WP+125805/tsl

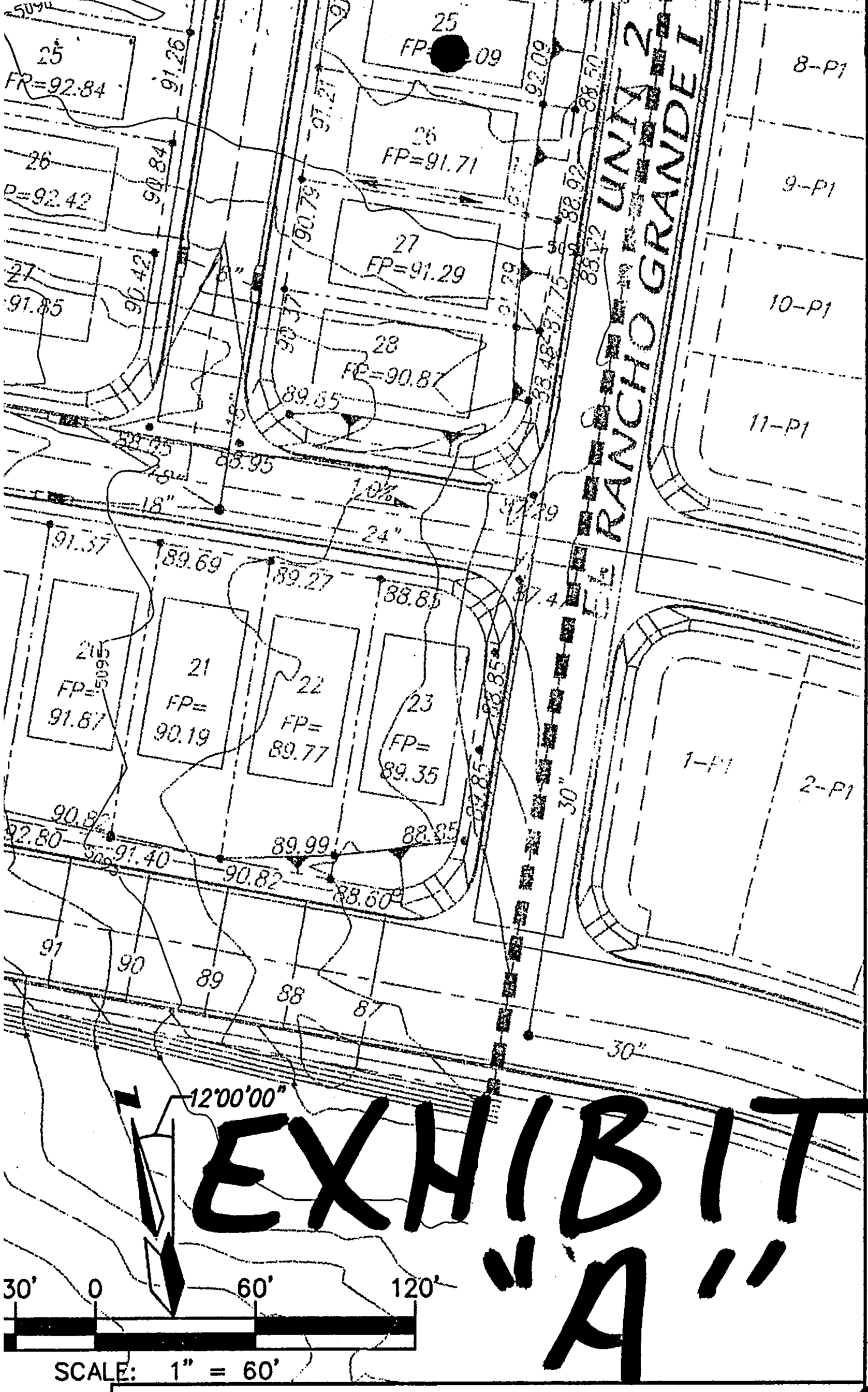


EXHIBIT "A"

Pg. 1 of 2

SURVEY INFO	
FIELD NO.	
BY	

NO.	REMARKS	DATE

ENGINEER'S SEAL

RECEIVED
MAY 1 1 2000
PWD/DESIGN REVIEW

REVISIONS	DATE

DESIGN	DATE
DESIGNED BY GJK	
DRAWN BY ACH	02/00
CHECKED BY DMG	02/00

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

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE:

SILVERADO SUBDIVISION - UNIT 1
GRADING AND DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

2000051995
5373064
Page: 6 of 7
05/30/2000 10:20A
Bk-A6 Pg-1788
Judy D. Woodward Bern. Co. COV R 19.00

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
6330.81	M-9	6	29

ACH MJR

2000051995
5373064
Page: 7 of 7
05/30/2000 10:20A
Judy D. Woodward Bern. Co. COV R 19.00 Bk-A6 Pg-1788

BLOCK 1
ROCK RD. S.W.
GOLDEN VIEW DR. S.W.
SILVER SPUR AVE. S.W.
86TH STREET S.W.
BARRANCA DR. S.W.
UNIT 1
UNIT 2
10' PUBLIC DRAINAGE EASEMENT
ASPHALT RUNDOWN
TEMP. RET. POND 200' x 100'
POND BOTTOM = 97.00
MAX. WATER SURFACE = 01.64
BLOCK 5

EXHIBIT "A"
PG. 2 of 2

RECEIVED
MAY 11 2000
PWD/DESIGN REVIEW

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 19, 2002

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

RE: SILVERADO SUBD UNIT 2 (M-9/D-20)
(AKA: EL RANCHO GRANDE UNIT 2B)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 7/24/2001
Engineers Certification dated 11/8/2002

Dear Greg:

Based upon the information provided in your Engineers Certification submittal dated 11/8/2002, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

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

Sincerely,

Teresa A. Martin

Teresa A. Martin
Hydrology Plan Checker
Development & Bldg. Ser. Division
BCB

c: Arlene Portillo, COA--Project # 645686
File

DRAINAGE INFORMATION SHEET

(EL RANCHO GRANDE UNIT 2B)

M-9/D20

PROJECT TITLE: (SILVERADO UNIT 2) ZONE ATLAS#: ~~M-9~~

DRB#: 1000182 EPC# WORK ORDER#:

LEGAL DESCRIPTION: TRACT B, BLOCK 4, ALBUQUERQUE SOUTH

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: BO JOHNSON

ADDRESS: 6301 INDIAN SCHOOL RD NE PHONE: 881-2200

ARCHITECT: CONTACT:

ADDRESS: PHONE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTACTOR: CONTACT:

ADDRESS: PHONE:

TYPE OF SUBMITTAL:

- ___ DRAINAGE REPORT
- ___ DRAINAGE PLAN
- ___ CONCEPTUAL GRADING & DRAINAGE PLAN
- ___ GRADING PLAN
- ___ EROSION CONTROL
- X ENGINEER'S CERTIFICATION
- ___ OTHER
- ___ EASEMENT VACATION

PRE-DESIGN MEETING:

- ___ YES
- ___ NO
- ___ COPY PROVIDED

RECEIVED
NOV 0 8 2002
PWD/DESIGN REVIEW

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAT APRROVAL
- ___ PRELIMINARY PLAT APRROVAL
- ___ 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
- X RELEASE OF FINANCIAL GUARANTY
- ___ TRAFFIC CIRCULATION LAYOUT

DATE SUBMITTED: 11-8-02

BY: GREGORY J. KRENIK

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

July 24, 2001

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

Re: Silverado Subdivision Conceptual Grading Plan Amendment
Engineer's Stamp dated 7-24-01 (M9/D20)

Dear Mr. Krenik,

Based upon the information provided in your submittal dated 7-24-01, the above referenced plan is approved for Amended Preliminary Plat action by the DRB. You will need to provide an approved Grading Plan prior to Final Plat or Work Order.

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

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Sr. Engineer, Hydrology

C: file

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Silverado Unit 2 ZONE MAP/DRG. FILE #:
DRB #: EPC#: WORK ORDER#:

LEGAL DESCRIPTION:
CITY ADDRESS:

ENGINEERING FIRM: MGA CONTACT: Greg K
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

OWNER: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

ARCHITECT: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:
ADDRESS PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:
- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- X CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ OTHER

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- ____ YES
- ____ NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
- ____ SIA / FINANCIAL GUARANTEE RELEASE
- X PRELIMINARY PLAT APPROVAL (Amended)
- ____ 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
- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

DATE SUBMITTED: 7/24/01 BY:

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report**: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 16, 2001

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

RE: **SILVERADO SUBDIVISION UNIT 1** **(M-9/D20)**
Engineers Certification For Release of Financial Guaranty
Engineers Stamp dated 4/11/2000
Engineer's Certification dated 11/13/2001

Dear Mr. Krenik:

Based upon the information provided in your submittal dated 11/13/2001, the above referenced plan 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

Teresa A. Martin
Hydrology Plan Checker
Public Works Department
BLB

C: Arlene Portillo, PWD – #633081
File

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

DRAINAGE INFORMATION SHEET

M-9/D20

PROJECT TITLE: SILVERADO SUBDIVISION UNIT 1 ZONE MAP/DRG. FILE #: M-9
DRB #: 1000182 EPC#: WORK ORDER#: 633081

LEGAL DESCRIPTION: TRACT A, ALBUQUERQUE SOUTH, UNIT 4
CITY ADDRESS:

ENGINEERING FIRM: MARK GOODWIN & ASSOCIATES
ADDRESS: PO BOX 90606
CITY, STATE: ALB, NM
CONTACT: GREGORY J. KRENIK
PHONE: 828-2200
ZIP CODE: 87199

OWNER: ZI HOUSING CORP.
ADDRESS: 3911 CANDELARIA RD SUITE J
CITY, STATE: ALB NM
CONTACT: WALTER TILLEY
PHONE: 761-9606
ZIP CODE: 87107

ARCHITECT:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

SURVEYOR:
ADDRESS
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

CONTRACTOR:
ADDRESS:
CITY, STATE:
CONTACT:
PHONE:
ZIP CODE:

CHECK TYPE OF SUBMITTAL:
- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ____ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- X ENGINEER'S CERTIFICATION
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ OTHER

WAS A PRE-DESIGN CONFERENCE ATTENDED:
- ____ YES
- ____ NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:
- X SIA / FINANCIAL GUARANTEE RELEASE
- ____ 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
- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ OTHER (SPECIFY)

DATE SUBMITTED: 11-13-01 BY: GREGORY J. KRENIK, PE

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope ot the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.

RECEIVED
NOV 13 2001
HYDROLOGY SECTION

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 12, 2000

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

RE: Revised Drainage Report and Grading and Drainage Plan for Silverado Subdivision (M9/D20), Submitted for Preliminary Plat Approval and Rough Grading Approval, Engineer's Stamp Dated 4/11/00.

Dear Mr. Krenik:

Based on the information provided with the submittals of April 5, 2000 and April 11, 2000, the above referenced Drainage Report and Grading and Drainage Plans are approved for Preliminary Plat action.

The above referenced plan is also approved for Rough Grading. A separate topsoil disturbance permit must be obtained for the proposed grading on this site.

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: Walter Tilley, Centex
Lisa Manwill, Albuquerque Metropolitan Arroyo Flood Control Authority
<File>

RONALD D. BROWN, CHAIR
DANIEL W. COOK, VICE-CHAIR
CLIFFORD E. ANDERSON, P.E., SECRETARY-TREASURER
LINDA STOVER, ASST. SECRETARY-TREASURER
DANIEL HERNANDEZ, DIRECTOR

JOHN P. KELLY, P.E.
EXECUTIVE ENGINEER

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N.E. - ALBUQUERQUE, NM 87107

PHONE: (505) 884-2215
FAX: (505) 884-0214

April 11, 2000

Greg Krenik, PE
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

RE: SILVERADO SUBDIVISION UNITS 1 & 2 (ZAP M9)

Dear Greg:

Based on your April 10, 2000 submittal, the above referenced project is acceptable with the following conditions:

1. The north most outfall to the Snow Vista Channel (approximately sta 18+00) needs to enter the channel below the drop structure. The pipe penetration must enter the channel at a 45° angle. A "marked up" copy of your plan is attached showing the desired alignment. A new manhole will be required to construct the pipe at the desired alignment.

2. Portions of the road, between the Snow Vista Channel and the Silverado Subdivision, need to be flattened out.

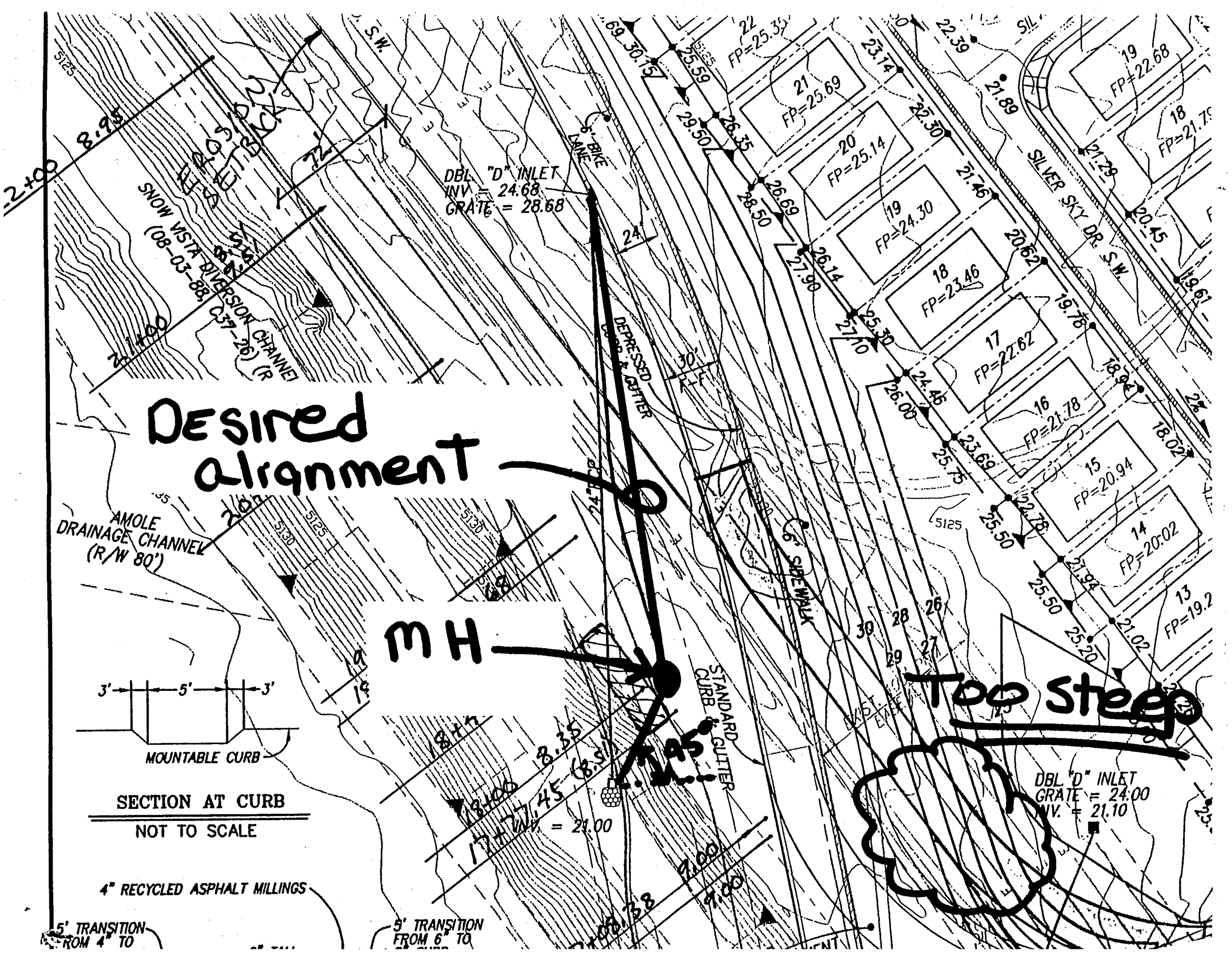
If I can be of further assistance, please call me at 884-2215

Sincerely,
AMAFCA

Lisa Ann Manwill, P.E.
Development Review Engineer

c: Susan Calongne - COA
File

P.S. need License Agreement from AMAFCA for channel penetration


Desired alignment
MH
Too Steep
SILVER SKY DR. S.W.
SNOW VISTA DIVERSION CHANNEL (08-03-88 C37-26) (R
AMOLE DRAINAGE CHANNEL (R/W 80')
DBL "D" INLET
INV = 24.68
GRATE = 28.68
DEPRESSED CURB & GUTTER
6' BIKE LANE
6' SIDEWALK
STANDARD CURB & GUTTER
DBL "D" INLET
GRATE = 24.00
INV. = 21.10
INV. = 21.00
3' 5' 3'
MOUNTABLE CURB
SECTION AT CURB
NOT TO SCALE
4" RECYCLED ASPHALT MILLINGS
5' TRANSITION FROM 4" TO
5' TRANSITION FROM 6" TO

[redacted]

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

CENTEX — SILVERADO

RECEIVED
APR 0 5 2000
HYDROLOGY SECTION

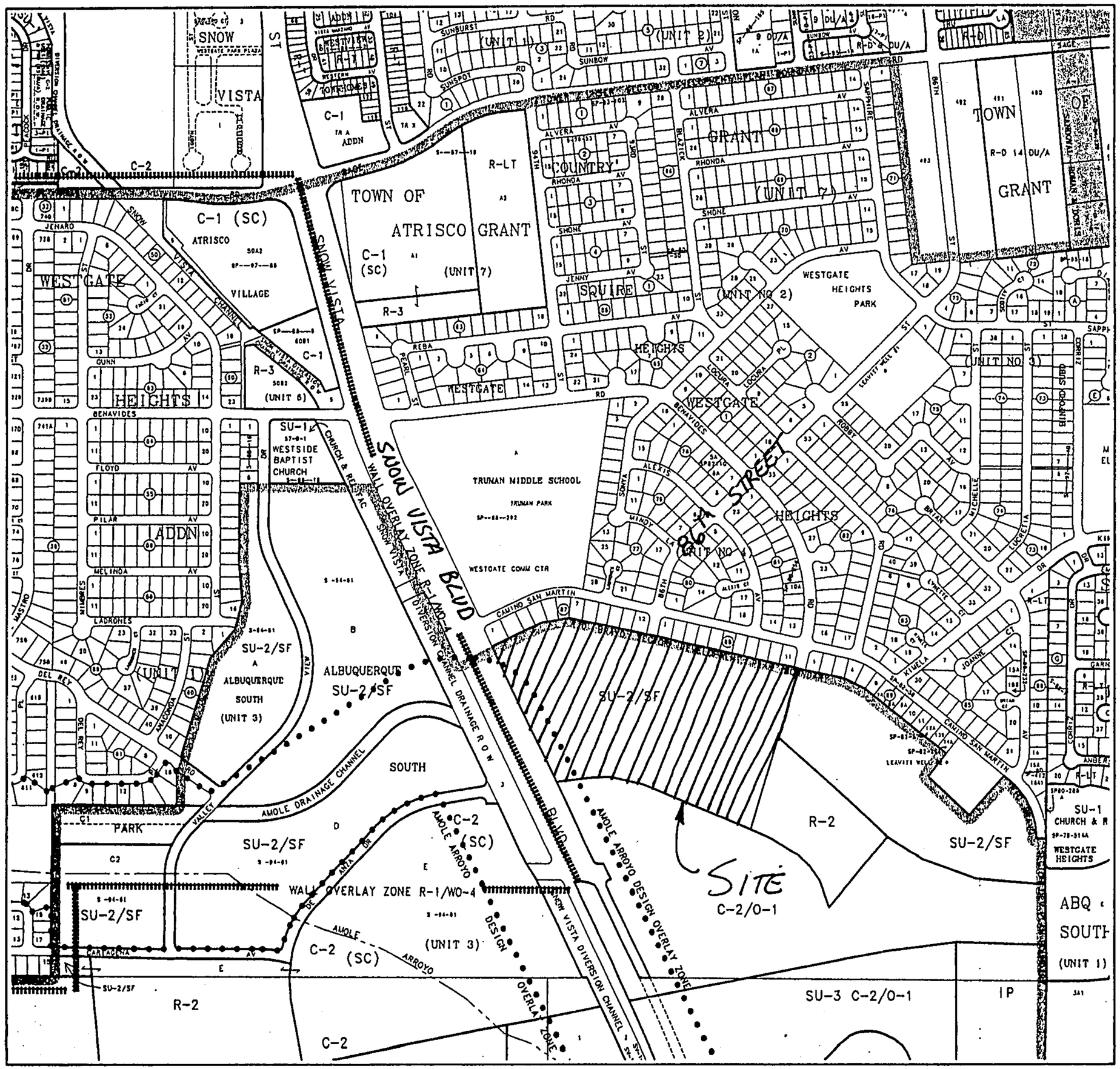
Prepared By

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

November 1999

GREGORY JAMES KRENIK
NEW MEXICO
11929
11-29-99
REGISTERED PROFESSIONAL ENGINEER

3-20-00
4-11-00



CITY OF Albuquerque

Albuquerque Geographic Information System

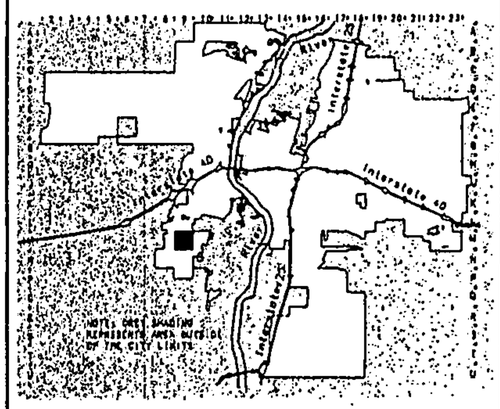
PLANNING DEPARTMENT

© Copyright 1998

N W E S

GRAPHIC SCALE IN FEET

250 0 500 1000



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: dmg@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" (SSR)
- 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 98 ☐ 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.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 1 OF ____

REVISED 3-20-00

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)

BASIN 1

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 AC

PAD SIZE = 56'x28' = 1568
DRIVE PAD = 20'x20' = 400
1968 x 156 = 7.0479 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 AHYMO OUTPUT SHEETS 11-13

Q = 76.76 CFS

Q PER LOT = 76.76/156 = 0.4921 CFS

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-20-00
CHECKED _____ DATE _____
SHEET 2 OF ____

PER SHEET 3 OF THE (SSR)

- MOUNTABLE C+G CAPACITY AT 2% = Q½ = 8.4 CFS

  NUMBER OF LOTS THAT DRAIN = 2 × 8.4/0.4921 = 34.14

- TRANSITION FROM MOUNTABLE C+G TO STD C+G WILL OCCUR ON GOLDEN VIEW DRIVE.

  - NUMBER OF LOTS FROM SOUTH = 28 AT 2%
    TRANSITION WILL OCCUR AT LOT 1, BLK 1 AND LOT 11, BLK 2
  - NUMBER OF LOTS FROM NORTH = 27 AT 2%
    TRANSITION WILL OCCUR AT LOT 42, BLK 1 AND LOT 9, BLK 2

PER SHEET 4 OF THE SSR

- STD C+G CAPACITY AT 1% = Q = 47.53 CFS

  NUMBER OF LOTS THAT DRAIN = 47.53/0.4921 = 96.59

PER SHEET 6 OF THE SSR

- STD C+G CAPACITY AT 2% = Q = 38.545 CFS

  NUMBER OF LOTS THAT DRAIN = 38.545/0.4921 = 78.33

- DETERMINE IF WATER WILL JUMP CURB AT SILVER SPUR AND BARRANCA.

  Q = 63 × 0.4921 = 31.00 CFS

  INTERSECTION IS FLAT S = 0.0% WITH A CROWN ALONG SILVER SPUR TO SPLIT THE FLOW

  FIND d JUST BEFORE INTERSECTION S = 1.8% n = 0.017

  d = 0.46
  WP = 32.92
  A = 7.05
  V = 4.20 F/s
  Q = 29.59 CFS ≈ 30.00 CFS OK

  $d + \frac{V^2}{2g} = 0.73 < 0.67 + 0.33$ OK

  ACTUAL d WILL BE LOWER BECAUSE WATER WILL SPREAD OUT WHEN IT ENTERS THE INTERSECTION AND SLOW DOWN BECAUSE THE INTERSECTION FLATTENS AND SLOPES AWAY.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 3 OF ____

REVISED 3-20-00

- FIND d ON Silverado (71.5 LOTS)

  Q = 35.19 cfs S = 2.0% n = 0.017

  d = 0.48
  WP = 32.96
  A = 7.69
  V = 4.685 F/s
  Q = 36.03 cfs ≈ 35.19 cfs OK

- USE 2 DBL A INLETS — ONE ON EACH SIDE OF THE ROAD AT LOT 20, BLK 5

  FROM NOMO SHEET 9

  Q = 9.0 cfs

  Q PAST INLETS

  35.19 − 2(9.0) = 17.19 cfs

- FIND d ON WATERS (78.5 LOTS)

  Q = 38.63 cfs S = 1.0% n = 0.017

  d = 0.55
  wp = 33.10
  A = 9.93
  V = 3.917 F/s
  Q = 38.90 cfs ≈ 38.63 cfs OK

- USE 2 "DBL A" INLETS — ONE AT LOT 28, BLK 3 AND ONE AT LOT 27, BLK 4.

  FROM NOMO SHEET 9

  Q = 8.2 cfs

  Q PAST INLETS

  38.63 − 2(8.2) = 22.23 cfs

- FIND Q AT Silverado AND BENEVIDEZ

  Q = 17.19 + 22.23 + 6(0.4921)

  = 42.37 cfs

- FIND d = 0.56 S = 1.0%

  WP = 33.12
  A = 10.33
  V = 4.02 F/s
  Q = 41.53 cfs ≈ 42.37 cfs OK

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 4 OF ____

REVISED 3-20-00

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

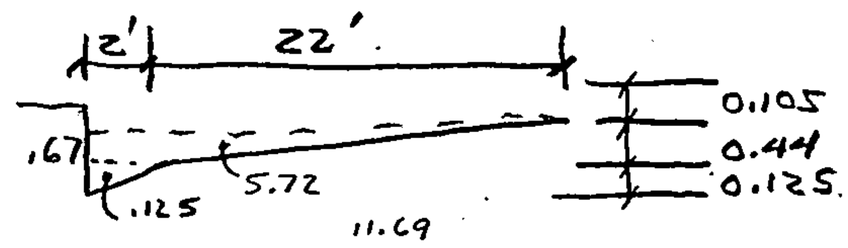
BASIN 1+2

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 AHYMO 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
V½ = 3.714 F/s
Q½ = 4.61 CFS ≈ 8.95/2 = 4.475 CFS OK

- FIND d IN BARBADOS JUST PAST BENEVIDES

Q = 8.95 + 42.37 = 51.32 CFS S = 1.0%

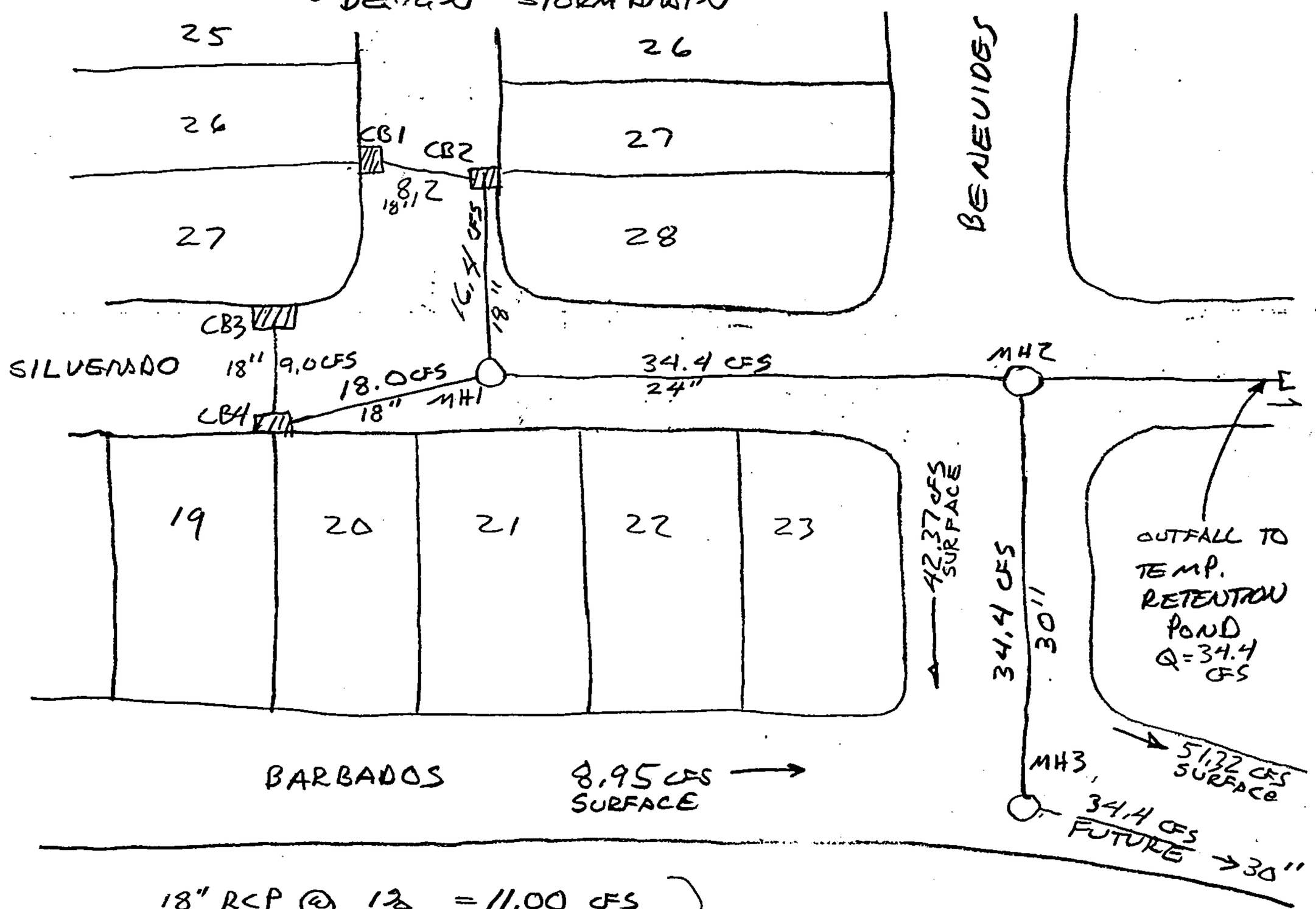
d = 0.48
wp = 48.96
A = 13.61
V = 3.723 F/s
Q = 50.67 CFS ≈ 51.32 OK

$d + \frac{V^2}{2g} = 0.70 < 0.67 + 0.33$ OK

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 5 OF ____

• DESIGN STORM DRAIN



18" RCP @ 1% = 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	83.11	24" RCP
MH2	87.89	79.31	30" RCP
MH3	86.18	77.58	30" RCP.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 6 OF ____
REVISED 3-20-00

• DESIGN CHANNEL FROM SILVER SKY CT TO GOLDEN VIEW DRIVE.

$Q = 3 \times 0.5068$
$= 1.52$ CFS

• SIZE WIER

$Q = 2.95 L H^{1.5}$

$H = 4''$

$L = 2.68'$

USE 5'

• SIZE CHANNEL

$S = 4\%$ $n = 0.013$

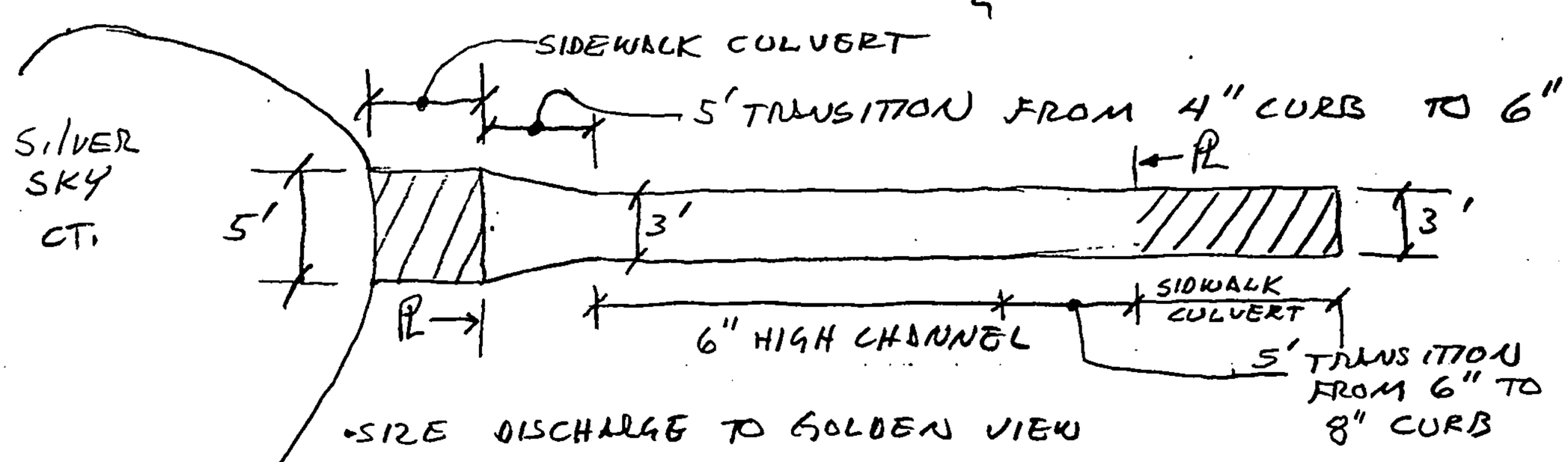
TRY 3' WIDE, 4" TALL

$d = .33$
$WP = 3.67$
$A = 1.0$
$V = 9.61$ F/s
$Q = 9.61$ CFS = CAPACITY

FIND ACTUAL d

$d = 0.104$
$WP = 3.208$
$A = 0.3125$
$V = 4.84$ F/s
$Q = 1.51$ CFS $\approx$ 1.52 CFS OK

$V^2/2g = 0.47 > 0.33$ USE 6" TALL CHANNEL



• SIZE DISCHARGE TO GOLDEN VIEW

$d = 0.13$ 3' WIDE $S = 2\%$ 8" TALL
$WP = 3.36$
$A = 0.39$
$V = 3.85$ F/s
$Q = 1.50$ CFS $\approx$ 1.52 CFS OK

$d + V^2/2g = 0.13 + 0.23 = 0.36 < 0.67$ OK

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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 (ON TRACT "C")

FROM AHYMO OUTPUT

V = 2.6199 AC-FT

$$V_{100-10d} = 2.6199 + 12.105\left(\frac{3.67-2.2}{12}\right) = V_6 + A_0\left(\frac{P_{10d} - P_6}{12}\right)$$

$$= 2.6199 + 1.4829$$

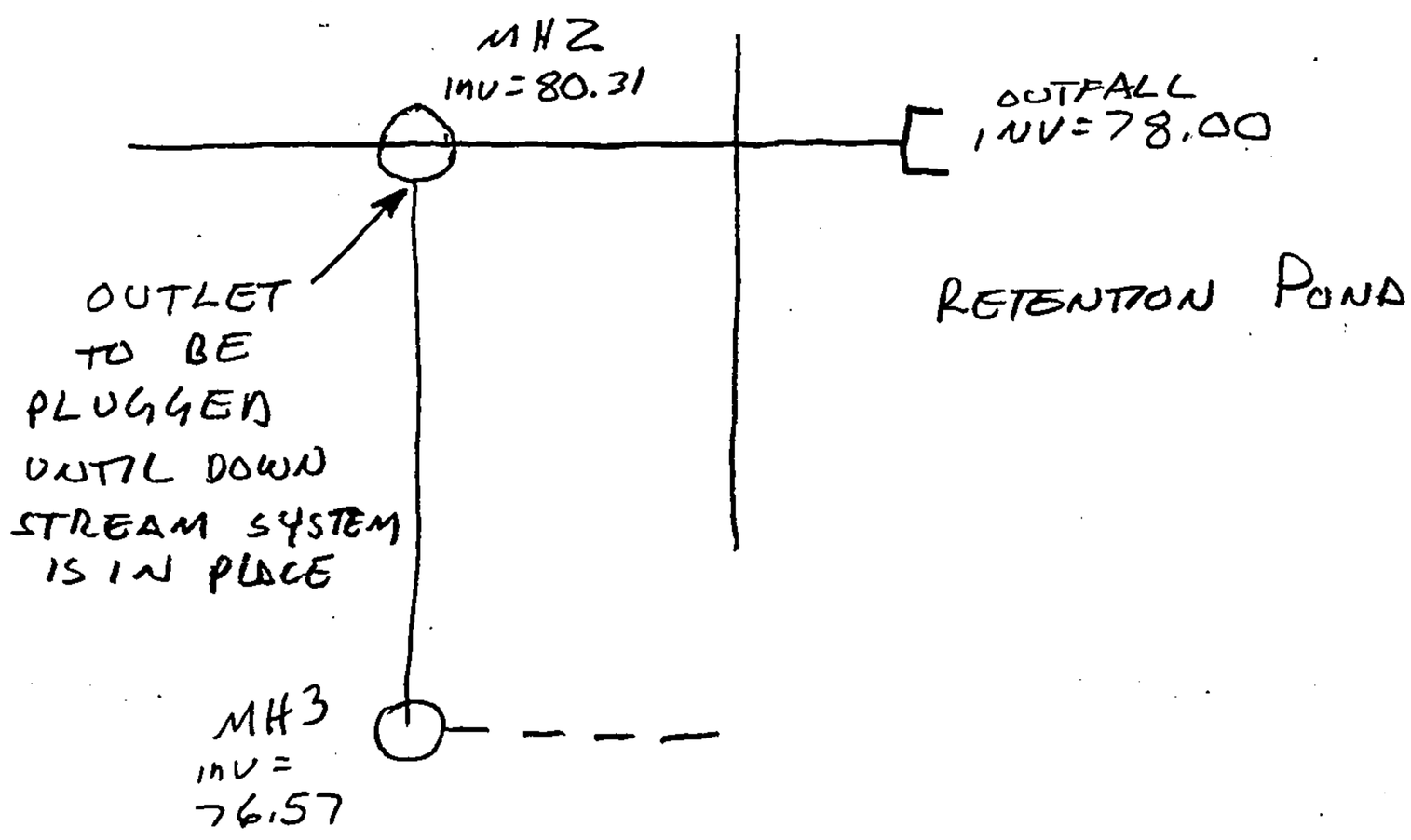
$$= 4.1028 \text{ AC-FT}$$

REQ. POND VOLUME = 178,716 CF

ELEV	AREA (SF)	VOLUME (CF)
78	170 x 70 = 11,900	0
79	176 x 76 = 13,376	12,638
80	182 x 82 = 14,924	26,788
81	188 x 88 = 16,544	42,522
82	194 x 94 = 18,236	59,912
83	200 x 100 = 20,000	79,030
84	206 x 106 = 21,836	99,948
85	212 x 112 = 23,744	122,738
86	218 x 118 = 25,724	147,472
87	224 x 124 = 27,776	174,222
88	230 x 130 = 29,900	203,060

← WATER SURFACE ELEVATION FOR 178,716 IS = 87.16

THE 24" RCP WILL EXTEND ACCROSS BENEVIDES INTO THE POND



D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 8 OF ____

REVISED 3-20-00

- 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	170x70 = 11,900	0
98.00	176x76 = 13,376	12,638
99.00	182x82 = 14,924	26,788
5100.00	188x88 = 16,544	42,522
01.00	194x94 = 18,236	59,912
02.00	200x100 = 20,000	79,030

← WATER SURFACE 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.

- SIZE TWO STORMDRAIN OUTFALLS TO THE SNOW VISTA CHL.

BASIN 3 = 1.27 AC 100% B

BASIN 4 = 5.90 AC 63% B 37% D

BASIN 4 WILL BE SPLIT IN HALF SO RUNOFF GOES TO TWO INLETS

FROM AHYMO OUTPUT SHEETS 17-22

BASIN 3 Q = 2.63 CFS

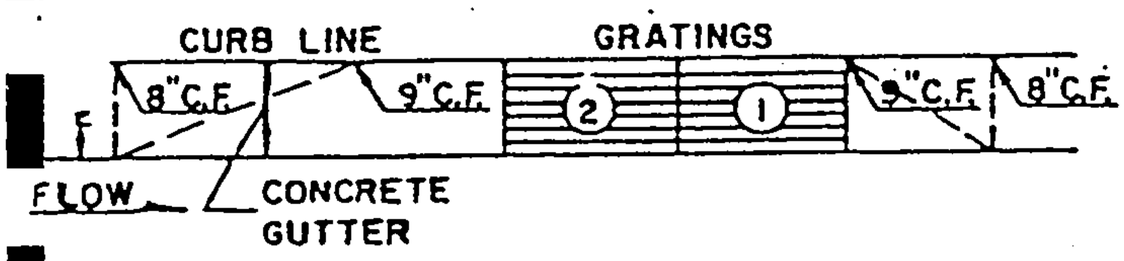
BASIN 4 Q = 17.31 CFS Q½ = 8.655 CFS

INLETS WILL BE IN SUMP CONDITION

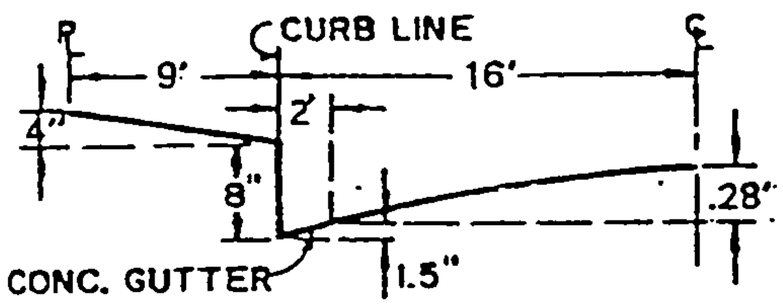
FOR BASIN 3 USE 18" RCP AT 0.9%
CAPACITY FROM NOMO SHEET 10 = 10.0 CFS

FOR BASIN 4 USE 24" RCP AT 1.18%
CAPACITY FROM NOMO SHEET 10 = 24.0 CFS

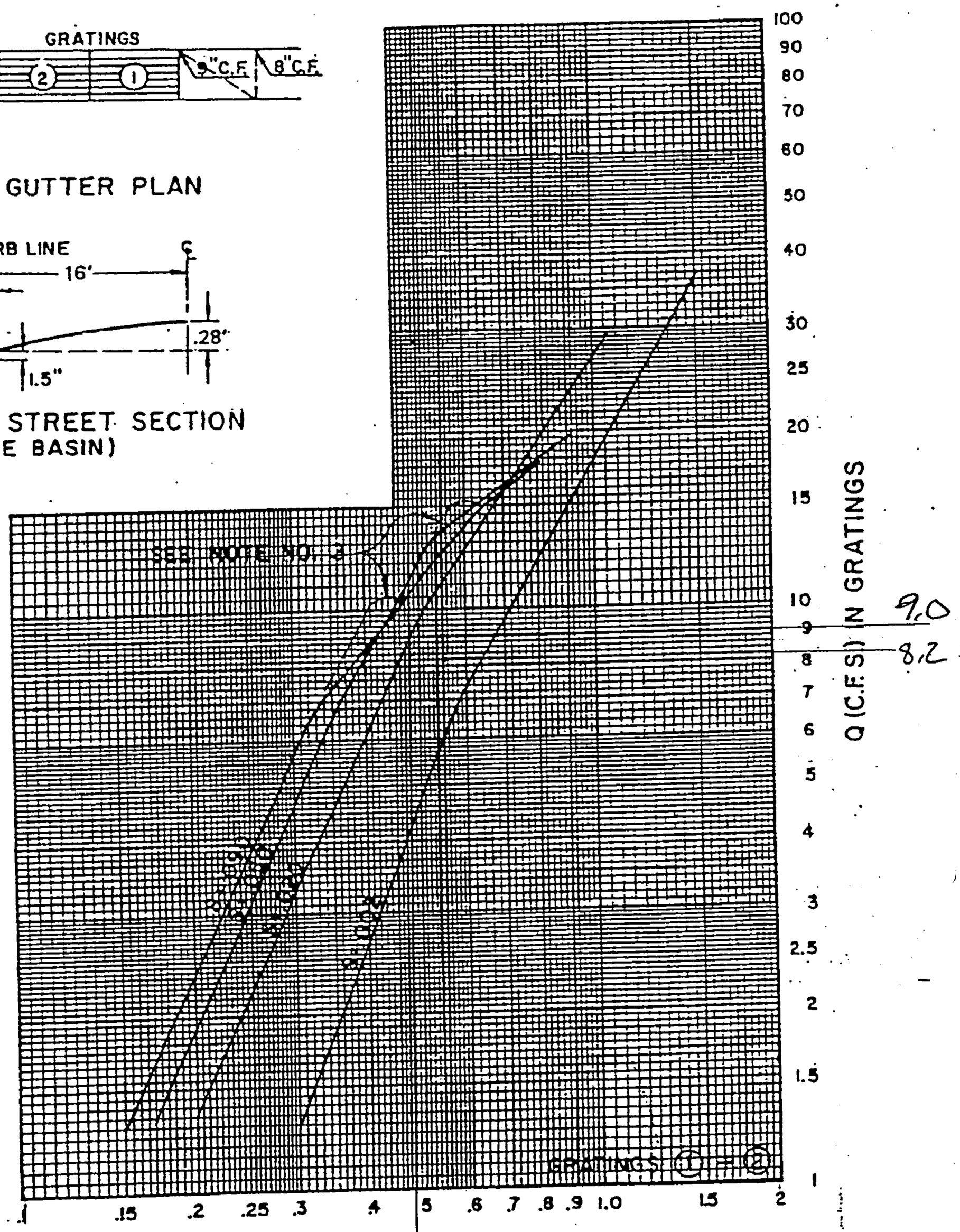
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



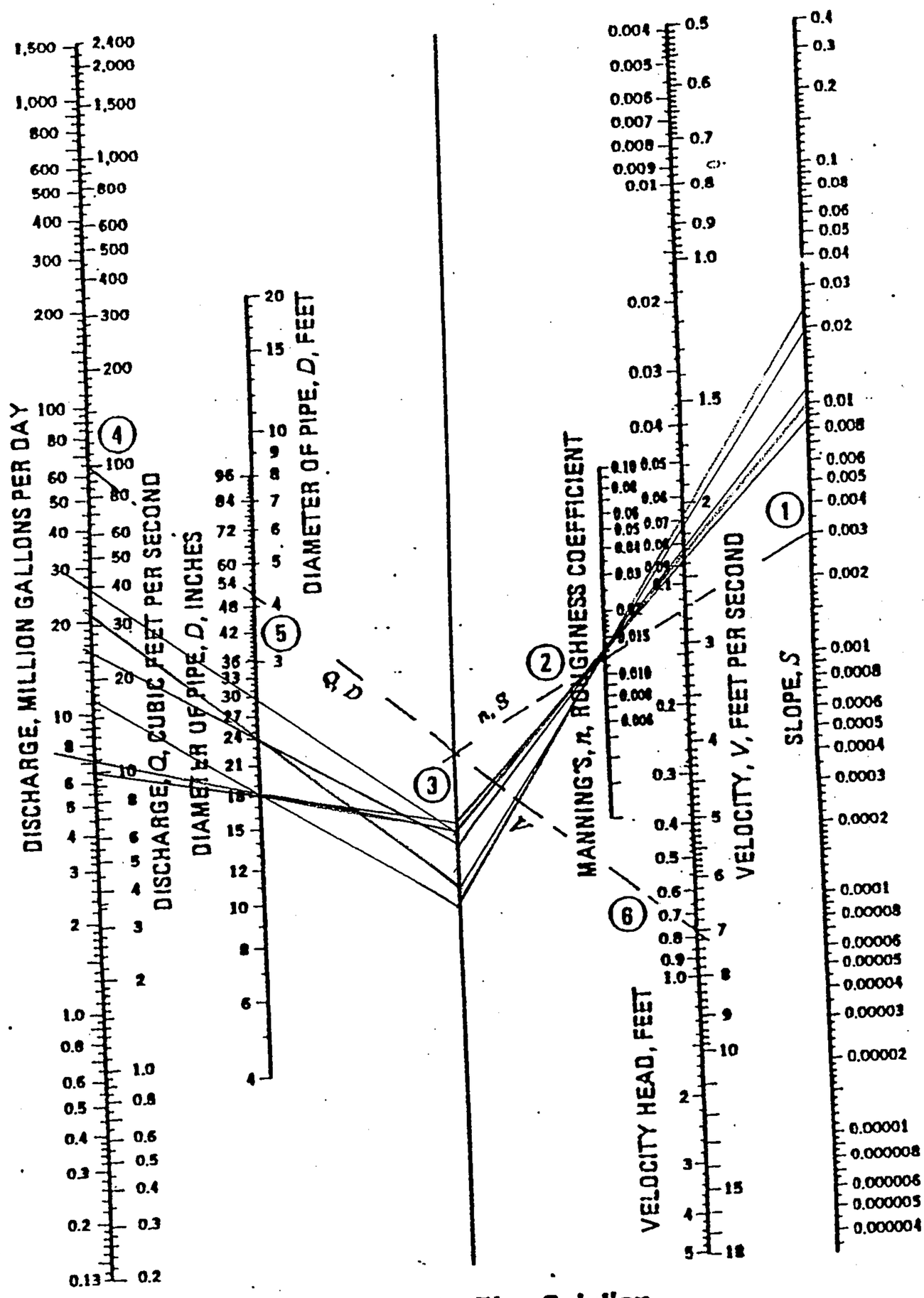
GRATING & GUTTER PLAN



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

                                    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

                                        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
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 3
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=0.001984 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) = 03/21/2000
               START TIME (HR:MIN:SEC) = 08:15:46     USER NO.=
M_GOODWN.I01
               INPUT FILE = SVBSW.DAT

     START                    TIME=0.0
     ***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 3
     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=0.001984 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 =    4.8752    CFS   UNIT VOLUME =    .9975       B =
327.55      P60 = 1.9000
         AREA =       .001984 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     =        .0721 ACRE-FEET
         PEAK DISCHARGE RATE =       2.63 CFS  AT   1.533 HOURS   BASIN
AREA =   .0020 SQ. MI.


