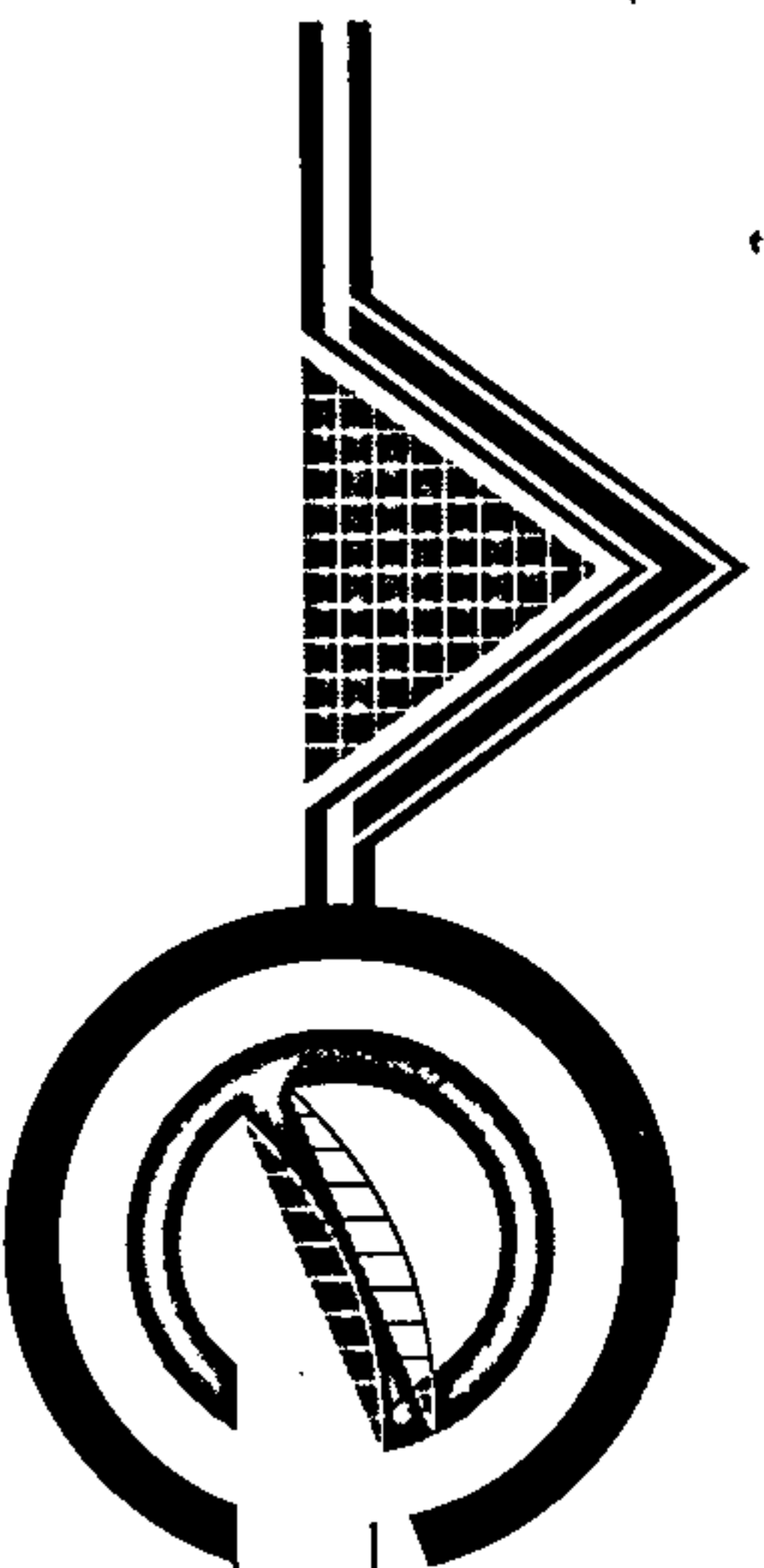
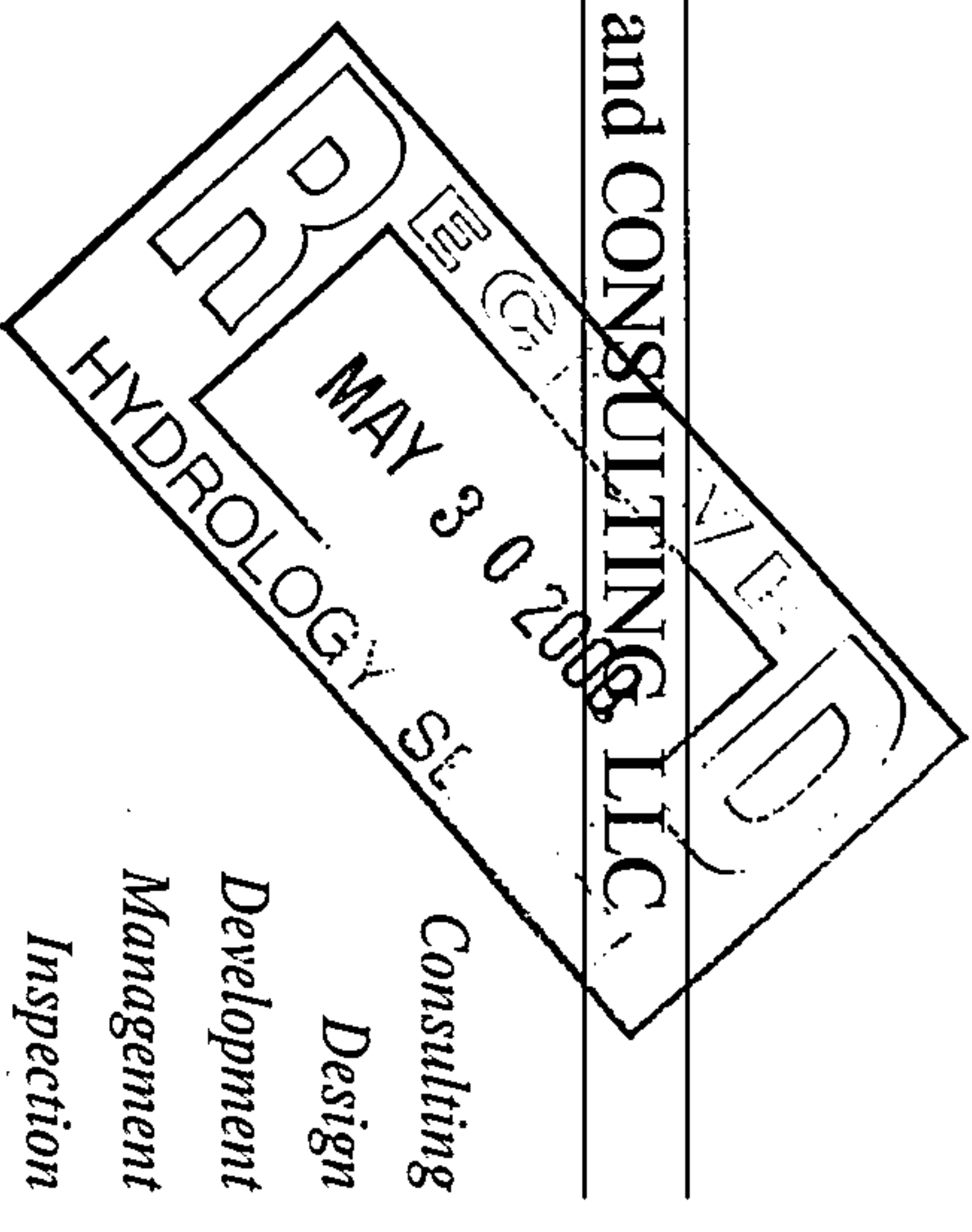