     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:15:46
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 4
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=0.009219 SQ MI
                         PER A=0 B=63 C=0 D=37
                         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) = 03/21/2000
             START TIME (HR:MIN:SEC) = 08:17:49     USER NO.=
M_GOODWN.I01
             INPUT FILE = SV.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 4
     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=0.009219 SQ MI
                          PER A=0 B=63 C=0 D=37
                          TP=0.1333 HR MASS RAINFALL=-1

         K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
         UNIT PEAK =   13.467    CFS   UNIT VOLUME =    .9985       B =
526.28      P60 = 1.9000
         AREA =       .003411 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 =   14.272    CFS   UNIT VOLUME =    .9994       B =
327.55      P60 = 1.9000
         AREA =       .005808 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 =     1.15660 INCHES     =        .5687 ACRE-FEET
         PEAK DISCHARGE RATE =      17.31 CFS  AT   1.500 HOURS   BASIN
AREA =   .0092 SQ. MI.


     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:17:49
```

APPENDIX A

DRAINAGE CALCULATIONS

FOR

SILVERADO SUBDIVISION

7-15-98

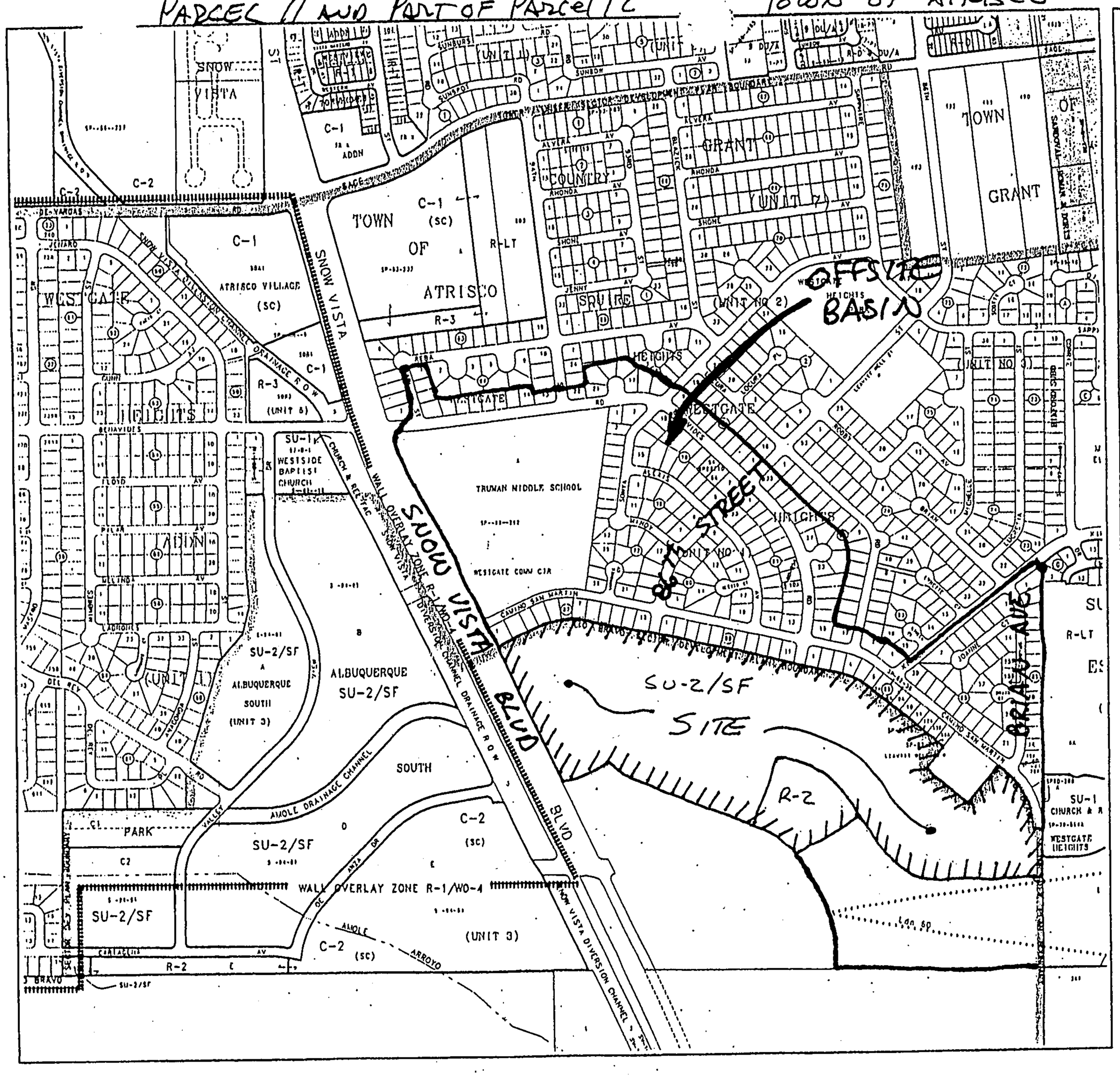
8-5-98

8-25-98

9-30-98

D. MARK GOODWIN & ASSOCIATES

PARCEL 11 AND PART OF PARCEL 12 TOWN OF ATRISCO



GRAPHIC SCALE IN FEET

250 0 500 1000

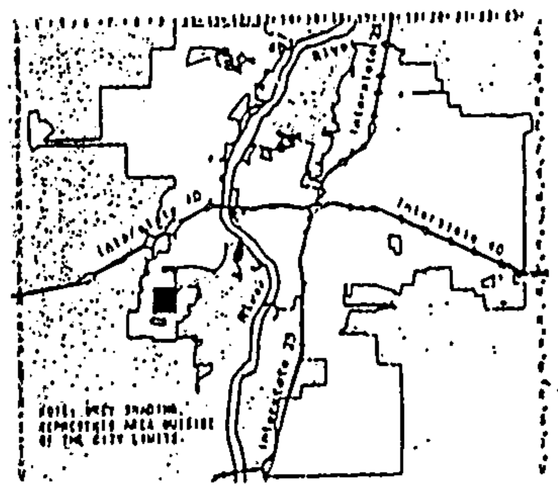
CITY OF Albuquerque

Albuquerque Geographic Information System

PLANNING DEPARTMENT

©Copyright 1997

Map Amended through February 17, 1997



LEGAL DESCRIPTION

TION

R2E

SEC 33

UNIFORM PROPERTY CODE

1-009-065

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)

PAD SIZE = 56' x 28' = 1568
DRIVE PAD = 20' x 20' = 400
1968 x 241 = 474,288 ft² = 10.8882 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)

AREA SU-2/SF = 45.3723 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 AC

$\frac{21.8433}{45.3723 - 0.2146}$ = 47.92 %

TYPE "B"
(45.3723 - 13.4793)
(31.8930 - 10.8882) +
0.2(0.2146 + 13.4793) =
21.0048 + 2.7388 = 23.7436

52.08 %

R-2

USE 80% "D" 2.8334 AC

USE 20% "B" 0.7084 AC

$P_1 = 1.90$ in
$P_6 = 2.2$ in
$P_{24} = 2.7$ 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 BRAVO.
- PER THE TRANSPORTATION DEPARTMENT WE WILL BE REQUIRED TO INSTALL A PERMANANT 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 COMPRIMISED. 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 CALONGNE, FRED AGUIRRE, LISA MAWILL (AMAFCA), FRED ARFMAN (DETENTION POND ENGINEER) AND GREG KRENIK (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 DRAIN 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,

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

PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GSK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 3 OF ____
REVISED 8-5-98

FROM RHYMO SHEETS 15-20

$Q_{surf} = 145.59$ CFS $V = 5.0742$ AC-FT

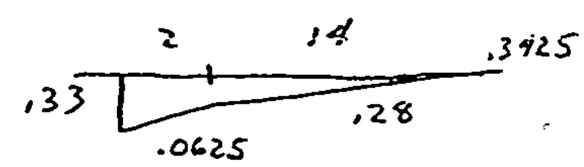
$Q_{R-2} = 14.03$ CFS $V = 0.5045$ AC-FT

- FIND CFS PER LOT

$145.59 / 241 = 0.6041$ CFS/LOT

- FIND STREET CAPACITY

MOUNTABLE CURB AT 2%



$d = .33$
$WP_{1/2} = 15.705$
$A_{1/2} = 2.3864$
$V_{1/2} = 3.52$ F/S
$Q_{1/2} = 8.4$ CFS

$d + V^2/2g = 0.52 < 0.53$ OK

TOTAL Q IN STREET $= 2 \times 8.4 = 16.8$ CFS

- No. OF LOTS which can drain to street

$16.8 / 0.6041 = 27.81$

MOUNTABLE CURB AT 1%

$d = .33$
$WP = 15.705$
$A = 2.3864$
$V_{1/2} = 2.489$ F/S
$Q_{1/2} = 5.94$ CFS

$d + V^2/2g = 0.43 < 0.53$ OK

TOTAL Q $= 2 \times 5.94 = 11.88$ CFS

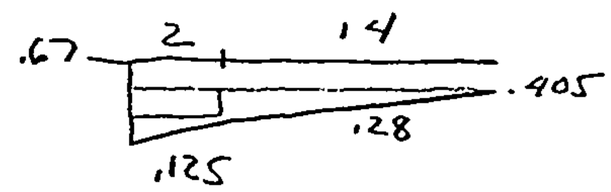
- No. OF LOTS TO DRAIN

$11.88 / 0.6041 = 19.67$

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

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%



d = .59
wp = 33.18
A = 11.21
v = 4.24 F/s
Q = 47.53 CFS

5.29

$d + v^2/2g = 0.87 = 0.87$ OK

NO. OF LOTS TO DRAIN
47.53 / 0.6041 = 78.68

STANDARD C+G AT 1.67%

d = 0.52
wp = 33.04
A = 8.97
V = 4.736 F/s
Q = 42.48 CFS

$d + V^2/2g = 0.87 = 0.87$ 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 GATE = 9.4 CFS

71 × 0.6041 = 42.89

Q IN STREET = 42.89 - 2(9.4)
= 24.09 CFS

- FIND d ON WATERS DR AT RODEO AVE

Q = 32.02 CFS S = 1% 53 LOTS

d = 0.51
wp = 33.02
A = 8.65
V = 3.58 F/s
Q = 30.96 CFS ≈ 32.02 CFS

$d + V^2/2g = 0.71 < .87$ OK

USE 2 - "DBL A" INLETS

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 5 OF ____

REVISED 8-5-98

FROM SHEET 11

Q grate = 7.0 CFS

Q INTO INTERSECTION

32.02 − 2(7) = 18.02 CFS

- FIND d ON RODEO AT WATERS 24.09 + 10(.6041) = 30.13

Q = 29.63 CFS S = 1.67 %

d = 0.47
WP = 32.94
A = 7.37
V = 4.16 F/S
Q = 30.68 CFS ≈ 30.13 OK

$d + V^2/2g = 0.74 < 0.87$ OK

- INSTALL 2 "B" INLETS BEFORE INTERSECTION FROM SHEET 12

Q grate = 10.0 CFS

Q INTO INTERSECTION

30.13 − 2(10) = 10.13 CFS

- TOTAL Q PAST INTERSECTION

Q = 18.02 + 10.13
= 28.15 CFS

- FIND CAPACITY OF MOUNTABLE CURB AT 3%

d = 0.29
WP = 13.665
A = 1.8114
$V_{1/2}$ = 3.936 F/S
$Q_{1/2}$ = 7.13 CFS

$d + V^2/2g = 0.53 = 0.53$ OK

TOTAL Q = 2 × 7.13 = 14.26

- NO. OF LOTS TO DRAIN

14.26/0.6041 = 23.61

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

PROJECT SILVENSDO 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
wp = 32.98
A = 8.01
V = 4.812 F/s
Q = 38.545 CFS

$d + v^2/2g = 0.85 < 0.87$ OK

FIND LOCATION OF NEXT INLETS ON ROBED.

Q OF STREET = 38.55 CFS

Q past Benedes = 28.15 + 3(.6041) = 29.96

Q = 38.55 − 29.96 = 8.59 CFS

No. of Lots = 8.59/0.6041 = 14.22 USE 14 lots
Q = 14 x .6041 + 29.96 = 38.42

• ADD two "B" inlets here
FROM sheet 12
Q grate = 12.75 CFS

Q past INLETS
= 38.42 − 2(12.75)
= 12.92 CFS

• ADD 2 SGL "A" INLETS ON THE WEST SIDE OF NEVIS EAST ON JEREMIAH

NO. LOTS = 19 x 0.6041 = 11.48 CFS
PLUS FLOW FROM R-2 = 14.03 CFS
Q = 25.51 CFS S = 3%

d = .415
wp = 32.83
A = 5.61
V = 4.66 F/s
Q = 26.16 CFS ≈ 25.51 CFS

$d + v^2/2g = 0.75 < .85$ OK

Q grate = 6.6 CFS FROM SHEET 13

Q past inlets = 25.51 − 2(6.6) = 12.31 CFS

• ADD 2 "B" INLETS ON SABA JUST NORTH OF JEREMIAH
Q = 35(.6041) + 12.31 = 33.45 CFS S = 1%

d = 0.52
wp = 33.04
A = 8.97
V = 3.66 F/s
Q = 32.87 CFS ≈ 33.45 OK

$d + \frac{v^2}{2g} = 0.73 < .85$ OK

FROM SHEET 12 Q grate = 9.0 CFS
Q past INLETS = 33.45 − 2(9) = 15.45 CFS

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

PROJECT Silverado Subdivision
SUBJECT Drainage Calcs
BY GSK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 2 OF ____
REVISED 8-5-98

- FIND Q AT ROATAN & SAINT KITTS

$Q = 15.45 + 29(.6041)$
$= 32.97$ CFS

PUT 2 "DBL A" IN SUMP

$P = 34$

$Q/P = 3.0\ H^{1.5}$

$H = 0.47 < 0.67$ OK

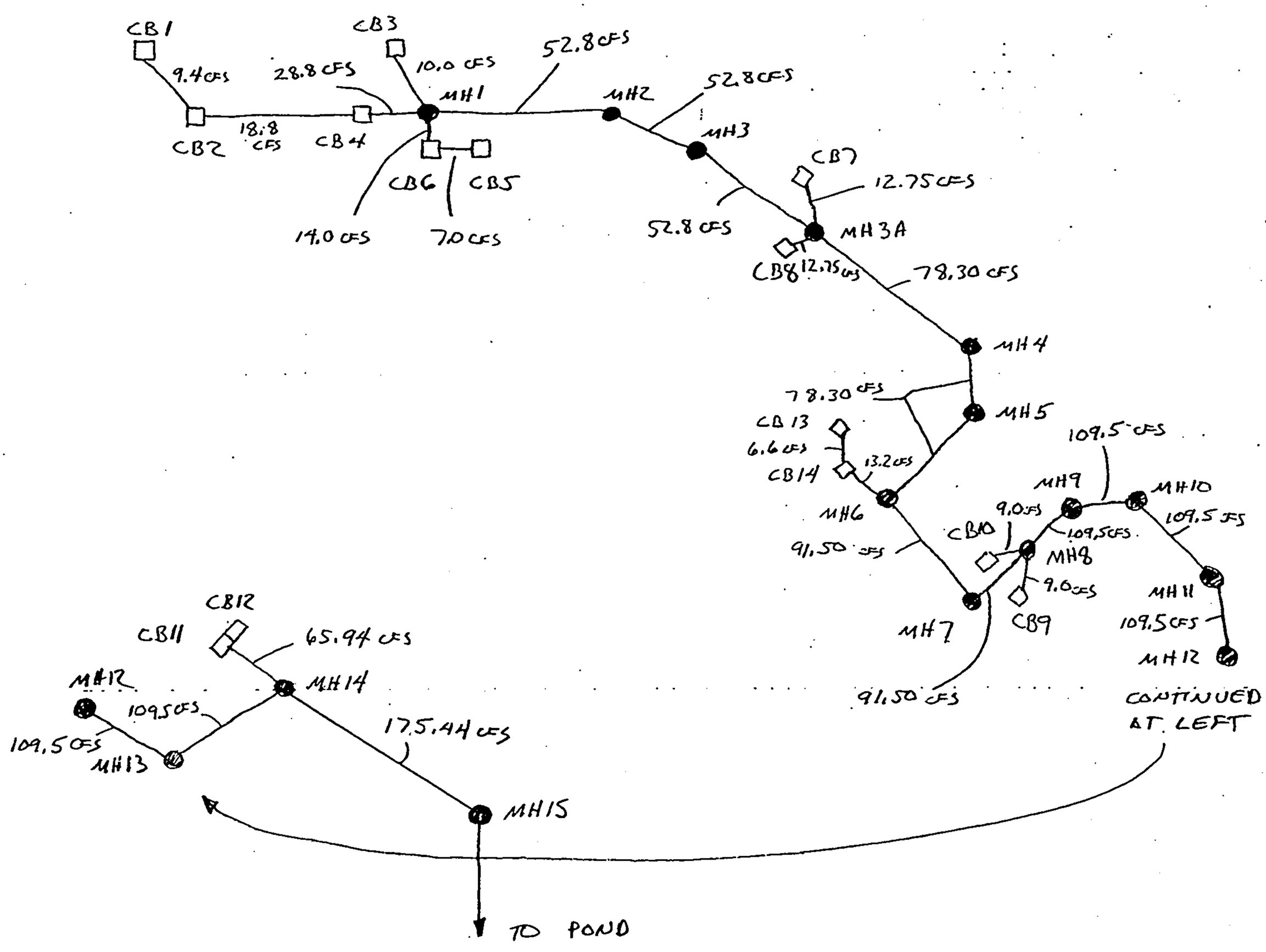
FIND H with 2-100yr STORMS

$H = 0.65 < 0.67$

WATER SURFACE WILL ALWAYS BE BELOW CURB.

SINCE WE HAVE A SUMP CONDITION THE PIPE NEEDS TO BE SIZED FOR 2×32.97 CFS $= 65.94$ CFS.

- REMAINING 9 LOTS DRAIN TO CAMINO SAN MARTIN $Q = 7 \times 0.6041 = 4.23$ CFS



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

PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____
REVISED 8-5-98 SHEET 8 OF ____

STRUCTURE	RIM / GRATE	INV	TYPE
CB1	96.98	93.48	DBL A
CB2	96.80	93.18	DBL A
CB3	91.15	87.65	B
CB4	91.25	87.15	B
CB5	91.25	87.75	DBL A
CB6	91.25	87.45	DBL 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	DBL A
CB12	61.60	57.10	DBL 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

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 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'

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

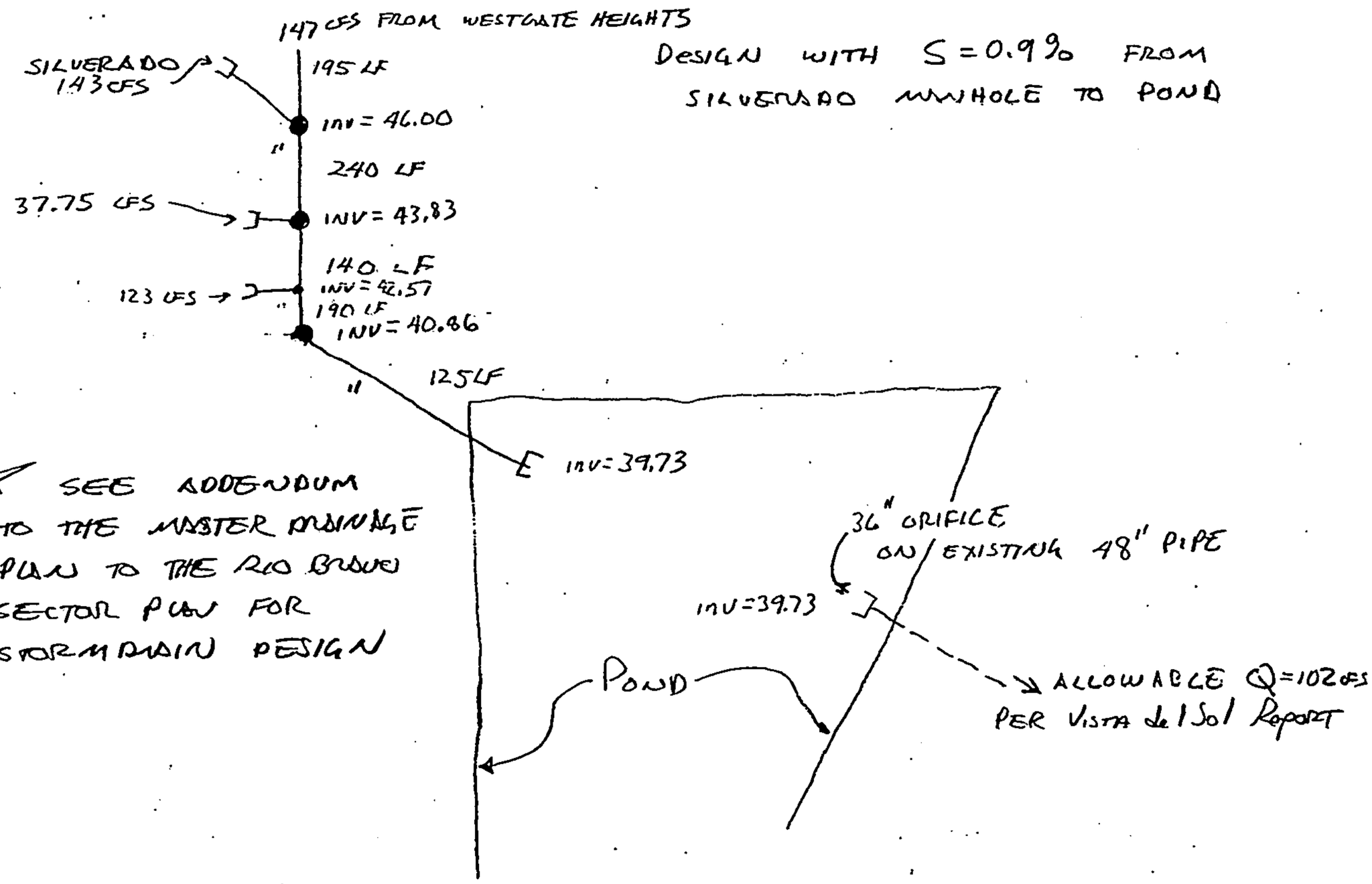
PROJECT SILVERADO SUBDIVISION
SUBJECT DRAINAGE CALCS
BY GJK DATE 6-25-98
CHECKED _____ DATE _____
SHEET 10 OF ____
REVISED 8-5-98

FROM ARMO OUTPUT SHEETS 21-25

Q_{max} = 101.48 CFS < 102 ALLOWABLE PER ADDENDUM TO THE MASTER DRAINAGE PLAN FOR RIO BRAVO SECTOR PLAN

WATER SURFACE = 48.62

- SIZE STORMDRAIN



DESIGN WITH S = 0.9% FROM SILVERADO MANHOLE TO POND

☆ SEE ADDENDUM TO THE MASTER DRAINAGE PLAN TO THE RIO BRAVO SECTOR PLAN FOR STORMDRAIN DESIGN

- 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"&72" RCP SHOWN ABOVE.

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

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 100yr 10day

$V_{100d} = 5.0742 + 21.8433 \left(\frac{3.67 \cdot 2.2}{12}\right)$

$= 7.75$ AC-FT

$V/LOT = 7.75/241$

$= 0.032158$ AC-F

$= 1400.79$ CF/LOT

POND VOL Req.

$= 78 \times 1400.79$

$= 109,262$ 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
91	240 x 88 = 21120	119178

WATER SURFACE = 90.51

EMERGENCY SPILLWAY WILL DUMP ONTO RODEO AVE AND BENEVIDES INTERSECTION.

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

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 AHYMO OUTPUT sheets 33-35

Q = 14.17 CFS

V = 0.3998 AC-FT

= 17,415 CF

$V_{100\ 10\ day} = 0.3998 + 0\left(\frac{3.67-2.2}{12}\right)$

$= 0.3998$

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 x 1400.79) + 0.5045 AC-FT see sheet 3

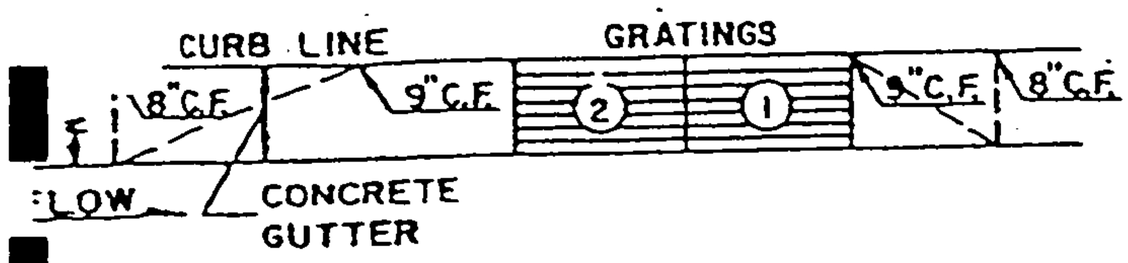
= 206,880 CF

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	

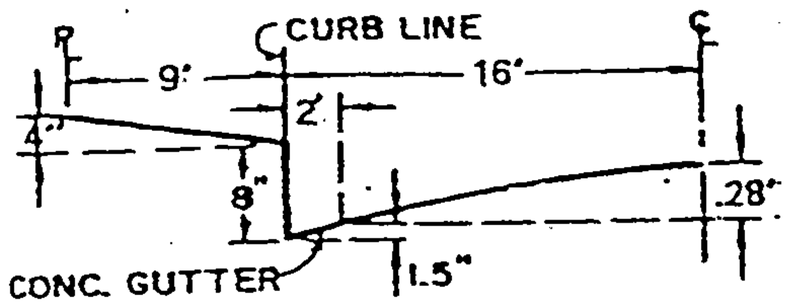
EMERGENCY SPILLWAY WILL DUMP ON TO JEREMIAH PL.

- A BLANKET DRAINAGE EASEMENT 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.

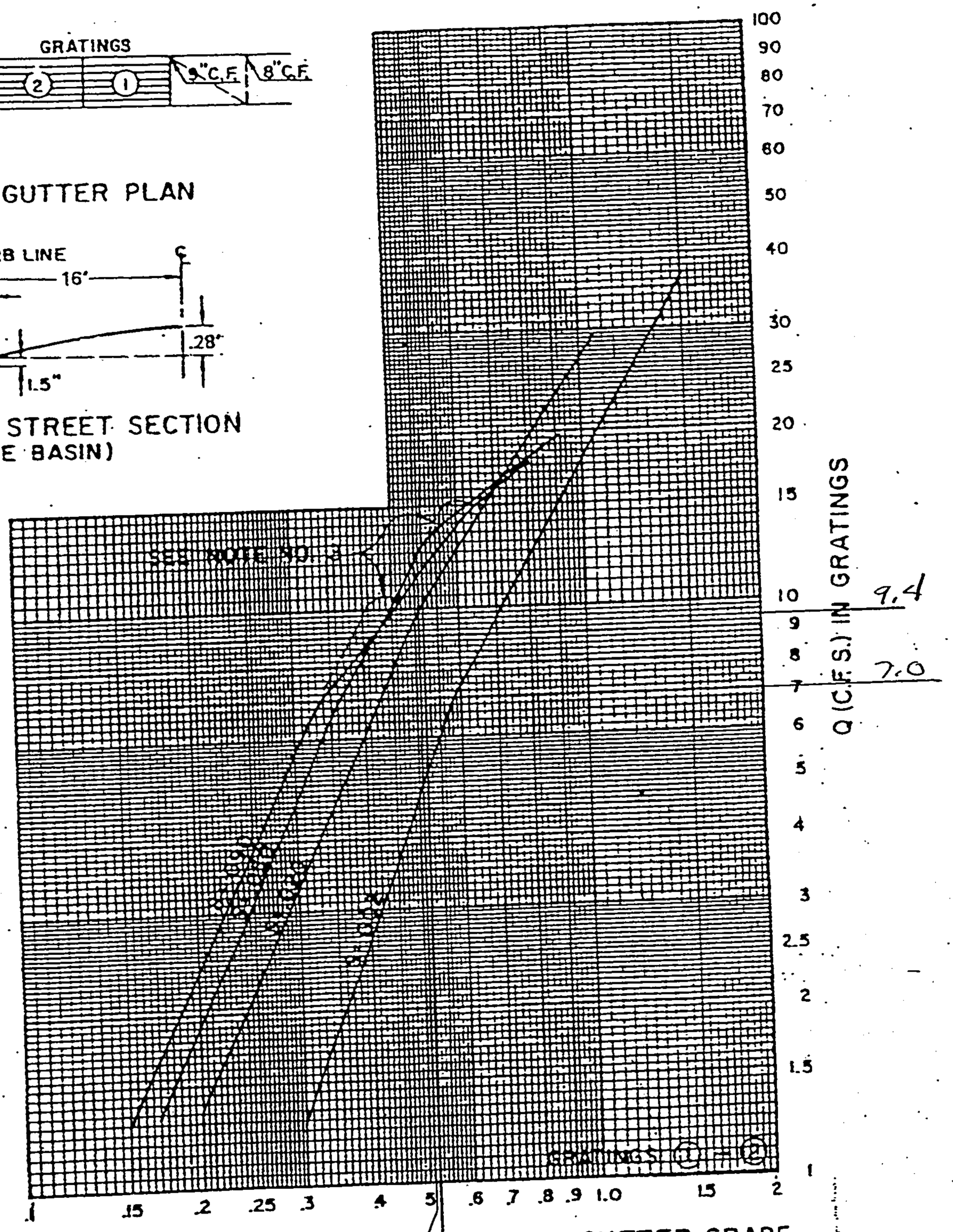
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



GRATING & GUTTER PLAN

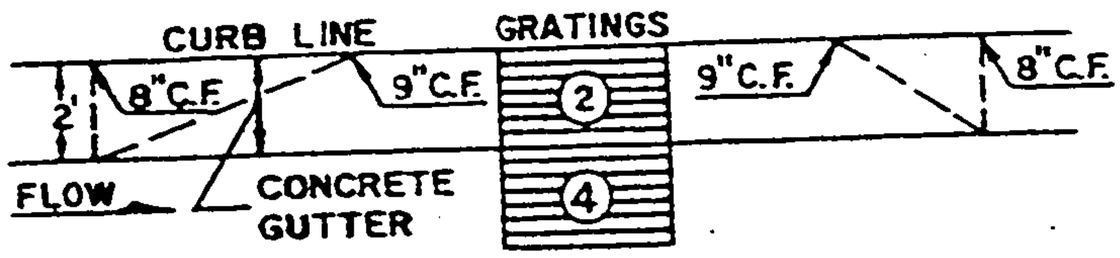


TYPICAL HALF STREET SECTION
(ABOVE BASIN)

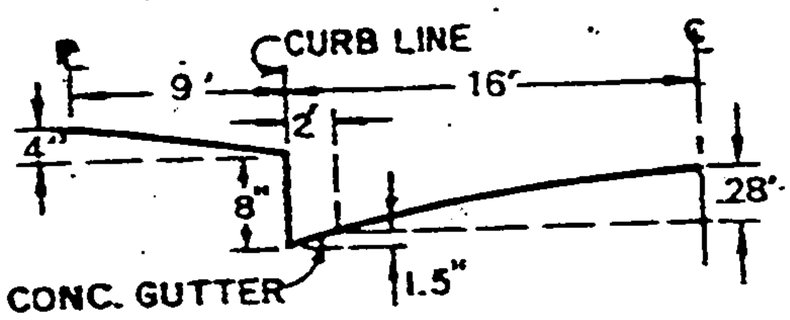


12

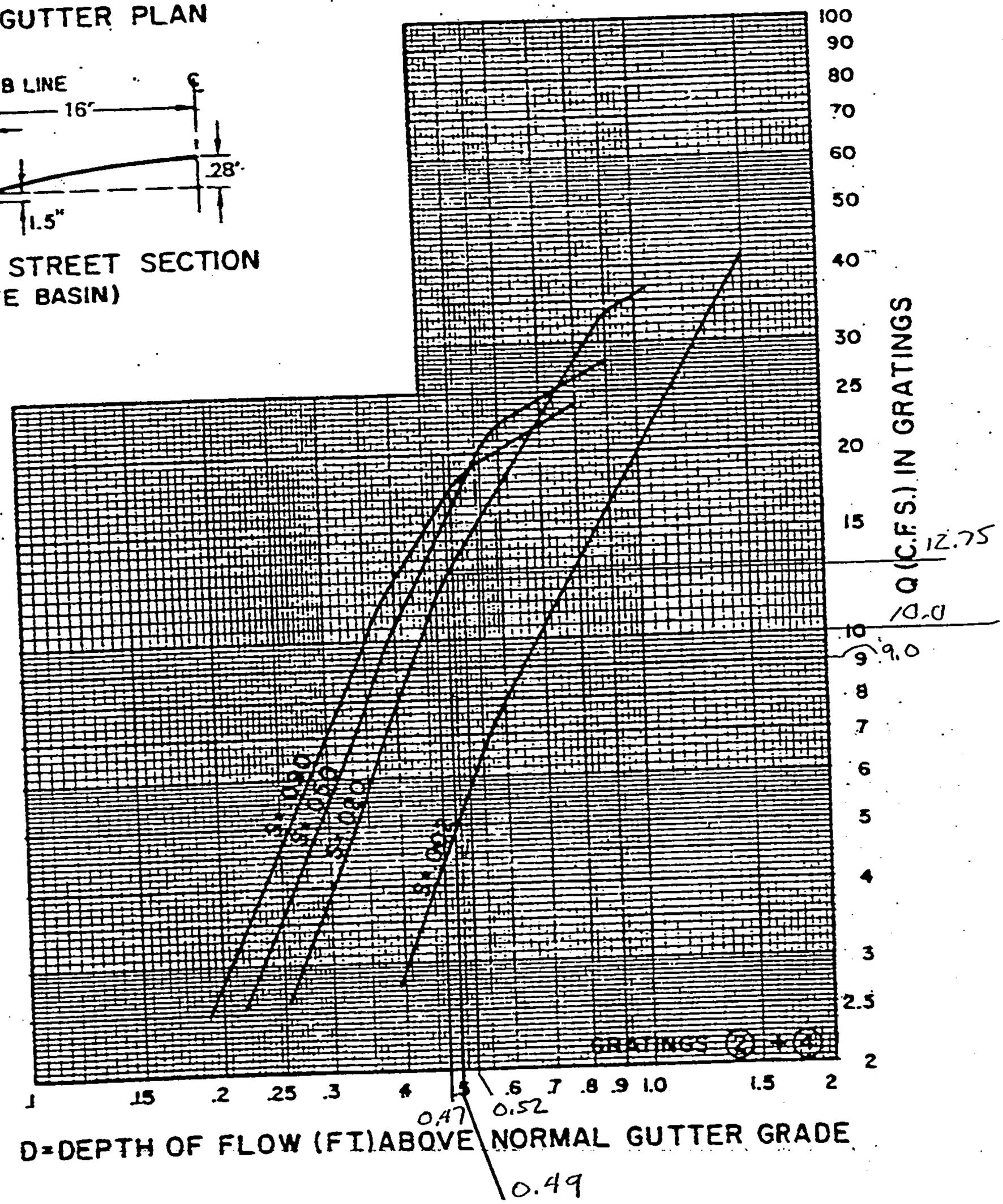
GRATING CAPACITIES FOR TYPE "B"



GRATING & GUTTER PLAN

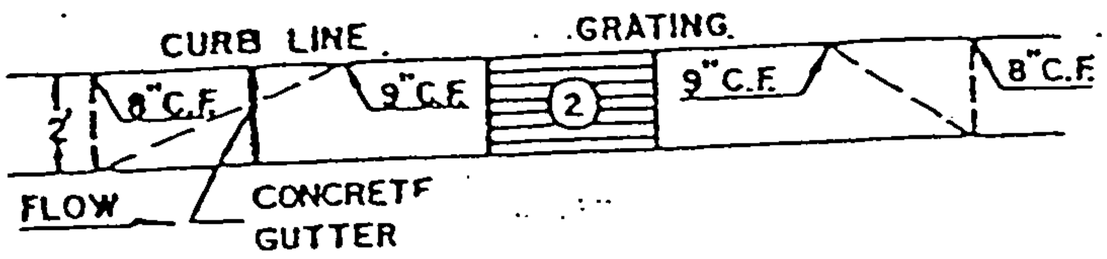


TYPICAL HALF STREET SECTION
(ABOVE BASIN)

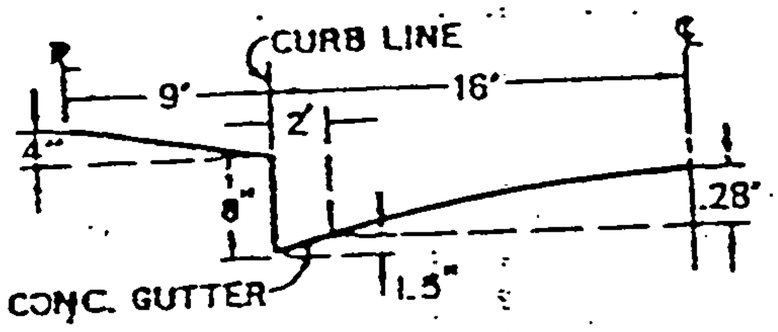


13

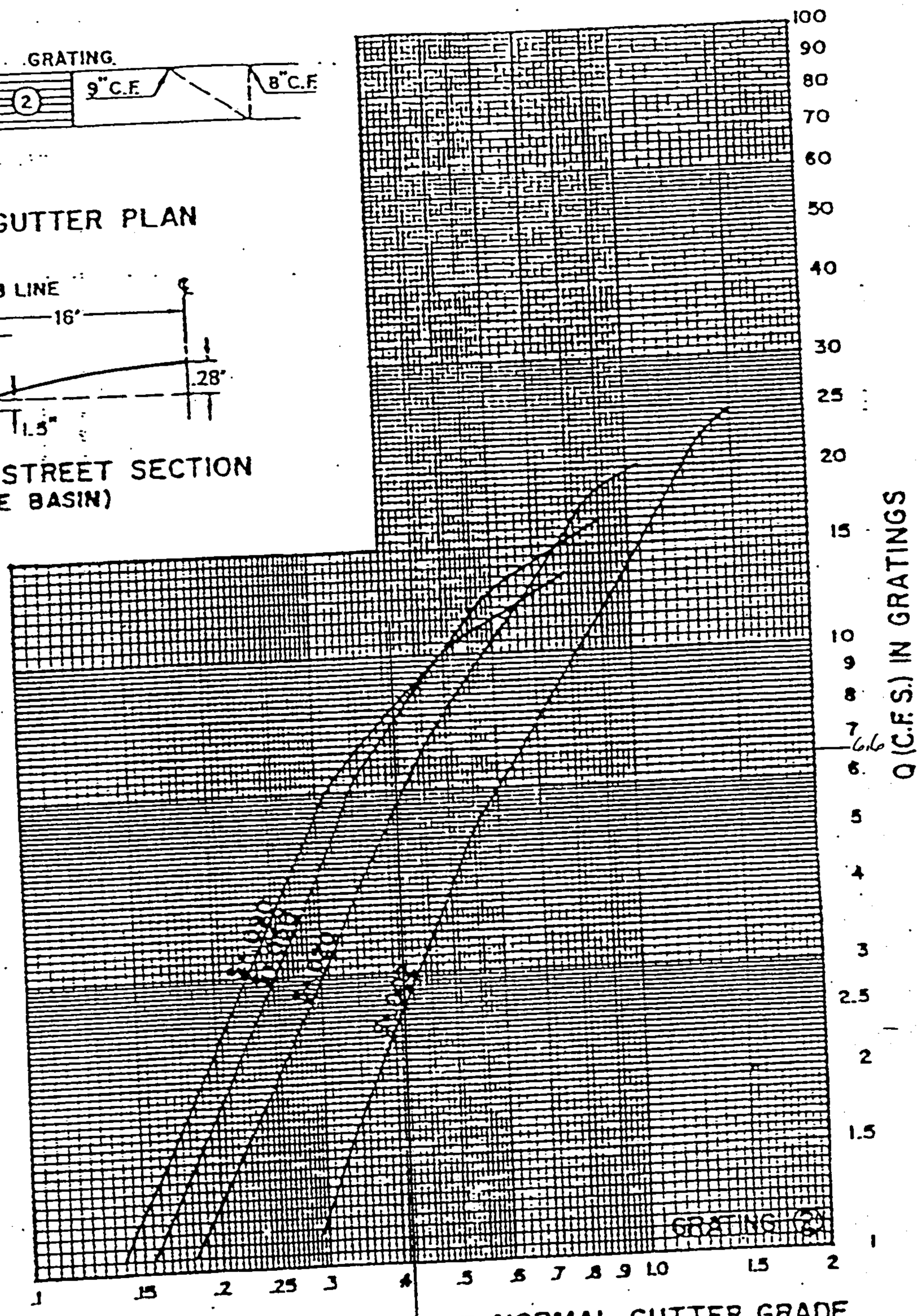
GRATING CAPACITIES FOR TYPE "A", "C" and "D".



GRATING & GUTTER PLAN



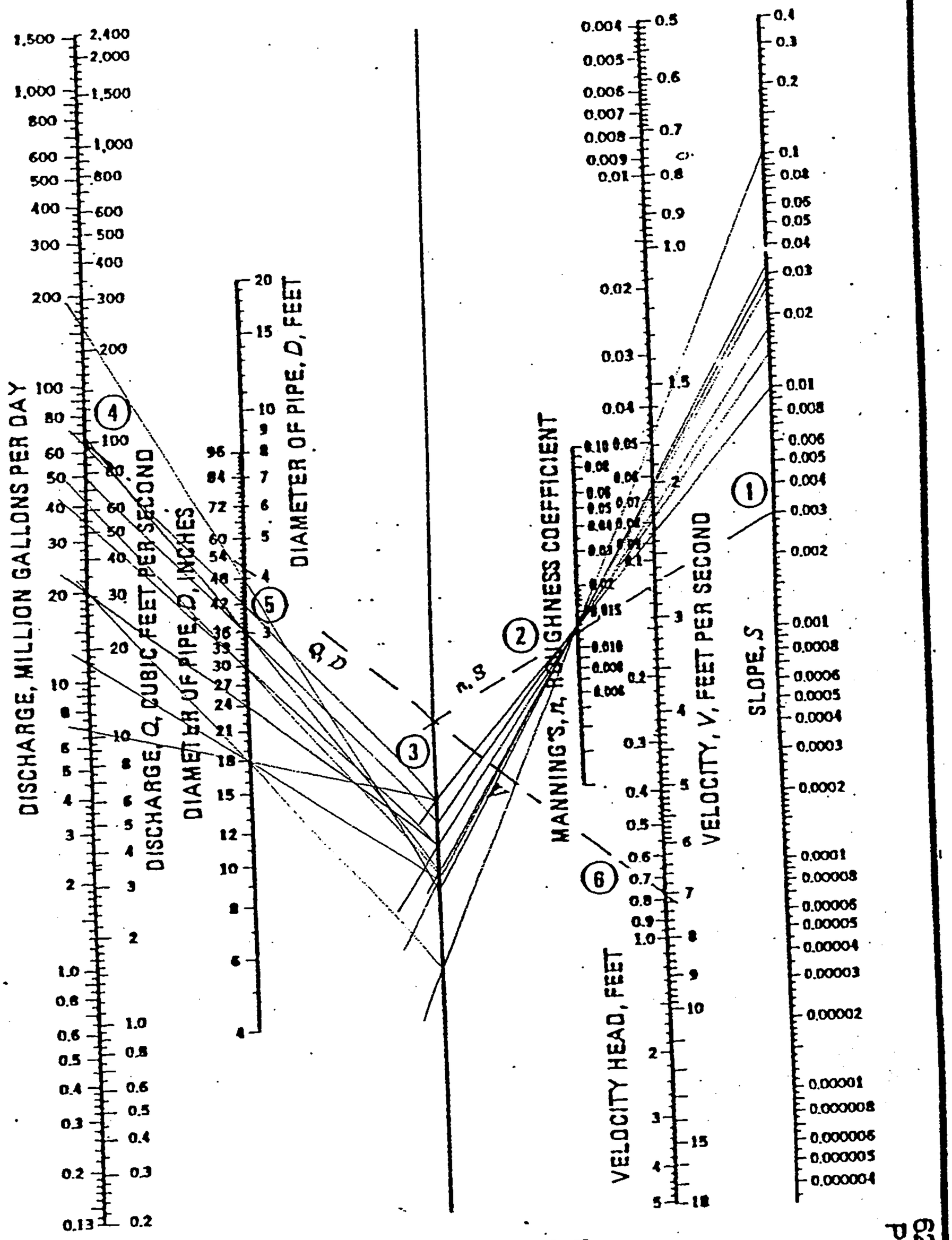
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



REV. 3-83

PLATE 22.3 D-5.

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
```

```
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
```

```
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
```

```
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 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

          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

                                   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        INFLOW     ELEV       VOLUME     OUTFLOW
   (HRS)        (CFS)     (FEET)     (AC-FT)     (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
```

```
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

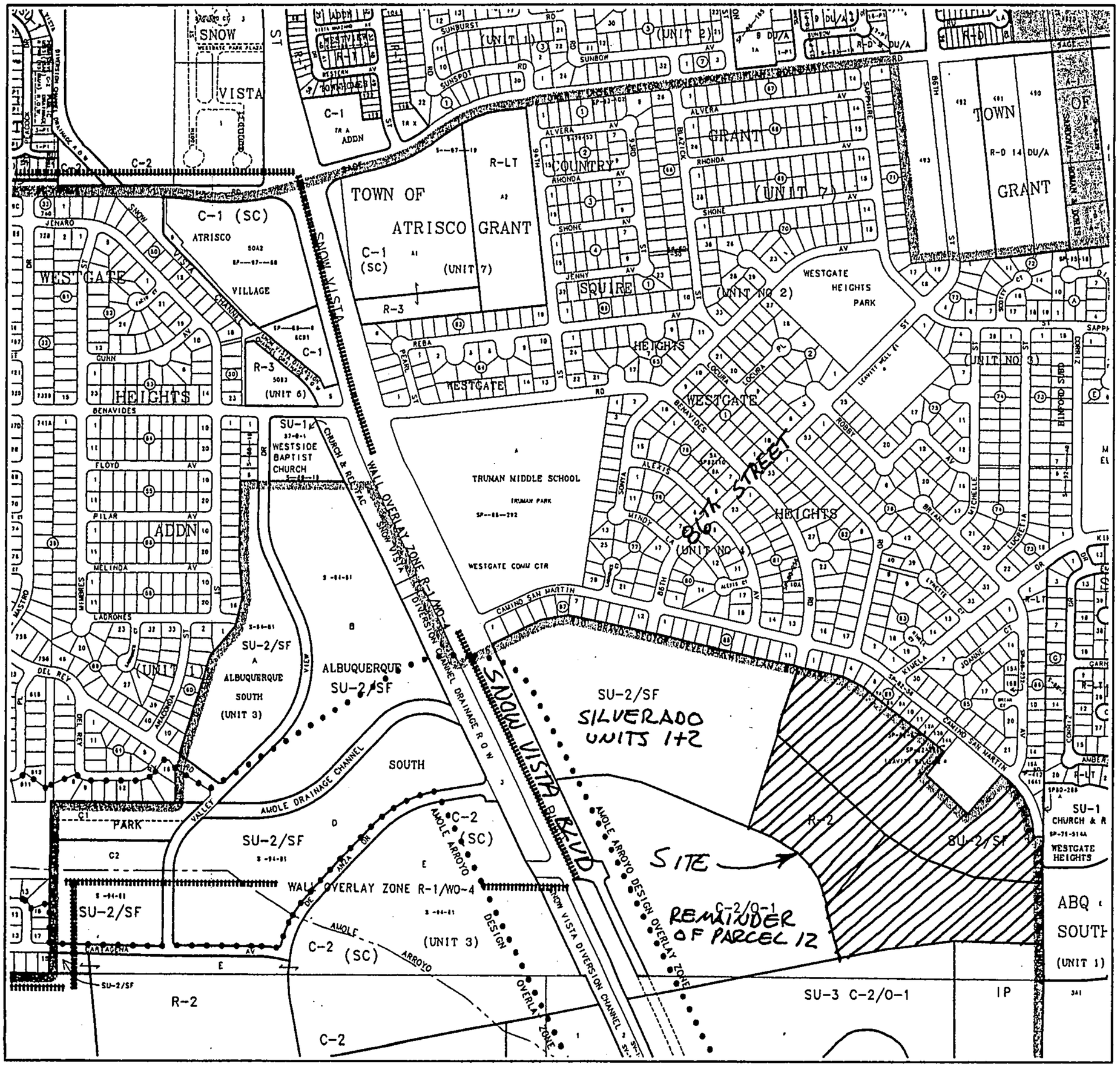
EL RANCHO GRANDE I

UNITS 1 & 2

GREGORY JAMES RENIK
NEW MEXICO
11929
REGISTERED PROFESSIONAL ENGINEER
2-18-00

3-30-00

D. MARK GOODWIN & ASSOCIATES



CITY OF Albuquerque

Albuquerque Geographic Information System

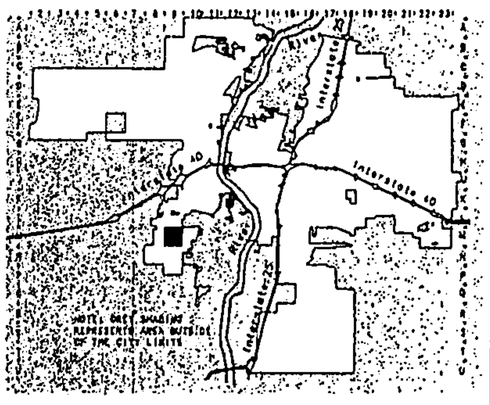
PLANNING DEPARTMENT

© Copyright 1998

N W E S

GRAPHIC SCALE IN FEET

250 0 500 1000



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: dmg@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/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"	TYPE "B"	
11.0193 AC	13.5508 AC	= 24.5701
5.5584 AC	1.3896 AC	= 6.9480
16.5777 AC	14.9404 AC	= 31.5181 + 3.5206 = 35.0387
−1.0078 AC	−1.0066 AC	= −2.0144 AC SEE SHEET 3
15.5699 AC	13.9338 AC	= 29.5037 AC
52.77 %	47.23 %	

FROM AHYMO OUTPUT SHEETS 19-21
Q = 97.62 CFS 192 − 13 = 179 LOTS

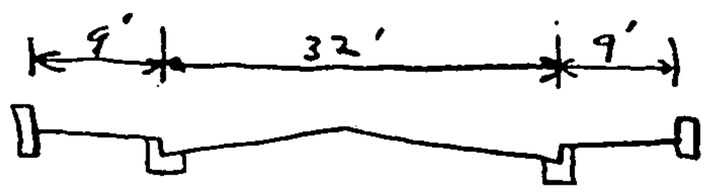
Q per lot = 97.62/179 = 0.5454 CFS/LOT

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 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. TO HANDLE 133.79 CFS



ADD 8" HEADER CURB AT BACK OF SIDEWALKS

FIND NEW CAPACITY

$d = 1.52$ $S = 0.58\%$
$WP = 52.68$
$A = 54.65$
$V = 6.82$ F/s
$Q = 372.82$ CFS

FIND d

$d = 1.01$
$WP = 51.66$
$A = 29.15$
$V = 4.55$ F/s
$Q = 132.51$ CFS ≈ 133.79 OK

$d + V^2/2g = 1.01 + 0.32 = 1.33 < 1.52$ OK

A 6" HEADER CURB WILL WORK

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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

REVISED 3-30-00

- INSTALL A TRENCH DRAIN AT THE END OF THE EXISTING PAVEMENT.
  - FIND RATIO OF FRONTAL FLOW INTERCEPTED TO TOTAL FRONTAL FLOW

$R_f = 1 - 0.09(V - V_o)$ PER "DRAINAGE OF HIGHWAY PAVEMENTS" MANUAL PAGE 54

V = Velocity in Gutter

V_o = Gutter Velocity where splash-over first occurs

$V = 4.55$ F/S

LENGTH OF GRATE = 2.0'
USE 45° TILT-BAR GRATE

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 GRATE IS TAKEN IN BY THE GRATE. SINCE THE STREET DOES NOT HAVE CAPACITY ONLY THE FLOW IN THE STREET ENTERS THE GRATE.

$Q_{GRATE} = 133.79$ (PERCENT IN STREET)

$d = 1.01$ $w = 32.0$
$A = 24.65$
AREA ROW = 29.15 − AREA STREET = 24.65

$24.65 / 29.15 = 84.56\%$

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

- FIND Q THAT GOES PAST TRENCH DRAIN
  $Q = 133.79 - 113.14 = 20.65$ CFS

- ADD Q FROM 13 EL RANCHO LOTS AND 3 TRACT E LOTS

ROW =	0.3444 AC	0.0689 AC TYPE "B"	0.2755 AC TYPE "D"
13 LOTS =	1.6873 AC	0.9412 AC TYPE "B"	0.7461 AC TYPE "D"
3 LOTS =	0.4638 AC	0.2916 AC TYPE "B"	0.1722 AC TYPE "D"
	2.4955 AC	1.3017 AC TYPE "B"	1.1938 AC TYPE "D"
		52.16%	47.84%

FROM AHYMO OUTPUT SHEETS

$Q = 7.98$ CFS

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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

REVISED 3-30-00

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

AREA TRACT E = 4.2103 AC − 0.4924 = 3.7179
21−3=19 LOTS @ (35x60) + (20x20) = 47,500 SF = 1.0904 AC TYPE "D"

ROW AREA = 0.8990 AC
22.73% "B" 77.27% "D"

TYPE "B" = 0.2043 + 1.7285 = 1.9328 AC 51.99 %
TYPE "D" = 1.0904 + 0.6947 = 1.7851 AC 48.01 %
Q = 11.98 CFS

- SIZE POND ON TRACT E

A DETENTION POND WILL BE REQUIRED

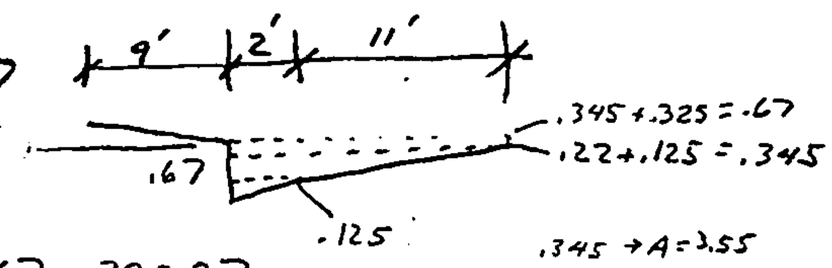
USE 24" OUTFALL A = 3.141593 $Q = 0.6A\sqrt{2gh}$

ELEV	AREA(SF)	VOLUME(AC-FT)	OUTFLOW (CFS)
44.00	1783	0	0
45.00	2630	0.051	4.78
46.00	3635	0.123	15.12
47.00	4797	0.219	21.42
48.00	6117	0.345	26.24

FROM ATYMO SHEETS 25-48
PEAK DISCHARGE = 24.5 CFS = 24.5 CFS OK
MAX WATER SURFACE = 47.64

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

S = 1% n = 0.017 STD C+G



d = 0.58
wP = 27.16
A = 9.66
V = 4.388 F/S
Q = 42.39 CFS

$d + \frac{v^2}{2g} = 0.87 = 0.67 + .20 = .87$ OK

- FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

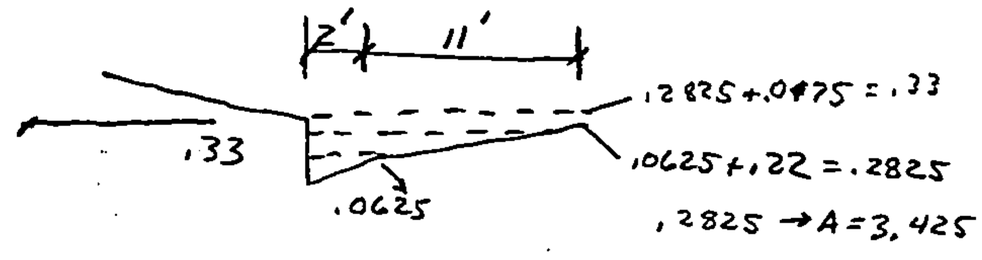
42.39 / .5454 = 77.72 SAY 77 LOTS

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 SHEET 5 OF ____

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

S = 1% n = 0.017 MOUNTABLE C+G



d = 0.33
wp = 26.66
A = 4.66
V = 2.73 F/s
Q = 12.73 CFS

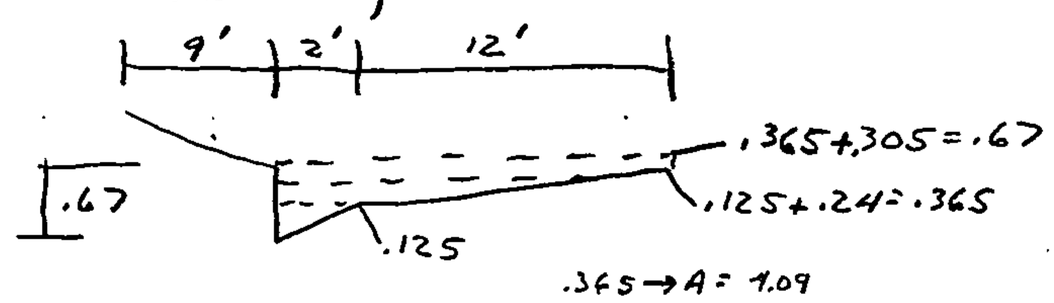
$d + \frac{V^2}{2g} = .45 \approx .33 + .2$ OK

• FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

12.73 / .5454 = 23.34 SAY 23 LOTS

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

S = 2.36% n = 0.017 STD C+G



d = 0.46
wp = 28.92
A = 6.75
V = 5.09 F/s
Q = 34.36 CFS

$d + \frac{V^2}{2g} = 0.86 \approx .67 + .2$

• FIND NUMBER OF LOTS THAT CAN DRAIN TO STREET

34.36 / .5454 = 63.0 SAY 63

• TRANSITION FROM MOUNTABLE TO STD C+G WILL OCCUR ON RODEO ROAD BETWEEN LOTS 11+12 BLOCK 1 AND LOTS 4+5 BLOCK 3

• TRANSITION WILL OCCUR ON SILVERADO AVE BETWEEN LOTS 21+22 BLOCK 4 AND LOTS 11+12 BLOCK 5.

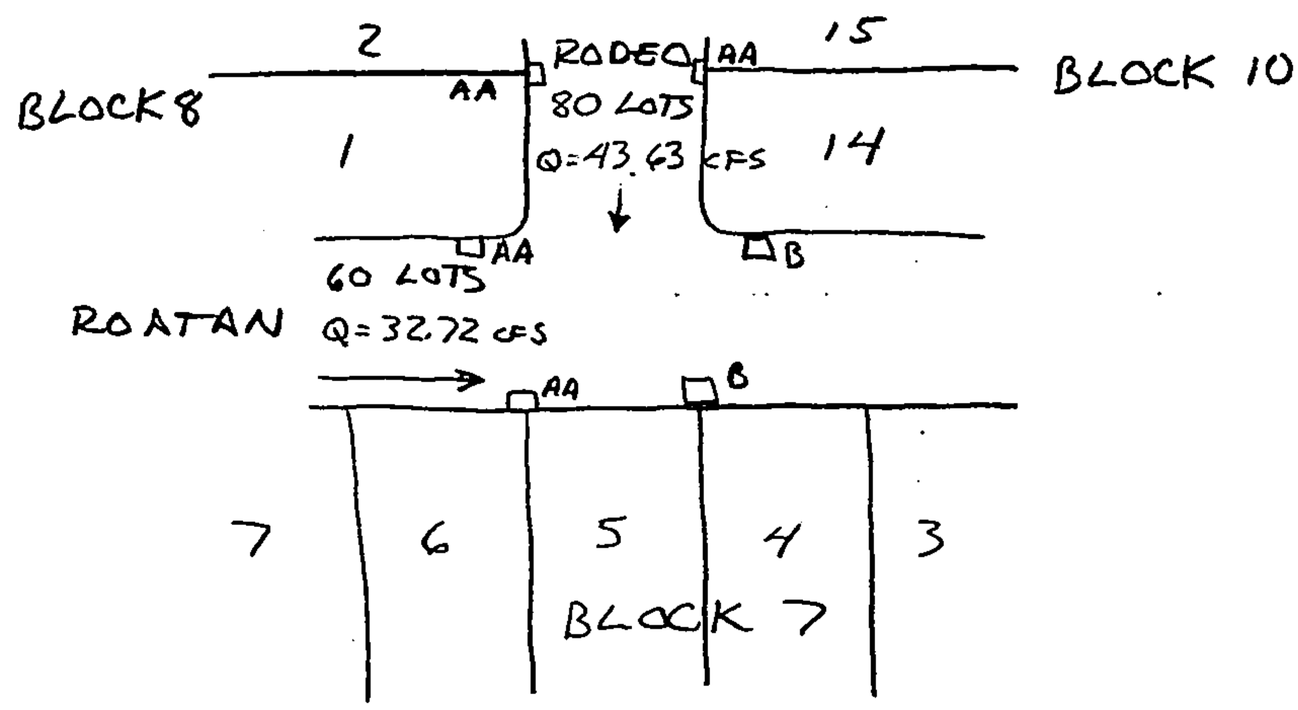
• TRANSITION WILL OCCUR ON ROATAN COURT BETWEEN LOTS 9+10 BLOCK 4 AND AT THE RETURN OF LOT 15 BLOCK 3

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE 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

d = 0.59
WP = 27.18
A = 9.92
V = 4.46 F/s
Q = 44.29 CFS ≈ 43.63 CFS OK

FROM NOMO SHEET 16
Q_{grate} = 9.4 CFS

Q INTO ROATAN = 43.63 − 2(9.4)
= 24.83 CFS

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

• Find d

d = 0.45
WP = 28.90
A = 6.47
V = 4.95 F/s
Q = 32.03 CFS ≈ 32.72 CFS OK

FROM NOMO SHEET 16
Q_{grate} = 5.5 CFS
Q CONTINUING IN ROATAN = 32.72 − 2(5.5) = 21.72 CFS

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RUCITO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 SHEET 7 OF ____

• FIND Q IN ROATAN PAST INLETS

Q = 24.83 + 21.72
= 46.55 CFS

NUMBER OF LOTS

46.55 / .5454 = 85.35 > 63 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 CFS

d = 0.51
WP = 29.02
A = 8.15
V = 5.76 F/S
Q = 46.93 CFS ≈ 47.10 CFS OK

FROM NOMO SHEET 17

$Q_{g\,MTE}$ = 14 CFS

Q PAST INLETS
= 47.10 − 2(14)
= 19.10 CFS

• FIND Q IN ROATAN AT CAMINO SAN MARTIN

Q = 19.10 + 4 (.5454)
= 21.28 CFS

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

• FIND TOTAL Q THAT ENTERS TRACT E

Q = 20.65 + 7.98 + 21.28
= 49.91 CFS

ADD TO TRACT E FLOW

Q THROUGH TRACT E
= 49.91 + 11.89
= 61.80 CFS

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

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 SHEET 8 OF ____

• SIZE TRACT E STREET

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

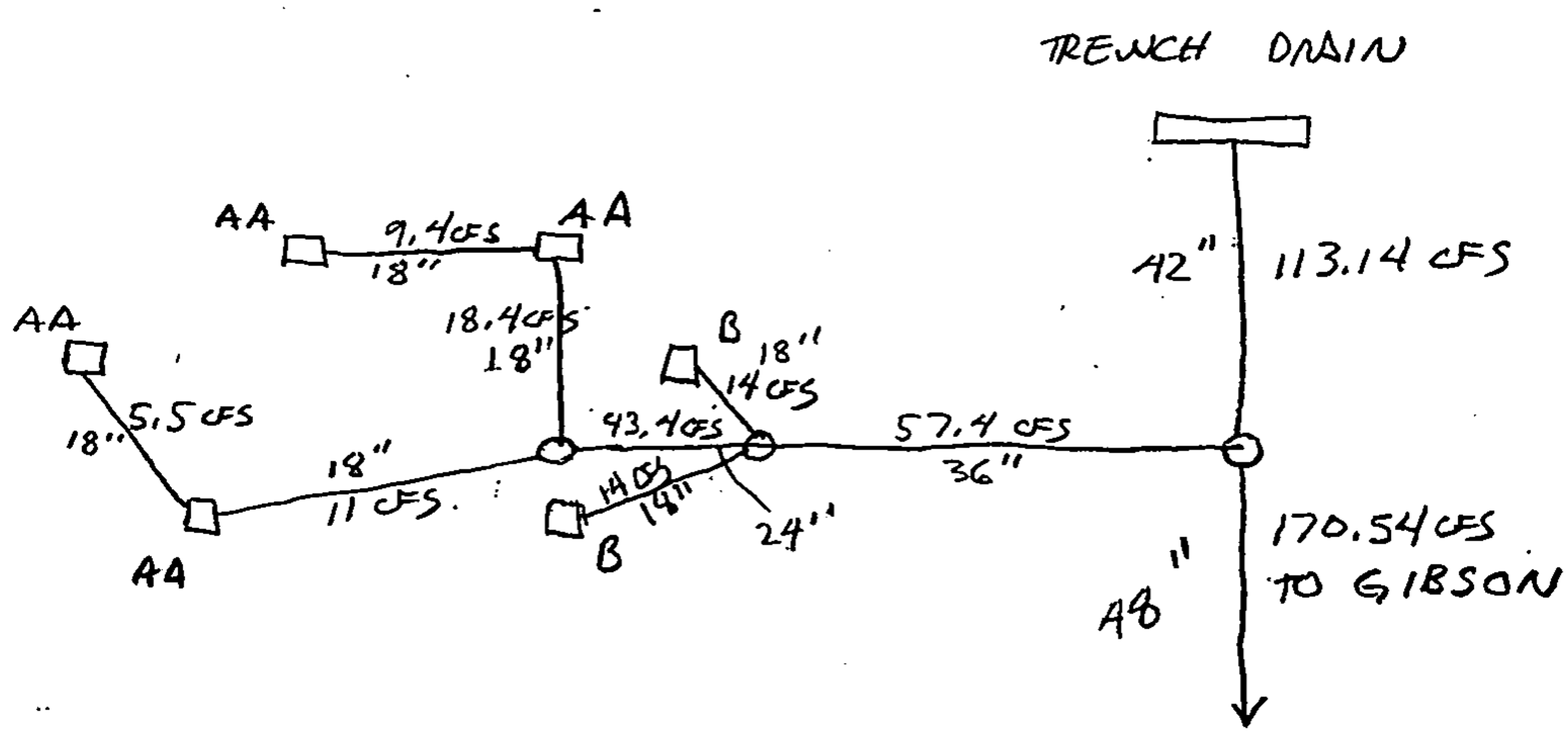
NO CROWN S = 0.75% n = 0.017

d = 0.51
WP = 27.02
A = 13.26
V = 4.71 F/S
Q = 62.45 CFS ≈ 61.80 CFS OK

$d + \frac{V^2}{2g} = 0.85 < 0.67 + .20$ OK

• SIZE STORMDRAIN

SEE HYDRAULIC ANALYSIS FOR STORMDRAIN DESIGN SHEETS 87-107



D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RONCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 SHEET 9 OF ____

- DETERMINE RUN OFF IN BARBADOS

A = 1.2644 AC
80% D 20% B

FROM AHYMO OUTPUT SHEETS 49-51

Q = 5.02 CFS

- ADD CENTEX SILVERADO RUNOFF

Q = 8.95 CFS + 42.37 CFS
= 51.32 CFS

- FIND Q IN BARBADOS AT ROATAN

Q = 5.02 + 51.32
= 56.34 CFS

- FIND d = 0.50 S = 1% n = 0.017 48' F-F STD C+G
WP = 49.00
A = 14.57 $d + \frac{V^2}{2g} = 0.73 < 0.67 + .33$ OK
V = 3.89 F/S
Q = 56.74 CFS ≈ 56.34 CFS OK

- FIND Q IN ROATAN AT BARBADOS

Q = 34 x 0.5454
= 18.54 CFS

- TOTAL Q IN BARBADOS BETWEEN ROATAN AND GIBSON

Q = 56.34 + 18.54 NO CROWN S=1%
= 74.88 CFS

- FIND d = 0.36
WP = 48.72 $d + \frac{V^2}{2g} = 0.66 < 0.67 + 0.33$ OK
A = 17.26
V = 4.38 F/S
Q = 75.68 CFS ≈ 74.88 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

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GSK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 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.

  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 52-54

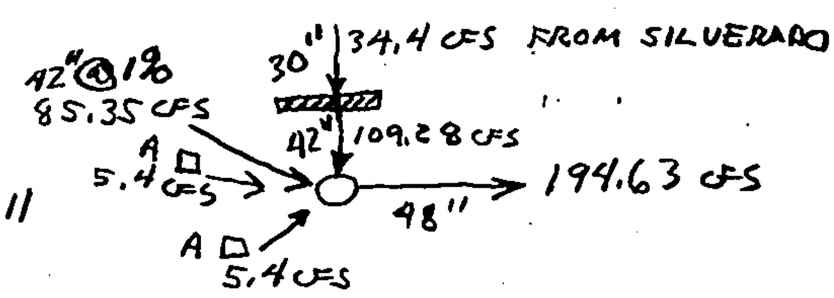
  Q = 85.35 CFS

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

- FIND Q ENTERING GIBSON STORMDRAIN AT BARBADOS.

  Q = 85.35 + 74.88 + 2(5.4)
  = 171.03 CFS + 34.4
  = 194.63

  See SHT 11



- FIND Q OF GIBSON BLVD

  50% "B" 50% "D"

  A = 8.2185 AC

  FROM AHYMO OUTPUT SHEETS 55-57

  Q = 26.66 CFS

  Q½ = 13.33 CFS

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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% n = 0.017

d = 0.345
WP = 13.345
A = 1.775
V = 4.375 F/S
Q = 7.77 CFS

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

FROM NOMO SHEET 16
Q gate = 5.40 CFS

Q½ AT BARBADOS IN GIBSON

Q = 13.33/2 = 6.67 CFS

Q past BARBADOS = 6.67 − 5.40
= 1.27 CFS

Q½ AT CAMINO SAN MARTIN IN GIBSON

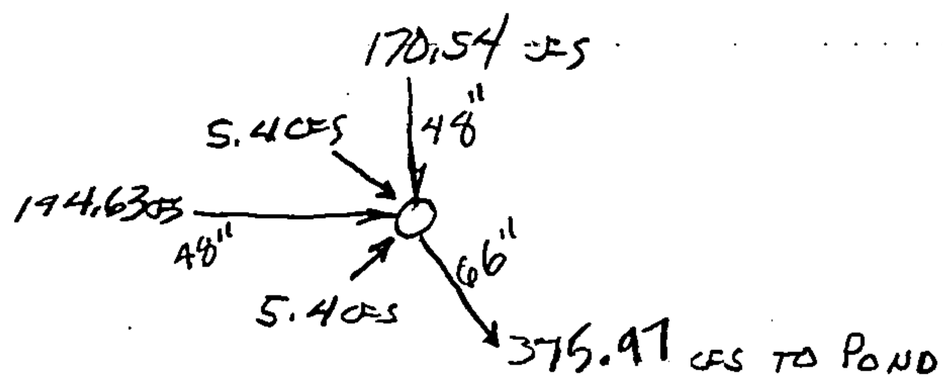
Q = 6.67 + 1.27
= 7.94 CFS

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

Q past CAMINO SAN MARTIN

Q = 7.94 − 5.40
= 2.54 CFS

• FIND Q ENTERING GIBSON STORMDRAIN AT CAMINO SAN MARTIN



D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
REVISED 3-30-00 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/W FROM NORTH HIGH POINT TO SOUTH HIGH POINT.

A = 4.66 AC

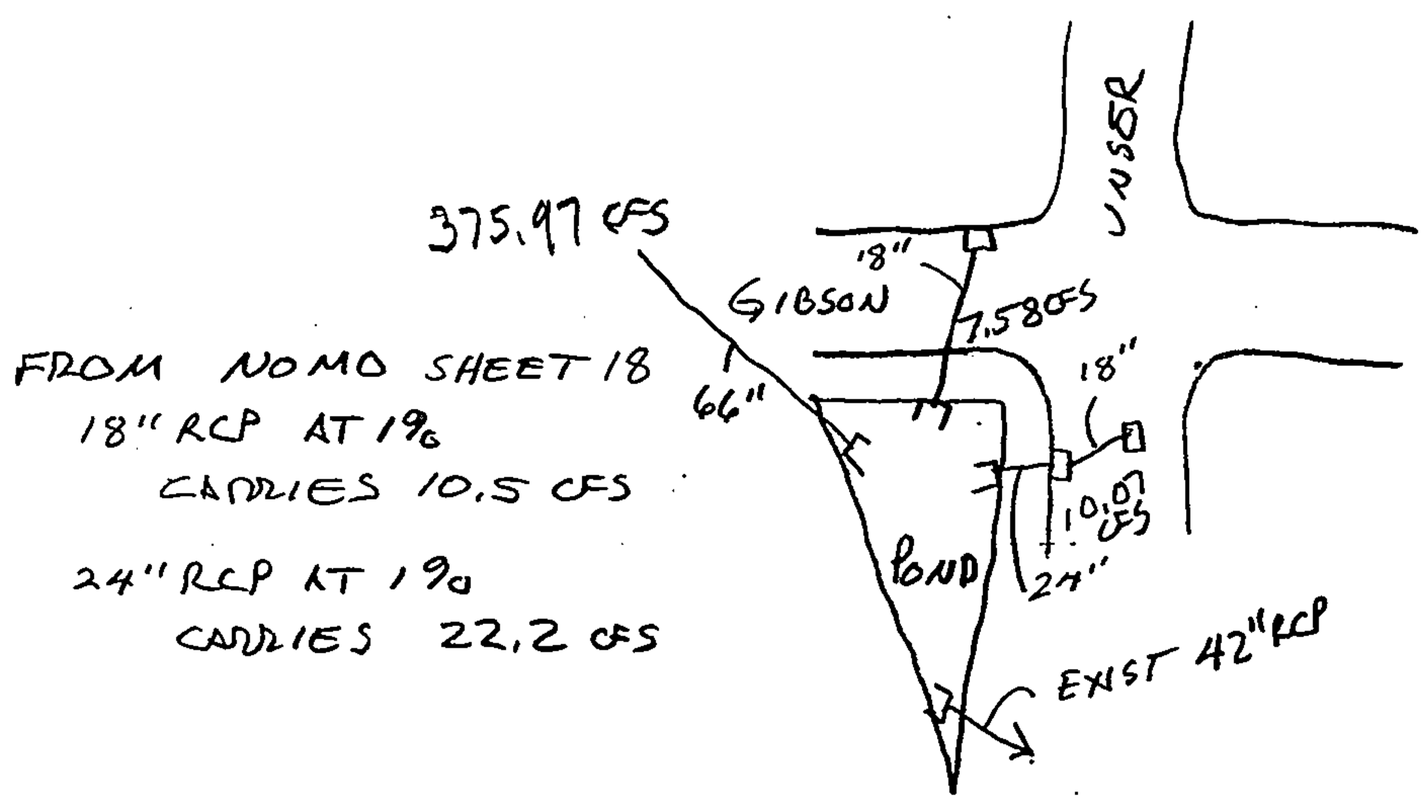
50% "B" 50% "D"

FROM AHYMO OUT PUT SHEETS 58-60

Q = 15.11 CFS

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

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



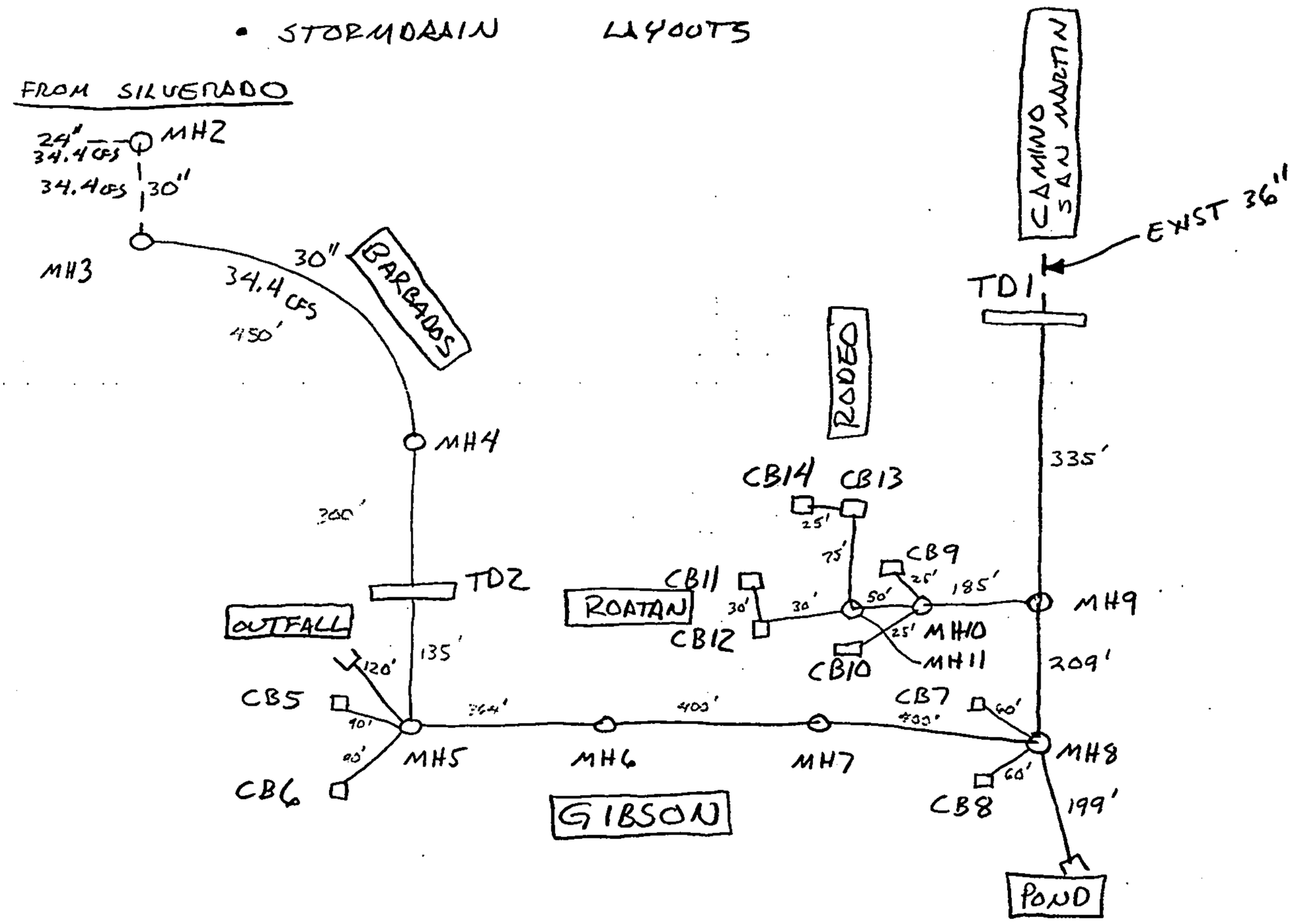
FROM AHYMO OUTPUT SHEETS 61-86

PEAK DISCHARGE = 97.80 CFS < 102 CFS ALLOWABLE
MAX WATER SURFACE = 44.47

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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

• STORMDRAIN LAYOUTS



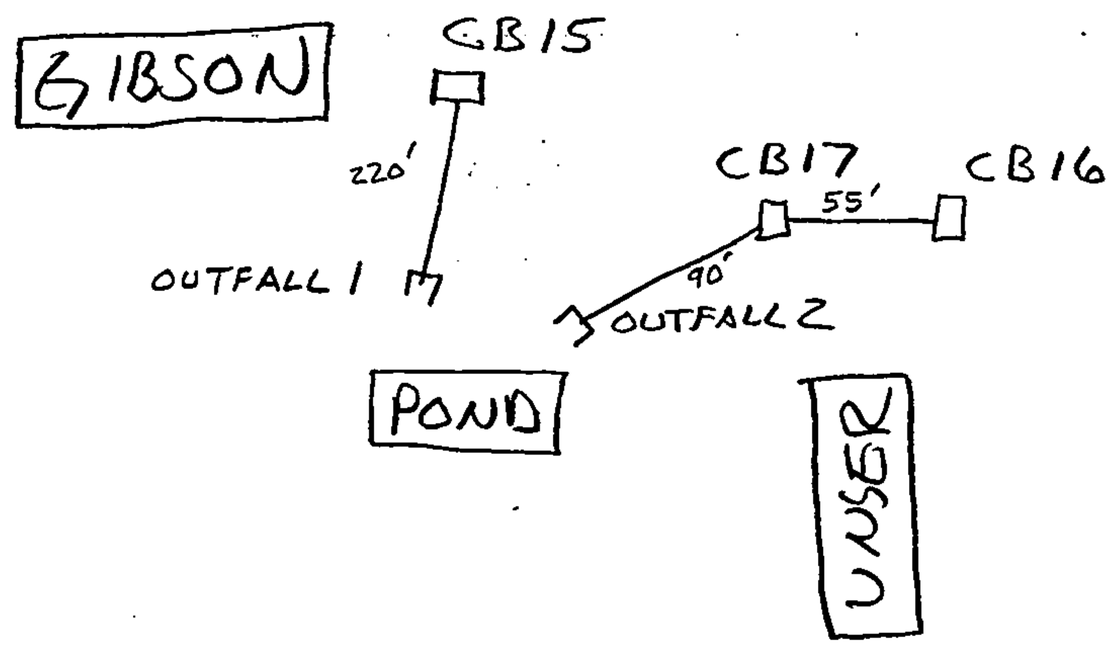
STRUCTURE	RIM/GRATE	INV.	PIPE SIZE LEAVING STRUCTURE
MH3	86.18	77.58	30" RCP
MH4	81.50	73.08	30" RCP
MH5	77.50	68.73	48" RCP
MH6	73.00	60.98	48" RCP
MH7	68.00	51.37	48" RCP
MH8	56.25	41.77	66" RCP
MH9	57.58	43.35	48" RCP
MH10	59.46	47.72	30" RCP
MH11	60.55	50.00	24" RCP
CB5	77.98	73.98	18" RCP
CB6	77.98	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

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT EL RANCHO GRANDE I
SUBJECT DRAINAGE CALCS
BY GJK DATE 12-13-99
CHECKED _____ DATE _____
SHEET 14 OF ____
REVISED 3-30-00

STRUCTURE	RIM/GRATE	INV.	PIPE SIZE LEAVING STRUCTURE
TD 1	56.56	47.77	42" RCP
TD 2	78.35	70.08	42" RCP
OUTFALL	N/A	69.93	42" RCP
POND	N/A	40.00	N/A

SEE HYDRAULIC ANALYSIS FOR STORMDRAIN DESIGN SHEETS 87-107



STRUCTURE	RIM/GRATE	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.

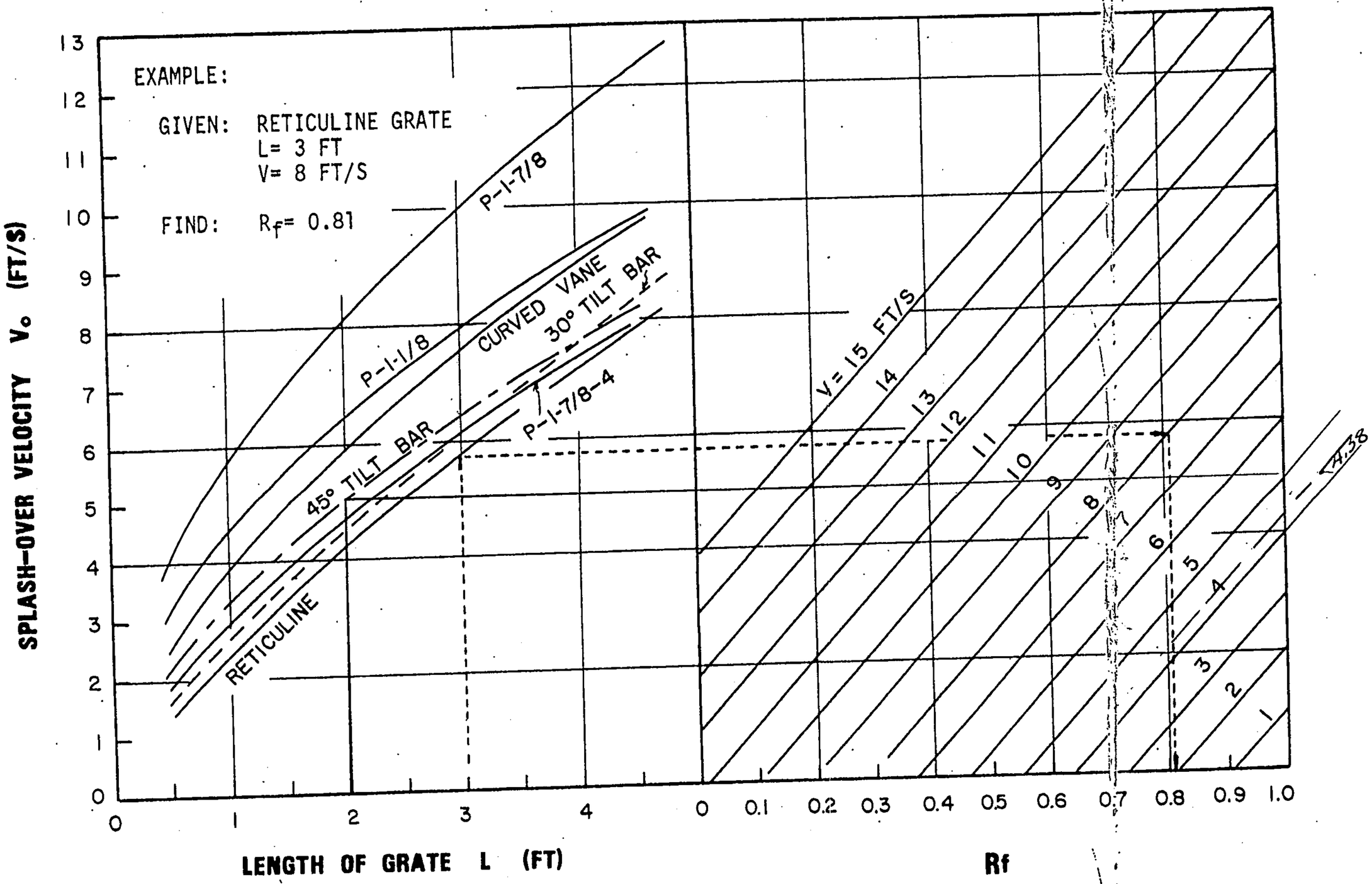
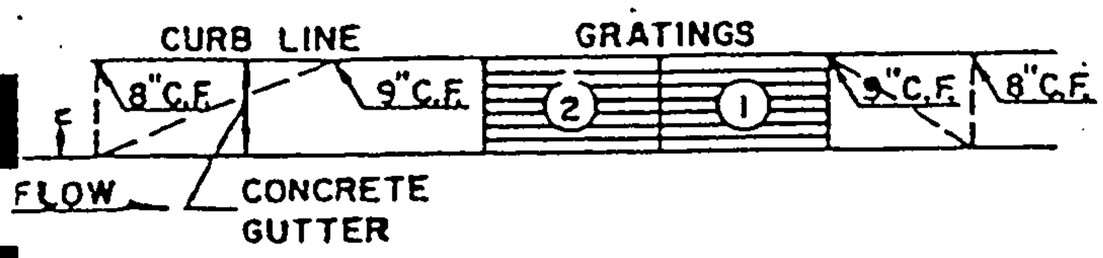


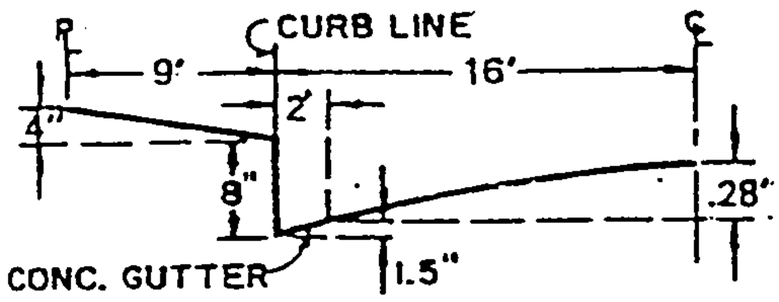
CHART 7. Grate inlet frontal flow interception efficiency.

15

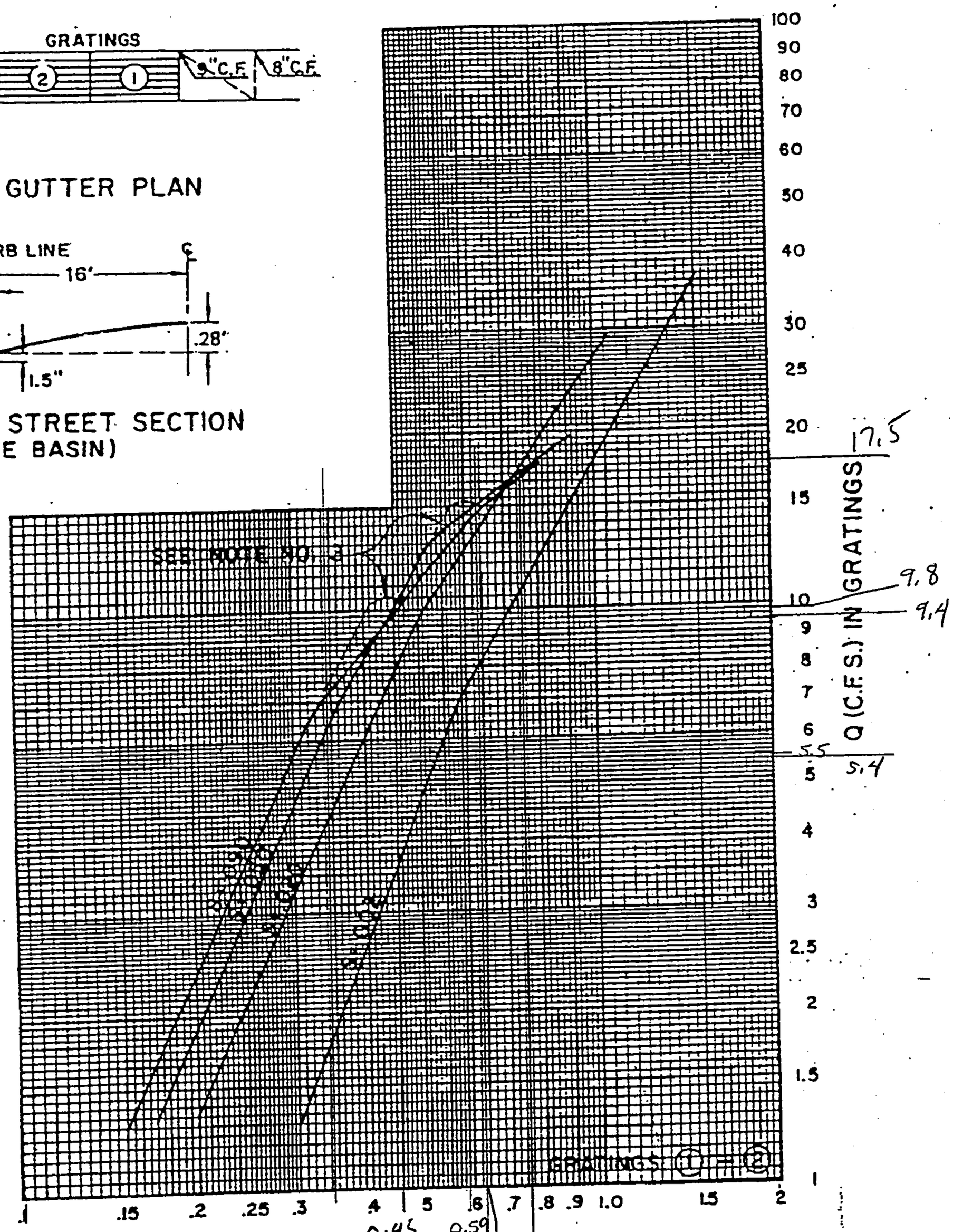
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



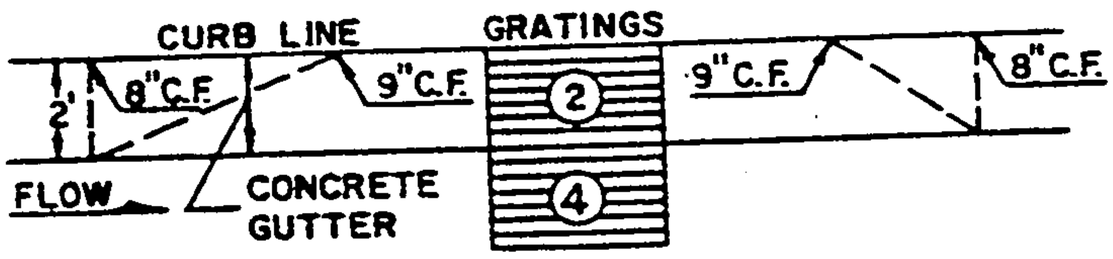
GRATING & GUTTER PLAN



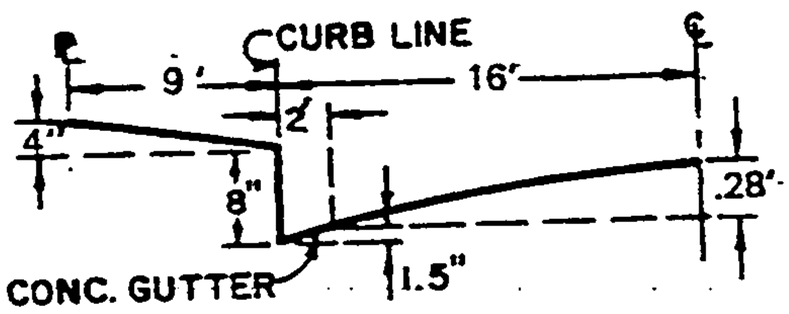
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



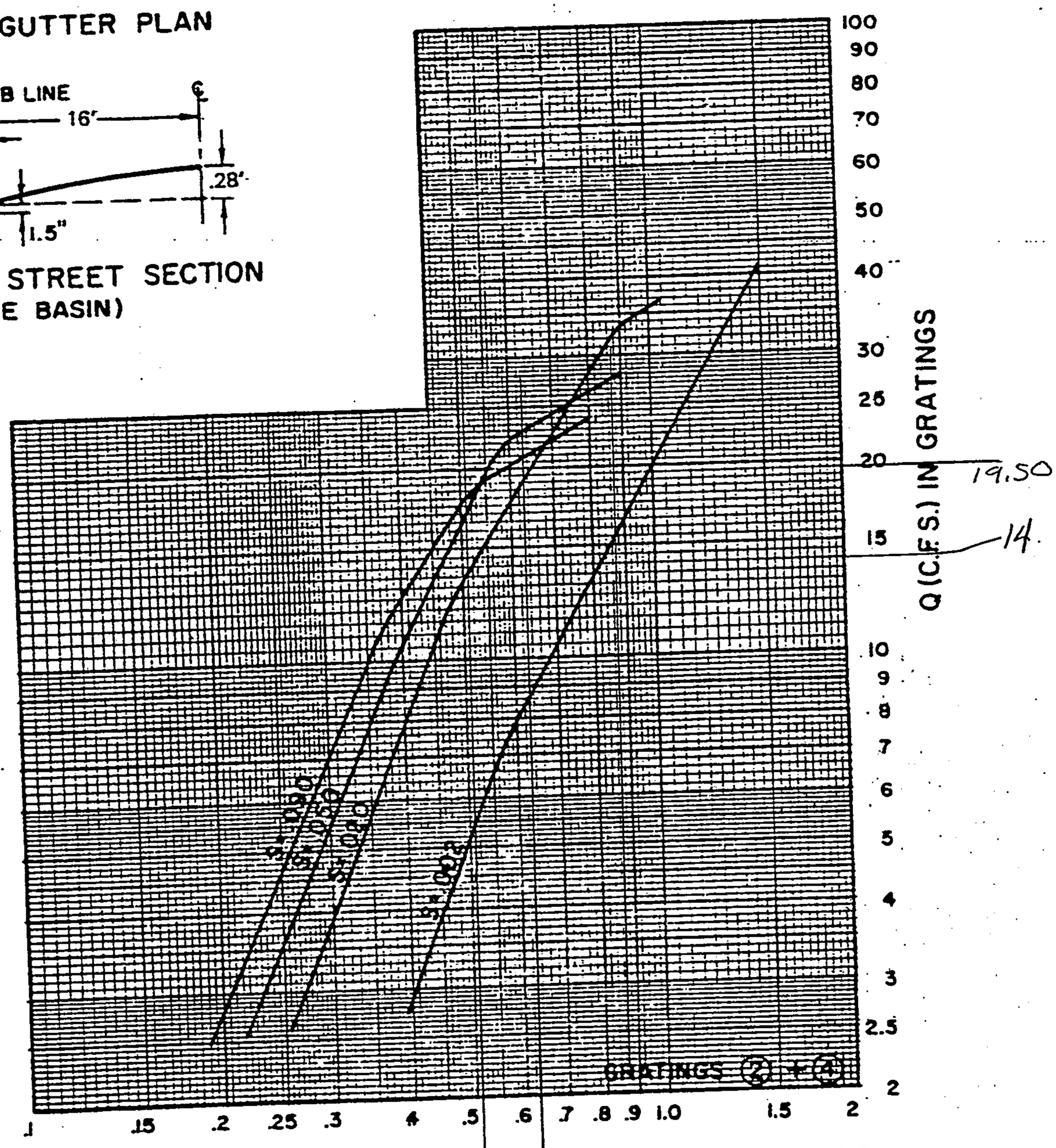
GRATING CAPACITIES FOR TYPE "B"



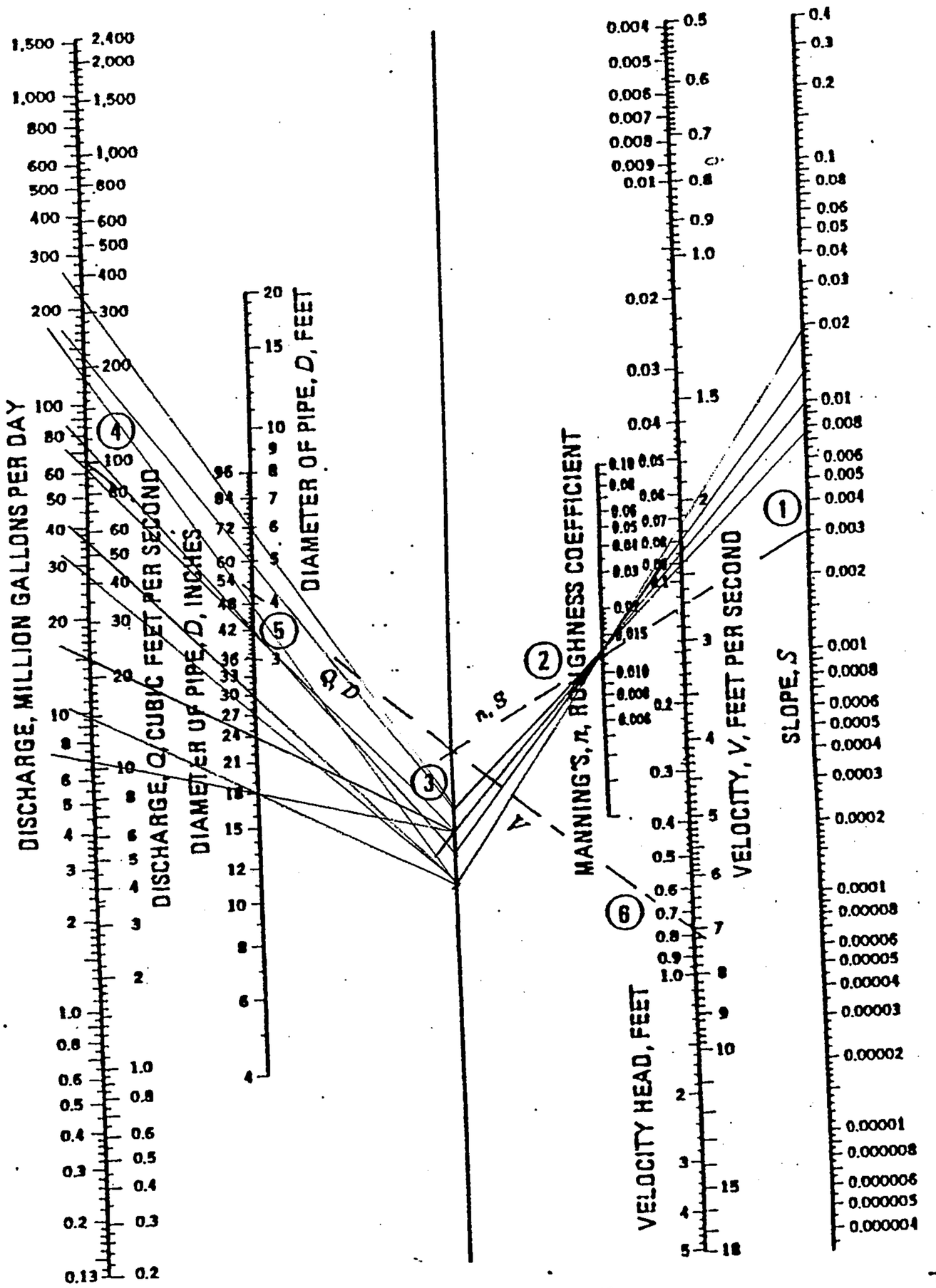
GRATING & GUTTER PLAN



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 ERGI &3 LOTS TRACT E
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=0.003899 SQ MI
                         PER A=0 B=52.16 C=0 D=47.84
                         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) = 04/03/2000
               START TIME (HR:MIN:SEC) = 15:14:33     USER NO.=
M_GOODWN.I01
               INPUT FILE = 13LOTS.DAT

     START                    TIME=0.0
     ***** HYDROGRAPH FOR 13 LOTS ERGI &3 LOTS TRACT E
     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=0.003899 SQ MI
                          PER A=0 B=52.16 C=0 D=47.84
                          TP=0.1333 HR MASS RAINFALL=-1

         K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
         UNIT PEAK =   7.3642    CFS   UNIT VOLUME =    .9978       B =
526.28      P60 = 1.9000
         AREA =      .001865 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 =   4.9974    CFS   UNIT VOLUME =    .9975       B =
327.55      P60 = 1.9000
         AREA =      .002034 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 =     1.29593 INCHES     =        .2695 ACRE-FEET
         PEAK DISCHARGE RATE =       7.98 CFS  AT   1.500 HOURS   BASIN
AREA =   .0039 SQ. MI.


     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:14:33
```

```
        AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January,
1994
              RUN DATE (MON/DAY/YR) = 04/04/2000
              START TIME (HR:MIN:SEC) = 09:48:24     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 - 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
```

```
                                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
```

```
        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 ERGI & 3 LOTS TRACT E
     COMPUTE NM HYD       ID=38  HYD NO=138  AREA=0.003899 SQ MI
                          PER A=0 B=52.16 C=0 D=47.84
                          TP=0.1333 HR MASS RAINFALL=-1

         K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
         UNIT PEAK =    7.3642    CFS   UNIT VOLUME =    .9978       B =
526.28      P60 = 1.9000
         AREA =       .001865 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 =    4.9974    CFS   UNIT VOLUME =    .9975       B =
327.55      P60 = 1.9000
         AREA =       .002034 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 =     1.29593 INCHES     =        .2695 ACRE-FEET
         PEAK DISCHARGE RATE =       7.98 CFS  AT   1.500 HOURS   BASIN
AREA =   .0039 SQ. MI.


     *
     **BASIN TRACT E
```

```
     COMPUTE NM HYD        ID=39  HYD NO=139  AREA=0.005809 SQ MI
                           PER A=0 B=51.99 C=0 D=48.01
                           TP=0.1333 HR MASS RAINFALL=-1

         K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
         UNIT PEAK =   11.011    CFS   UNIT VOLUME =    .9984       B =
526.28      P60 = 1.9000
         AREA =       .002789 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 =   7.4211    CFS   UNIT VOLUME =    .9985       B =
327.55      P60 = 1.9000
         AREA =       .003020 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 =     1.29812 INCHES     =        .4022 ACRE-FEET
         PEAK DISCHARGE RATE =      11.89 CFS  AT   1.500 HOURS   BASIN
AREA =   .0058 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.


    *
    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 =     1.29718 INCHES     =        .6716 ACRE-FEET
     PEAK DISCHARGE RATE =      19.87 CFS  AT   1.500 HOURS   BASIN
AREA =   .0097 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 =     1.37626 INCHES     =       5.2631 ACRE-FEET
     PEAK DISCHARGE RATE =     153.19 CFS  AT   1.500 HOURS   BASIN
AREA =   .0717 SQ. MI.


*
ADD HYD                ID=43 HYD NO=143  ID=41  ID=42
PRINT HYD              ID=43 CODE=1

                                        PARTIAL HYDROGRAPH   143.00


     RUNOFF VOLUME =     1.36962 INCHES     =       8.6051 ACRE-FEET
     PEAK DISCHARGE RATE =     250.81 CFS  AT   1.500 HOURS   BASIN
AREA =   .1178 SQ. MI.


*
*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
44.0
                                4.78               0.051
45.0
                               15.12               0.123
46.0
                               21.42               0.219
47.0
                               26.24               0.335
48.0

     *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

       TIME       INFLOW    ELEV      VOLUME    OUTFLOW
```

```
(HRS)      (CFS)      (FEET)     (AC-FT)    (CFS)

  .00        .00      44.00       .000       .00
  .80        .00      44.00       .000       .00
PEAK DISCHARGE =        24.508 CFS - PEAK OCCURS AT HOUR    1.57
MAXIMUM WATER SURFACE ELEVATION =        47.641
MAXIMUM STORAGE =          .2933 AC-FT      INCREMENTAL TIME=
.033330HRS

PRINT HYD            ID=46 CODE=1

                                    PARTIAL HYDROGRAPH   146.00


RUNOFF VOLUME =     1.36962 INCHES     =        .4807 ACRE-FEET
PEAK DISCHARGE RATE =      24.51 CFS  AT   1.567 HOURS   BASIN
AREA =   .0066 SQ. MI.

FINISH

NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 09:48:25
```

```
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
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
PRINT HYD             ID=10 CODE=1
*
**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
PRINT HYD             ID=11 CODE=1
*
**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
PRINT HYD             ID=12 CODE=1
*
**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
PRINT HYD             ID=13 CODE=1
*
**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
PRINT HYD             ID=14 CODE=1
*
**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
PRINT HYD             ID=15 CODE=1
*
**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
PRINT HYD             ID=16 CODE=1
*
**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
PRINT HYD             ID=17 CODE=1
**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
PRINT HYD             ID=18 CODE=1
*
**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
PRINT HYD             ID=19 CODE=1
*
**BASIN 13 LOTS ERGI & 3 LOTS TRACT E
```

```
COMPUTE NM HYD          ID=38  HYD NO=138  AREA=0.003899 SQ MI
                        PER A=0 B=52.16 C=0 D=47.84
                        TP=0.1333 HR MASS RAINFALL=-1
PRINT HYD               ID=38 CODE=1
*
**BASIN TRACT E
COMPUTE NM HYD          ID=39  HYD NO=139  AREA=0.005809 SQ MI
                        PER A=0 B=51.99 C=0 D=48.01
                        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
*
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=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                 44.0
                        4.78               0.051               45.0
                       15.12               0.123               46.0
                       21.42               0.219               47.0
                       26.24               0.335               48.0
PRINT HYD            ID=46 CODE=1
FINISH
```

```
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
```

```
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

                                    PARTIAL HYDROGRAPH    101.10
```

```
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

                                        PARTIAL HYDROGRAPH   101.10
```

```
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

.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=0.012841 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
```

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
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.
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=0.007274 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
PRINT HYD               ID=10 CODE=1
*
**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
PRINT HYD               ID=11 CODE=1
*
**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
PRINT HYD               ID=12 CODE=1
*
**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
PRINT HYD               ID=13 CODE=1
*
**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
PRINT HYD               ID=14 CODE=1
*
**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
PRINT HYD               ID=15 CODE=1
*
**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
PRINT HYD               ID=16 CODE=1
*
**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
PRINT HYD               ID=17 CODE=1
**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
PRINT HYD               ID=18 CODE=1
*
**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
PRINT HYD               ID=19 CODE=1
*
**BASIN 13 LOTS ERGI & 3 LOTS TRACT E
```

```
COMPUTE NM HYD        ID=38  HYD NO=138  AREA=0.003899 SQ MI
                      PER A=0 B=52.16 C=0 D=47.84
                      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=49.91   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) = 04/03/2000
              START TIME (HR:MIN:SEC) = 16:21:50     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
```

```
                                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
```

```
        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 ERGI & 3 LOTS TRACT E
     COMPUTE NM HYD         ID=38  HYD NO=138  AREA=0.003899 SQ MI
                            PER A=0 B=52.16 C=0 D=47.84
                            TP=0.1333 HR MASS RAINFALL=-1

          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
          UNIT PEAK =    7.3642    CFS   UNIT VOLUME =    .9978       B =
526.28       P60 = 1.9000
          AREA =       .001865 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 =    4.9974    CFS   UNIT VOLUME =    .9975       B =
327.55       P60 = 1.9000
          AREA =       .002034 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 =     1.29593 INCHES     =         .2695 ACRE-FEET
          PEAK DISCHARGE RATE =        7.98 CFS  AT   1.500 HOURS   BASIN
AREA =    .0039 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
```

```
        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 =      1.35370 INCHES      =        3.1914 ACRE-FEET
        PEAK DISCHARGE RATE =       93.33 CFS  AT    1.500 HOURS   BASIN
AREA =  .0442 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 =     1.37410 INCHES     =       7.7828 ACRE-FEET
        PEAK DISCHARGE RATE =     226.65 CFS  AT   1.500 HOURS   BASIN
AREA =  .1062 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 =     1.36962 INCHES     =      11.1249 ACRE-FEET
        PEAK DISCHARGE RATE =     324.27 CFS  AT   1.500 HOURS   BASIN
AREA =  .1523 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 =     1.36285 INCHES     =      14.6512 ACRE-FEET
        PEAK DISCHARGE RATE =     427.60 CFS  AT   1.500 HOURS   BASIN
AREA =  .2016 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 =     1.36148 INCHES     =      15.1647 ACRE-FEET
        PEAK DISCHARGE RATE =     442.71 CFS  AT   1.500 HOURS   BASIN
AREA =  .2088 SQ. MI.
```

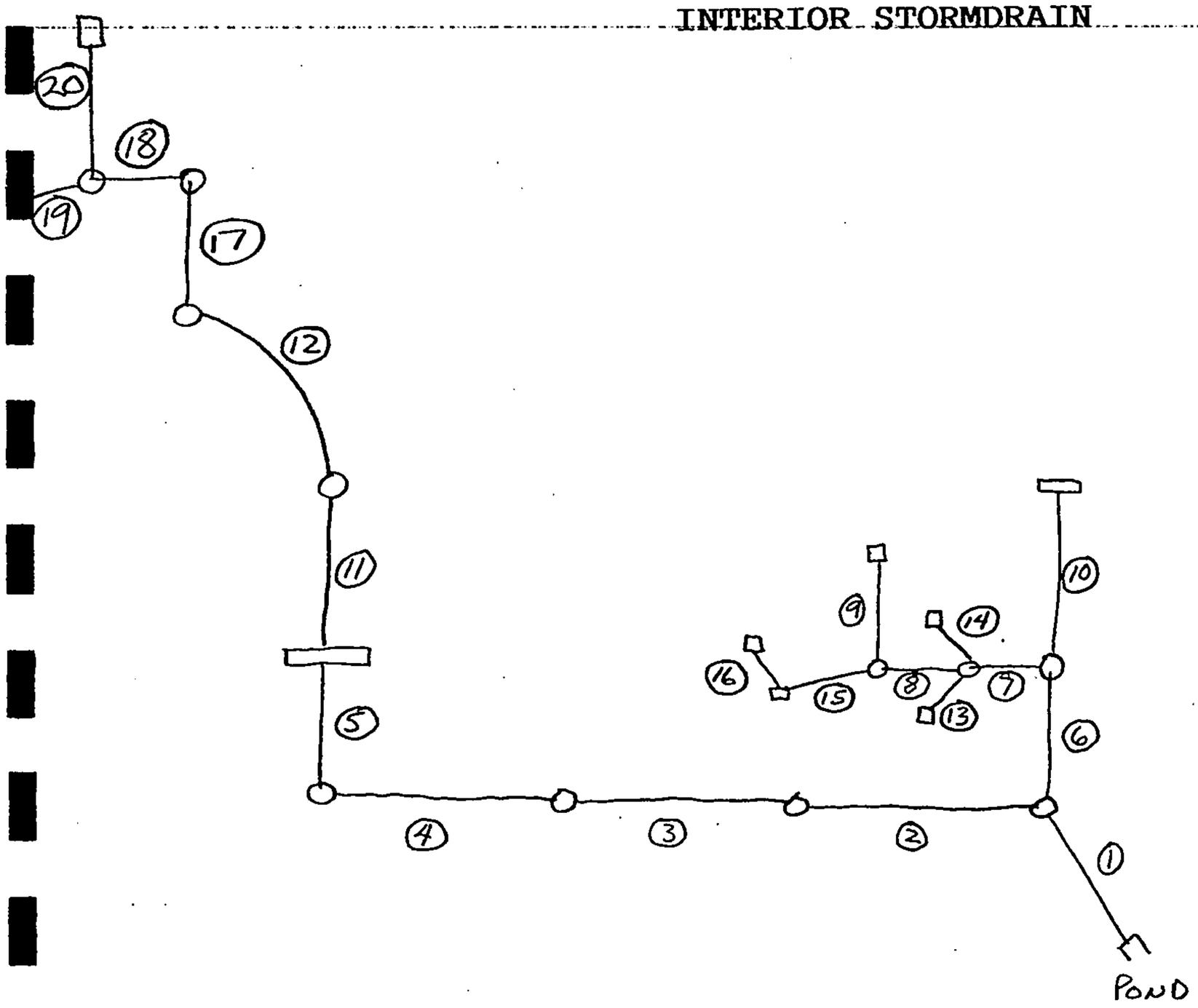
```
*
*DIVIDE BY MAXIMUM FLOW RATE
DIVIDE HYD            ID=49  Q=49.91   ID I=50   HYD NO=150
                                       ID II=51  HYD NO=151
* ROUTING THROUGH POND
*
ROUTE RESERVOIR       ID=52 HYD NO=152  INFLOW ID=51 CODE=24
                      OUTFLOW(CFS)       STORAGE(AC-FT)
ELEVATION(FT)
                         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

      *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

        TIME      INFLOW    ELEV      VOLUME    OUTFLOW
        (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

         .00        .00     40.00       .000       .00
         .80        .00     40.00       .000       .00
        1.60     268.51     43.79      4.831     90.05
        2.40        .00     42.46      2.859     72.31
        3.20        .00     40.22       .261     10.31
        4.00        .00     40.02       .019       .76
        4.80        .00     40.00       .001       .06
        5.60        .00     40.00       .000       .00
     PEAK DISCHARGE =        97.796 CFS - PEAK OCCURS AT HOUR    1.80
     MAXIMUM WATER SURFACE ELEVATION =       44.470
     MAXIMUM STORAGE =         5.9240 AC-FT      INCREMENTAL TIME=
.033330HRS

    PRINT HYD             ID=52 CODE=1

                                   PARTIAL HYDROGRAPH   152.00

        RUNOFF VOLUME =     1.36148 INCHES     =       9.9716 ACRE-FEET
        PEAK DISCHARGE RATE =      97.80 CFS  AT   1.800 HOURS   BASIN
AREA =  .1373 SQ. MI.


    FINISH

        NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 16:21:52
```

HYDRAULIC REPORT FOR

EL RANCHO GRANDE I

GIBSON BLVD STORMDRAIN

INTERIOR STORMDRAIN



LINE 1 / Q = 376.0 / HT = 66 / WID = 66 / N = .013 / L = 199 / 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	47.64	66.00	41.76	15.82	51.53	0.00	8.99	23.76

Drainage area (ac)	= 0	Slope of invert (%)	= 0.884
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.170
Time of conc (min)	= 14	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)	= 315.8	Line storage (cuft)	= 4686

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	48.61	48.00	41.77	15.49	52.34	0.00	10.47	12.56
UPSTRM	55.96	48.00	51.37	15.49	59.69	0.00	12.63	12.57

Drainage area (ac)	= 0	Slope of invert (%)	= 2.400
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.836
Time of conc (min)	= 11	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)	= 222.5	Line storage (cuft)	= 5026

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	56.89	48.00	51.37	15.49	60.62	0.00	12.63	12.56
UPSTRM	64.87	46.65	60.98	15.61	68.65	15.85	8.02	12.47

Drainage area (ac)	= 0	Slope of invert (%)	= 2.403
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.009
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)	= 73
Line capac. (cfs)	= 222.7	Line storage (cuft)	= 5006

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	65.81	48.00	60.98	15.49	69.54	0.00	8.02	12.56
UPSTRM	72.62	46.65	68.73	15.61	76.40	15.85	4.76	12.47

Drainage area (ac)	= 0	Slope of invert (%)	= 2.129
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.885
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)	= 77.5
Line capac. (cfs)	= 209.6	Line storage (cuft)	= 4556

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	73.56	42.00	68.73	11.36	75.57	0.00	5.26	9.62
UPSTRM	75.16	42.00	70.08	11.36	77.16	0.00	4.76	9.62

Drainage area (ac)	= 0	Slope of invert (%)	= 1.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.180
Time of conc (min)	= 6	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 = 209 / JLC = .25

6 / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	48.61	48.00	41.76	13.57	51.47	0.00	10.49	12.56
UPSTRM	51.56	48.00	43.66	13.57	54.42	0.00	6.58	12.57

Drainage area (ac)	= 0	Slope of invert (%)	= 0.909
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.409
Time of conc (min)	= 2	Critical depth (in)	= 45.16
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 156.2
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 44.8
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 6
Flow contrib (cfs)	= 170.5	Confluence angle (deg)	=-45
Default Q (cfs)	= 170.5	Natural ground elev (ft)	= 54.24
Line capac. (cfs)	= 137.0	Line storage (cuft)	= 2626

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	52.28	36.00	43.66	8.12	53.30	0.00	7.58	7.07
UPSTRM	53.65	36.00	47.72	8.12	54.67	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	53.90	24.00	47.72	13.82	56.87	0.00	9.73	3.14
UPSTRM	55.74	24.00	50.00	13.81	58.71	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	56.49	18.00	50.50	10.41	58.17	0.00	8.7	1.77
UPSTRM	59.21	18.00	55.57	10.41	60.89	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 = 335 / JLC = .25

10 / DNLN = 6

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.28	42.00	43.66	11.76	54.42	0.00	7.08	9.62
UPSTRM	57.05	42.00	47.77	11.76	59.20	0.00	5.68	9.62

Drainage area (ac)	= 0	Slope of invert (%)	= 1.227
Runoff coefficient	= 0	Slope energy grade line (%)	= 1.425
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)	= 56.96
Line capac. (cfs)	= 111.4	Line storage (cuft)	= 3223

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	75.66	30.00	70.08	7.01	76.42	0.00	5.76	4.91
UPSTRM	77.77	30.00	73.08	7.01	78.53	0.00	5.91	4.91

Drainage area (ac)	= 0	Slope of invert (%)	= 1.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.704
Time of conc (min)	= 5	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	77.96	30.00	73.08	7.01	78.72	0.00	5.91	4.91
UPSTRM	81.13	30.00	77.58	7.01	81.89	0.00	6.09	4.91

Drainage area (ac)	= 0	Slope of invert (%)	= 1.000
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.704
Time of conc (min)	= 2	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	56.49	16.63	55.10	6.43	57.13	9.28	4.11	1.71
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 (%)	= 2.469
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 (%)	= 0.518
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

LINE 17 / Q = 34.4 / HT = 30 / WID = 30 / N = .013 / L = 176 / JLC = .25

17 / DNLN = 12

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	81.32	30.00	77.58	7.01	82.08	0.00	6.09	4.91
UPSTRM	82.32	24.13	80.31	8.13	83.35	23.81	5.08	4.23

Drainage area (ac)	= 0	Slope of invert (%)	= 1.551
Runoff coefficient	= 0	Slope energy grade line (%)	= 0.719
Time of conc (min)	= 1	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)	= 90
Default Q (cfs)	= 34.4	Natural ground elev (ft)	= 87.89
Line capac. (cfs)	= 51.1	Line storage (cuft)	= 804

LINE 18 / Q = 34.4 / HT = 24 / WID = 24 / N = .013 / L = 146 / JLC = .25

18 / DNLN = 17

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	82.58	24.00	80.31	10.95	84.44	0.00	5.58	3.14
UPSTRM	85.96	24.00	83.11	10.95	87.82	0.00	3.79	3.14

Drainage area (ac)	= 0	Slope of invert (%)	= 1.918
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.314
Time of conc (min)	= 0	Critical depth (in)	= 23.31
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)	= 90
Default Q (cfs)	= 34.4	Natural ground elev (ft)	= 88.9
Line capac. (cfs)	= 31.3	Line storage (cuft)	= 459

LINE 19 / Q = 18.0 / HT = 18 / WID = 18 / N = .013 / L = 55 / JLC = .25

19 / DNLN = 18

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	86.42	18.00	83.11	10.19	88.03	0.00	4.29	1.77
UPSTRM	88.44	18.00	85.44	10.19	90.05	0.00	2.27	1.77

Drainage area (ac)	= 0	Slope of invert (%)	= 4.236
Runoff coefficient	= 0	Slope energy grade line (%)	= 3.671
Time of conc (min)	= 0	Critical depth (in)	= 17.62
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 16.5
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 4.7
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 6
Flow contrib (cfs)	= 18	Confluence angle (deg)	= 15
Default Q (cfs)	= 18	Natural ground elev (ft)	= 89.22
Line capac. (cfs)	= 21.6	Line storage (cuft)	= 97

LINE 20 / Q = 16.4 / HT = 18 / WID = 18 / N = .013 / L = 85 / JLC = .25

20 / DNLN = 18

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	86.42	18.00	83.11	9.28	87.76	0.00	4.29	1.77
UPSTRM	88.83	18.00	85.77	9.28	90.17	0.00	2.28	1.77

Drainage area (ac)	= 0	Slope of invert (%)	= 3.129
Runoff coefficient	= 0	Slope energy grade line (%)	= 2.439
Time of conc (min)	= 0	Critical depth (in)	= 17.32
Inlet time (min)	= 0	Req'd length curb inlet (ft)	= 15.0
Intensity (in/hr)	= 0.00	Req'd grate area (sf)	= 4.3
Cumulative C*A	= 0.0	Depth at inlet opening (in)	= 6
Flow contrib (cfs)	= 16.3	Confluence angle (deg)	= 90
Default Q (cfs)	= 16.4	Natural ground elev (ft)	= 89.55
Line capac. (cfs)	= 18.6	Line storage (cuft)	= 150

City of Albuquerque

April 4, 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 Silverado Subdivision (M9/D20), Submitted for Preliminary Plat Approval and Rough Grading Approval, Engineer's Stamp Dated 3/20/00.

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. As you are aware, each submittal must be complete in order to stand alone. Since this subdivision drains through the El Rancho Grande Subdivision, one comprehensive drainage report must be provided for both. The design for the complete storm drain system must be provided in one report. The above referenced report is incomplete.

2. Some of the street capacity calculations are missing. Please provide the referenced street calculations to verify that the water depth is not over the top of curb, and that the EGL is not over the right-of-way elevation. The inlet calculations for Silverado Avenue used a slope of 2% in the report, however, the plan indicates that the slope is 3% at that location.

3. Provide the complete design for the downstream storm drain system. All of the downstream storm drain improvements must be included on the Infrastructure List. These improvements must be bonded with the Silverado Unit 2 Subdivision.

4. The drainage report did not address the stability of the existing Snow Vista Channel.

5. Please provide cross-sections and details for the proposed 3' wide concrete channel located between Silver Sky Court and Golden View Drive. Will this channel be constructed to City Standards? Is concrete proposed for the entire width of the public drainage easement? If approved, the property owners must be aware that no walls or fences will be allowed to block the 10' wide easement. The proposed grading shows slopes to the edges of this easement. It appears that retaining walls may be needed along this easement.

April 4, 2000

6. The proposed ultimate street grades for Snow Vista Boulevard were not provided on the plan. The plan shows an inlet in this road. Please show the drainage basin and provide calculations.

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: Walter Tilley, Centex
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Centex Silverado ZONE ATLAS#: M-9 /D026

DRB#: 00410-00000-00219 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Tracts A and B, Albuquerque South, Unit 4

CITY ADDRESS:

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Gregory J. Krenik, PE

ADDRESS: P.O. Box 90606, Albuquerque, NM 87199 PHONE: 828-2200

OWNER: Centex CONTACT: Walter Tilley

ADDRESS: 6700 Jefferson NE, Building B, Albq., NM 87109 PHONE: 761-9606

ARCHITECT: CONTACT:

ADDRESS: PHONE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTACTOR: CONTACT:

ADDRESS: PHONE:

TYPE OF SUBMITTAL:

X REVISED 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 APRROVAL

X PRELIMINARY PLAT APRROVAL

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

RECEIVED MAR 21 2000 HYDROLOGY S.

DATE SUBMITTED: 3-21-00

BY:

Gregory J. Krenik, PE

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.

1999133611
5294675
Page: 1 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

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.

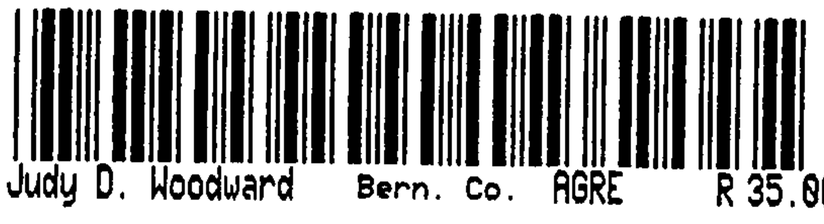
F. Curb has entered into an agreement with Thunder to assume Thunder's right to purchase Tract C and Tract D from Alb. South (the "Curb Tracts").

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

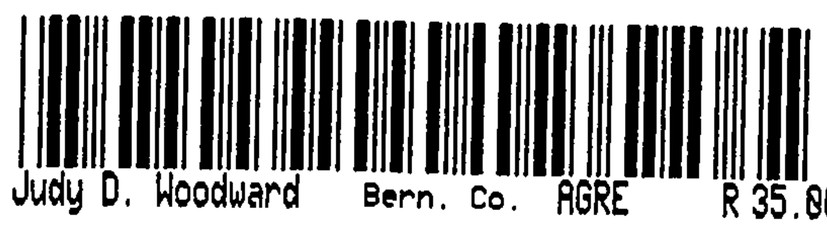


Judy D. Woodward Bern. Co. AGRE R 35.00
1999133611
5294675
Page: 2 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

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



Judy D. Woodward Bern. Co. AGRE R 35.00
1999133611
5294675
Page: 3 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

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

1999133611
5294675
Page: 4 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

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

1999133611
5294675
Page: 5 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

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.

Judy D. Woodward Bern. Co. AGRE R 35.00

1999133611
5294675
Page: 6 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

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 agreer 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

_____

_____

1999133611
5294675
Page: 7 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

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.

1999133611
5294675
Page: 8 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

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

By: _____

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

By: _____

Its: _____

CURB, INC., a New Mexico corporation

By: _____

Its: _____

1999133611
5294675
Page: 9 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

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.

NOTARY PUBLIC STATE OF TEXAS
Judy L. Evans
Notary Public, State of Texas
My Comm. Expires 05/10/03

Judy L. Evans
Notary Public

Judy D. Woodward Bern. Co. AGRE R 35.00
1999133611
5294675
Page: 10 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

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
ARJAY, INC, co-managing partner
By: Joseph L. Wendt
Its President

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

By: _____
Its: President

CURB, INC., a New Mexico corporation

By: Charles A Voegeli
Its: President

Judy D. Woodward Bern. Co. AGRE R 35.00
1999133611
5294675
Page: 11 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

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

The foregoing instrument was acknowledged before me on OCT 20, 1999, by ARJAY, INC by, JOSEPH L. WERNITZ of Albuquerque South Partnership, a New Mexico general partnership.

Notary Public

My Commission Expires:

OFFICIAL SEAL
ROBERT J. SCHAEFER
NOTARY PUBLIC - NEW MEXICO
Notary Bond Filed with Secretary of State
My Commission Expires 9/28/2002

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.

Notary Public

My Commission Expires:

4-5-03

OFFICIAL SEAL
[illegible]
STATE OF NEW MEXICO

Judy D. Woodward Bern. Co. AGRE R 35.00

1999133611
5294675
Page: 12 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

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

H:\HAEGELIN\JAM\LEGALDOC\Grading Easement Agrmt-3.wpd\October 20, 1999

Judy D. Woodward Bern. Co. AGRE R 35.00

1999133611
5294675
Page: 13 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

Judy D. Woodward Bern. Co. AGRE R 35.00
1999133611
5294675
Page: 14 of 15
10/21/1999 02:57P
Bk-9914 Pg-3195

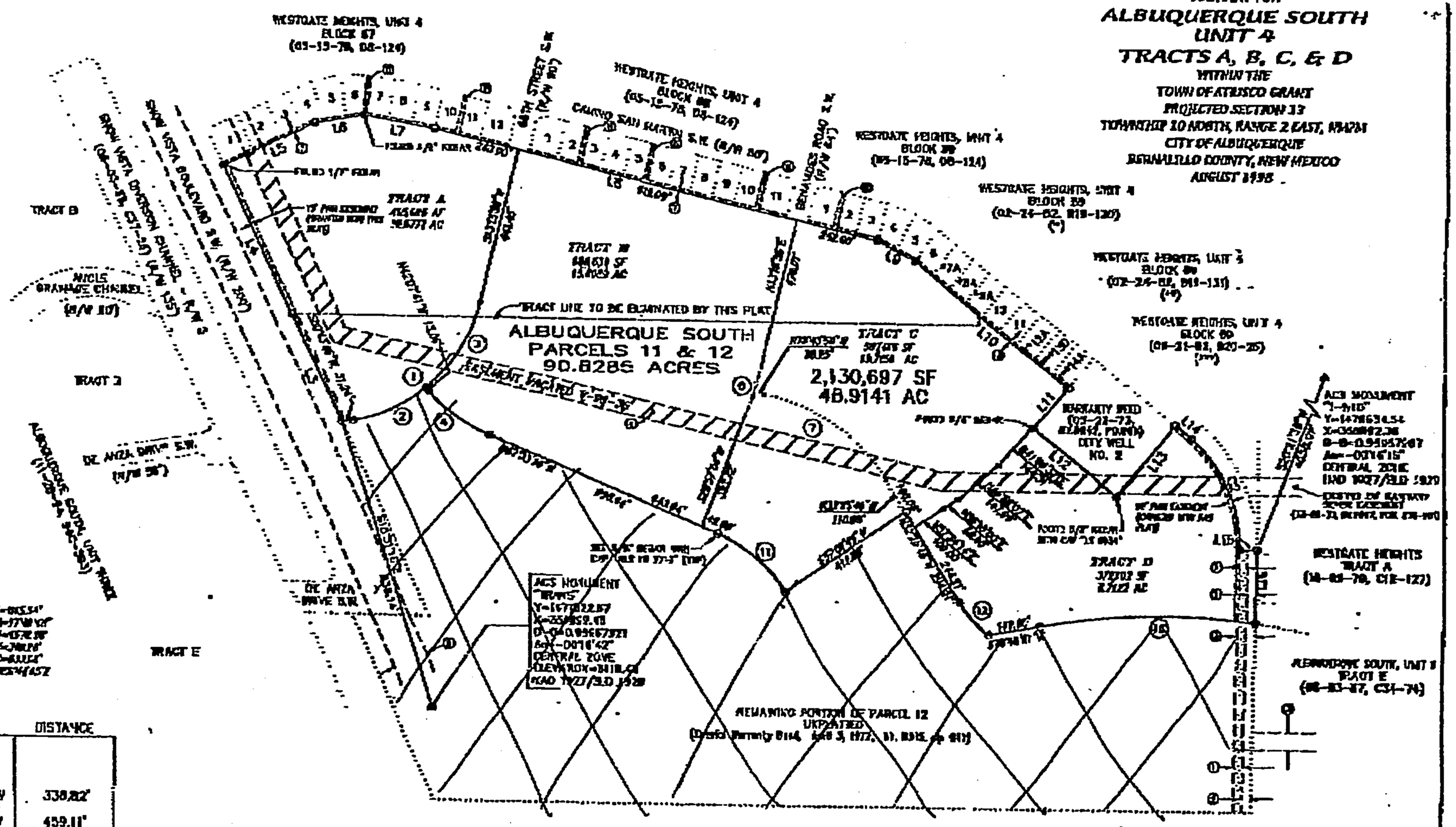
EXHIBIT

BULK PLAT FOR

ALBUQUERQUE SOUTH UNIT 4

TRACTS A, B, C, & D

WITHIN THE
TOWN OF ATRISCO GRANT
PROJECTED SECTION 33
TOWNSHIP 10 NORTH, RANGE 2 EAST, NMPM
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
AUGUST 1998



LINE	DIRECTION	DISTANCE
L3	N25°08'53"W (N05°32'35"W)	338.82'
L4	N25°17'22"W (N05°32'35"W)	459.11' (459.68)
L5	N84°43'21"E (N64°27'25"E)	283.47' (283.61)
L6	N80°13'21"E (N59°57'25"E)	145.91'
L7	S80°10'20"E (S59°28'16"E)	200.21'
L8	S75°44'04"E (S77°00'00"E)	1214.00'
L9	S63°18'00"E (S63°34'58"E)	123.43'
L10	S60°44'04"E (S50°00'00"E)	568.61' (558.73')
L11	S29°29'29"W (S35°00'00"W)	150.23' (150.00')
L12	S50°45'30"E (S51°00'00"E)	300.59' (300.00')
L13	N39°16'55"E (N40°00'00"E)	260.00'
L14	S50°44'04"E (S55°00'00"E)	81.05' (81.36')
L15	S89°17'42"E (S65°31'50"E)	50.00'
L16	S00°42'18"W (S00°28'10"W)	203.33'

EASEMENTS

(1) WESTERN 30' C.D.R. WATER LINE, SANITARY SEWER AND UTILITY EASEMENT (10-25-78, REMOVED, PER 083-030)

(2) EXISTING 15' C.D.R. WATER LINE EASEMENT (02-04-78, REMOVED, 5094, PER 575-053) (04-06-78, REMOVED, 5094, PER 583-087)

(3) EXISTING 50' C.D.R. TEMPORARY BORROW EASEMENT (02-24-80, EXPIRED, 7B1, PER 33-08)

(4) EXISTING 50' SANITARY SEWER EASEMENT (EXPIRED)

(5) EXISTING 100' PNM EASEMENT (12-13-68, DISTRICT COURT CAUSE NO. 81808)

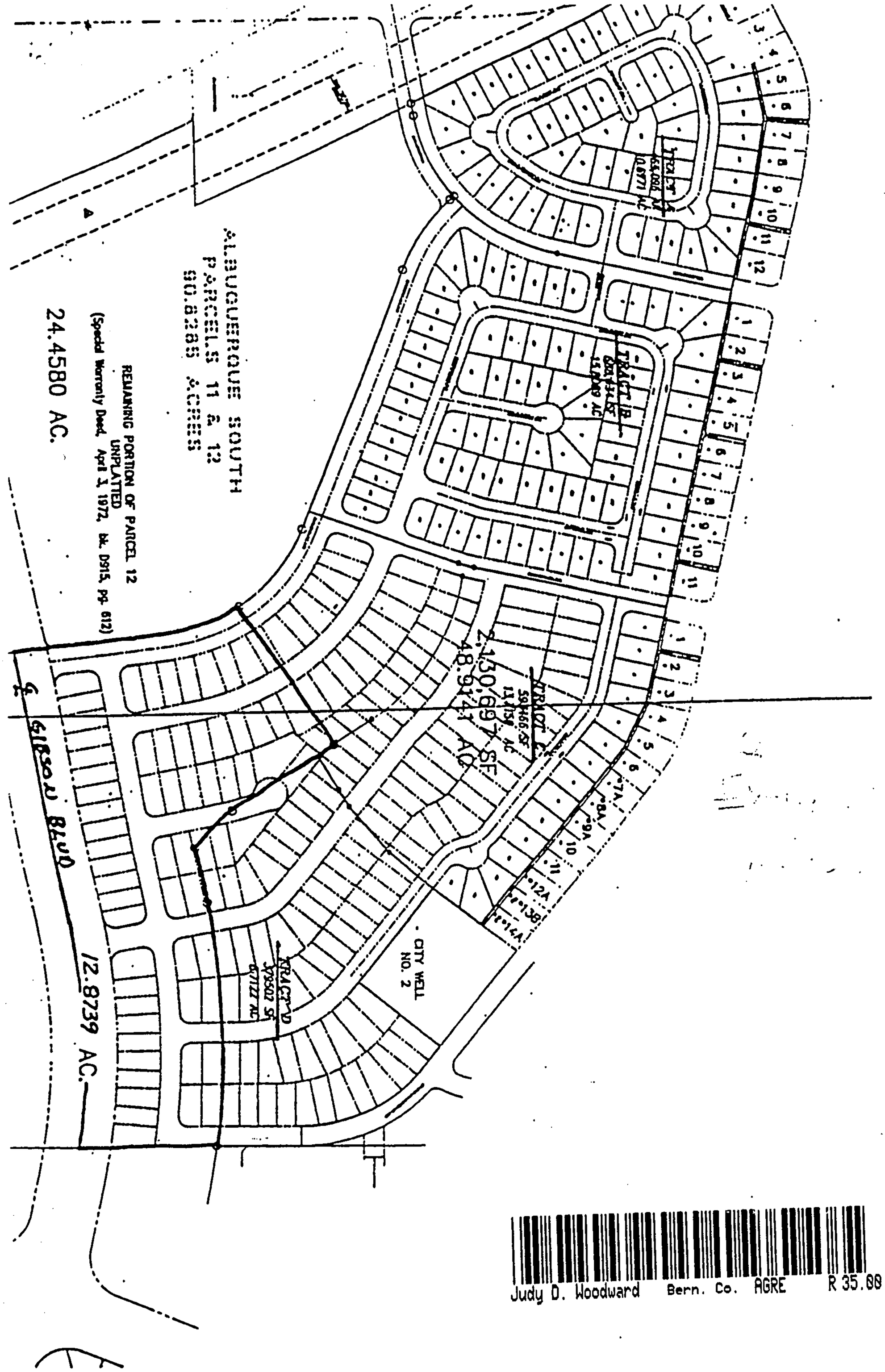
(6) EXISTING 7' POWER & COMMUNICATION EASEMENT (08-15-78, 08-124)

(7) EXISTING 10' POWER & COMMUNICATION EASEMENT (08-15-78, 08-124)

CURVE	LENGTH	DELTA	RADIUS	TANGENT	DIRECTION	CHORD
C2	352.83' (351.01')	51°26'22" (51°28'10")	393.00'	189.31'	S25°00'53"E	341.10'

Dwg.	7-5-98	Drawn	8/7/98	Checked	MS
Scale	1"=100'	Date	8/24/98	Job	97062

Sheet 3 of 4



1999133611
5294675
Page: 15 of 15
10/21/1999 02:57P
Judy D. Woodward Bern. Co. AGRE R 35.00 Bk-9914 Pg-3195

EXHIBIT "A"

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

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

March 20, 2000

Ms. Susan Calongne, PE
City/County Flood Plain Administrator
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

Re: Silverado Subdivision (M9/D20)

Dear Ms. Calongne:

This letter is an itemized response to your letter of March 15, 2000, and part of the re-submittal.

1. *We have obtained Glen Jurgensen's signature approving the channel as designed with some minor modifications since his department will be maintaining the channel.*

2. *These basins have been added to the plan and the report.*

3. *These locations have been added in the report. Street slopes have been added to the plan. Potential for hydraulic jumps have been addressed and added to the report.*

4. *I've included the paving profiles for these streets to show the design is compatible with future improvements.* ?

5. *The existing Snow Vista channel is not lined and no improvements are required with this project. AMAFCA's signature is on the DRC cover sheet of the plans, which are also included.*

6. *Off-site drainage map is enclosed. No wall is required along the west property line. Only a perimeter wall will be along the west side. This area will drain to the "DBL-D" inlet so as not to impose a retaining wall along the west property line. The area is too large to discharge to the street at one point and would dump unwanted sediment into the roadway.*

7. *This has been revised on the plan.*

8. *There are no inlets on Rodeo. The report calls for them on Waters Drive and Silverado Avenue, and they are shown on the plan. Street names have been added.*

9. *We have differentiated the elevations so they show as existing. Retaining walls are required along parts of the north property line and are shown on the plans. A letter from Albuquerque South is included for grading south of Barbados and 86th Street.* ?

We will be keeping the reports separate because they are two separate projects, two separate owners, two separate DRB cases, two separate SIA's and two separate Work Orders.

Please contact our office if you have any further questions or comments.

Very Truly Yours,

MARK GOODWIN & ASSOCIATES, PA

Gregory J. Krenik, PE
Vice President

GJK/sb

f:\\silverado\comments.no5

[redacted]

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

DRAINAGE REPORT

for

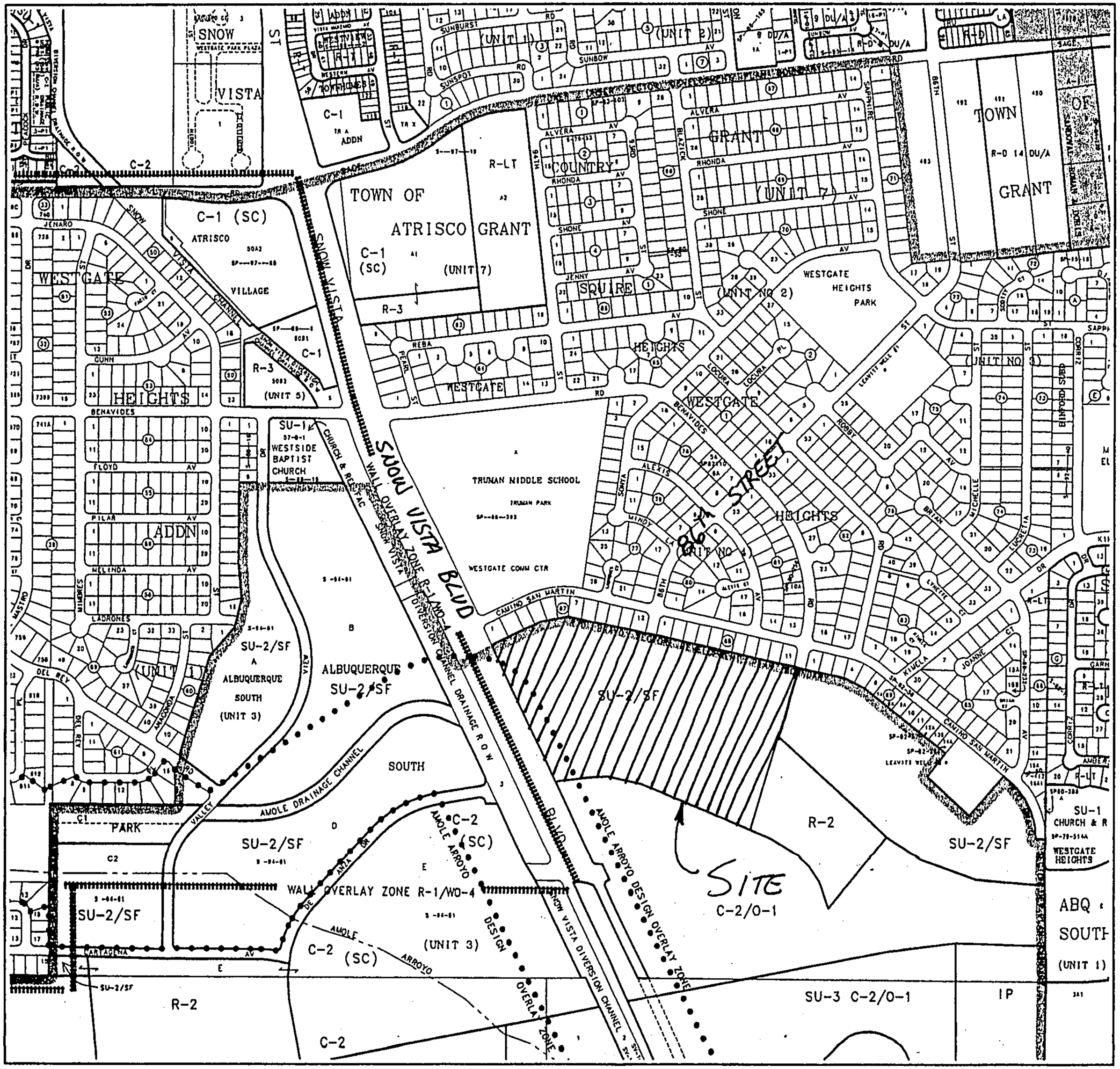
CENTEX — SILVERADO

Prepared By

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

November 1999

GREGORY JAMES KRENZ
NEW MEXICO
11929
11-29-99
REGISTERED PROFESSIONAL ENGINEER
3-20-00



CITY OF Albuquerque

Albuquerque Geographic Information System

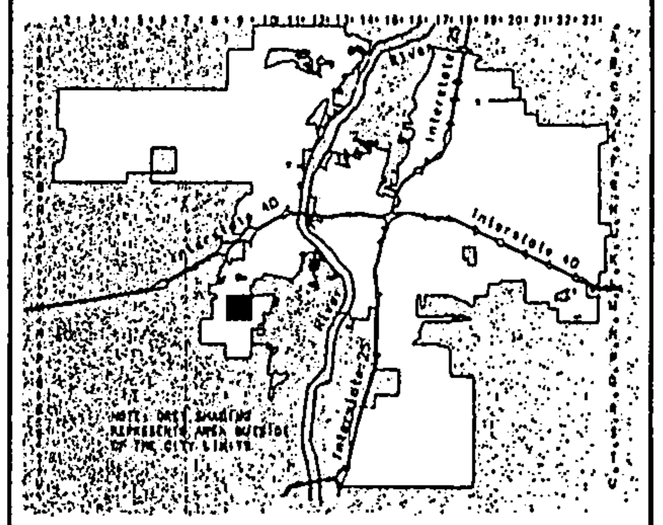
PLANNING DEPARTMENT

© Copyright 1998

N W E S

GRAPHIC SCALE IN FEET

250 0 500 1000



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: dmg@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" (SSR)
- 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 98 ☐ 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.

dmg
D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 1 OF ____

REVISED 3-20-00

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)

BASIN 1

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

unit 1 - 63
unit 2 { 23, 28, 42 }
156

- FIND PER LOT RUNOFF

26.4860 − 2.1699 = 23.3161 AC

PAD SIZE = 56'x28' = 1568
DRIVE PAD = 20'x20' = 400
1968 x 156 = 7.0479 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 AHYMO OUTPUT SHEETS 11-13

Q = 76.76 CFS

Q PER LOT = 76.76/156 = 0.4921 CFS

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 3-20-00
CHECKED _____ DATE _____
SHEET 2 OF ____

where is calc for d = .33' & BGL & pl elev?

PER SHEET 3 OF THE (SSR)

- MOUNTABLE C+G CAPACITY AT 2% = Q½ = 8.4 CFS

NUMBER OF LOTS THAT DRAIN = 2 × 8.4/0.4921 = 34.14

- TRANSITION FROM MOUNTABLE C+G TO STD C+G WILL OCCUR ON GOLDEN VIEW DRIVE.

- NUMBER OF LOTS FROM SOUTH = 28 AT 2%
  TRANSITION WILL OCCUR AT LOT 1, BLK 1 AND LOT 11, BLK 2

- NUMBER OF LOTS FROM NORTH = 27 AT 2%
  TRANSITION WILL OCCUR AT LOT 42, BLK 1 AND LOT 9, BLK 2

PER SHEET 4 OF THE SSR

d = ?
egl = ?

- STD C+G CAPACITY AT 1% = Q = 47.53 CFS

NUMBER OF LOTS THAT DRAIN = 47.53/0.4921 = 96.59

PER SHEET 6 OF THE SSR

- STD C+G CAPACITY AT 2% = Q = 38.545 CFS

NUMBER OF LOTS THAT DRAIN = 38.545/0.4921 = 78.33

- DETERMINE IF WATER WILL JUMP CURB AT SILVER SPUR AND BARRANCA.

Q = 63 × 0.4921 = 31.00 CFS

INTERSECTION IS FLAT S = 0.0% WITH A CROWN ALONG SILVER SPUR TO SPLIT THE FLOW

FIND d JUST BEFORE INTERSECTION S = 1.8% n = 0.017

d = 0.46
WP = 32.92
A = 7.05
V = 4.20 F/s
Q = 29.59 CFS ≯ 30.00 CFS OK

$d + \frac{V^2}{2g} = 0.73 < 0.67 + 0.33$ OK

ACTUAL d WILL BE LOWER BECAUSE WATER WILL SPREAD OUT WHEN IT ENTERS THE INTERSECTION AND SLOW DOWN BECAUSE THE INTERSECTION FLATTENS AND SLOPES AWAY.

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 3 OF ____

REVISED 3-20-00

Street Calcs?

Slope = 3%

• FIND d ON Silverado (71.5 LOTS)

Q = 35.19 CFS S = 2.0% n = 0.017

down stream Storm drain?

d = 0.48
WP = 32.96
A = 7.69
V = 4.685 F/S
Q = 36.03 CFS ≈ 35.19 CFS OK

• USE 2 DBL A INLETS — ONE ON EACH SIDE OF THE ROAD AT LOT 20, BLK 5

FROM NOMO SHEET 9

Q = 9.0 CFS

Q PAST INLETS

35.19 − 2(9.0) = 17.19 CFS

• FIND d ON WATERS (78.5 LOTS)

Q = 38.63 CFS S = 1.0% n = 0.017

d = 0.55
wp = 33.10
A = 9.93
V = 3.917 F/S
Q = 38.90 CFS ≈ 38.63 CFS OK

• USE 2 "DBL A" INLETS — ONE AT LOT 28, BLK 3 AND ONE AT LOT 27, BLK 4.

FROM NOMO SHEET 9

Q = 8.2 CFS

Q PAST INLETS

38.63 − 2(8.2) = 22.23 CFS

• FIND Q AT Silverado AND BENEVIDEZ

Q = 17.19 + 22.23 + 6(0.4921)

= 42.37 CFS

• FIND d = 0.56 S = 1.0%

wp = 33.12
A = 10.33
V = 4.02 F/S
Q = 41.53 CFS ≈ 42.37 CFS OK

egl, .81'

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 4 OF ____

REVISED 3-20-00

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") Storm drain design

- DETERMINE RUNOFF IN BARBADOS (BOTH SIDES ARE BUILT)
  WE WILL HAVE TO ADD AREA OUTSIDE OF THE LIMITS OF THIS PROJECT

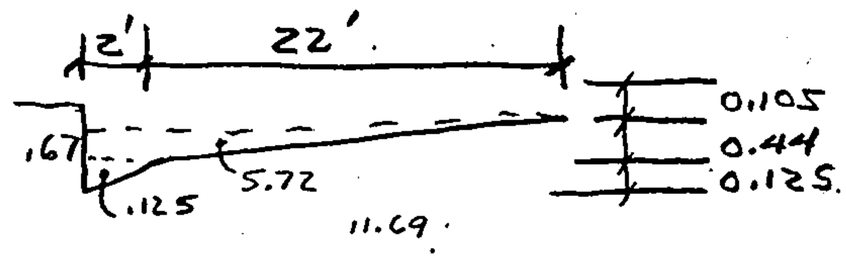
BASIN 1+2

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 AHYMO 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
V½ = 3.714 F/s
Q½ = 4.61 CFS ≈ 8.95/2 = 4.475 CFS OK

- FIND d IN BARBADOS JUST PAST BENEVIDES

Q = 8.95 + 42.37 = 51.32 CFS S = 1.0%

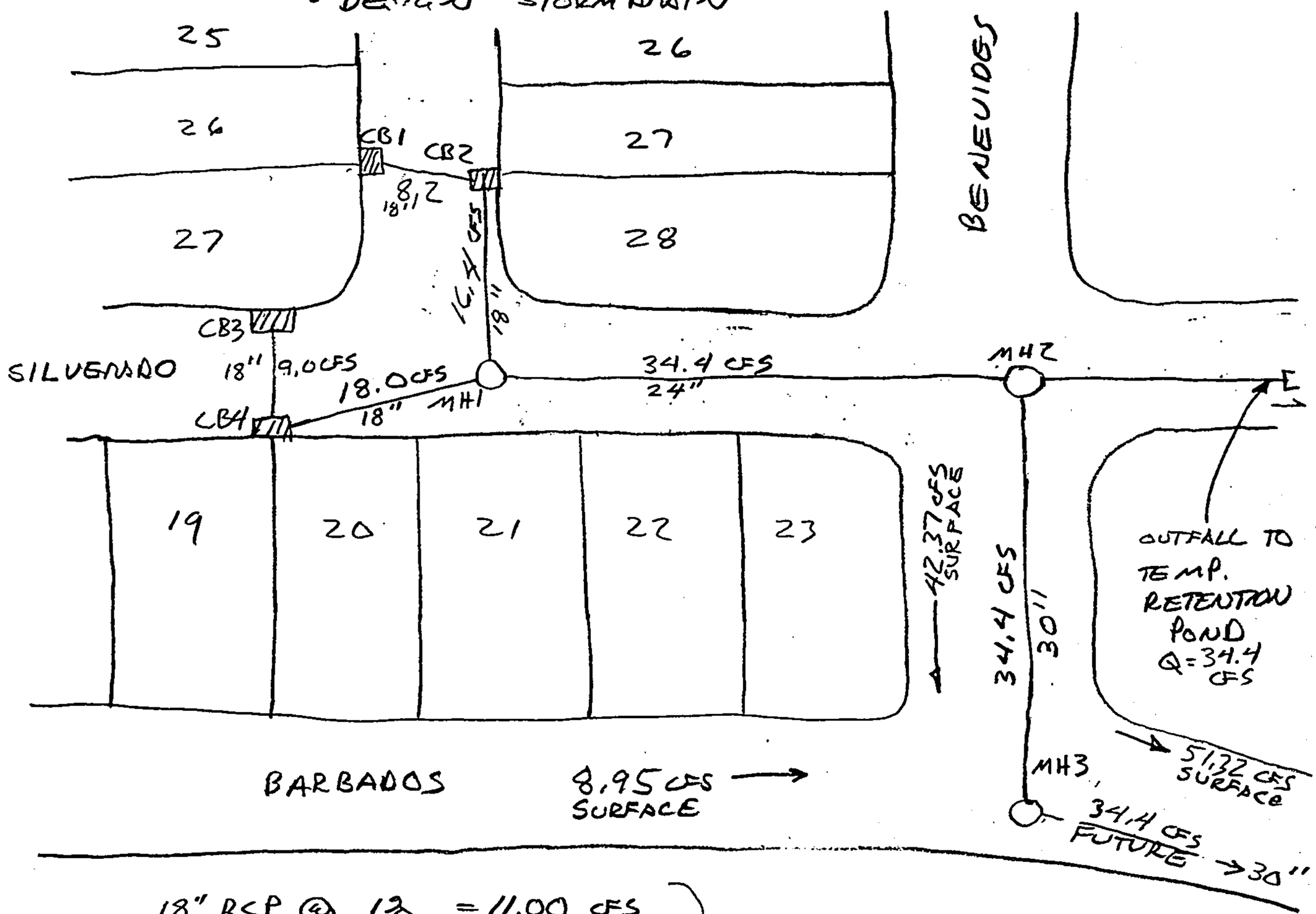
d = 0.48
wp = 48.96
A = 13.61
V = 3.723 F/s
Q = 50.67 CFS ≈ 51.32 OK

$d + \frac{V^2}{2g} = 0.70 < 0.67 + 0.33$ OK

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 5 OF ____

• DESIGN STORM DRAIN



18" RCP @ 1% = 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

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GSK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 6 OF ____
REVISED 3-20-00

• DESIGN CHANNEL FROM SILVER SKY CT TO GOLDEN VIEW DRIVE.

$Q = 3 \times 0.5068$
$= 1.52$ 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

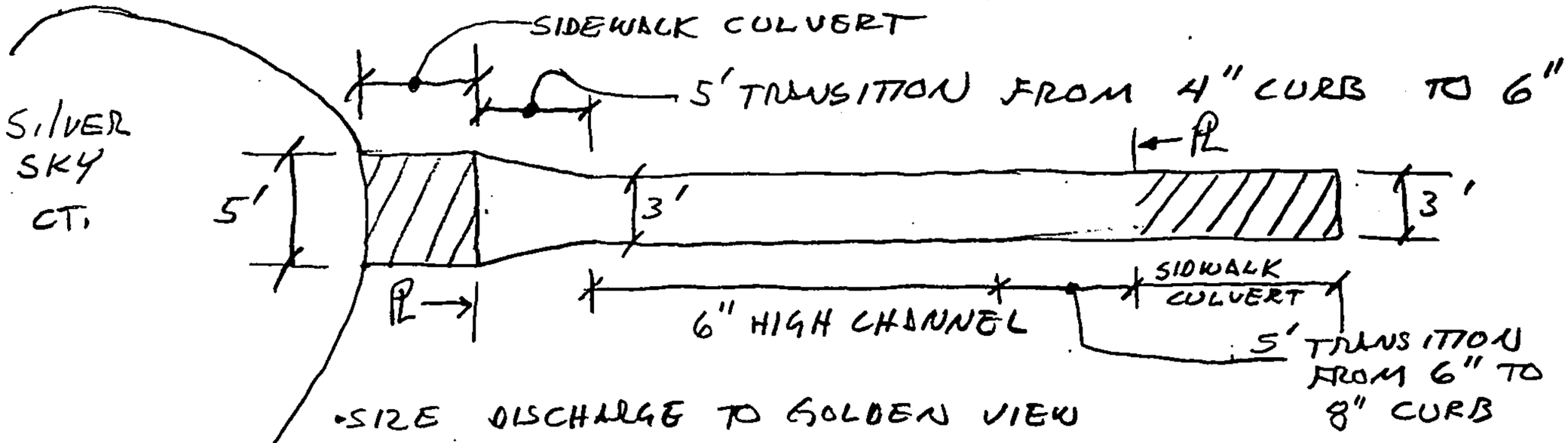
Channel per City Standard?

$d = .33$
$WP = 3.67$
$A = 1.0$
$V = 9.61$ F/s
$Q = 9.61$ CFS = CAPACITY

FIND ACTUAL d

$d = 0.104$
$WP = 3.208$
$A = 0.3125$
$V = 4.84$ F/s
$Q = 1.51$ CFS $\approx$ 1.52 CFS OK

$V^2/2g = 0.47 > 0.33$ USE 6" TALL CHANNEL



• SIZE DISCHARGE TO GOLDEN VIEW

$d = 0.13$ 3' WIDE $S = 2\%$ 8" TALL

$WP = 3.36$
$A \cdot 0.39$
$V = 3.85$ F/s
$Q = 1.50$ CFS $\approx$ 1.52 CFS OK

$d + V^2/2g = 0.13 + 0.23 = 0.36 < 0.67$ OK

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

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 (ON TRACT "C")

FROM AHYMO OUTPUT

V = 2.6199 AC-FT

$$V_{100-10d} = 2.6199 + 12.105\left(\frac{3.67-2.2}{12}\right) = V_6 + A_0\left(\frac{P_{10d} - P_6}{12}\right)$$

$$= 2.6199 + 1.4829$$

$$= 4.1028 \text{ AC-FT}$$

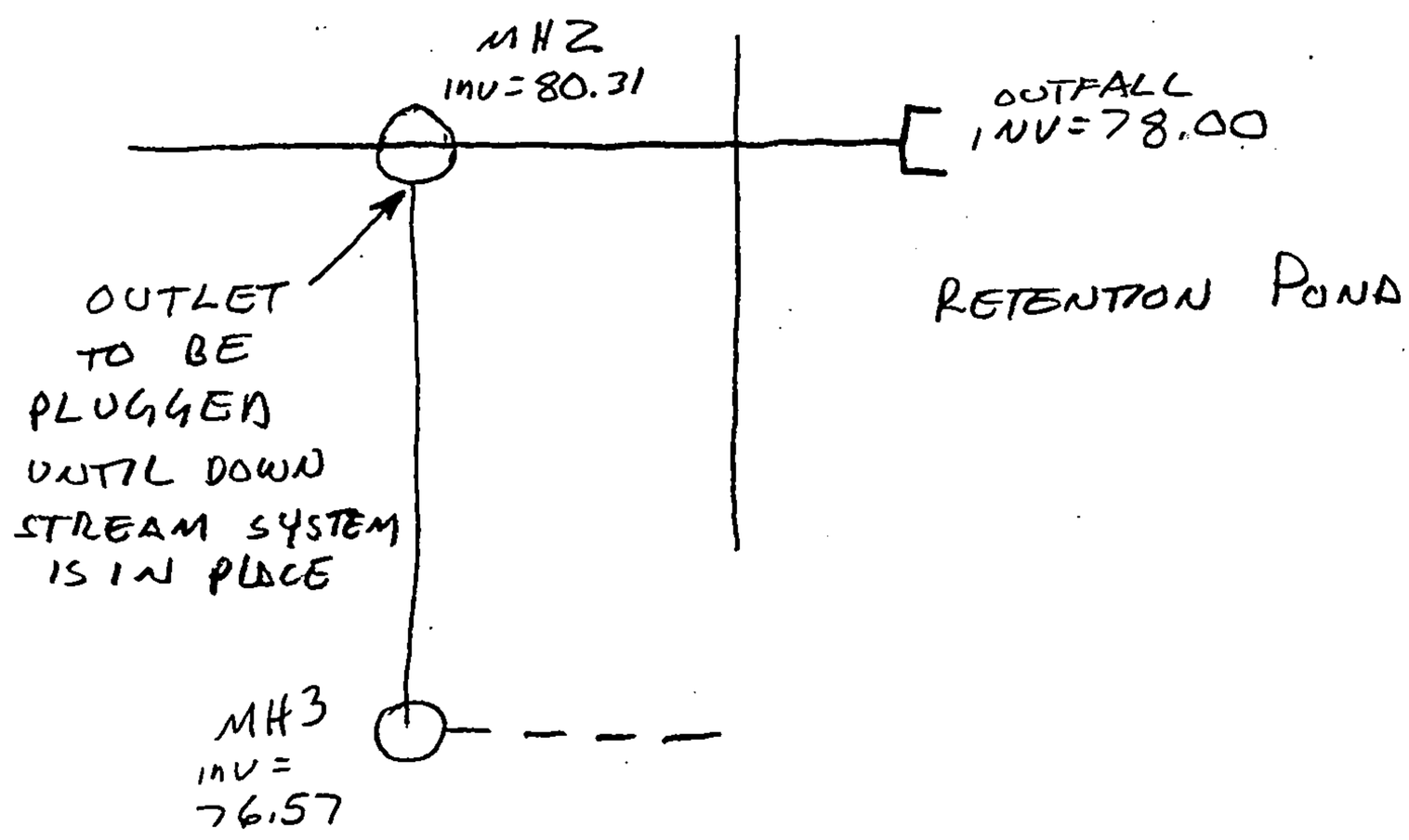
REQ. POND VOLUME = 178,716 CF

ELEV	AREA (SF)	VOLUME (CF)
78	170 x 70 = 11,900	0
79	176 x 76 = 13,376	12,638
80	182 x 82 = 14,924	26,788
81	188 x 88 = 16,544	42,522
82	194 x 94 = 18,236	59,912
83	200 x 100 = 20,000	79,030
84	206 x 106 = 21,836	99,948
85	212 x 112 = 23,744	122,738
86	218 x 118 = 25,724	147,472
87	224 x 124 = 27,776	174,222
88	230 x 130 = 29,900	203,060

← WATER SURFACE ELEVATION FOR 178,716 IS = 87.16

Tract C? where?

THE 24" RCP WILL EXTEND ACCROSS BENEVIDES INTO THE POND



D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT CENTEX SILVERADO
SUBJECT DRAINAGE CALCS
BY GJK DATE 11-23-99
CHECKED _____ DATE _____
SHEET 8 OF ____

REVISED 3-20-00

• SIZE TEMPORARY RETENTION POND FOR UNIT 1 (ON TRACT "B")

V= 63 LOTS/156 (4.1028 AC-FT)
= 1.6569 AC-FT
= 72,175 CF

100-yr
10-day?

ELEV	AREA (SF)	VOLUME (CF)
97.00	170x70 = 11,900	0
98.00	176x76 = 13,376	12,638
99.00	182x82 = 14,924	26,788
5100.00	188x88 = 16,544	42,522
01.00	194x94 = 18,236	59,912
02.00	200x100 = 20,000	79,030

← WATERSURFACE 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.

• SIZE TWO STORMDRAIN OUTFALLS TO THE SNOW VISTA CHL.

BASIN 3 = 1.27 AC 100% B

BASIN 4 = 5.90 AC 63% B 37% D

BASIN 4 WILL BE SPLIT IN HALF SO RUNOFF GOES TO TWO INLETS

FROM AHYMO OUTPUT SHEETS 17-22

BASIN 3 Q = 2.63 CFS

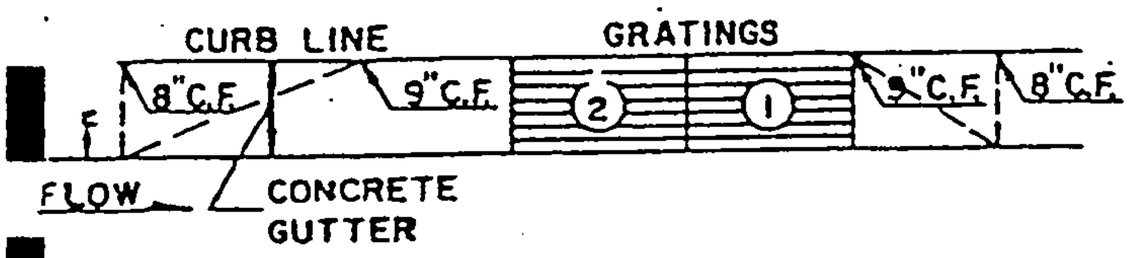
BASIN 4 Q = 17.31 CFS Q½ = 8.655 CFS

INLETS WILL BE IN SUMP CONDITION

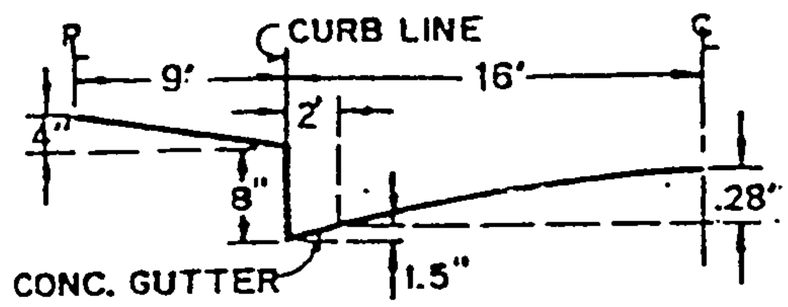
FOR BASIN 3 USE 18" RCP AT 0.9%
CAPACITY FROM NOMO SHEET 10 = 10.0 CFS

FOR BASIN 4 USE 24" RCP AT 1.18%
CAPACITY FROM NOMO SHEET 10 = 24.0 CFS

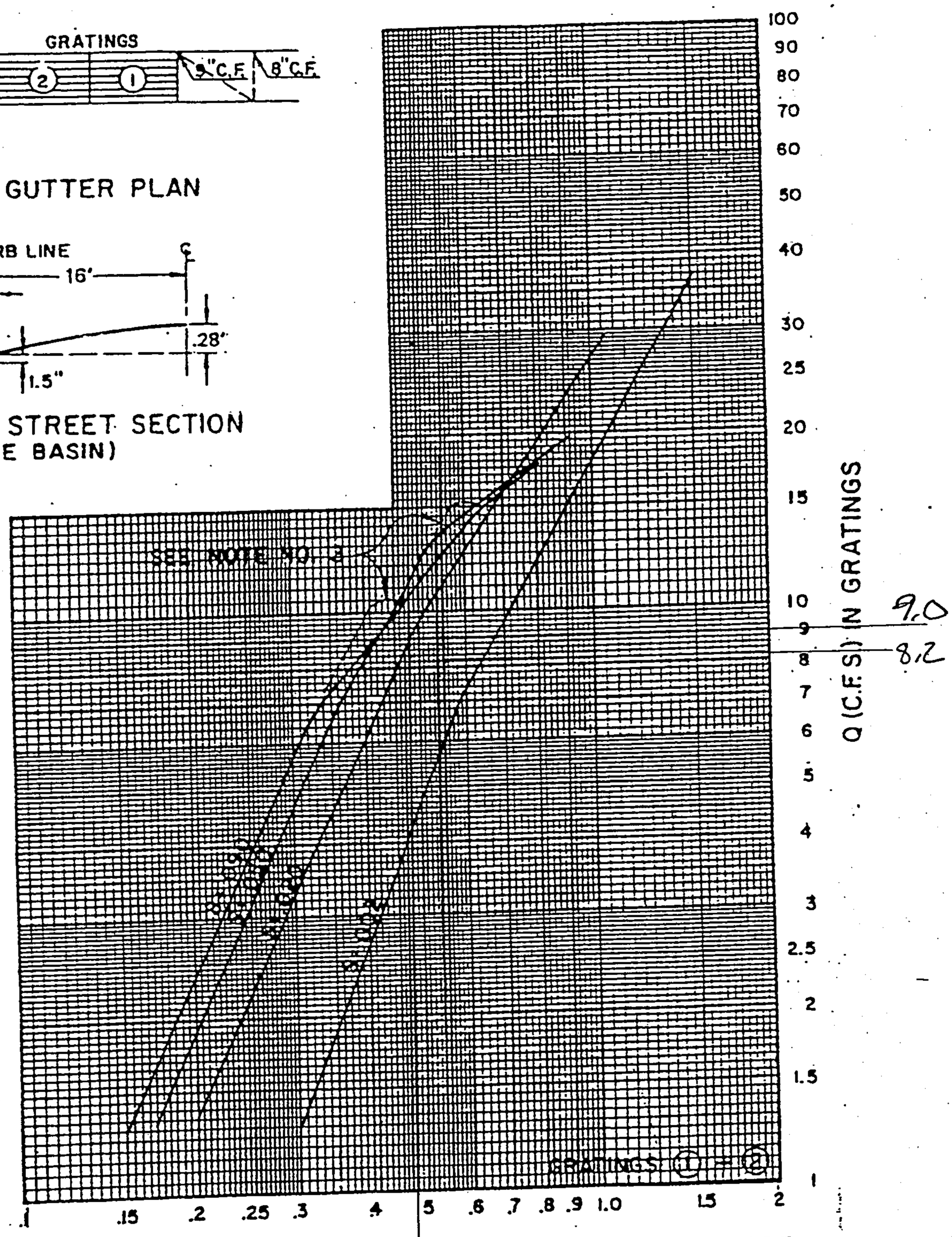
GRATING CAPACITIES FOR TYPE DOUBLE "A", "C," AND "D"



GRATING & GUTTER PLAN

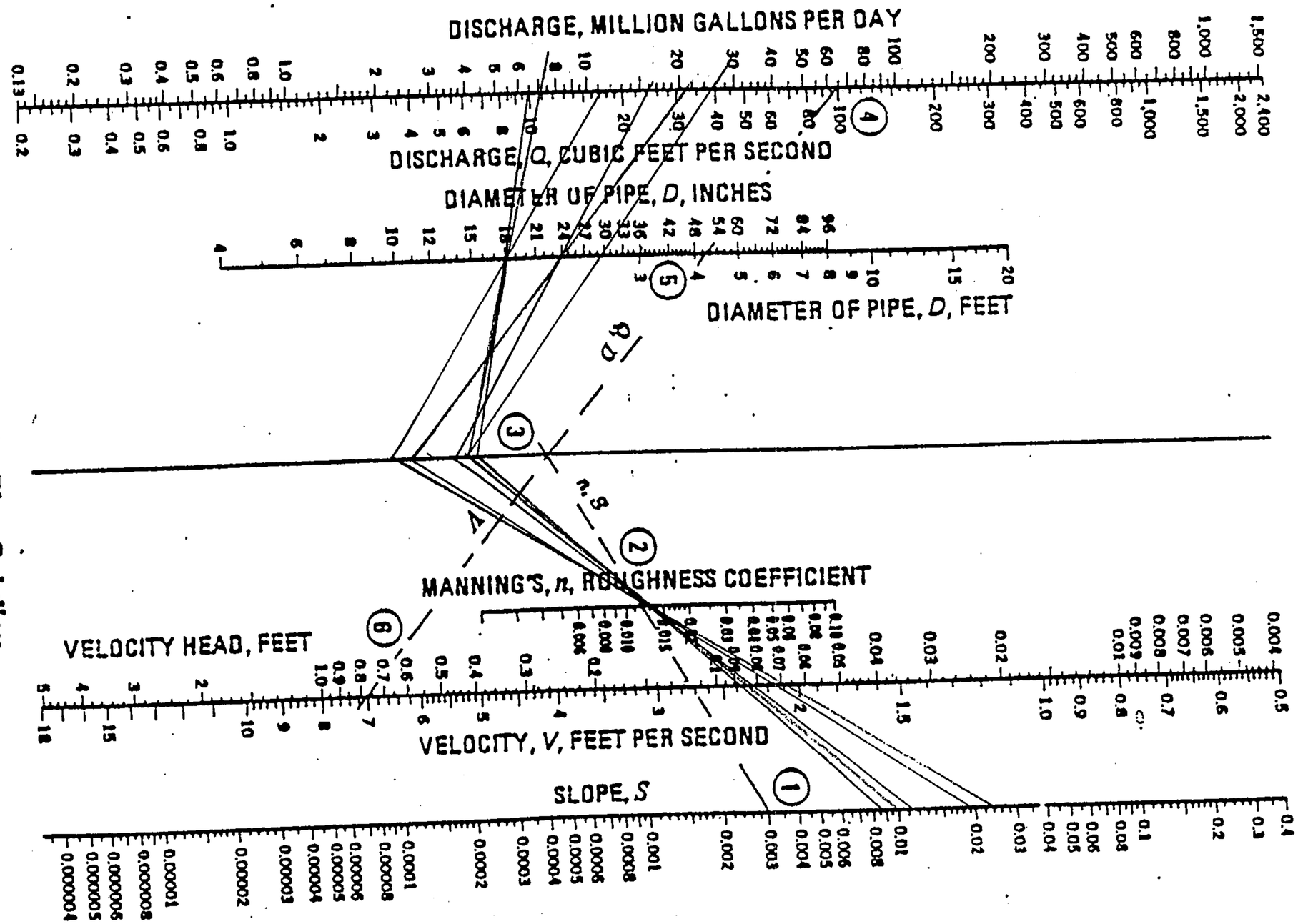


TYPICAL HALF STREET SECTION
(ABOVE BASIN)



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

.48 .55



B) Circular Pipe Solution

Reference: American Concrete Pipe Association (1980).

10

```
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

                                        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

                                        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
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 3
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=0.001984 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) = 03/21/2000
             START TIME (HR:MIN:SEC) = 08:15:46     USER NO.=
M_GOODWN.I01
             INPUT FILE = SVBSW.DAT

     START                  TIME=0.0
     ***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 3
     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=0.001984 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 =    4.8752    CFS   UNIT VOLUME =    .9975       B =
327.55      P60 = 1.9000
         AREA =       .001984 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     =        .0721 ACRE-FEET
         PEAK DISCHARGE RATE =       2.63 CFS  AT   1.533 HOURS   BASIN
AREA =   .0020 SQ. MI.


     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:15:46
```

```
START                    TIME=0.0
***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 4
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=0.009219 SQ MI
                         PER A=0 B=63 C=0 D=37
                         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) = 03/21/2000
               START TIME (HR:MIN:SEC) = 08:17:49     USER NO.=
M_GOODWN.I01
               INPUT FILE = SV.DAT

     START                    TIME=0.0
     ***** HYDROGRAPH FOR SILVERADO - SNOW VISTA RUNOFF BASIN 4
     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=0.009219 SQ MI
                          PER A=0 B=63 C=0 D=37
                          TP=0.1333 HR MASS RAINFALL=-1

         K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
         UNIT PEAK =   13.467    CFS   UNIT VOLUME =    .9985       B =
526.28      P60 = 1.9000
         AREA =      .003411 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 =   14.272    CFS   UNIT VOLUME =    .9994       B =
327.55      P60 = 1.9000
         AREA =      .005808 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 =     1.15660 INCHES     =        .5687 ACRE-FEET
         PEAK DISCHARGE RATE =      17.31 CFS  AT   1.500 HOURS   BASIN
AREA =   .0092 SQ. MI.


     FINISH

         NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 08:17:49
```

City of Albuquerque

March 15, 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 Silverado Subdivision (M9/D20), Engineer's Stamp Dated 11/29/99 in Report, and Plans Dated 2/10/00.

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. This plan proposes a 3' wide concrete channel located between residential lots to drain the Silver Sky Court stub street to Silver Spur Avenue. This proposed channel will receive public waters, therefore this channel must be built to City standards to be maintained by the City. Please revise the channel to have the standard 10' bottom width, or revise the plan to eliminate this channel.

2. Please provide the on-site drainage basin map showing the sub-basins. Where is the basin referenced on Sheet 1 that is removed from the per lot runoff area?

3. The calculations in the report are difficult to follow. Provide analysis points to show the locations where mountable curbs change to standard curbs and where inlets are required. Provide the street slopes on the plan. Also address the potential for hydraulic jumps at the T-intersections of the streets. This is especially needed where Silver Spur Avenue intersects Barranca Drive.

4. The proposed ultimate street grades for Snow Vista Boulevard must be provided on the plan. Are the grades at the intersection of 86th Street and the temporary Snow Vista road compatible with the proposed grades for the future bridge over the Snow Vista Channel?

5. The drainage report did not address the stability of the existing Snow Vista Channel. Is this channel lined adjacent to the subdivision? Are channel improvements required? AMAFCA approval is required for all proposed connections to this channel.

6. Provide the off-site drainage basin map. The proposed grading between Snow Vista Boulevard and the subdivision indicates that a concrete block wall is needed along the western edge of the property to protect the subdivision against off-site runoff. This minor runoff should be directed onto 86th street, not into an inlet.

THE CITY OF ALBUQUERQUE IS AN EQUAL OPPORTUNITY/REASONABLE ACCOMMODATION EMPLOYER

March 15, 2000

7. Please revise the Typical Lot layout Section on the plan to provide dimensions to verify that the slopes for the side yard swales are no steeper than 3:1.

8. Where are the proposed inlets located on Rodeo Avenue? These must be shown on the plan. The overall storm drain layout is not clear. Please provide street names for clarity.

9. Provide existing elevations around the perimeter of the site. It appears that block walls are needed along the northern property line to prevent the lots to the north from draining into the site. The plan also shows proposed grading on the property south of 86th Street. Permission from the adjacent property owner must be provided prior to Preliminary Plat approval for this off-site grading.

The drainage report was difficult to follow and review since a previous report was attached and referenced. One comprehensive drainage report should be provided for both this subdivision and for El Rancho Grande Subdivision. Please revise this.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan Calongne

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

c: Walter Tilley, Centex
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Centex Silverado ZONE ATLAS#: M-9 P20

DRB#: 00410-00000-00219 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Tracts A and B, Albuquerque South, Unit 4

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik, PE
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Centex	CONTACT:	Walter Tilley
ADDRESS:	6700 Jefferson NE, Building B, Albq., NM 87109	PHONE:	761-9606
ARCHITECT:		CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:		CONTACT:	
ADDRESS:		PHONE:	
CONTACTOR:		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 APRROVAL
X PRELIMINARY PLAT APRROVAL
___ 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:

Gregory J. Krenik, PE

RECEIVED
FEB 25 2000
HYDROLOGY SECTION

DRAINAGE REPORT

for

CENTEX — SILVERADO

RECEIVED
FEB 25 2000
HYDROLOGY SECTION

Prepared By

Mark Goodwin & Associates, PA
P.O. Box 90606
Albuquerque, NM 87199

GREGORY JAMES KRENK
NEW MEXICO
11929
11-29-99
REGISTERED PROFESSIONAL ENGINEER

November 1999

FAX

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
DEVELOPMENT AND BUILDING SERVICES
(ONE STOP SHOP)
600 2ND STREET - PLAZA DEL SOL - 2ND FLOOR WEST
FAX NO. 924-3864

DATE: 3-13-00

TIME:

NO. OF PAGES: 3
(INCLUDING COVER PAGE)

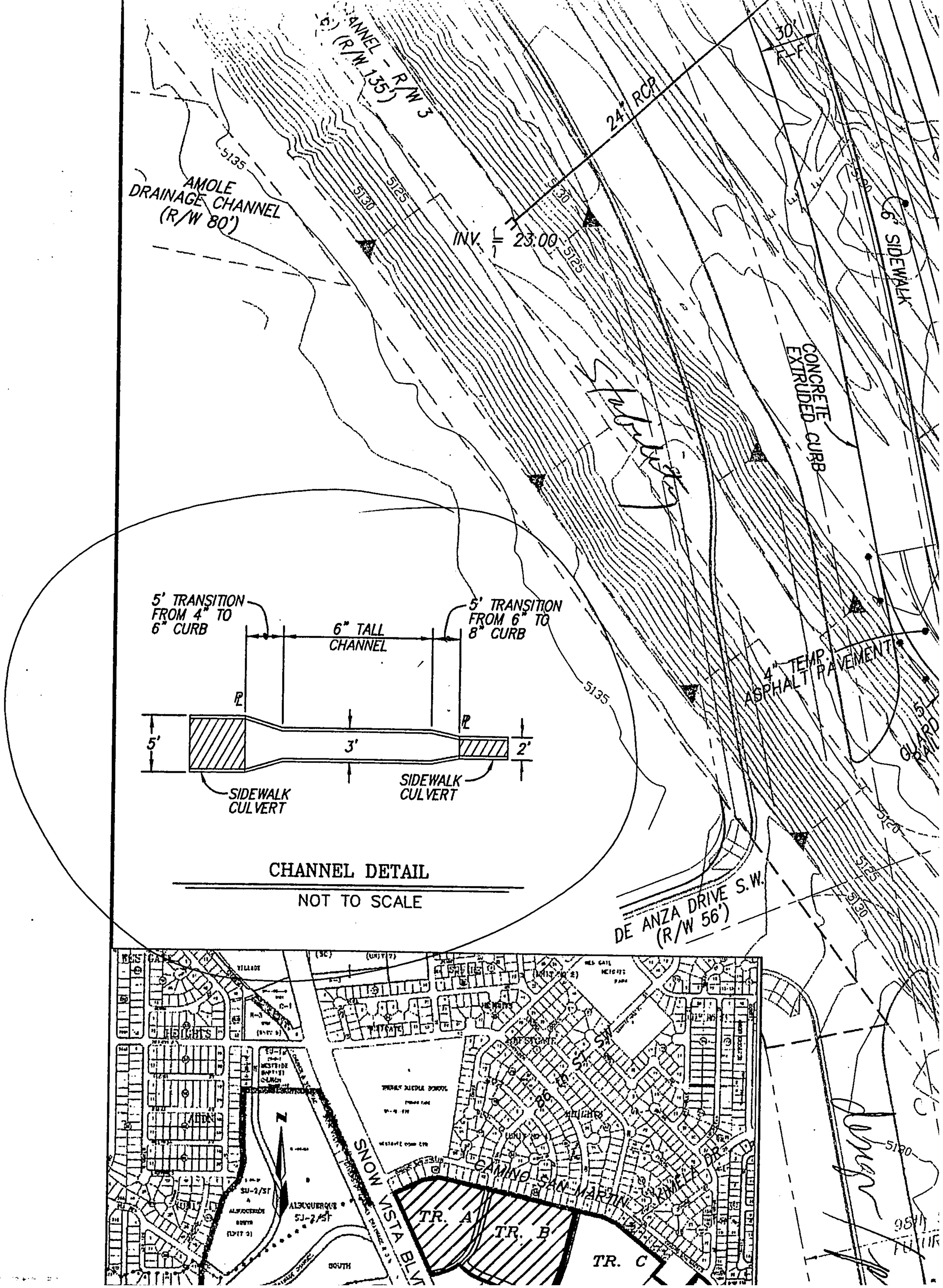
TO: GLENN JURGENSEN

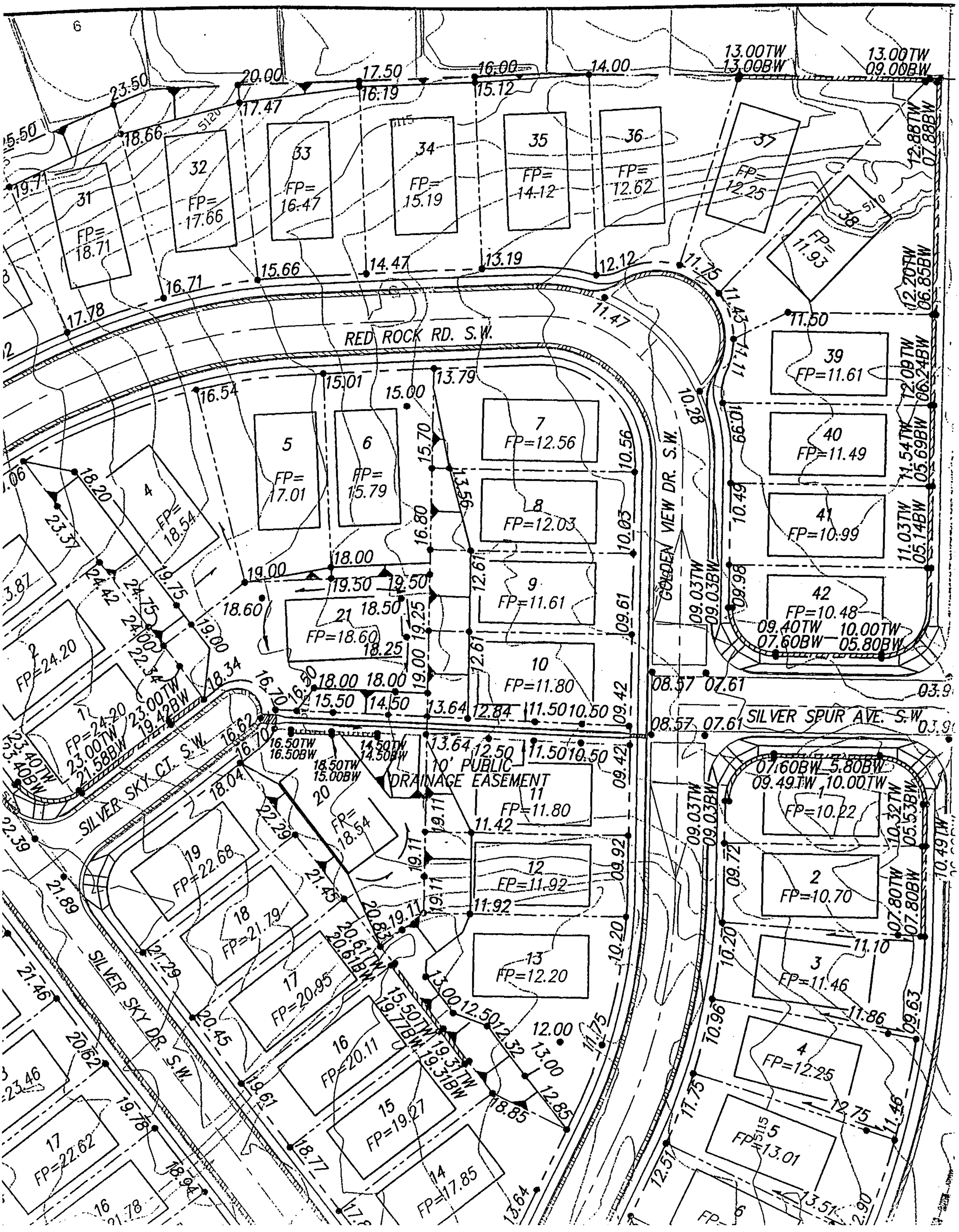
FROM: SUSAN CALONGNE

COMMENTS:

GREG KRENIK IS PROPOSING TO PUT A 3' WIDE CHANNEL BETWEEN LOTS TO DRAIN A STUB STREET (SILVER SKY CT.) SINCE THIS IS PUBLIC WATERS AND WILL BE MAINTAINED BY US - I'm TELLING HIM TO CHANGE THE CHANNEL TO MAKE IT 10' WIDE. HE CLAIMS YOU OK'd the 3' CHANNEL, SO I'M CHECKING. PLEASE CALL ME AT 924-3982

— Sue


AMOLE DRAINAGE CHANNEL (R/W 80')
CHANNEL - R/W 3 (R/W 135')
24" RCP
INV. = 23.00
30'
6' SIDEWALK
CONCRETE EXTRUDED CURB
4" TEMP. ASPHALT PAVEMENT
DE ANZA DRIVE S.W. (R/W 56')
5135
5130
5125
5120
5' TRANSITION FROM 4" TO 6" CURB
6" TALL CHANNEL
5' TRANSITION FROM 6" TO 8" CURB
5'
3'
2'
SIDEWALK CULVERT
SIDEWALK CULVERT
CHANNEL DETAIL
NOT TO SCALE
SNOW VISTA BLVD.
CAMINO SAN MARTIN
TR. A
TR. B
TR. C
ALBUQUERQUE
SOUTH


RED ROCK RD. S.W.
GOLDEN VIEW DR. S.W.
SILVER SPUR AVE. S.W.
SILVER SKY CT. S.W.
SILVER SKY DR. S.W.
10' PUBLIC DRAINAGE EASEMENT
31 FP=18.71
32 FP=17.66
33 FP=16.47
34 FP=15.19
35 FP=14.12
36 FP=12.62
37 FP=12.25
38 FP=11.93
39 FP=11.61
40 FP=11.49
41 FP=10.99
42 FP=10.48
5 FP=17.01
6 FP=15.79
7 FP=12.56
8 FP=12.03
9 FP=11.61
10 FP=11.80
11 FP=11.80
12 FP=11.92
13 FP=12.20
4 FP=18.54
21 FP=18.60
2 FP=24.20
1 FP=24.20
20 FP=18.54
19 FP=22.68
18 FP=21.79
17 FP=20.95
16 FP=20.11
15 FP=19.27
14 FP=17.85
17 FP=22.62
16 FP=21.78
1 FP=10.22
2 FP=10.70
3 FP=11.46
4 FP=12.25
5 FP=13.01
6

CITY OF
Albuquerque

October 27, 1998

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

RE: Additional Comments Regarding the Revised Drainage Report and Grading and Drainage Plan for Silverado Subdivision (M9/D20), Engineer's Stamp Dated 9/30/98.

Dear Mr. Krenik:

The above referenced plans indicate that Unit 3 of the Silverado Subdivision discharges a small amount of runoff to Camino San Martin Road. When Unit 3 is constructed, the Silverado Subdivision will be responsible for the storm drainage improvements needed in Camino San Martin adjacent to your property, down to the outfall at the City Pond.

When the Infrastructure List is revised for Units 2 or 3 to address the comments of my letter of October 26, 1998, these storm drain improvements must be included.

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

Sincerely,

Susan Calongne

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

c: Tom Joseph, Thunder Development
File

CITY OF
Albuquerque

October 26, 1998

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

RE: Revised Drainage Report and Grading and Drainage Plan for Silverado Subdivision (M9/D20), Engineer's Stamp Dated 9/30/98.

Dear Mr. Krenik:

Based on the information provided, the above referenced Drainage Report and Grading and Drainage Plans are approved for Preliminary Plat action.

It appears that some of the street flows in Nevis Drive were not accounted for in the storm drain calculations. This may be corrected, and the storm drain sizes may be revised, prior to Final Plat or Work Order approval for Units 2 or 3. The infrastructure list may also be revised if the pipe sizes change.

As you are aware, the Grading and Drainage Certification is required prior to release of financial guarantees for each Unit. Agreement and Covenants are required for each of the temporary ponds.

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

Sincerely,

Susan Calongne

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

c: Tom Joseph, Thunder Development
File

CITY OF
Albuquerque

October 13, 1998

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

RE: Addendum to the Master Drainage Plan for the Rio Bravo Sector Plan, Engineer's Stamp Dated 9/21/98.

Dear Mr. Krenik:

Based on the information provided in the submittal of September 24, 1998, the above referenced Addendum to the Master Drainage Plan is approved.

All development within this area must be in compliance with this approved Master plan.

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

Sincerely,

Susan Calongne

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

c: File

CITY OF
Albuquerque

September 16, 1998

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 Silverado Subdivision (M9/D20), Engineer's Stamp Dated 8/25/98.

Dear Mr. Krenik:

It appears that the above referenced submittal did not satisfy the comments from my letter of August 6, 1998. Prior to approval for Preliminary Plat action for Silverado subdivision, the Addendum to the Rio Bravo Master Drainage Plan must be approved. Therefore, this submittal will not be reviewed in detail at this time.

All ultimate street and drainage facilities adjacent to this subdivision must be designed at this time. All drainage easements for interim improvements between the Units in this subdivision and all off-site easements must be identified at this time.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan Calongne

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

c: File

CITY OF
Albuquerque

September 16, 1998

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

RE: Addendum to the Rio Bravo Master Drainage Plan, Engineer's Stamp Dated 8/25/98.

Dear Mr. Krenik:

It appears that the above referenced submittal did not satisfy the comments from my previous letter. Prior to approval of the revised master plan, the following comments must be addressed:

1. This revised master plan must include the existing contours. Your letter stated that a swale from the west had been cut off, however, a contour map was not provided.

2. The master plan must identify the drainage improvements needed for this area, not the responsibility for these facilities. The responsibility for construction comes as a result of development, and will be determined by the DRB.

3. With respect to the proposed detention pond in the Unser right-of-way, how do your pond elevations compare with the work order plans for the current pond construction?

4. Unser is under construction from Arenal through the Gibson intersection, and has been graded south to Blake road. Your plan must address the street flows in Unser Boulevard, and the existing and proposed (preliminary) street grades must be included in this plan.

5. Has AMAFCA approval been obtained for this master plan?

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan Calongne

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

c: File

CITY OF
Albuquerque

August 10, 1998

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

RE: Addendum to the Rio Bravo Master Drainage Plan, Engineer's Stamp Dated 7/22/98.

Dear Mr. Krenik:

With respect to the above referenced master plan revision, the following comments must be addressed prior to approval:

1. The master plan proposes a permanent detention pond within a triangular piece of land adjacent to Unser. There must be a drainage easement for this pond or documentation from the owner granting permission to use this land for a permanent pond.

2. The addendum to the master plan must show the existing contours. The old Rio Bravo plan showed an existing swale from the west crossing the Snow Vista right-of-way and entering Basin B-1. Has this swale been diverted to the south within the Snow Vista right-of-way? Where does the Snow Vista channel end? Does the area between Basin B-1 and the Snow Vista drain east?

3. It appears that the drainage basins did not account for the street flows within Unser Boulevard and the pond itself. Please show on the basin map the location of the existing church. Where does it drain? Does the parcel of land south of the church drain into the proposed permanent pond?

4. Is Tract "A" within drainage basin B-2? Is the Park in Basin B-9? Please label Blake road on the basin map and note the locations of the adjacent subdivisions.

5. It appears that storm drain line 3A may be able to discharge directly into the proposed permanent pond, thus saving lines 1A and 2A.

6. How do the proposed pond elevations relate to the proposed street grades in Unser?

August 10, 1998

7. Has AMAFCA reviewed this revised Master Drainage Plan? Since a portion of this area drains back into the Snow Vista channel, AMAFCA approval is required.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan Calongne

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

c: DRB-98-57
Lisa Ann Manwill, Albuquerque Metropolitan Arroyo Flood Control Authority
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Silverado Subdivision ZONEATLAS/DRNG,FILE#: M-9

DRB#: 98-57 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Parcels 11 & 12, Albuquerque South, Unit 4, Tracts A, B, C & D, Town of Atrisco Grant.

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik, PE
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Thunder Development	CONTACT:	Tom Joseph
ADDRESS:	3 Calle Pinon, Placitas, NM 87043	PHONE:	771-8758
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	Aldrich Land Surveying	CONTACT:	Tim Aldrich
ADDRESS:	P.O. Box 30701, Albuquerque, NM 87190-0701	PHONE:	884-1990
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
X SIDEWALK VARIANCE
X EASEMENT VACATION - SAS EASEMENT

CHECK TYPE OF APPROVAL SOUGHT:

SKETCH PLAT APRROVAL
X PRELIMINARY PLAT APRROVAL
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

PRE-DESIGN MEETING:

X YES
NO
COPY PROVIDED

Approved Drainage Report is Bound in Section J of the Rio Bravo Addendum to the Sector Plan - Part B (dated 9-30-98) on file

DATE SUBMITTED: 9-22-98

BY: Gregory J. Krenik, PE

RECEIVED SEP 22 1998 HYDROLOGY SECTION

SUSAN!

I'VE ASSEMBLED THE SILVERADO REPORT FOR YOU SO YOU SEE IT AS IT SHOULD BE - COMPLETE.

sheets 10A + 10B are the calcs for the UNIT 1 AND UNIT 2 PONDS.

Also I've revised sheet 2 per your comments to match the rest of the report.

FAX

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
DEVELOPMENT AND BUILDING SERVICES
(ONE STOP SHOP)
600 2ND STREET - PLAZA DEL SOL - 2ND FLOOR WEST
FAX NO. 924-3864

DATE: 10-13-98

TIME:

NO. OF PAGES: 2
(INCLUDING COVER PAGE)

TO: Greg Krenik

FROM: Susan Calongne

This is assembled

This is done and added to Report

COMMENTS: Greg - To approve Silverado Subd., I need to have a complete report. Per previous comments and meetings, it appears that sheet 2 of the report should also be updated. Here is a copy of my markup. Please revise.

With your 8/25/98 submittal you included a copy of the entire Vista del Sol Mobile Home Park report. Does this need to be bound in this report?? This is assembled

I assume the Silverado report is to be included in the Rio Bravo Master Drainage Plan addendum notebooks. I'll note in file # M9/D20 where to find it.

Silverado is not ready ~~for~~ yet - Still in review

— SMC

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 ____

- THIS SITE IS ADJACENT TO SNOW VISTA BLVD R.O.W.
- FINAL GRADES FOR SNOW VISTA ARE SHOWN ON THE GRADING PLAN ~~NOT COMPLETED OR EVEN THOUGHT ABOUT AT THIS TIME. WE SHOW THE ALIGNMENT PER THE RIO RANCHO SECTOR PLAN FOR THE ROADS. THESE GRADES WILL BE USED AS A BASE TO FINALIZE THE INTERSECTION DESIGN.~~

design comment #4

- 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.~~
- PER THE TRANSPORTATION DEPARTMENT WE WILL BE REQUIRED TO INSTALL A TEMPORARY PAVEMENT SECTION WITH UNIT 1 ALONG OUR WEST PROPERTY LINE. THE FINAL PAVEMENT WILL BE INSTALLED WITH UNIT 4 ~~AND OTHER ROADWAY IMPROVEMENTS.~~

drainage improvements required these are shown on plans

- 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 COMPRIMISED. THE GRADING IN THE ROW AND DISCHARGE TO SNOW VISTA CHANNEL IS NECESSARY TO PREVENT ROW WATER FROM ENTERING THE HOMES BACK YARDS.

MAFCA approval (you have it)

- FOR THIS REPORT A DETENTION POND WILL BE REQUIRED. PER A MEETING WITH SUSAN CALONGNE, FRED AGUIRRE, LISA MANWILL (AMAFCA), FRED ARFMAN (DETENTION POND ENGINEER) AND GREG IRENIK (MGA) IT WAS DECIDED TO BASE THIS REPORT ON USING THE PROPOSED DETENTION POND THAT WILL BE CONSTRUCTED ON CITY PROPERTY.

For final plat not interim

- 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 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. ~~THE PHASE I + II PONDS WILL BE SIZED WHEN THESE GRD PLANS ARE SUBMITTED.~~ FINAL GRADES ARE SHOWN ON THE GRADING PLANS

pond easements & covenants

System/grades must be designed now

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 ____

revise sheet 2

- THIS SITE IS ADJACENT TO SNOW VISTA BLVD R.O.W.

design comment #4

- FINAL GRADES FOR SNOW VISTA ARE NOT COMPLETED OR EVEN THOUGHT ABOUT AT THIS TIME. WE SHOW THE ALIGNMENT PER THE RIO BRAVO SECTOR PLAN FOR THE ROADS.

- 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.

- PER THE TRANSPORTATION DEPARTMENT WE WILL BE REQUIRED TO INSTALL A TEMPORARY PAVEMENT SECTION ALONG OUR WEST PROPERTY LINE. NO OTHER ROADWAY IMPROVEMENTS.

drainage improvements required

AMAFCA approval

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 COMPRIMISED. 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 CALONGNE, FRED AGUIRRE, LISA MANWILL (AMAFCA), FRED ARFMAN (DETENTION POND ENGINEER) AND GREG KRENIK (MGA) IT WAS DECIDED TO BASE THIS REPORT ON USING THE PROPOSED DETENTION POND THAT WILL BE CONSTRUCTED ON CITY PROPERTY.

interim pond easements & covenants

- 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 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. THE PHASE I + II PONDS WILL BE SIZED WHEN THOSE G+D-PLANS ARE SUBMITTED

System/grades must be designed now

MICHAEL MURPHY, CHAIR
TIM EICHENBERG, VICE-CHAIR
LINDA OLMSTED-STOVER, SECRETARY-TREASURER
RONALD D. BROWN, ASST. SECRETARY-TREASURER
DANIEL W. COOK, DIRECTOR

FRANK H. MARTINEZ
EXECUTIVE DIRECTOR

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N.E. - ALBUQUERQUE, N.M. 87107
TELEPHONE (505) 884-2215

September 16, 1998

Gregory Krenik, P.E.
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

RE: SILVERADO SUBDIVISION

Dear Mr. Krenik:

Based on the information provided on your August 25, 1998 submittal and your September 8, 1998 letter the above referenced project is acceptable for Preliminary Plat.

Prior to further approval, you must coordinate the pipe penetrations into the Snow Vista Channel. It is my understanding that the only area being drained to the Snow Vista Channel is Public Right-of-Way.

If I can be of further assistance, please call me at 884-2215

Sincerely,
AMAFCA

Lisa Ann Manwill, P.E.
Development Review Engineer

c: File
cc. SUSAN CALONGNE

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Silverado Subdivision ZONEATLAS/DRNG,FILE#: M-9 / D20

DRB#: 98-57 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Parcels 11 & 12, Albuquerque South, Unit 4, Tracts A, B, C & D, Town of Atrisco Grant.

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik, PE
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Thunder Development	CONTACT:	Tom Joseph
ADDRESS:	3 Calle Pinon, Placitas, NM 87043	PHONE:	771-8758
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	Aldrich Land Surveying	CONTACT:	Tim Aldrich
ADDRESS:	P.O. Box 30701, Albuquerque, NM 87190-0701	PHONE:	884-1990
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
- X SIDEWALK VARIANCE
- X EASEMENT VACATION - SAS EASEMENT

PRE-DESIGN MEETING:

- X YES
- NO
- COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- SKETCH PLAT APRROVAL
- X PRELIMINARY PLAT APRROVAL
- 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

DATE SUBMITTED: 8-25-98

BY:

Gregory J. Krenik, PE

Please place these revisions in the large binders to replace the old sets.

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

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

August 25, 1998

Ms. Susan M. Calongne, PE
City of Albuquerque
Hydrology Department
P.O. Box 1293
Albuquerque, NM 87103

Re: Addendum to Master Drainage Plan for the Rio Bravo Master Plan

Dear Ms. Calongne:

This letter is an itemized response to your letter of August 10, 1998 and part of the resubmittal.

1. *Per our meeting August 20, 1998 with Fred Aguirre, Lisa Manwell, yourself, Fred Arfman and myself it was determined that Fred Arfman representing his client, Curb Inc., will obtain all that is necessary to finalize the detention pond, and that I should design using that pond as my outfall.*

2. *Since this addendum will accompany the original plan we will not show contours. The existing swale is an old arroyo that is not active since being cut off by the Snow Vista Channel. The arroyo to the west intersects the Snow Vista Channel and then continues along its alignment. The Snow Vista Channel ends south of De Anza Dr. and then follows an existing arroyo that is not shaped like the channel. I've included the area between the Snow Vista and B-1 into B-1 and drains southeast.*

3. *The church is a total retention site. Per our meeting on 8/20/98, Fred Arfman said Tract "E" drains to the north. Part of his Desert Flower Unit 3 will drain to the pond. The Unser right of way will either drain to the pond or the south stormdrain or both depending on the grades of Unser Blvd. which is unknown at this time. For this report we will split the right of way in two and drain half to pond and half to the south stormdrain.*

4. *Tract "A" drains within the Silverado Subdivision. The park is Basin B-9. Blake Road has been added.*

5. *We have eliminated old lines 1A and 2A.*

6. *There are not proposed grades on Unser at this time, but the edge of the pond is at least 50 feet from the right of way and the 2-3 foot possible grade difference can easily be taken out in that distance.*

7. *AMAFCA is reviewing this and is copied on all correspondence.*

Please contact me if you have any further questions or comments.

Very Truly Yours,

MARK GOODWIN AND ASSOCIATES, P.A.

Gregory J. Krenik, PE
Vice President

GJK/sb

xc: Lisa Ann Manwill - AMAFCA

f:\silverado\comments.no1

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

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

August 25, 1998

Ms. Susan M. Calongne, PE
City of Albuquerque
Hydrology Department
P.O. Box 1293
Albuquerque, NM 87103

Re: Silverado Subdivision (M9/D20)

Dear Ms. Calongne:

This is an itemized response to your letter of August 6, 1998 and part of the resubmittal.

1. *You and AMAFCA are reviewing this.*

2. *The offsite drainage basin is shown on the map included in the report. Grading is proposed in the PNM easement and is allowed so as not to affect the power pole foundations.*

3. *Tract "A" (which is part of Silverado) runoff is routed through the subdivision therefore no cross-lot easements are required.*

4. *I've included grades on Snow Vista so to have a base to work from. These are not by any means final grades. As part of this project we are to build 25' of pavement along Snow Vista and place it in the correct alignment as much as possible. We will not do any crossing design therefore our pavement is only to access to the north.*

5. *A crossing structure will be required at 86th Street but the final design of the channel is unknown as well as the final alignment of the intersection. ROW needs to be obtained AMFCA and the city should finalize what is to be done at the intersection as well as a time table for when improvements need to be done.*

6. *The zoning boundary is shown on the plat. If we add more lines to the Grading and Drainage Plan you won't be able to see much.*

7. *I've added Q's to the drawings to show the flow in the streets. The flow in the stormdrain is shown in the report. This was done instead of adding more lines as basin boundaries to clog the drawings. Run-off calculations include all streets and the report breaks the flow down to a per lot basis. Pavement on Barbados and part of Benevidas will have a separate financial guarantee because there is no area to pond this water. These roads will get built when the property to the south is developed.*

8. *The lot section is sufficient. See revised details.*

9. *These have been added to the plans.*

10. *You need to use the plans and the calcs at the same time to follow. There is no other way.*

11. *This is shown on the plans. Since we have 2 double "A" inlets with 12' of grate and 18' of throat, the inlets will never be clogged and are sized for 2 - 100 year storms.*

12. *The TW or BW indicate top of wall or bottom of wall elevations. These are the elevations along the adjacent property.*

13. *The letter states easements will be grated for transmission of flow. The proposed easements are shown on sheet 3 of 3 of the plans.*

Please call if you have any questions or concerns.

Sincerely,

MARK GOODWIN & ASSOCIATES, PA

Gregory J. Krenik, PE
Vice President

GJK/st

xc: Lisa Ann Manwill - AMAFCA

f:\\silverad.sub\comments.no2

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Silverado Subdivision, Units 1, 2, 3 and 4

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
		UNIT 1		
24' FE	Res Pvmt Mount C&G (W side) 4' Sdwk (W side)	Benavides Road	Lot 9, Blk 5	Lot 15, Blk 3
24' FE**	Res Pvmt Mount C&G (W side) 4' Sdwk (W side)	Benavides Road	Barbados Avenue	Lot 9, Blk 5
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	St. Nikolai Avenue	86th Street	Barranca Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	St. Nikolai Avenue	Rodeo Avenue
32' FF	Res Pvmt Std C&G (N side) 4' Sdwk (N side)	Rodeo Avenue	Barranca Drive	Benavides Road
32' FF	Res Pvmt Std C&G (S side) * 4' Sdwk (S side)	Waters Drive	Silverado Avenue	Rodeo Avenue

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Silverado Court	Waters Drive
24' FE**	Art Pvmt Std C&G (N side) 4' Sdwk (N side)	Barbados Avenue	86th Street	Benavides Road
24' FE	Art Pvmt Std C&G (E side) 4' Sdwk (E side)	86th Street	Barbados Avenue	North Prop. Line
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Barranca Drive	Silverado Court
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Court	Silverado Avenue	Lot 7, Blk 4
25' EE	Res Pvmt	Snow Vista Blvd	Camino San Martin	86 th St

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Benavides Road	Rodeo Avenue	N Property line
6"	PVC Waterline	Barbados Avenue	entire length	
6"	PVC Waterline	Benavides Road	Barbados Avenue	Jeremiah Place
6"	PVC Waterline	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
6"	PVC Waterline	Silverado Avenue	entire length	
6"	PVC Waterline	Silverado Court	entire length	
6"	PVC Waterline	Waters Drive	entire length	
6"	PVC Waterline	86th Street	St. Nikolai Avenue	N Property line
8"	PVC Waterline	Benavides Road	Jeremiah Place	Rodeo Avenue
8"	PVC Waterline	St. Nikolai Avenue	entire length	
8"	PVC Waterline	Barranca Drive	St. Nikolai Avenue	Rodeo Drive
8"	PVC Waterline	Rodeo Avenue	entire length	
8"	SAS	Benavides Road	Rodeo Avenue	Jeremiah Place
8"	SAS	Jeremiah Place	Benavides Road	Saba Drive
8"	SAS	Saba Drive	entire length	
8"	SAS	Park Terrace Avenue	Saba Drive	Roatan Road
8"	SAS	Roatan Road	entire length	
8"	SAS	St. Kitts Drive	Roatan Road	Brian Avenue
8"	SAS	Brian Avenue	entire length	
8"	SAS	St. Nikolai Avenue	entire length	
8"	SAS	Barranca Drive	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Silverado Avenue	entire length	
8"	SAS	Silverado Court	entire length	
8"	SAS	Waters Drive	entire length	
18",24",30"	RCP Stormdrain	Rodeo Avenue	Lot 7, Blk 3	Benavides Road
18"	RCP Stormdrain	Waters Drive	Lot 1, Blk 5	Rodeo Avenue

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 2		
32' FF	Res Pvmt Std C&G (both sides) 4' Sdwk (both sides)	Rodeo Avenue	Benavides Road	Nevis Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Benavides Road	Nevis Drive (west)
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Nevis Drive (east)	Jeremiah Place	Rodeo Avenue
8' FE	Res Pvmt Mount C&G (E side) 4' Sdwk (E side)	Benavides Road	Lot 9, Blk 5	Lot 1, Blk 6
8' FE**	Res Pvmt Mount C&G (E side) 4' Sdwk (E side)	Benavides Road	Barbados Avenue	Lot 9, Blk 5
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Nevis Drive (west)	Lot 6, Blk 9
24' FE**	Art Pvmt Std C&G (N side) * 4' Sdwk (N side)	Barbados Avenue	Benavides Road	E Property Line
32' FF	Res Pvmt Mount C&G (both sides) 4' Sdwk (both sides)	Nevis Drive (west)	Jeremiah Place	Tract "A"

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Rodeo Avenue	entire length	
6"	PVC Waterline	Nevis Drive (east)	entire length	
6"	PVC Waterline	Barbados Avenue	entire length	
8"	PVC Waterline	Jeremiah Place	Benavides Road	Saba Drive
8"	PVC Waterline	Nevis Drive (west)	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Nevis Drive (east)	entire length	
8"	SAS	Nevis Drive (west)	entire length	
18",30",36"	RCP Stormdrain	Rodeo Avenue	Benavides Road	Nevis Drive (east)
36",42"	RCP Stormdrain	Nevis Drive (east)	Rodeo Avenue	Jeremiah Place
42"	RCP Stormdrain	Jeremiah Place	Nevis Drive (east)	Lot 12 Blk 8

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 3		
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Saba Drive	Lot 14, Blk 9
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Lot 13, Blk 8	Saba Drive
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Saba Drive	Jeremiah Place	Park Terrace Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Park Terrace Avenue	Saba Drive	Roatan Road
25' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (west side)	Park Terrace Avenue	Roatan Road	Lot 7, Blk 10
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Roatan Road	Park Terrace Avenue	St. Kitts Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	St. Kitts Drive	Roatan Road	Lot 38, Blk 6
32' FF	Res Pvmt Mount C&G (both sides) 4' Sdwk (both sides)	Brian Avenue	St. Kitts Drive	Camino San Martin
46' FF	Res Pvmt Std C&G (both sides)	Camino San Martin	Hammerhead	
4'	Sidewalk (S side)	Camino San Martin	Lot 38, Blk 6	Lot 39, Blk 6

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Jeremiah Place	Saba Drive	Lot 14, Blk 9
6"	PVC Waterline	Park Terrace Avenue	Roatan Road	Lot 7, Blk 9
6"	PVC Waterline	St. Kitts Drive	Brain Avenue	Lot 38, Blk 6
8"	PVC Waterline	Saba Drive	entire length	
8"	PVC Waterline	Park Terrace Avenue	Saba Drive	Roatan Road
8"	PVC Waterline	Roatan Road	Park Terrace Avenue	St. Kitts Drive
8"	PVC Waterline	St. Kitts Drive	Roatan Road	Brian Avenue
8"	PVC Waterline	Brian Avenue	entire length	
8"	PVC Waterline	86th Street	Snow Vista Blvd.	St. Nikolai Avenue
8"	SAS	Jeremiah Place	Saba Drive	Lot 14, Blk 9
8"	SAS	Park Terrace Avenue	Roatan Road	Lot 7, Blk 9
8"	SAS	St. Kitts Drive	Brian Avenue	Lot 38, Blk 6
18", 42"	RCP Stormdrain	Saba Drive	entire length	
42"	RCP Stormdrain	Park Terrace Avenue	Saba Drive	Roatan Road
30",42",48"	RCP Stormdrain	Roatan Road	entire length	
48"	RCP Stormdrain	20' Drainage Esmt	Roatan Road	50' Drainage Esmt

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 4		
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Los Alex Court	Cabo Drive	Lot 20, Blk 2
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Cabo Drive	Red Rock Road	Golden View Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Red Rock Road	Cabo Drive	Golden View Drive
32' F	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (both sides)	Golden View Drive	Cabo Drive	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Golden View Drive	Red Rock Road	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) 4' Sdwk (both sides)	St. Nikolai Avenue	Golden View Drive	86th Street
24' FE	Art Pvmt Std C&G (W side) 4' Sdwk (W side)	86th Street	West Prop. Line	Barbados Avenue
8" FE	Art Std C & G (W side) 4' Sdwk (W side)	86th Street	Barbados Avenue	North Prop Line

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	St. Nikolai Avenue	entire length	
6"	PVC Waterine	Red Rock Road	entire length	
6"	PVC Waterline	Cabo Drive	entire length	
6"	PVC Waterline	Los Alex Court	entire length	
6"	PVC Waterline	Golden View Drive	entire length	
12"	PVC Waterline	Snow Vista Blvd	entire length	
8"	SAS	St. Nikolai Avenue	Golden View Drive	86th Street
8"	SAS	Red Rock Road	entire length	
8"	SAS	Cabo Drive	entire length	
8"	SAS	Los Alex Court	entire length	
8"	SAS	Golden View Drive	entire length	

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 8/25/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Exisitng SAS line shall be abandoned with each unit.

Stormdrain to include manholes, inlets, riprap and outfall.

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees. Financial Guarantee is not required for this item.

Water infrastructure to include valves, fittings, valveboxes and fire hydrants.

Sanitary sewer to include manholes and service connections.

Street lights per DPM.

* Item to be deferred.

** Separate Financial Guarantee.

Prepared By: _____

Print Name: Gregory J. Krenik, PE

Firm: Mark Goodwin & Associates, PA

* * * *

8-10 letter

1. Master plan uses flower pond - if flower dies - Silverado will need to build it as condition of prelim plat - pond on infra.
- easement required for pub. plat

2 brought in topo

3.

86th grading road - need concurrence from prop owner

Master plan - today or Mon

CITY OF
Albuquerque

August 6, 1998

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 Silverado Subdivision (M9/D20), Engineer's Stamp Dated 7/15/98 in Report, and 7/16/98 on Plans.

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 Addendum to the Rio Bravo Master Drainage Plan must be approved prior to approval of this subdivision.

2. Please provide the off-site drainage basin map. The report mentions an off-site flow condition that may be diverted, however the location is not identified. It appears that grading is proposed in the existing PNM easement and in the future Snow Vista Boulevard right-of-way. Is this allowed?

3. It appears that runoff from Tract "A" would impact Unit 1 of your site in the existing condition. The proposed grading directs the runoff toward the parcel to the east of Tract "A." A cross-lot drainage easement is required to drain Tract "A" onto the adjacent Lot. Permission is also required for the grading on Tract "A."

4. This site is adjacent to the future Snow Vista Boulevard, however the proposed ultimate street grades for this road are not shown. Is this project building this street or bonding for the improvements?

5. It appears that a bridge is proposed over the Snow Vista Channel for the extension of 86th Street. How do the proposed street grades tie into the ultimate street grades in De Anza Drive and 96th Street? AMAFCA approval is required for the channel crossing.

6. The report mentions two different zoning designations, however the limits for these are not shown. Where do these different land treatments apply?

7. Provide the on-site drainage basin map showing subbasins. For clarity, please also provide analysis points. Do the runoff calculations account for the street flows in 86th, Barbados, Benevides? The calculations are unclear.

8. The typical lot layout section is not acceptable due to the proximity of the house pads. A minimum of a 3:1 slope is required for the sideyard swales.

9. The grading plan does not identify the property lines and right-of-way limits. It appears that a high point in Saint Kitts is missing.

10. The street capacity, inlet capacity and storm drain calculations are hard to follow. Labeling the streets on the storm drain schematic drawing may assist in the review.

11. Please identify on the plan where the 100-year volume will be if the sump inlets at Saint Kitts and Roatan become clogged. Would any of the adjacent Lots be adversely impacted?

12. Please provide more spot elevations around the perimeter of the subdivision, especially on the north side adjacent to the existing subdivision and City Well site.

13. The letter you provided from Moses, Dunn, Farmer & Tuthill, dated February 4, 1998, was very vague regarding storm drainage easements on Albuquerque South's property. Please provide an exhibit to show where the proposed easements will be provided or documentation that this letter applies to the same pond which was proposed with the Silverado Subdivision.

If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,

Susan Calongne

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

c: Fred Aguirre, DRB-98-57
Lisa Ann Manwill, Albuquerque Metropolitan Arroyo Flood Control Authority
File

MOSES, DUNN, FARMER & TUTHILL, P.C.

ATTORNEYS AT LAW

VICTOR E. CARLIN
GREGORY T. DUNN
THOMAS J. DUNN
TERRY D. FARMER**
MARK A. GLENN
ALICIA L. GUTIERREZ
STEVEN J. HILE*
MARTIN K. HOLLAND ***
JOSEPH L. WERNTZ

*ALSO LICENSED IN COLORADO
**ALSO LICENSED IN OKLAHOMA
***ALSO LICENSED IN NEBRASKA

612 FIRST STREET NW
P.O. BOX 27047
ALBUQUERQUE, NEW MEXICO 87125-7047

TELEPHONE
(505) 843-9440

FACSIMILE
(505) 247-3213

Donald B. Moses
(Retired)

Jon H. Tuthill
(1925-1991)

February 4, 1998

VIA FACSIMILE 797-9539
Mr. Mark Goodwin
D. Mark Goodwin & Associates, P.A.
P. O. Box 90606
Albuquerque, NM 87199

THIS IS WRITTEN APPROVAL THAT THE ADJACENT LAND OWNER WILL GRANT THE EASEMENT FOR THE TEMP. DETENTION POND.

RE: Lands of Albuquerque South/Thunder Development

Dear Mark:

Following our meeting last Friday I have had the opportunity to visit with Henry South and Fred Arfman concerning the subject property. We have the following input into the bulk land plat you are working on for Thunder Development.

1. We request that the remaining Albuquerque South lands be shown on your bulk plat as the "Unplatted Remainder". This is how the undeveloped lands of Albuquerque South under contract to Longford have been handled. We believe that this is achievable because our lands have not been previously platted and the City has accepted this approach on the Longford land. We are concerned if our lands are now included within the bulk land plat, our property taxes will increase thereby increasing the financial burden of the partnership for an undetermined length of time.

2. Your proposal to adjust the center road slightly to the west is agreeable.

3. Albuquerque South would provide paper easements for the center road and the proposed Gibson right of way.

4. Albuquerque South is not in favor of any other road cuts to the west or east of the center road because it cuts up our remaining lands too much.

5. Albuquerque South would be willing to provide storm drainage outflow easements as necessary.

These are our preliminary comments. We look forward to reviewing your proposed plat.

Very truly yours,

MOSES, DUNN, FARMER & TUTHILL, P.C.

By Joseph L. Werntz
Joseph L. Werntz

JLW:rr

cc: Henry South
Fred Arfman
R.J. Schaefer
Thomas Joseph

To: Fred Aguirre

RONALD D. BROWN, CHAIR
DANIEL W. COOK, VICE CHAIR
CLIFFORD E. ANDERSON, SECRETARY-TREASURER
LINDA STOVER, ASST. SECRETARY-TREASURER
DANIEL HERNANDEZ, DIRECTOR

JOHN P. KELLY, P.E.
EXECUTIVE ENGINEER

Albuquerque Metropolitan Arroyo Flood Control Authority

2600 PROSPECT N.E. ALBUQUERQUE, NM 87107

PHONE: (505) 884-2215
FAX: (505) 884-0214

FAX TRANSMITTAL

April 6, 2000

Greg Krenik, PE
Mark Goodwin & Associates
PO Box90606
Albuquerque, NM 87199

Re: Silverado Subdivision: Snow Vista Rd. setback from Snow Vista Channel (COA 6330.81)

I am not sure what stage of the process you are at but your submittal of partial plans has been timely. Since your last submittal to AMAFCA in August of 1998 the **Amole Hubbell DMP** has been finalized and adopted by the AMAFCA Board. The section of the Snow Vista Channel you have inquired about has been identified as requiring upgrades to fix existing high priority deficiencies as well as to meet future increased flow rates. Therefore, reliance on modified erosion setbacks to protect the Snow Vista street improvements would not be appropriate.

The identified deficiencies are freeboard enhancements to meet FEMA requirements and bank stabilization (riprap) where erosive velocities exist. The proposed design has been further clarified by the **Master Drainage Plan for the Rio Bravo Sector Plan Amendment**. (3/2000) in which it is now proposed to bring the main Amole Arroyo into the Snow Vista alignment at your approximate location. You will need to address these issues prior to completing your infrastructure agreement and obtaining an AMAFCA license to work in the AMAFCA easement and discharge storm water at the locations shown on your sheet 6 of 29 dated 3/28/2000.

AMAFCA

Donald S. Dixon, PE
Drainage Engineer

Cc: L. Manwill
F. Aguirre, COA

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Centex Silverado ZONE ATLAS#: M-9 / D20

DRB#: 00410-00000-00219 EPC# WORK ORDER#:

LEGAL DESCRIPTION: Tracts A and B, Albuquerque South, Unit 4

CITY ADDRESS:

ENGINEERING FIRM: Mark Goodwin & Associates, PA CONTACT: Gregory J. Krenik, PE

ADDRESS: P.O. Box 90606, Albuquerque, NM 87199 PHONE: 828-2200

OWNER: Centex CONTACT: Walter Tilley

ADDRESS: 6700 Jefferson NE, Building B, Albq., NM 87109 PHONE: 761-9606

ARCHITECT: CONTACT:

ADDRESS: PHONE:

SURVEYOR: CONTACT:

ADDRESS: PHONE:

CONTACTOR: CONTACT:

ADDRESS: PHONE:

TYPE OF SUBMITTAL:

X REVISED 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 APRROVAL

X PRELIMINARY PLAT APRROVAL

___ 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

HYDROLOGY SECTION
APR 05 2000

DATE SUBMITTED: 4-5-00

BY:

Gregory J. Krenik, PE

RONALD D. BROWN, CHAIR
DANIEL W. COOK, VICE-CHAIR
CLIFFORD E. ANDERSON, P.E., SECRETARY-TREASURER
LINDA STOVER, ASST. SECRETARY-TREASURER
DANIEL HERNANDEZ, DIRECTOR

JOHN P. KELLY, P.E
EXECUTIVE ENGINEER

Albuquerque Metropolitan Arroyo Flood Control Authority

2600 PROSPECT N.E. - ALBUQUERQUE, NM 87107
PHONE: (505) 884-2215
FAX: (505) 884-0214

April 11, 2000

Greg Krenik, PE
Mark Goodwin & Associates
P.O. Box 90606
Albuquerque, NM 87199

RE: SILVERADO SUBDIVISION UNITS 1 & 2 (ZAP M9)

Dear Greg:

Based on your April 10, 2000 submittal, the above referenced project is acceptable with the following conditions:

1. The north most outfall to the Snow Vista Channel (approximately sta 18+00) needs to enter the channel below the drop structure. The pipe penetration must enter the channel at a 45° angle. A "marked up" copy of your plan is attached showing the desired alignment. A new manhole will be required to construct the pipe at the desired alignment.

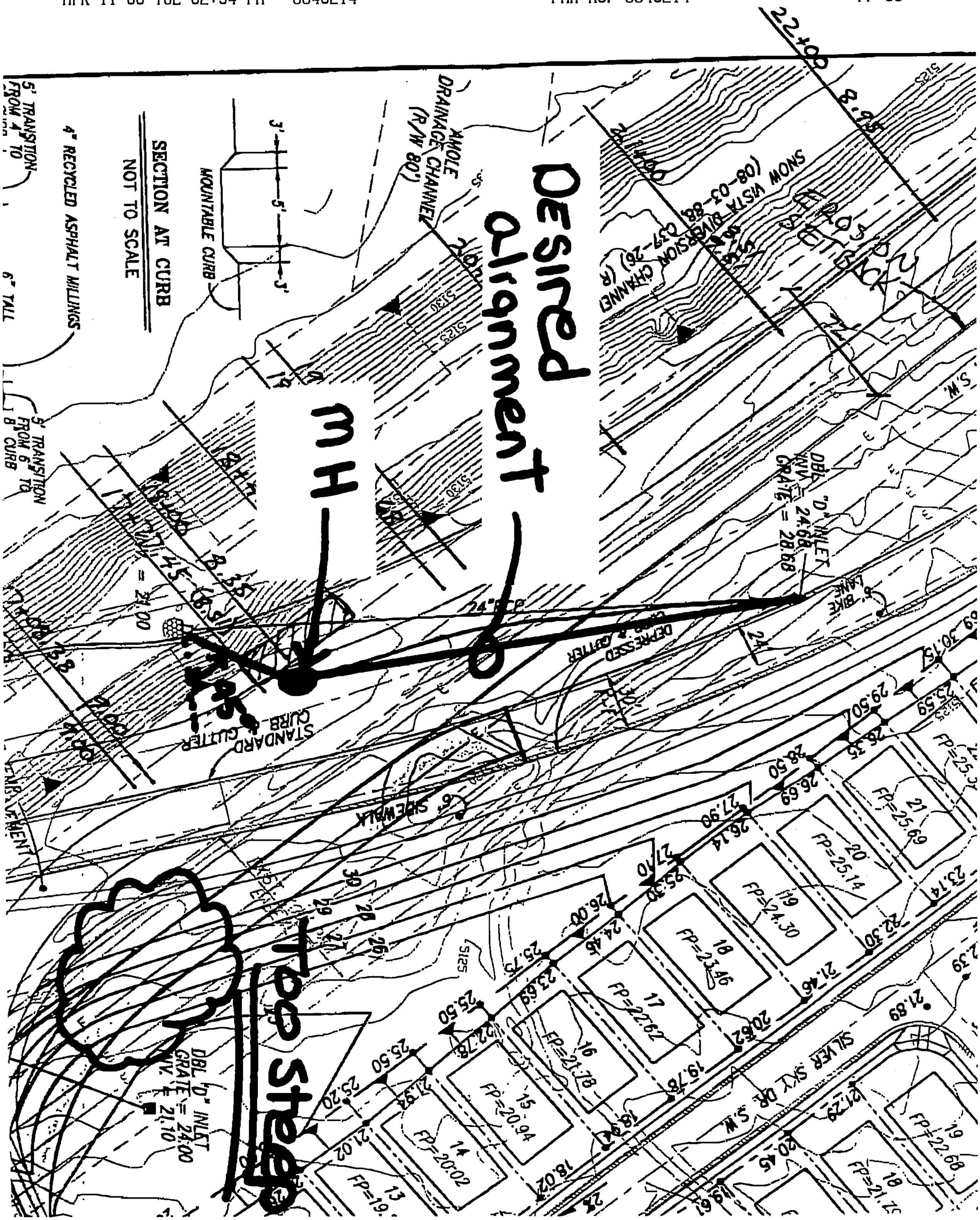
2. Portions of the road, between the Snow Vista Channel and the Silverado Subdivision, need to be flattened out.

If I can be of further assistance, please call me at 884-2215

Sincerely,
AMAFCA

Lisa Ann Manwill, P.E.
Development Review Engineer

c: Susan Calongne - COA
File


Desired
Alignment
Not Stable
SECTION AT CURB
NOT TO SCALE
4" RECYCLED ASPHALT MILLINGS
5' TRANSITION FROM 4" TO 6" TALL
5' TRANSITION FROM 6" TO 8" CURB
MOUNTABLE CURB
3'
5'
3'
WHOLE DRAINAGE CHANNEL (R/W 80')
SNOW VISTA DIVERSION CHANNEL (R 08-03-88 C37-26)
"D" INLET GRATE = 24.68 INV. = 28.68
DBL "D" INLET GRATE = 24.00 INV. = 21.10
STANDARD CUTTER & CURB
DEPRESSED CUTTER
6' SIDEWALK
6' BIKE LANE
24" RCP
SILVER SKY DR. S.W.
FP=25.14
FP=24.30
FP=23.46
FP=22.62
FP=21.78
FP=20.94
FP=20.02
FP=25.69
FP=22.68
FP=21.75

FAX TRANSMISSION

AMAFCA

2600 Prospect, NE
Albuquerque, NM 87107
(505) 884-2215
Fax: (505) 884-0214

To: Susan

Date: 4-11-00

Fax #: Auto

Pages: 3, including this cover sheet.

From: Luci

Subject: Silvendo Subdivision

COMMENTS:

LETTER OF TRANSMITTAL

dmg
D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

DATE 4-11-00 JOB NO.

ATTENTION

RE: Snow Vista AT Silverado Subdivision

TO Susan Calongne
One Stop

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ Report

COPIES	DATE	NO.	DESCRIPTION
1			Freeboard and Erosion Setback report

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS
This is what I submitted to AMAFCA (Don Dixon).

COPY TO

SIGNED: Gregory J. Krenik

If enclosures are not as noted, kindly notify us at once.

[redacted]

> freeboard issue (does rd give 3' fb?)
> use SEDG for Δ mat
for ESB

MARK GOODWIN & ASSOCIATES
CONSULTING ENGINEERS

dmg

SILVERADO SUBDIVISION

UNITS 1 & 2

SNOW VISTA CHANNEL

EROSION SETBACK CALCULATIONS

GREGORY JAMES TRENK
NEW MEXICO
11929
REGISTERED PROFESSIONAL ENGINEER

4-6-00

4-10-00

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT SILVERADO UNITS 1+2
SUBJECT SNOW VISTA EROSION STBK
BY GJK DATE 4-6-00
CHECKED _____ DATE _____
SHEET 1 OF 2
REVISED 4-10-00

PURPOSE: TO DETERMINE IF PROPOSED SNOW VISTA BLVD. IS WITHIN THE EROSION SETBACK OF THE SNOW VISTA CHANNEL.

- THE EXISTING CONDITION OF THE SNOW VISTA CHANNEL IS AN UNLINED MANMADE CHANNEL.

  SLOPE = 0.378%
  Q = 1814 CFS per AMOLE-HUBBELL DMP
  n = 0.03
  BOTTOM WIDTH = 40'
  SIDE SLOPES = 3:1

- THE PRESENT CONDITION OF THE CHANNEL IS TEMPORARY. FUTURE PLANS CALL FOR IT TO BE CONCRETE LINED BUT THE TIME FRAME FOR THIS IS UNDETERMINED AT THIS TIME.

- FIND d OF FLOW IN CHANNEL

  d = 4.7
  WP = 69.73
  A = 254.27
  V = 7.215 F/S
  Q = 1834.60 CFS ≈ 1814 CFS

  $d + V^2/2g = 4.7 + 0.81 = 5.51'$

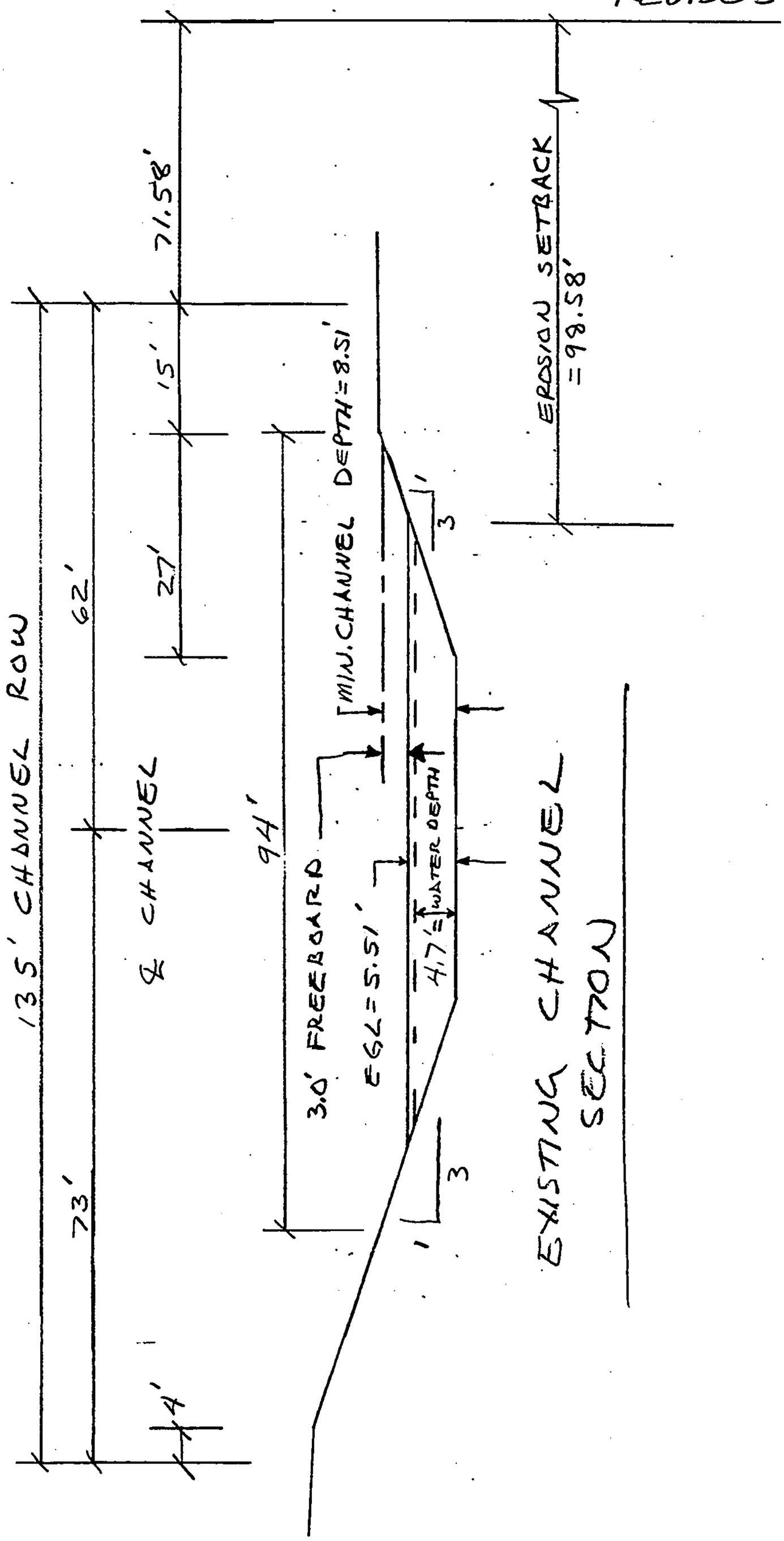
- NEED 3' OF FREEBOARD
  MINIMUM CHANNEL DEPTH = 5.51 + 3.0 = 8.51'

- USE SEDIMENT AND EROSION DESIGN GUIDE TO FIND EROSION SETBACK
  - FIND Q_D
    $Q_D = Q\,0.2 = 1814(.2) = 362.8$ CFS
  - FIND W_D
    $W_D = 2.46\,Q_D^{0.375}\,S^{-0.188} = 64.01$
  - FIND L_v
    DROP STRUCTURES ARE AT 300' = L_v
  - FIND MAXIMUM LATERAL EROSION DISTANCE
    SEE FIG 24
    DOWNVALLEY SPACING / W_D = 300/64.01 = 4.69
    MAXIMUM OFFSET / W_D = 1.54
    MAXIMUM OFFSET = Δ_{max} = 1.54(64.01) = 98.58
    MAXIMUM EROSION SETBACK = MAXIMUM OFFSET = 98.58

D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT SILVERADO UNITS 1+2
SUBJECT SNOW VISTA EROSION STRK
BY GJK DATE 4-6-00
CHECKED _____ DATE _____
SHEET 2 OF 2

REVISED 4-10-00



D. Mark Goodwin & Associates, P.A.
Consulting Engineers
P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539
e-mail: dmg@swcp.com

PROJECT SILVERADO UNITS 1+2
SUBJECT SNOW VISTA EROSION STBK
BY GJK DATE 4-10-00
CHECKED _____ DATE _____
SHEET 3 OF ____

- SUPERIMPOSING THE ASBUILTS OF THE SNOW VISTA CHANNEL ONTO THE GRADING PLAN BY STATIONING AND MARKING THE CHANNEL DEPTH AT THE STATIONS IT IS SHOWN THAT THERE ARE TWO AREAS ON THE EAST SIDE OF THE CHANNEL ADJACENT TO THE SILVERADO PROPERTY THAT REQUIRE CHANNEL BUILD UP TO OBTAIN THE PROPER FREEBOARD.

- THESE TWO AREAS ARE FROM 15+00.00 TO 15+47.78 AND 17+77.45 TO 18+41.11.

  THESE AREAS COINCIDE WITH THE PIPE PENETRATIONS TO THE CHANNEL SO AS BACKFILLING AND COMPACTION TAKES PLACE THE CHANNEL WILL BE BUILT UP TO THE PROPER HEIGHT TO HAVE A DEPTH OF 8.51' IN THE CHANNEL.

  THESE AREAS ARE SHOWN ON THE G+D PLAN IN THIS REPORT.

- THE ROADWAY WILL BE CONSTRUCTED OUTSIDE OF THE EROSION SETBACK LINE.

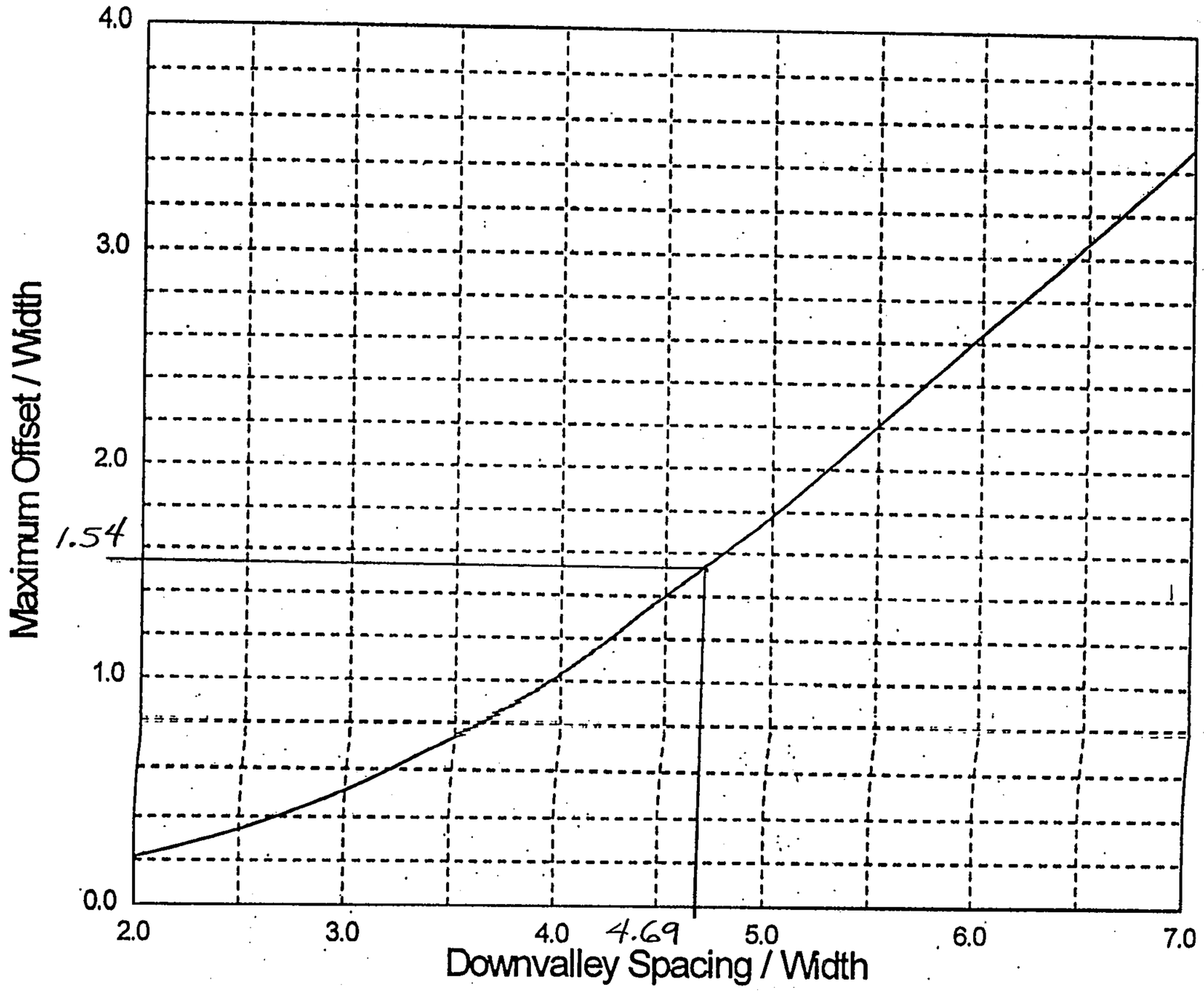


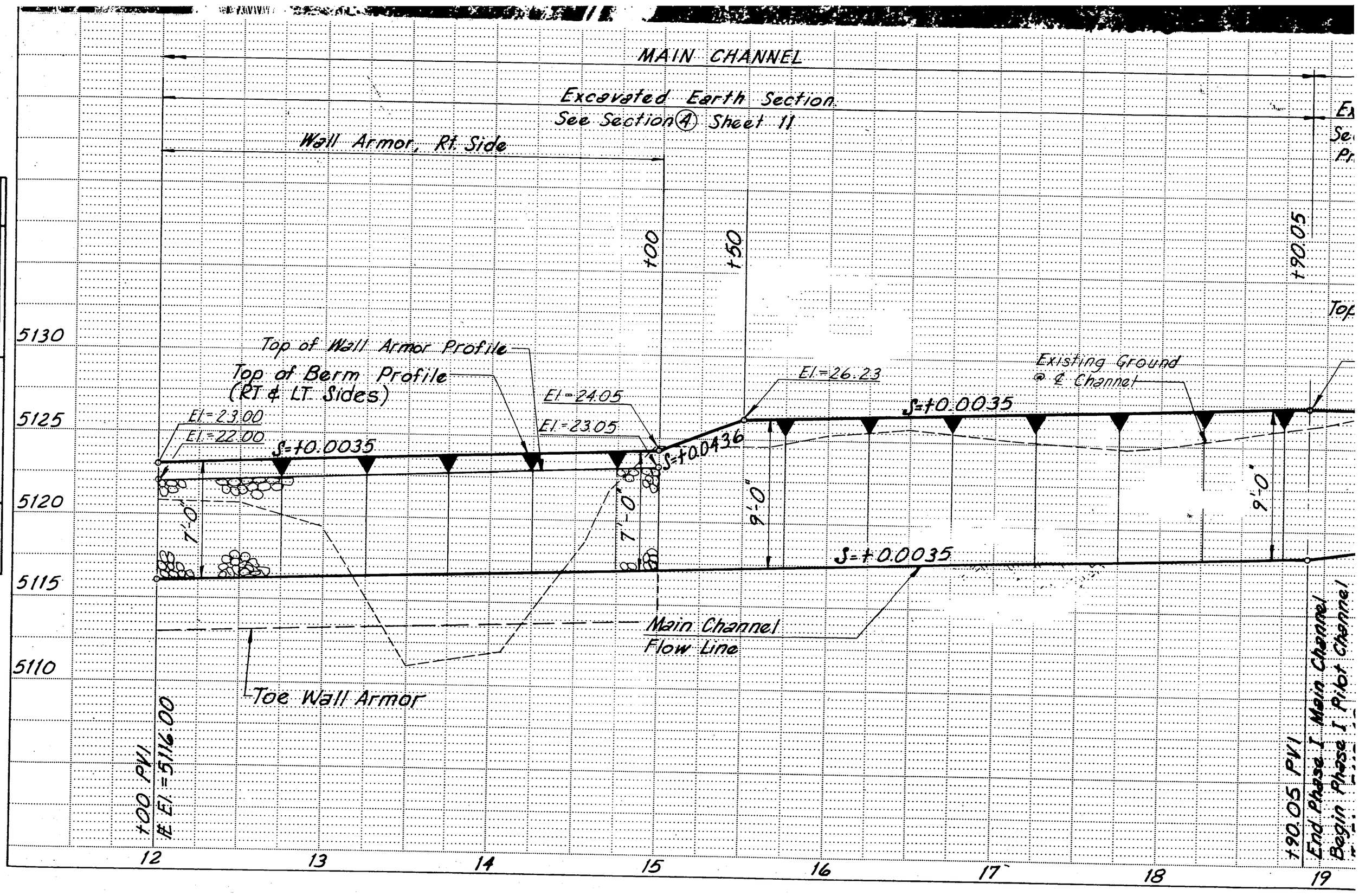
Figure 3.24. Maximum lateral erosion distance for control spaced at less than half the assumed unconstrained meander length.

TABLE II-1
HYDROLOGIC SUMMARY
MAJOR AMOLE ARROYO DMP FACILITIES

Existing Facility	Existing Design Capacity/ Bank Full Capacity	Existing Conditions (100-Yr Event)	Developed Conditions-Existing Facilities (100-Yr Event) (1)	Developed Conditions w/ DMP Facilities (100-yr Event)	DMP Design Capacity (Future)	Comments
Westgate Dam (Detention)	425 AF/425 AF	345 AF	421 AF (1) 1511 AF (2)	421 AF	425 AF	
Powerline Channel @ Amole	475 cfs/2000 cfs	502 cfs	941 cfs (3)	20 cfs	475 cfs	
Amole Arroyo @ Delgado CBC	720 cfs/720 cfs	652 cfs	1525 cfs	575 cfs	720 cfs	
Snow Vista Channel @ Amole	1200 cfs/2600 cfs	1814 cfs (3)	2083 cfs (3)	2083 cfs	2100 cfs	
Entrance Rundown to Amole Dam	4235 cfs/7480 cfs	3022 cfs (4)	6089 cfs	5293 cfs	5300 cfs	
South Powerline Detention	NA	NA	NA	65.1 AF	65.1 AF	New Facility
South Powerline Channel @ Rio Bravo	NA	NA	NA	446 cfs	450 cfs	New Facility
Sacate Blanco Diversion @ Amole	853 cfs/1660 cfs	901 cfs	2380 cfs	1183 cfs(5)	1190 cfs	
Rio Bravo Roadway Channel @ Hubbell	1105 cfs/2190 cfs	400 cfs	1004 cfs	658 cfs	1105 cfs	
South Rio Bravo Channel @ Hubbell Lake	NA	357 cfs	734 cfs	644 cfs(5)	700 cfs	
Borrega Detention Basin	NA	NA	NA	51 AF	51 AF	New Facility
Borrega Diversion @ inlet	225 cfs/225cfs	612 cfs (5)	1627 cfs (5)	225 cfs	225 cfs	
Amole Dam (Detention)	492 AF/492 AF	492 AF	492 AF	1352 AF	1352 AF	w/ Guac Basin
Hubbell Channel @ Amole Dam	10159 cfs/10159 cfs	122 cfs	2524 cfs	150 cfs	10159 cfs	
Hubbell Dam	493 AF/ 493 AF	519 AF	1301AF(1) 2600 AF (2)	493 AF	493 AF	

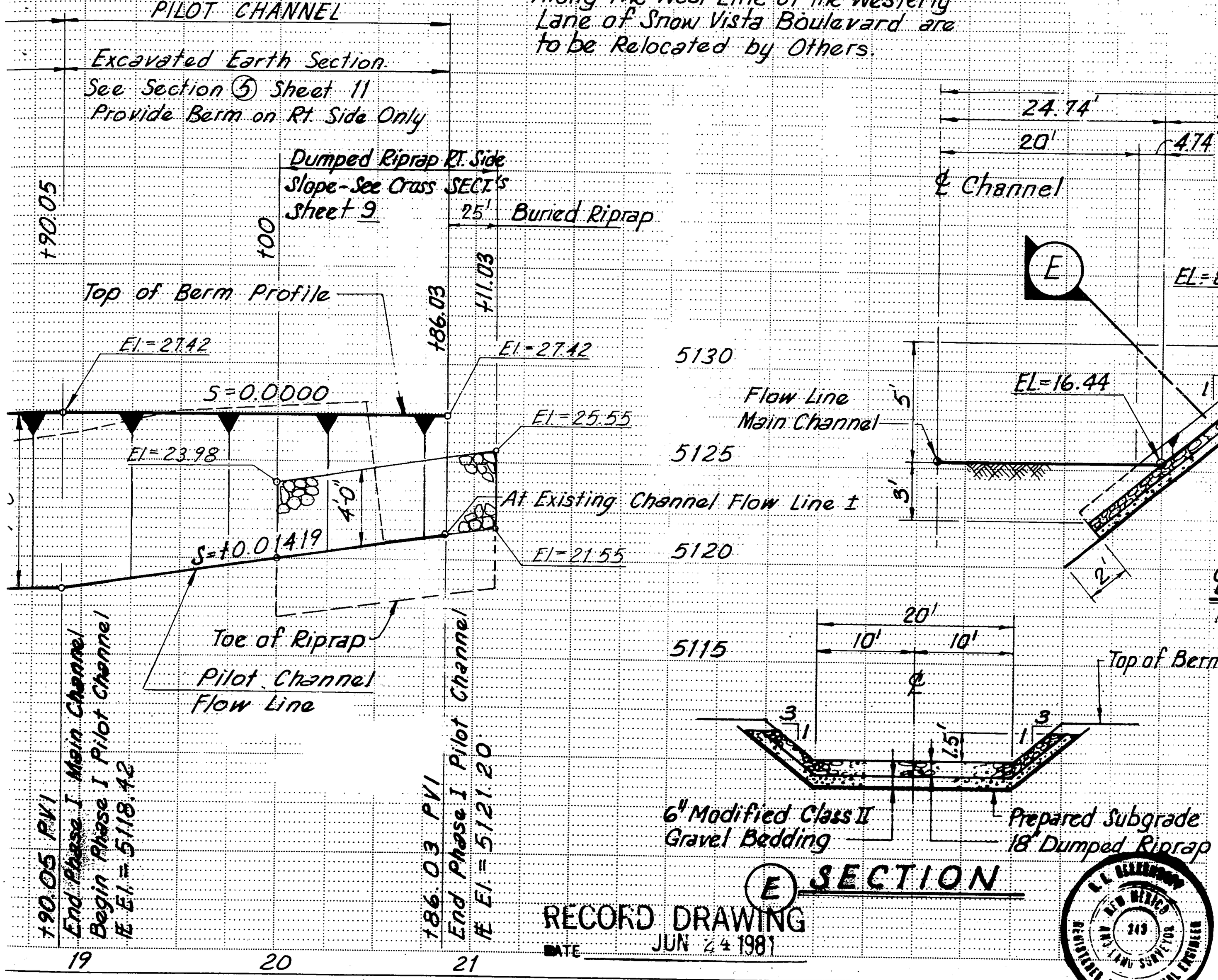
(1) Incorporates Amole Dams and Diversion of runoff north of I-40 (15 SM±).
(2) w/o Amole Dams and Diversion north of I-40.
(3) Contained within available freeboard.
(4) Minor Channel upgrades to convey flows.
(5) Significant Improvements required to convey flows.

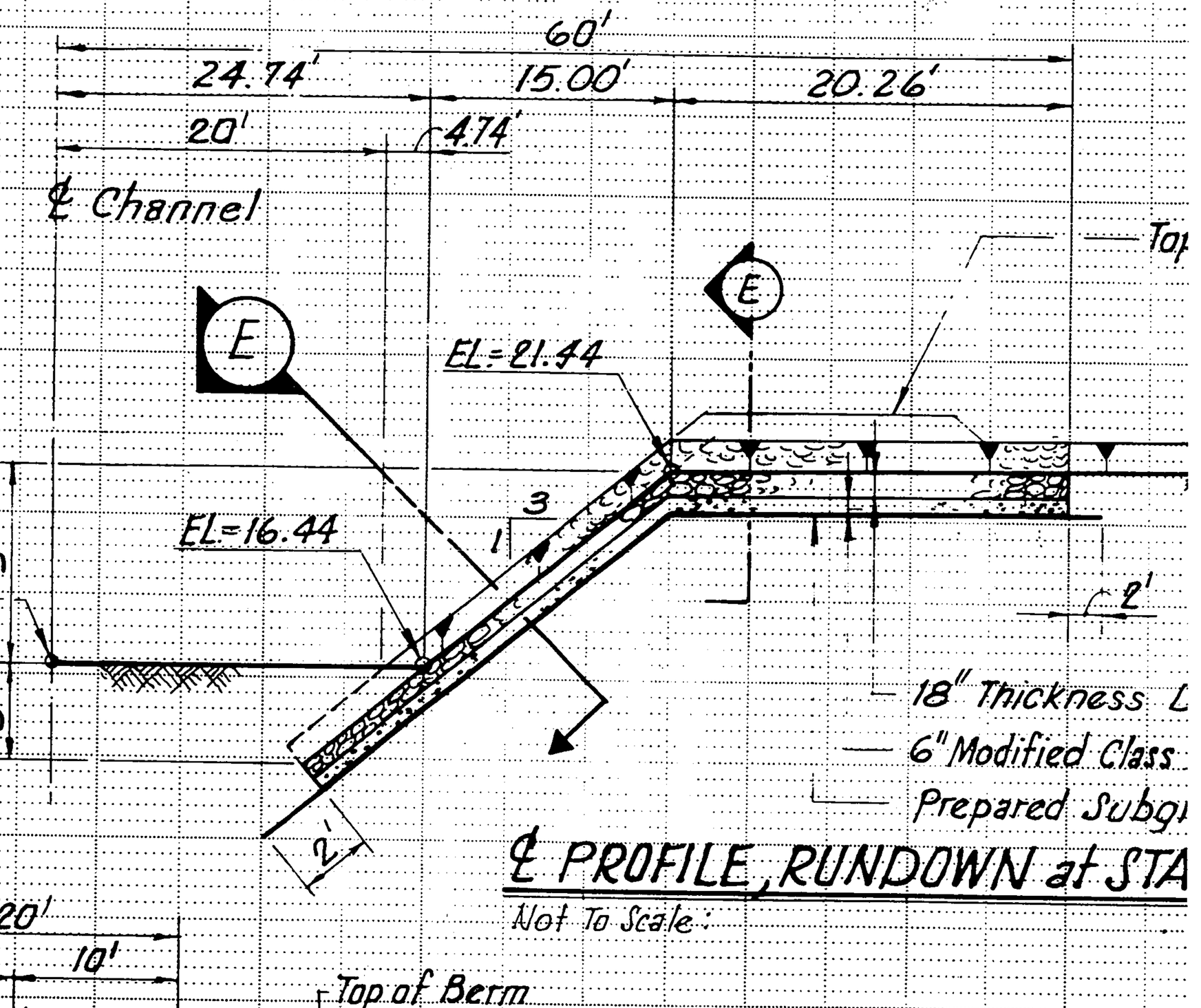
G:\DATA\WP\AMAFCA\AMOLE\DMP\HYDROSUM.TBL



B.M.s NOTED
STRUCTURE NOTAT'NS CH'KD
NO.
8308A COM

Along the West Line of the Westerly Lane of Snow Vista Boulevard are to be Relocated by Others.





RECORD DRAWING
DATE JUN 24 1981

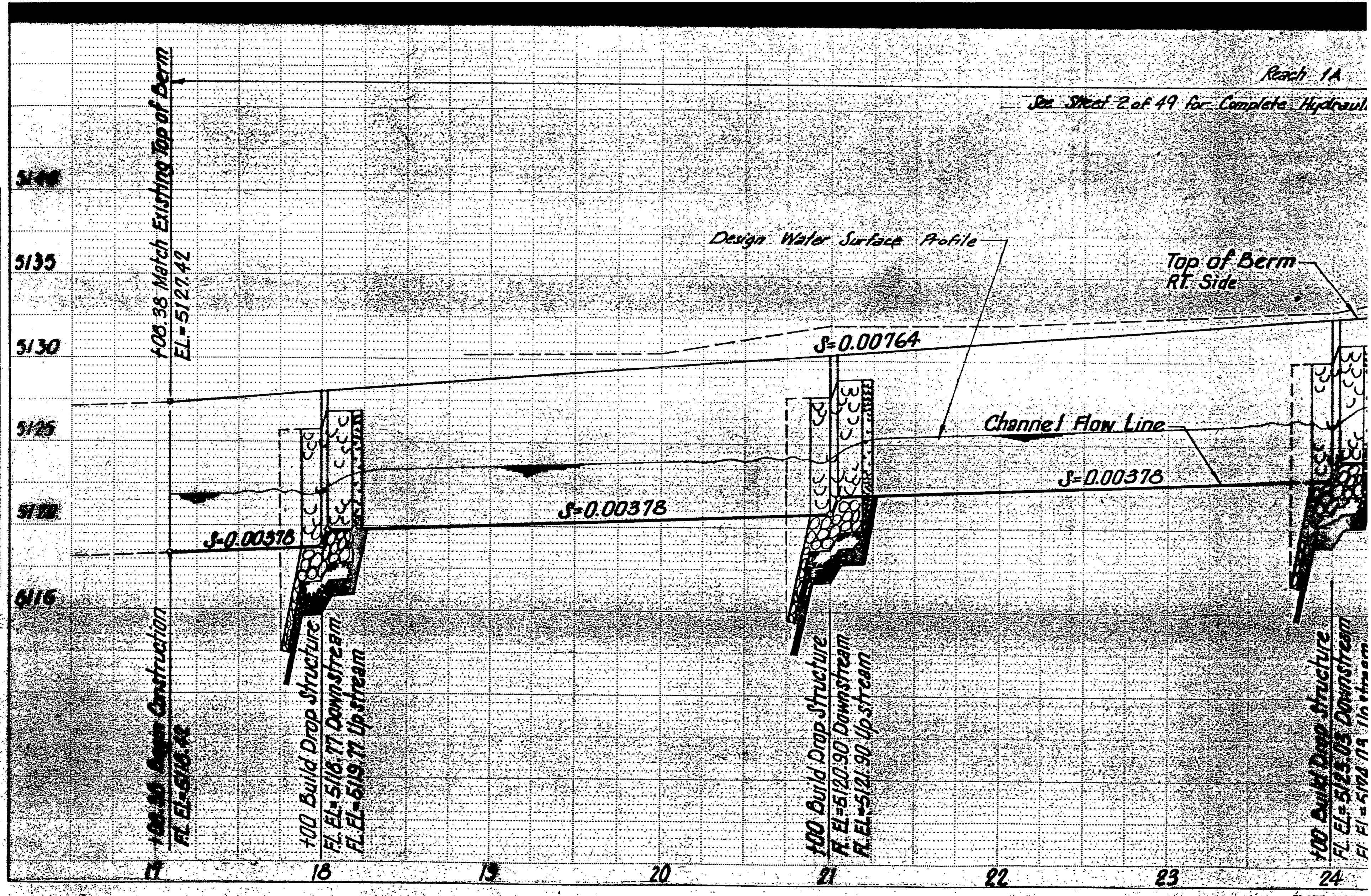
AMAFCA

WESTGATE DIVERSION CHAN
SNOW VISTA CHANNEL-PHA

PHASE I CHANN
STA. 12+00 TO STA.20

GORDON HERKENHOFF &
ENGINEERS • PL
ALBUQUERQUE

SH



STRUCTURE NOTATIONS CH'KD

NO

PLATE 1 SING

Reach 14

Complete Hydraulic Information

1+50 (20'LT.) Build Riprap Rundown

Existing ground at ℄ Channel

Natural ground Lt side

1+00 Top of Berm EL=5135.00

Existing 8" Sanitary Sewer Line

1+00 Top of Berm EL=5136.30

S=0.00433

S=0.00378

S=0.00378

1+00 Build Drop Structure
FL. EL.=5124.79 Downstream
FL. EL.=5125.79 Upstream

Remove 8" VCP Sewer Line &
Replace W/ New 8" D.I. in
Sleeve Encasement
See Sheet 10

1+39 Construct 96" Sleeve
℄ Inv. El. 5118.30

24 25 26 27 28 29 30 31

RECORD DRAWING
Date: JUN 1 6 1987

These drawings have been revised based on field data and every reasonable attempt has been made to depict construction as actually performed.

AMAFC

WESTGATE DIVERSIO

SNOW VISTA CHAN

PLAN AND P

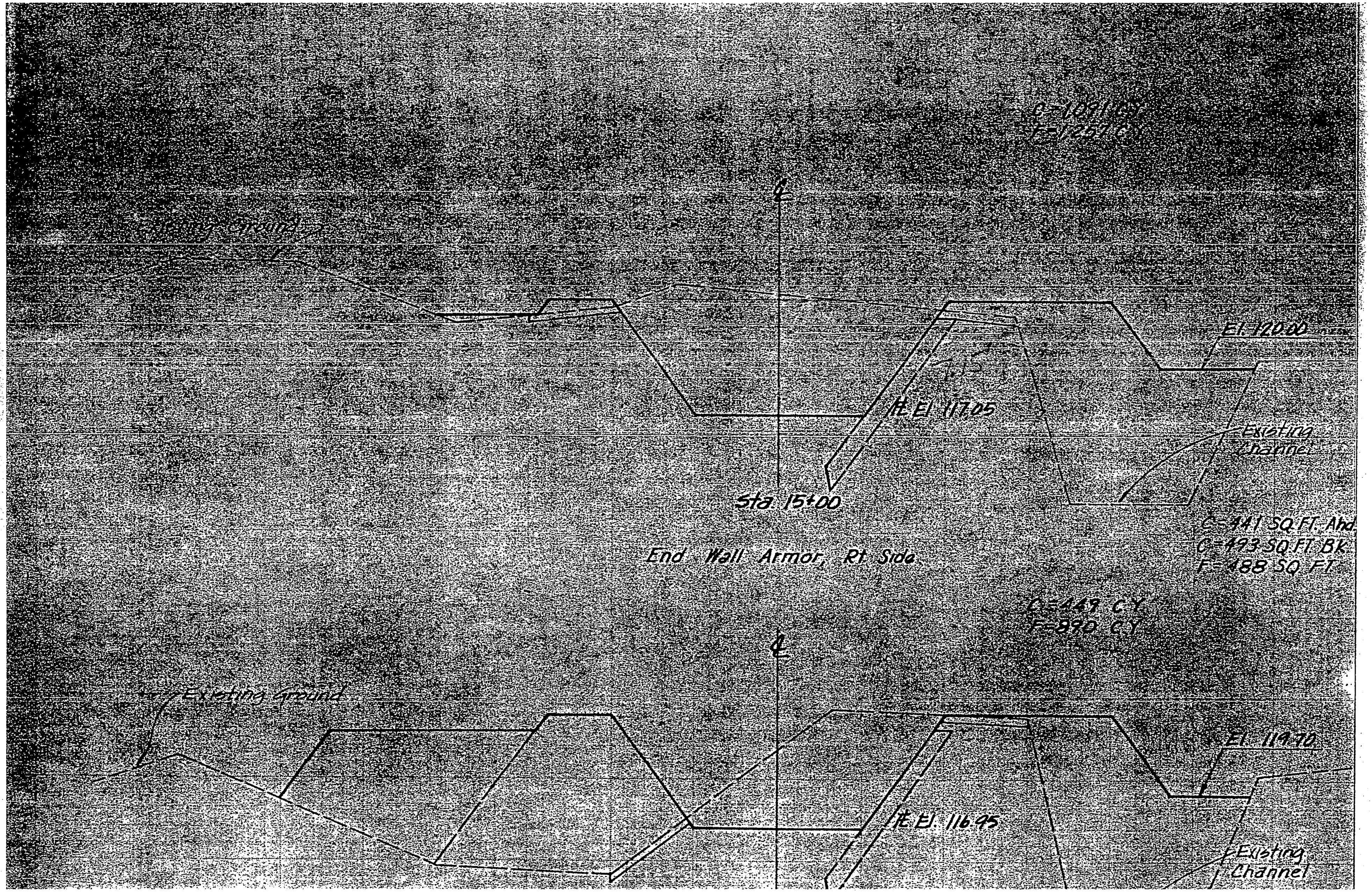
STA. 17+08.36 TO

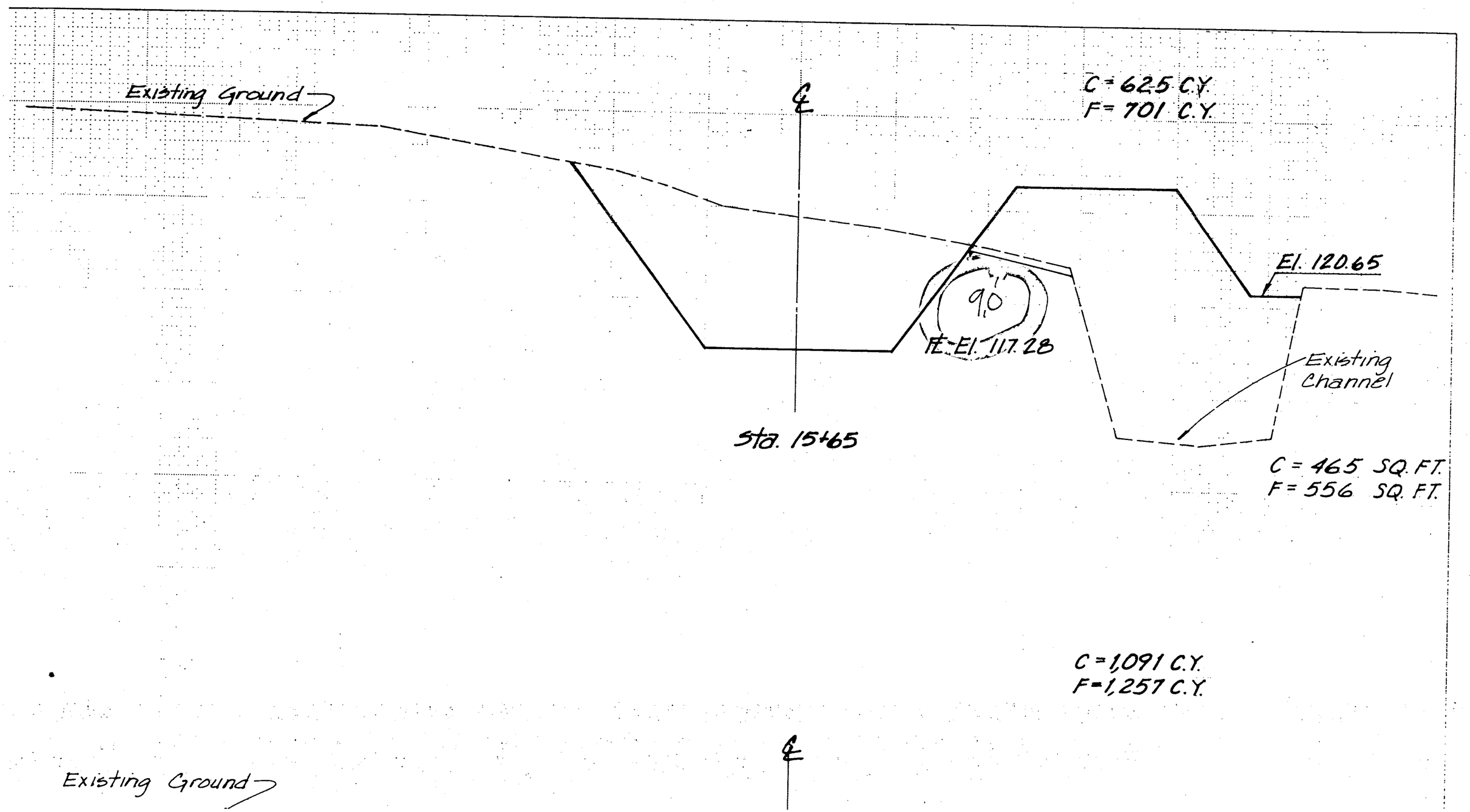
GORDON HERKENHOFF &

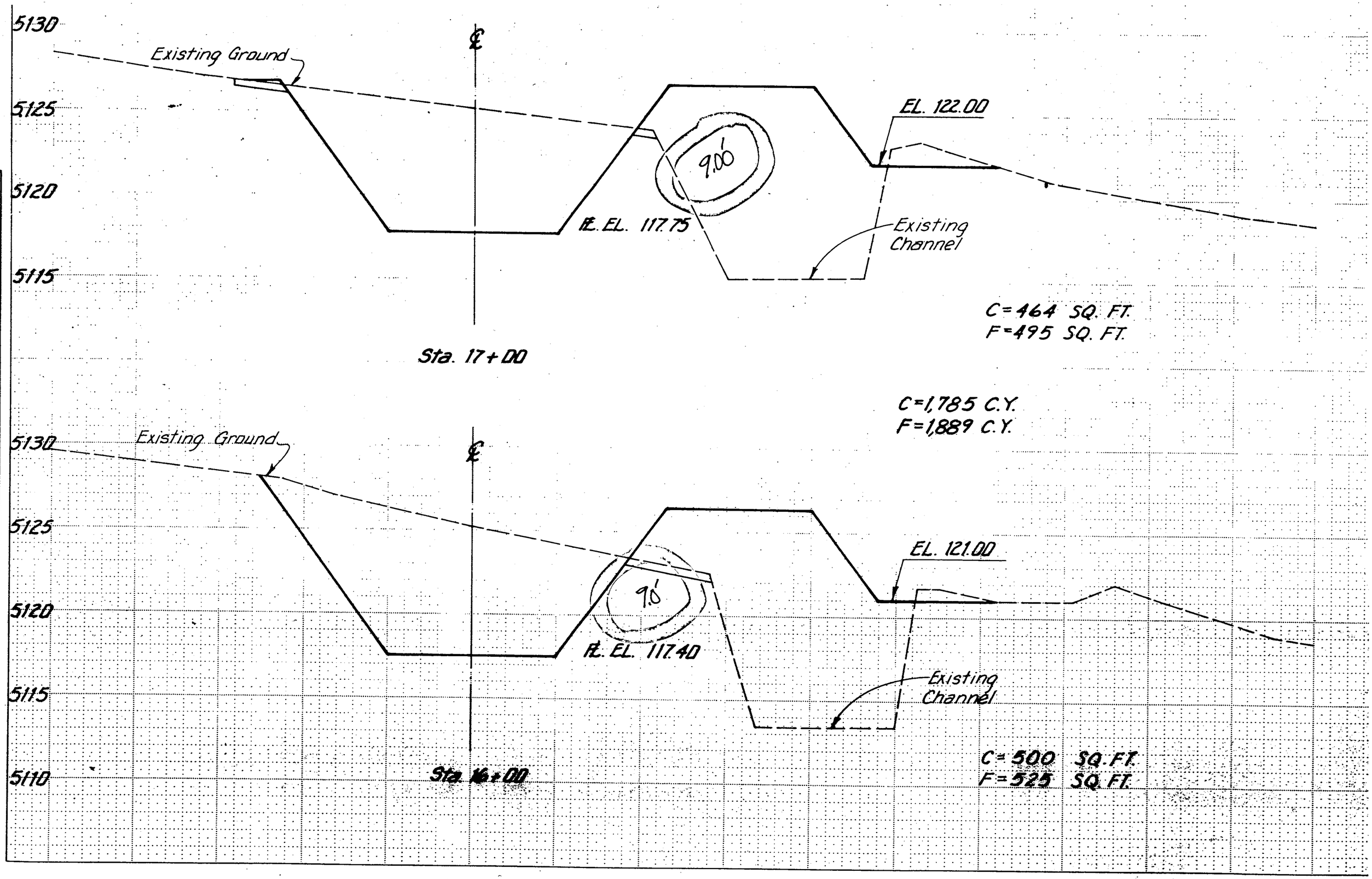
ENGINEERS ARCHITECT

ALBUQUERQUE

PLATE 1 SINGLE PLAN - PROFILE - DOTTED
CHARLES BRUNING COMPANY
MADE IN U.S.A.

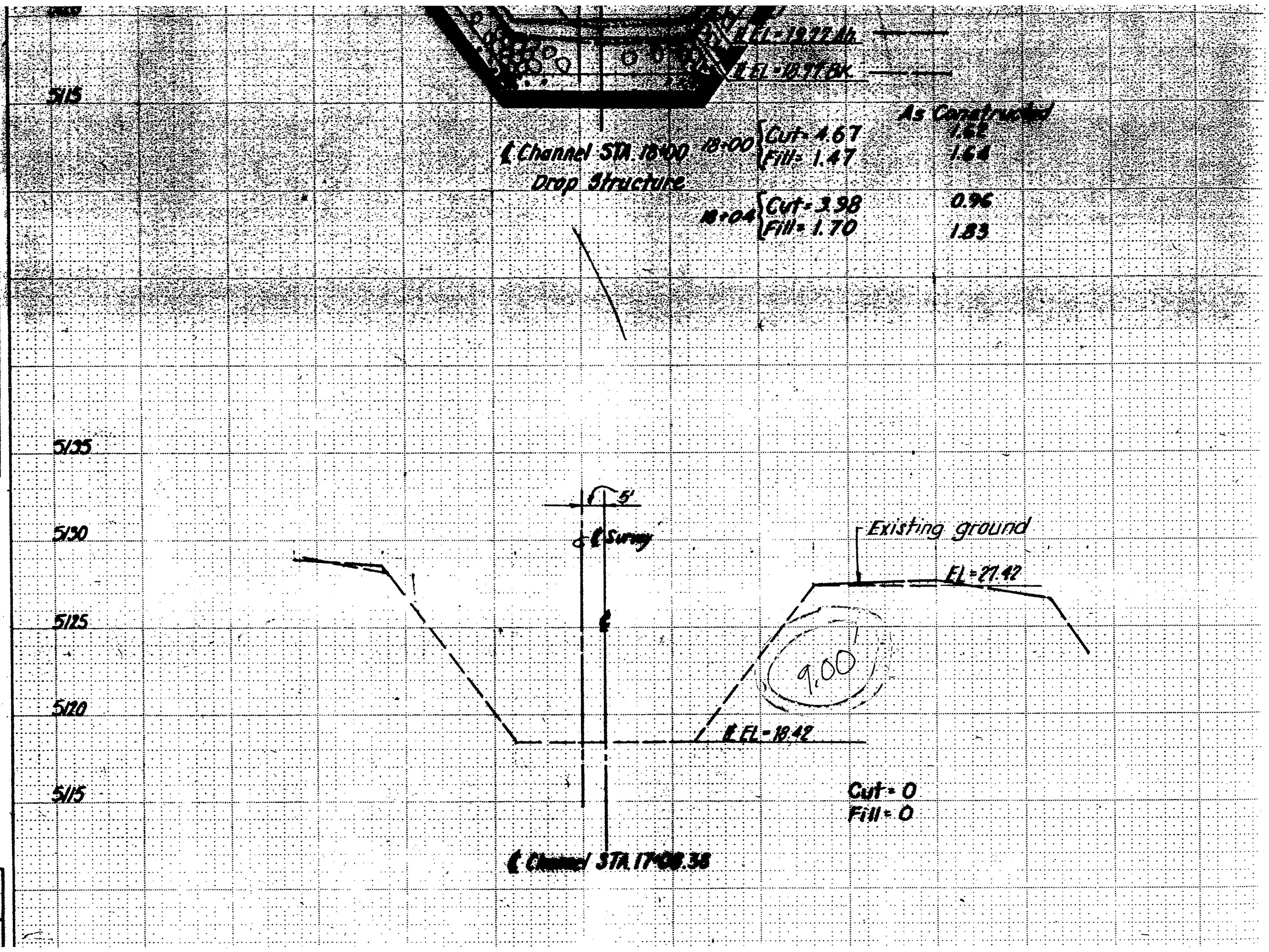

C-1071 CY
F-1257 CY
Existing Ground
El. 120.00
℄ El. 117.05
Existing Channel
Sta. 15+00
C=441 SQ. FT. Ahd
C=493 SQ. FT. Bk.
F=488 SQ. FT.
End Wall Armor, Rt. Side
C=449 CY
F=990 CY
Existing Ground
El. 119.70
℄ El. 116.95
Existing Channel


Existing Ground
℄
C = 625 C.Y.
F = 701 C.Y.
El. 120.65
90'
FL-El. 117.28
Existing Channel
Sta. 15+65
C = 465 SQ. FT.
F = 556 SQ. FT.
C = 1,091 C.Y.
F = 1,257 C.Y.
℄
Existing Ground

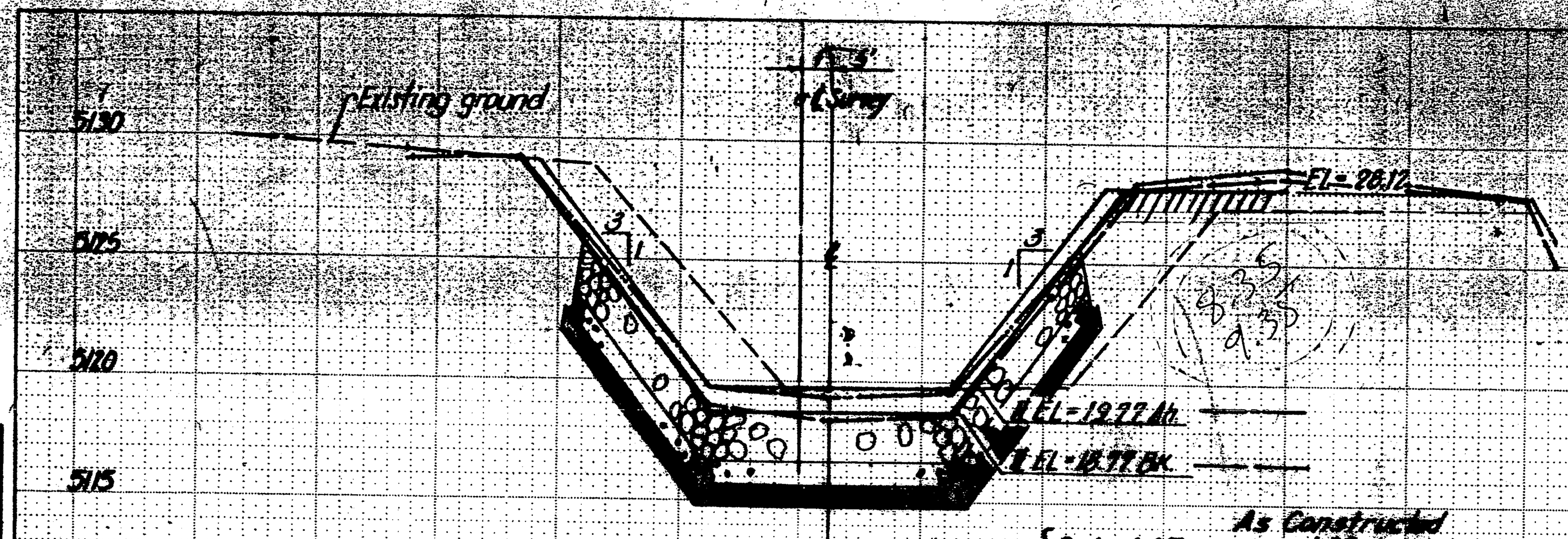


NO. AREAS CHECKED

FINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED



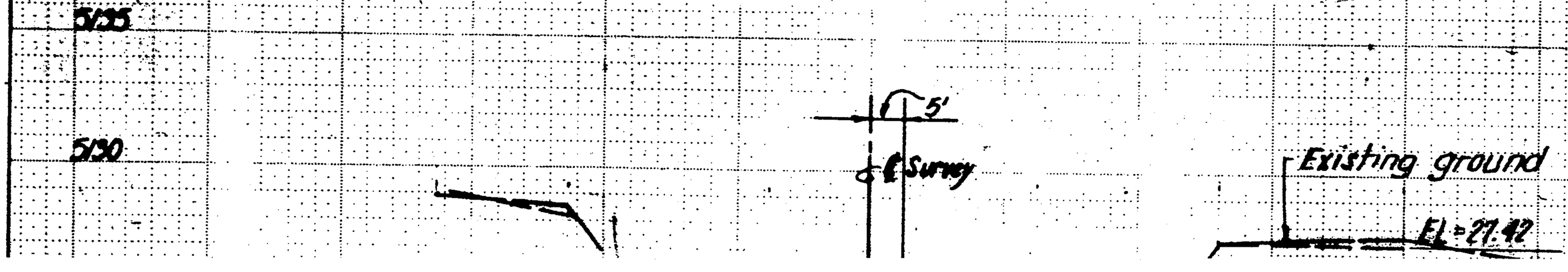
DATE

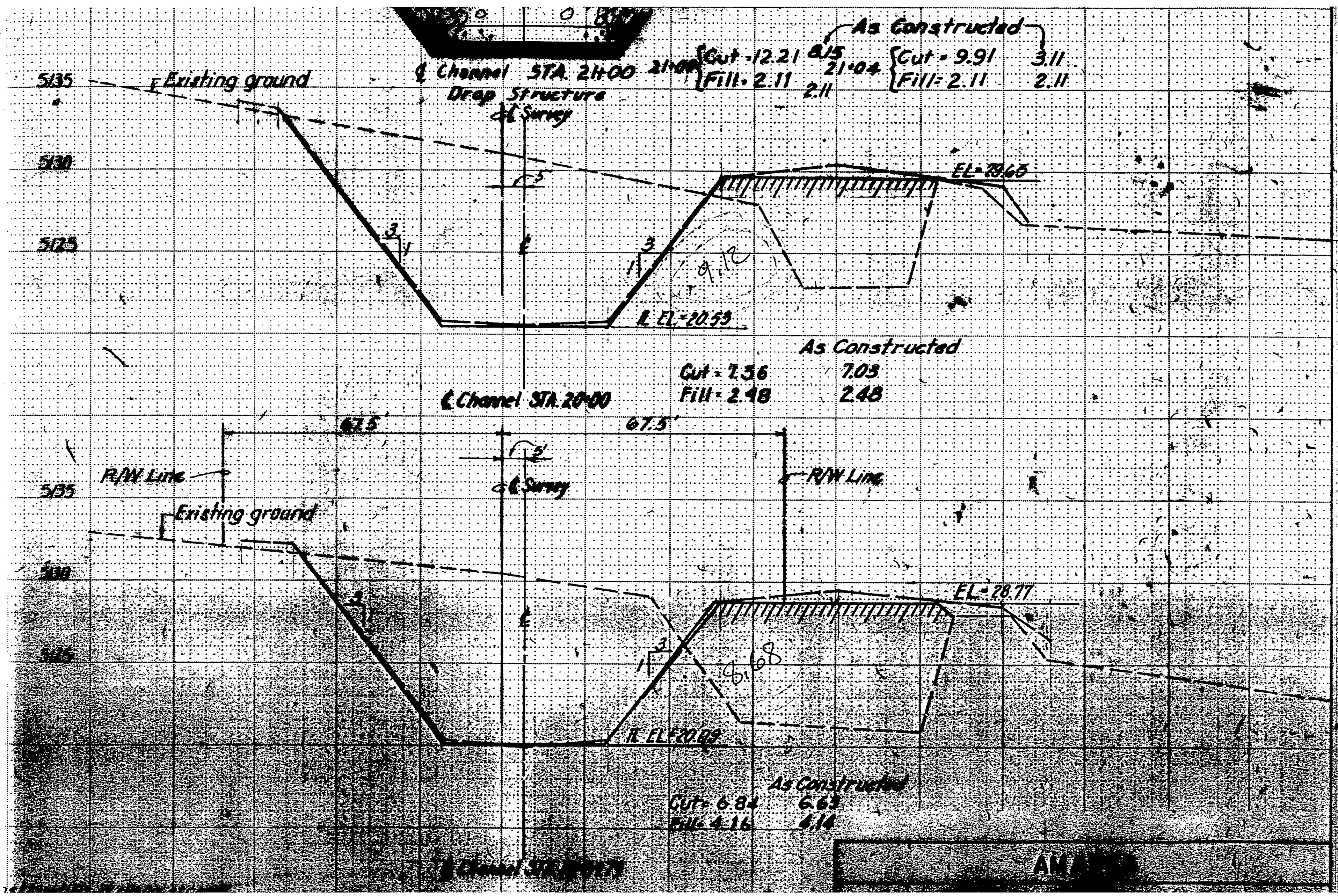


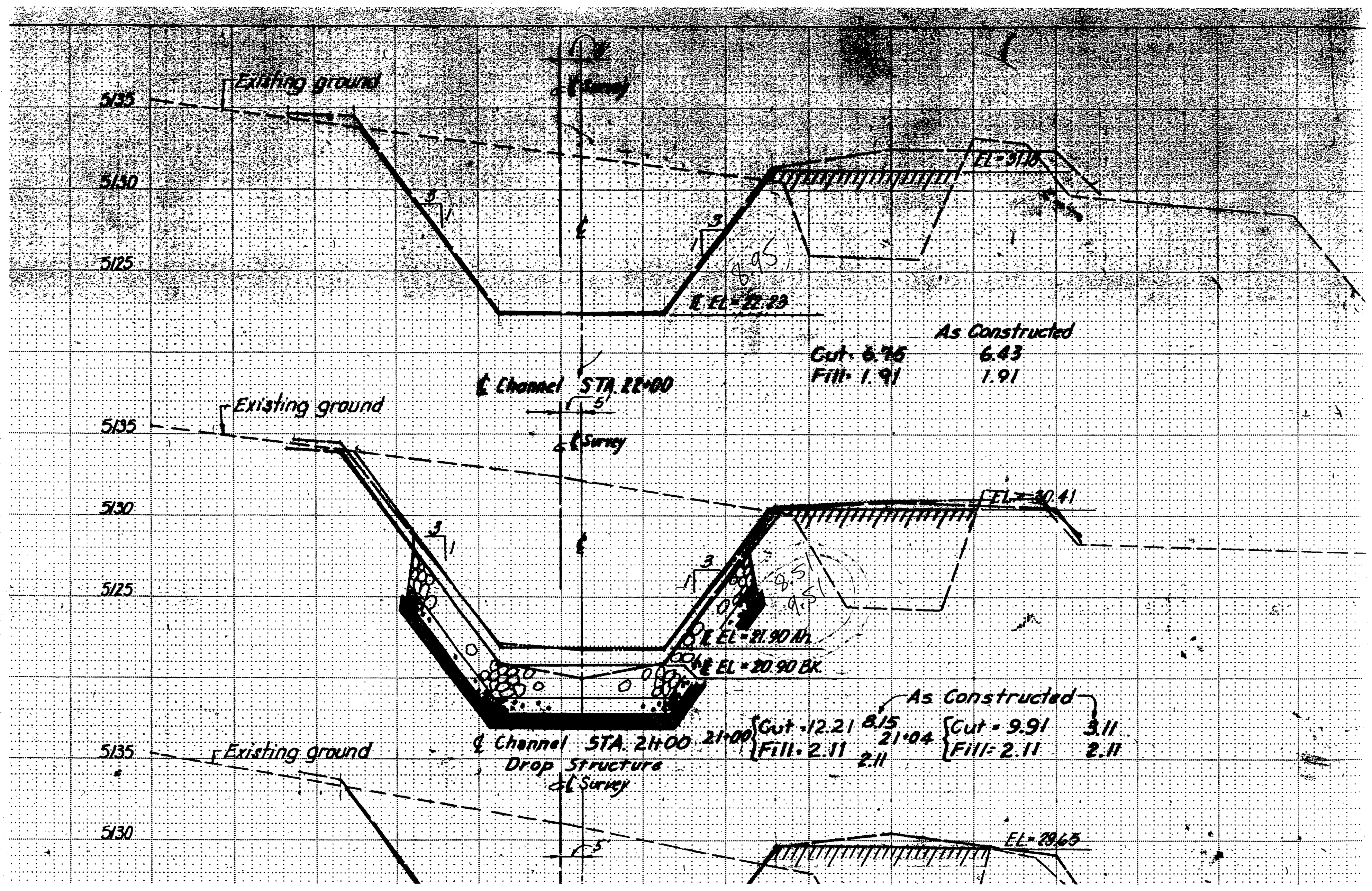
℄ Channel STA. 18+00 Drop Structure

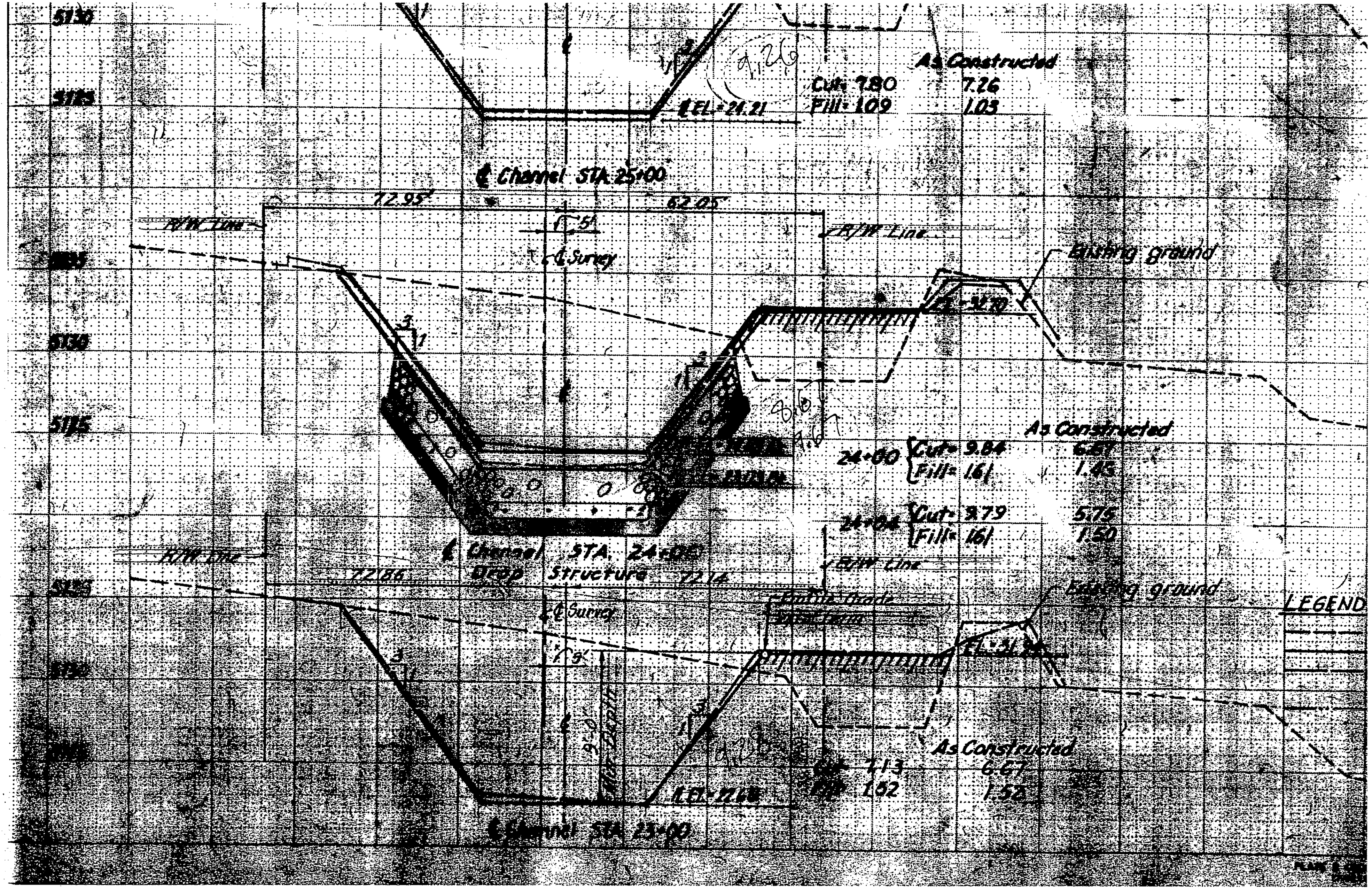
		As Constructed
18+00	Cut = 4.67	1.62
	Fill = 1.47	1.64
18+04	Cut = 3.98	0.96
	Fill = 1.70	1.83

FINAL SURVEY
NOTE BOOK
NO.
SURVEYED
PLOTTED
TEMPLATE
AREAS
AREAS CHECKED
BY
DATE




As Constructed
Cut - 12.21 8.15
Fill - 2.11 2.11
21+04
Cut - 9.91 3.11
Fill - 2.11 2.11
5135
Existing ground
℄ Channel STA. 21+00
Drop Structure
℄ Survey
5130
EL - 29.65
5125
3
1
℄
R EL - 20.59
As Constructed
Cut - 7.56 7.03
Fill - 2.48 2.48
℄ Channel STA. 20+00
67.5'
67.5'
R/W Line
R/W Line
5135
Existing ground
℄ Survey
5130
EL - 28.77
5125
R EL - 20.09
As Constructed
Cut - 6.84 6.63
Fill - 4.16 4.14


Existing ground
5135
5130
5125
℄ Survey
℄
3
1
3
1
6.95
℄ EL = 22.23
EL = 31.16
As Constructed
Cut - 6.76 6.43
Fill - 1.91 1.91
℄ Channel STA. 22+00
5
1
Existing ground
5135
5130
5125
℄ Survey
EL = 30.41
3
1
3
1
8.5
9.5
℄ EL = 21.90 Ah
℄ EL = 20.90 Bk
As Constructed
21+00 Cut - 12.21 8.15
Fill - 2.11 2.11
21+04 Cut - 9.91 3.11
Fill - 2.11 2.11
℄ Channel STA. 21+00
Drop Structure
Existing ground
5135
5130
℄ Survey
5
EL = 29.65


5130
5125
5120
5115
5110
5105
As Constructed
Cut: 7.80
Fill: 1.09
7.26
1.03
℄ EL. = 21.21
℄ Channel STA. 25+00
72.95'
62.05'
R/W Line
℄ Survey
Existing ground
EL. = 31.70
24+00
Cut: 9.84
Fill: 1.61
6.67
1.45
24+04
Cut: 9.79
Fill: 1.61
5.75
1.50
℄ Channel STA. 24+00
Drop Structure
72.86
72.14
Bottom Grade
Base Elev.
EL. 31.
LEGEND
As Constructed
Cut: 7.13
Fill: 1.52
6.67
1.52
EL. 22.18
℄ Channel STA 23+00

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Silverado Subdivision

ZONEATLAS/DRNG,FILE#: M-9 NW D20

DRB#: 98-57 EPC#

WORK ORDER#:

LEGAL DESCRIPTION: Parcels 11 & 12, Albuquerque South, Unit 4, Tracts A, B, C & D, Town of Atrisco Grant.

CITY ADDRESS:

ENGINEERING FIRM:	Mark Goodwin & Associates, PA	CONTACT:	Gregory J. Krenik, PE
ADDRESS:	P.O. Box 90606, Albuquerque, NM 87199	PHONE:	828-2200
OWNER:	Thunder Development	CONTACT:	Tom Joseph
ADDRESS:	3 Calle Pinon, Placitas, NM 87043	PHONE:	771-8758
ARCHITECT:	N/A	CONTACT:	
ADDRESS:		PHONE:	
SURVEYOR:	Aldrich Land Surveying	CONTACT:	Tim Aldrich
ADDRESS:	P.O. Box 30701, Albuquerque, NM 87190-0701	PHONE:	884-1990
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
- X SIDEWALK VARIANCE
- X EASEMENT VACATION - SAS EASEMENT

PRE-DESIGN MEETING:

- X YES
- ___ NO
- ___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ___ SKETCH PLAT APRROVAL
- X PRELIMINARY PLAT APRROVAL
- ___ 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

DATE SUBMITTED: 7-16-98

BY:

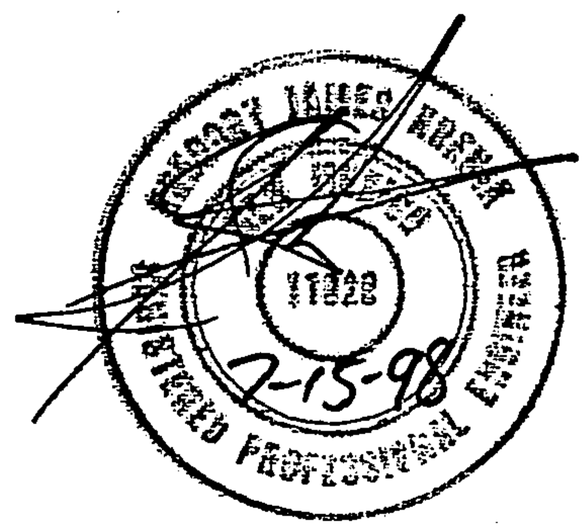
Gregory J. Krenik, PE

RECEIVED
JUL 17 1998
HYDROLOGY SECTION

DRAINAGE CALCULATIONS

FOR

SILVERADO SUBDIVISION



D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Silverado Subdivision, Units 1, 2, 3 and 4

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
		UNIT I		
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Rodeo Avenue	Benevides Road	Nevis Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Benevides Road	Nevis Drive
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Nevis Drive	Jeremiah Place	Rodeo Avenue
24' FE	Res Pvmt Mount C&G (E side) * 4' Sdwk (E side)	Benevides Road	Barbados Avenue	Lot 1, Blk 6
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Nevis Drive	Lot 12, Blk 8
24' FE	Art Pvmt Std C&G (N side) * 4' Sdwk (N side)	Barbados Avenue	Benevides Road	E Property Line

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Benevides Road	Rodeo Avenue	N Property line
6"	PVC Waterline	Rodeo Avenue	entire length	
6"	PVC Waterline	Nevis Drive	entire length	
6"	PVC Waterline	Barbados Avenue	entire length	
8"	PVC Waterline	Jeremiah Place	entire length	
8"	PVC Waterline	Benevides Road	Jeremiah Place	Rodeo Avenue
8"	PVC Waterline	Jeremiah Place	Lot 13, Blk 8	Saba Drive
8"	PVC Waterline	Saba Drive	entire length	
8"	PVC Waterline	Park Terrace Avenue	Saba Drive	Roatan Road
8"	PVC Waterline	Roatan Road	Park Terrace Avenue	St. Kitts Drive
8"	PVC Waterline	St. Kitts Drive	Roatan Road	Brian Avenue
8"	PVC Waterline	Brian Avenue	entire length	
8"	SAS	Jeremiah Place	Lots 13, Blk 8	Saba Drive
8"	SAS	Saba Drive	entire length	
8"	SAS	Park Terrace Avenue	Saba Drive	Roatan Road
8"	SAS	Roatan Road	entire length	
8"	SAS	St. Kitts Drive	Roatan Road	Brian Avenue
8"	SAS	Brian Avenue	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Nevis Drive	entire length	
8"	SAS	Jeremiah Place	entire length	
8"	SAS	Benavides Road	Rodeo Avenue	Jeremiah Place
18",30",36"	RCP Stormdrain	Rodeo Avenue	Benevides Road	Nevis Drive
36",42"	RCP Stormdrain	Nevis Drive	Rodeo Avenue	Jeremiah Place
18", 42"	RCP Stormdrain	Saba Drive	entire length	
42"	RCP Stormdrain	Park Terrace Avenue	Saba Drive	Roatan Road
30",42",48"	RCP Stormdrain	Roatan Road	entire length	
48"	RCP Stormdrain	20' Drainage Esmt	Roatan Road	50' Drainage Esmt
48", 36"	RCP Stormdrain	Temp Detention Pond		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 2		
24' FE	Res Pvmt Mount C&G (W side) * 4' Sdwk (W side)	Benevides Road	Barbados Avenue	Lot 15, Blk 3
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	St. Nikolai Avenue	86th Street	Barranca Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	St. Nikolai Avenue	Rodeo Avenue
32' FF	Res Pvmt Std C&G (N side) 4' Sdwk (N side)	Rodeo Avenue	Barranca Drive	Benevides Road
32' FF	Res Pvmt Std C&G (S side) * 4' Sdwk (S side)	Waters Drive	Silverado Avenue	Rodeo Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Silverado Court	Waters Drive
24' FE	Art Pvmt Std C&G (N side) * 4' Sdwk (N side)	Barbados Avenue	86th Street	Benevides Road
24' FE	Art Pvmt Std C&G (E side) * 4' Sdwk (E side)	86th Street	Barbados Avenue	Lot 5, Blk 3
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Barranca Drive	Silverado Court

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Court	Silverado Avenue	Lot 7, Blk 4
6"	PVC Waterline	Barbados Avenue	entire length	
6"	PVC Waterline	Benevides Road	Barbados Avenue	Jeremiah Place
6"	PVC Waterline	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
6"	PVC Waterline	Silverado Avenue	entire length	
6"	PVC Waterline	Silverado Court	entire length	
6"	PVC Waterline	Waters Drive	entire length	
6"	PVC Waterline	86th Street	St. Nikolai Avenue	N Property line
8"	PVC Waterline	St. Nikolai Avenue	entire length	
8"	PVC Waterline	Barranca Drive	St. Nikolai Avenue	Rodeo Drive
8"	PVC Waterline	Rodeo Avenue	entire length	
8"	PVC Waterline	86th Street	Snow Vista Blvd.	St. Nikolai Avenue
12"	PVC Waterline	Snow Vista Blvd.	N property line	S property line
8"	SAS	St. Nikolai Avenue	entire length	
8"	SAS	Barranca Drive	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Silverado Avenue	entire length	
8"	SAS	Silverado Court	entire length	
8"	SAS	Waters Drive	entire length	
18",24",30"	RCP Stormdrain	Rodeo Avenue	Lot 7, Blk 3	Benevides Road
18"	RCP Stormdrain	Waters Drive	Lot 1, Blk 5	Rodeo Avenue

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 3		
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Saba Drive	Lot 22, Blk 8
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Lot 13, Blk 8	Saba Drive
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Saba Drive	Jeremiah Place	Park Terrace Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Park Terrace Avenue	Saba Drive	Roatan Road
25' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (both sides	Park Terrace Avenue	Roatan Road	Lot 37, Blk 8
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Roatan Road	Park Terrace Avenue	St. Kitts Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	St. Kitts Drive	Roatan Road	Lot 39, Blk 6
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Brian Avenue	St. Kitts Drive	Camino San Martin
4'	Sidewalk (S side)	Camino San Martin	Lot 40, Blk 6	Lot 41, Blk 6

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
46' FF	Res Pvmt Std C&G (both sides)	Camino San Martin	Hammerhead	
6"	PVC Waterline	Jeremiah Place	Saba Drive	Lot 22, Blk 8
6"	PVC Waterline	Park Terrace Avenue	Roatan Road	Lot 37, Blk 8
6"	PVC Waterline	St. Kitts Drive	Brain Avenue	Lot 39, Blk 6
8"	SAS	Jeremiah Place	Saba Drive	Lot 22, Blk 8
8"	SAS	Park Terrace Avenue	Roatan Road	Lot 37, Blk 8
8"	SAS	St. Kitts Drive	Brian Avenue	Lot 39, Blk 6

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 4		
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Los Alex Court	Cabo Drive	Lot 20, Blk 2
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Cabo Drive	Red Rock Road	Golden View Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Red Rock Road	Cabo Drive	Golden View Drive
32' F	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (both sides)	Golden View Drive	Cabo Drive	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Golden View Drive	Red Rock Road	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	St. Nikolai Avenue	Golden View Drive	86th Street
24' FE	Art Pvmt Std C&G (W side) 4' Sdwk (W side)	86th Street	Snow Vista Blvd.	Lot 34, Blk 1
6"	PVC Waterline	St. Nikolai Avenue	entire length	
6"	PVC Waterine	Red Rock Road	entire length	
6"	PVC Waterline	Cabo Drive	entire length	
6"	PVC Waterline	Los Alex Court	entire length	
6"	PVC Waterline	Golden View Drive	entire length	
8"	SAS	St. Nikolai Avenue	Golden View Drive	86th Street
8"	SAS	Red Rock Road	entire length	
8"	SAS	Cabo Drive	entire length	
8"	SAS	Los Alex Court	entire length	
8"	SAS	Golden View Drive	entire length	

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 7/16/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Stormdrain to include manholes, inlets, riprap and outfall.

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees. Financial Guarantee is not required for this item.

Water infrastructure to include valves, fittings, valveboxes and fire hydrants.

Sanitary sewer to include manholes and service connections.

Street lights per DPM.

* Item to be deferred.

Prepared By: _____

Print Name: Gregory J. Krenik, PE

Firm: Mark Goodwin & Associates, PA

* * * *

FAX

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
DEVELOPMENT AND BUILDING SERVICES
(ONE STOP SHOP)
600 2ND STREET - PLAZA DEL SOL - 2ND FLOOR WEST
FAX NO. 924-3864

DATE: 10-27-98

TIME:

NO. OF PAGES: 2
(INCLUDING COVER PAGE)

TO: Fred Arfman

FROM: Susan Calongne

COMMENTS: Here are my additional comments to Greg Krenik re: Silverado, per our discussion. (for your information)

— S

facsimile
TRANSMITTAL

[redacted]

to: Susan Calongue
fax #:
re: Silverado Sub.
date: 10-26-98
pages: 11, including this cover sheet.

Susan:

sheet 2 of 5 Had the wrong lot numbers on it.

All lot/BLKS are per the plat.

I will give you a new sheet 2 of 5 with correct lots tomorrow before DRB

From the desk of...

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

(505) 828-2200
Fax: (505) 797-9539

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Silverado Subdivision, Units 1, 2, 3 and 4

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
		UNIT 1		
24' FE	M. Local Pvmt Mount C&G (W side) 4' Sdwk (W side)	Benavides Road	Lot 9, Blk 5	North Property Line
24' FE**	M. Local Pvmt Mount C&G (W side) 4' Sdwk (W side)	Benavides Road	Barbados Avenue	Lot 9, Blk 5
32' FF	Res Pvmt Std C&G (both sides) 4' Sdwk (both sides)	St. Nikolai Avenue	86th Street	Barranca Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	St. Nikolai Avenue	Rodeo Avenue
32' FF	Res Pvmt Std C&G (both side) * 4' Sdwk (both side)	Rodeo Avenue	Barranca Drive	Benavides Road
32' FF	Res Pvmt Std C&G (both side) * 4' Sdwk (both side)	Waters Drive	Silverado Avenue	Rodeo Avenue

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Silverado Court	Waters Drive
24' FE**	Art Pvmt Std C&G (N side) 4' Sdwk (N side)	Barbados Avenue	86th Street	Benavides Road
24' FE	Art Pvmt Std C&G (E side) 4' Sdwk (E side)	86th Street	Barbados Avenue	North Prop. Line
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Barranca Drive	Silverado Court
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Court	Silverado Avenue	Terminus
25' EE	Temp Pvmt	Snow Vista Blvd	Camino San Martin	86 th St/Barbados Inter.
N/A	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Benavides Road	Rodeo Avenue	N Property line
6"	PVC Waterline	Barbados Avenue	entire length	
6"	PVC Waterline	Benavides Road	Barbados Avenue	Jeremiah Place
6"	PVC Waterline	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
6"	PVC Waterline	Silverado Avenue	entire length	
6"	PVC Waterline	Silverado Court	entire length	
6"	PVC Waterline	Waters Drive	entire length	
6"	PVC Waterline	86th Street	St. Nikolai Avenue	N Property line
8"	PVC Waterline	Benavides Road	Jeremiah Place	Rodeo Avenue
8"	PVC Waterline	St. Nikolai Avenue	entire length	
8"	PVC Waterline	Barranca Drive	St. Nikolai Avenue	Rodeo Drive
8"	PVC Waterline	Rodeo Avenue	entire length	
8"	SAS	Benavides Road	Rodeo Avenue	Jeremiah Place
8"	SAS	Jeremiah Place	Benavides Road	Saba Drive
8"	SAS	Saba Drive	entire length	
8"	SAS	Park Terrace Avenue	Saba Drive	Roatan Road
8"	SAS	Roatan Road	entire length	
8"	SAS	St. Kitts Drive	Roatan Road	Brian Avenue
8"	SAS	Brian Avenue	entire length	
8"	SAS	St. Nikolai Avenue	entire length	
8"	SAS	Barranca Drive	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Silverado Avenue	entire length	
8"	SAS	Silverado Court	entire length	
8"	SAS	Waters Drive	entire length	
24"	RCP Stormdrain	Rodeo Avenue	Lot 7, Blk 3	Waters Dr.
18"	RCP Stormdrain	Waters Drive	Lot 1, Blk 5	Rodeo Avenue
30"	RCP Stormdrain	Rodeo Avenue	Waters Drive	Benavides Road
- -	Temp Retention Pond On Tract "C"	Agreement and Covenant required for Temp. Pond		
- -	Temp Retention Pond On Unit 4	Agreement and Covenant required for Temp. Pond		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 2		
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Rodeo Avenue	Benavides Road	Nevis Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Benavides Road	Nevis Drive (west)
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Nevis Drive (east)	Jeremiah Place	Rodeo Avenue
12' FE	Res Pvmt Mount C&G (E side) 4' Sdwk (E side)	Benavides Road	Lot 9, Blk 5	Lot 1, Blk 6
12' FE**	Res Pvmt Mount C&G (E side) 4' Sdwk (E side)	Benavides Road	Barbados Avenue	Lot 9, Blk 5
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Nevis Drive (west)	East Property Line
24' FE**	Art Pvmt Std C&G (N side) 4' Sdwk (N side)	Barbados Avenue	Benavides Road	E Property Line
32' FF	Res Pvmt Mount C&G (both sides). 4' Sdwk (both sides)	Nevis Drive (west)	Jeremiah Place	Tract "A"
N/A	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Rodeo Avenue	entire length	
6"	PVC Waterline	Nevis Drive (east)	entire length	
6"	PVC Waterline	Barbados Avenue	entire length	
8"	PVC Waterline	Jeremiah Place	Benavides Road	Saba Drive
8"	PVC Waterline	Nevis Drive (west)	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Nevis Drive (east)	entire length	
8"	SAS	Nevis Drive (west)	entire length	
30"	RCP Stormdrain	Rodeo Avenue	Benavides Road	Lot 8, Blk 7
36"	RCP Stormdrain	Rodeo Avenue	Nevis Drive (east)	Lot 8, Blk 7
42"	RCP Stormdrain	Nevis Drive (east)	Rodeo Avenue	Jeremiah Place
42"	RCP Stormdrain	Jeremiah Place	Nevis Drive (east)	Lot 12 Blk 8
- -	Temp Retention Pond	Drainage Covenant required for Final Plat		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 3		
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Saba Drive	Terminus
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	West Property Line	Saba Drive
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Saba Drive	Jeremiah Place	Park Terrace Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Park Terrace Avenue	Saba Drive	Roatan Road
26' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (west side)	Park Terrace Avenue	Roatan Road	Terminus
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Roatan Road	Park Terrace Avenue	St. Kitts Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	St. Kitts Drive	Roatan Road	Terminus
32' FF	Res Pvmt Mount C&G (both sides) 4' Sdwk (both sides)	Brian Avenue	St. Kitts Drive	Camino San Martin
46' FF	Res Pvmt Std C&G (both sides)	Camino San Martin	Hammerhead	
4'	Sidewalk (S side)	Camino San Martin	Lot 38, Blk 6	Lot 39, Blk 6
N/A	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Jeremiah Place	Saba Drive	Lot 14, Blk 9
6"	PVC Waterline	Park Terrace Avenue	Roatan Road	Lot 26, Blk 9
6"	PVC Waterline	St. Kitts Drive	Brain Avenue	Lot 38, Blk 6
8"	PVC Waterline	Saba Drive	entire length	
8"	PVC Waterline	Park Terrace Avenue	Saba Drive	Roatan Road
8"	PVC Waterline	Roatan Road	Park Terrace Avenue	St. Kitts Drive
8"	PVC Waterline	St. Kitts Drive	Roatan Road	Brian Avenue
8"	PVC Waterline	Brian Avenue	entire length	
8"	PVC Waterline	86th Street	Snow Vista Blvd.	St. Nikolai Avenue
8"	SAS	Jeremiah Place	Saba Drive	Lot 14, Blk 9
8"	SAS	Park Terrace Avenue	Roatan Road	Lot 26, Blk 9
8"	SAS	St. Kitts Drive	Brian Avenue	Lot 38, Blk 6
30"	RCP Stormdrain	Roatan Road	In Knuckle	
42"	RCP Stormdrain	Jeremiah Place	Lot 6, Blk 9	Saba Drive
42"	RCP Stormdrain	Saba Drive	Jeremiah Place	Park Terrace Avenue
42"	RCP Stormdrain	Park Terrace Avenue	Saba Drive	Roatan Road
42"	RCP Stormdrain	Roatan Road	Park Terrace Avenue	Lot 6, Blk 10
48"	RCP Stormdrain	20' Drainage Esmt	Roatan Road	50' Drainage Esmt
66"	RCP Stormdrain	50' Drainage Esmt	SE Corner of Subdivision	Gibson Blvd
72"	RCP Stormdrain	50' Drainage Esmt	Gibson Blvd	City Pond
- -	Increase Size	City Pond		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 4		
31' FF	Art Pvmt(includes bike lane) Std C&G (east side) Ext Curb (east side) 6' Sdwk (east side)	Snow Vista Blvd	North Property Line	86th St
26' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Los Alex Court	Cabo Drive	Terminus
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Cabo Drive	Red Rock Road	Golden View Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Red Rock Road	Cabo Drive	Golden View Drive
32' F	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (both sides)	Golden View Drive	Cabo Drive	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Golden View Drive	Red Rock Road	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) 4' Sdwk (both sides)	St. Nikolai Avenue	Golden View Drive	86th Street
24' FE	Art Pvmt Std C&G (W side) 4' Sdwk (W side)	86th Street	Snow Vista Blvd	Barbados Avenue
16' FE	Art Pvmt Std C & G (W side) 4' Sdwk (W side)	86th Street	Barbados Avenue	North Prop Line
24' FE	Art Pvmt Std C & G (E side) 6' Sdwk (E side)	Snow Vista Blvd	Camino San Martin	86th/Barbados Intersection
	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	St. Nikolai Avenue	entire length	
6"	PVC Waterine	Red Rock Road	entire length	
6"	PVC Waterline	Cabo Drive	entire length	
6"	PVC Waterline	Los Alex Court	entire length	
6"	PVC Waterline	Golden View Drive	entire length	
12"	PVC Waterline	Snow Vista Blvd	entire length	
8"	SAS	St. Nikolai Avenue	Golden View Drive	86th Street
8"	SAS	Red Rock Road	entire length	
8"	SAS	Cabo Drive	entire length	
8"	SAS	Los Alex Court	entire length	
8"	SAS	Golden View Drive	entire length	

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 10/26/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Exisitng SAS line shall be abandoned with each unit as approved at DRC.

Stormdrain to include connector pipes, manholes, inlets, riprap and outfall.

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees. Financial Guarantee is not required for this item.

Water infrastructure to include valves, fittings, valveboxes and fire hydrants.

Sanitary sewer to include manholes and service connections.

Res. Street lights per DPM.

* Item to be deferred.

** Separate Financial Guarantee. Construction to be deferred.

Prepared By: _____

Print Name: Gregory J. Krenik, PE

Firm: Mark Goodwin & Associates, PA

* * * *

SMC markup 10-26-98

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Figure 12

EXHIBIT "A"
To Subdivision Improvements Agreement
DEVELOPMENT REVIEW BOARD (DRB) REQUIRED INFRASTRUCTURE LISTING
for Silverado Subdivision, Units 1, 2, 3 and 4

Following is a summary of Public/Private Infrastructure required to be constructed or financially guaranteed to be constructed for the above development. This summary is not necessarily a complete listing. During the design process, if the City determines that appurtenant items have not been included in the summary, those items will be included in the listing and related financial guarantee, if the items normally are the Subdivider responsibility. In addition, any unforseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility are the responsibility of the Subdivider and will be included in the financial guarantee provided to the City.

Size	Type Improvement	Location	From	To
		UNIT 1		
24' FE	M. Local Pvmt Mount C&G (W side) 4' Sdwk (W side)	Benavides Road	Lot 9, Blk 5	North Property Line
24' FE**	M. Local Pvmt Mount C&G (W side) 4' Sdwk (W side)	Benavides Road	Barbados Avenue	Lot 9, Blk 5
32' FF	Res Pvmt Std C&G (both sides) 4' Sdwk (both sides)	St. Nikolai Avenue	86th Street	Barranca Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Barranca Drive	St. Nikolai Avenue	Rodeo Avenue
32' FF	Res Pvmt Std C&G (both side) * 4' Sdwk (both side)	Rodeo Avenue	Barranca Drive	Benavides Road
32' FF	Res Pvmt Std C&G (both side) * 4' Sdwk (both side)	Waters Drive	Silverado Avenue	Rodeo Avenue

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Silverado Court	Waters Drive
24' FE**	Art Pvmt Std C&G (N side) 4' Sdwk (N side)	Barbados Avenue	86th Street	Benavides Road
24' FE	Art Pvmt Std C&G (E side) 4' Sdwk (E side)	86th Street	Barbados Avenue	North Prop. Line
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Avenue	Barranca Drive	Silverado Court
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Silverado Court	Silverado Avenue	Terminus
25' EE	Temp Pvmt	Snow Vista Blvd	Camino San Martin	86 th St/Barbados Inter.
N/A	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Benavides Road	Rodeo Avenue	N Property line
6"	PVC Waterline	Barbados Avenue	entire length	
6"	PVC Waterline	Benavides Road	Barbados Avenue	Jeremiah Place
6"	PVC Waterline	Barranca Drive	Silverado Avenue	St. Nikolai Avenue
6"	PVC Waterline	Silverado Avenue	entire length	
6"	PVC Waterline	Silverado Court	entire length	
6"	PVC Waterline	Waters Drive	entire length	
6"	PVC Waterline	86th Street	St. Nikolai Avenue	N Property line
8"	PVC Waterline	Benavides Road	Jeremiah Place	Rodeo Avenue
8"	PVC Waterline	St. Nikolai Avenue	entire length	
8"	PVC Waterline	Barranca Drive	St. Nikolai Avenue	Rodeo Drive
8"	PVC Waterline	Rodeo Avenue	entire length	
8"	SAS	Benavides Road	Rodeo Avenue	Jeremiah Place
8"	SAS	Jeremiah Place	Benavides Road	Saba Drive
8"	SAS	Saba Drive	entire length	
8"	SAS	Park Terrace Avenue	Saba Drive	Roatan Road
8"	SAS	Roatan Road	entire length	
8"	SAS	St. Kitts Drive	Roatan Road	Brian Avenue
8"	SAS	Brian Avenue	entire length	
8"	SAS	St. Nikolai Avenue	entire length	
8"	SAS	Barranca Drive	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Silverado Avenue	entire length	
8"	SAS	Silverado Court	entire length	
8"	SAS	Waters Drive	entire length	
~~18"~~,24" ~~30"~~	RCP Stormdrain	Rodeo Avenue	Lot 7, Blk 3 – to Waters Dr.	
~~18"~~	RCP Stormdrain	Waters Drive	Lot 1, Blk 5	30" in Rodeo from Benavides Road to Waters Rodeo Avenue
--	Temp Retention Pond	~~Drainage~~ Agreement and Covenant required for ~~Final Plat~~ temp pond		

on Tract___?

Temp Ret. Pond on Unit 4 w/ Agreement & Cov.

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 2		
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Rodeo Avenue	Benavides Road	Nevis Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Benavides Road	Nevis Drive (west)
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Nevis Drive (east)	Jeremiah Place	Rodeo Avenue
12' FE	Res Pvmt Mount C&G (E side) 4' Sdwk (E side)	Benavides Road	Lot 9, Blk 5	Lot 1, Blk 6
12' FE**	Res Pvmt Mount C&G (E side) 4' Sdwk (E side)	Benavides Road	Barbados Avenue	Lot 9, Blk 5
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Nevis Drive (west)	East Property Line
24' FE**	Art Pvmt Std C&G (N side) 4' Sdwk (N side)	Barbados Avenue	Benavides Road	E Property Line
32' FF	Res Pvmt Mount C&G (both sides) 4' Sdwk (both sides)	Nevis Drive (west)	Jeremiah Place	Tract "A"
N/A	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Rodeo Avenue	entire length	
6"	PVC Waterline	Nevis Drive (east)	entire length	
6"	PVC Waterline	Barbados Avenue	entire length	
8"	PVC Waterline	Jeremiah Place	Benavides Road	Saba Drive
8"	PVC Waterline	Nevis Drive (west)	entire length	
8"	SAS	Rodeo Avenue	entire length	
8"	SAS	Nevis Drive (east)	entire length	
8"	SAS	Nevis Drive (west)	entire length	
~~18",30",36"~~	RCP Stormdrain	Rodeo Avenue	Benavides Road	Nevis Drive (east)
~~36~~",42"	RCP Stormdrain	Nevis Drive (east)	Rodeo Avenue	Jeremiah Place
42"	RCP Stormdrain	Jeremiah Place	Nevis Drive (east)	Lot 12 Blk 8
--	Temp Retention Pond	on Tract? ~~Drainage~~ Covenant required for ~~Final Plat~~ agreement?		pond

(Break up)

30" RCP — Rodeo — Benavides to Lot 8, BL ?

36" RCP — Rodeo — Nevis to " "

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 3		
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	Saba Drive	Terminus
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Jeremiah Place	West Property Line	Saba Drive
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Saba Drive	Jeremiah Place	Park Terrace Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Park Terrace Avenue	Saba Drive	Roatan Road
25' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (west side)	Park Terrace Avenue	Roatan Road	Terminus
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Roatan Road	Park Terrace Avenue	St. Kitts Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	St. Kitts Drive	Roatan Road	Terminus
32' FF	Res Pvmt Mount C&G (both sides) 4' Sdwk (both sides)	Brian Avenue	St. Kitts Drive	Camino San Martin
46' FF	Res Pvmt Std C&G (both sides)	Camino San Martin	Hammerhead	
4'	Sidewalk (S side)	Camino San Martin	Lot 38, Blk 6	Lot 39, Blk 6
N/A	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	Jeremiah Place	Saba Drive	Lot 14, Blk 9
6"	PVC Waterline	Park Terrace Avenue	Roatan Road	Lot 26, Blk 9
6"	PVC Waterline	St. Kitts Drive	Brain Avenue	Lot 38, Blk 6
8"	PVC Waterline	Saba Drive	entire length	
8"	PVC Waterline	Park Terrace Avenue	Saba Drive	Roatan Road
8"	PVC Waterline	Roatan Road	Park Terrace Avenue	St. Kitts Drive
8"	PVC Waterline	St. Kitts Drive	Roatan Road	Brian Avenue
8"	PVC Waterline	Brian Avenue	entire length	
8"	PVC Waterline	86th Street	Snow Vista Blvd.	St. Nikolai Avenue
8"	SAS	Jeremiah Place	Saba Drive	Lot 14, Blk 9
8"	SAS	Park Terrace Avenue	Roatan Road	Lot 26, Blk 9
8"	SAS	St. Kitts Drive	Brian Avenue	Lot 38, Blk 6
42"	RCP	Jeremiah	unit 3 Boundary	Saba Dr.
~~18~~", 42"	RCP Stormdrain	Saba Drive	~~entire length~~ Jeremia	to Park Terrace
42"	RCP Stormdrain	Park Terrace Avenue	Saba Drive	Roatan Road
~~30~~",42" ~~48"~~	RCP Stormdrain	Roatan Road	~~entire length~~ Park Terrace	to end of cul de sac
48"	RCP Stormdrain	20' Drainage Esmt	Roatan Road	50' Drainage Esmt
66"	RCP	50' DRN Esmt	SE Corner of Subd.	to GIBSON
72"	RCP	" "	GIBSON	to CITY POND

increase size of city pond

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
		UNIT 4		
31' FF	Art Pvmt(includes bike lane) Std C&G (east side) Ext Curb (east side) 6' Sdwk (east side)	Snow Vista	North Property Line	86th St
25' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Los Alex Court	Cabo Drive	Terminus
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Cabo Drive	Red Rock Road	Golden View Drive
32' FF	Res Pvmt Mount C&G (both sides) * 4' Sdwk (both sides)	Red Rock Road	Cabo Drive	Golden View Drive
32' F	Res Pvmt Mount C&G (both sides) * 4' Sdwlk (both sides)	Golden View Drive	Cabo Drive	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) * 4' Sdwk (both sides)	Golden View Drive	Red Rock Road	St. Nikolai Avenue
32' FF	Res Pvmt Std C&G (both sides) 4' Sdwk (both sides)	St. Nikolai Avenue	Golden View Drive	86th Street
24' FE	Art Pvmt Std C&G (W side) 4' Sdwk (W side)	86th Street	Snow Vista	Barbados Avenue
16" FE	Art Pvmt Std C & G (W side) 4' Sdwk (W side)	86th Street	Barbados Avenue	North Prop Line
	Res Street Lights	per DPM		

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Size	Type Improvement	Location	From	To
6"	PVC Waterline	St. Nikolai Avenue	entire length	
6"	PVC Waterine	Red Rock Road	entire length	
6"	PVC Waterline	Cabo Drive	entire length	
6"	PVC Waterline	Los Alex Court	entire length	
6"	PVC Waterline	Golden View Drive	entire length	
12"	PVC Waterline	Snow Vista Blvd	entire length	
8"	SAS	St. Nikolai Avenue	Golden View Drive	86th Street
8"	SAS	Red Rock Road	entire length	
8"	SAS	Cabo Drive	entire length	
8"	SAS	Los Alex Court	entire length	
8"	SAS	Golden View Drive	entire length	

D.R.B. Case No. 98-57
D.R.C. Project No. _____
Date Submitted 9/17/98
Prelim. Plat Approved _____
Prelim. Plat Expires _____

Exisitng SAS line shall be abandoned with each unit as approved at DRC.

Stormdrain to include manholes, inlets, riprap and outfall. and Connector pipes

Engineer's Certification for Grading and Drainage per DPM including Perimeter Walls as shown on the Grading Plan for Release of SIA and Financial Guarantees. ~~Financial Guarantee is not required for this item.~~ for Each UNIT

Water infrastructure to include valves, fittings, valveboxes and fire hydrants.

Sanitary sewer to include manholes and service connections.

Res. Street lights per DPM.

* Item to be deferred.

** Separate Financial Guarantee. Construction to be deferred.

Prepared By: _____

Print Name: Gregory J. Krenik, PE

Firm: Mark Goodwin & Associates, PA

* * * *