ADVANCED ENGINEERING and CONSULTING, LLC

May 26, 2000



Ms. Susan Calongne, P.E.
City/County Floodplain Administrator
600 Second Street NW
Albuquerque, New Mexico 87102

RE: REVISED GRADING/DRAINAGE PLAN FOR PHASE II OF PARCEL 2A, SUNPORT
PARK (M15/D23F)

Dear Ms. Calongne:

This letter is in response to your comments sent on April 10, 2000 for the above referenced site:

1. The owners have confirmed that the storm sewer has been completed, but it is still in the process of being accepted by the City. The depth of the storm sewer, based on the proposed grades, varies from 6.50' to 17.00' deep.
2. One 48" stub has been provided for the drainage purposes of this site. Since the pipe is controlled by inlet conditions, the runoff backups into the parking lot. We have used existing conditions ("Treatment "A") for our routing calculations for Offsite Basin B. Therefore, they will have to pond on site under developed conditions if they would want to surface discharge through this site. The other alternative is free discharge to the existing 54" pipe located to the south (assuming that it would have the capacity)..
3. The following table is treatments used under the existing and proposed conditions:

EXISTING CONDITIONS

BASIN	A	B	C	D
ON-SITE A	26%	7%	0%	67%
ON-SITE B	100%	0%	0%	0%
OFFSITE A	0%	100%	0%	0%
OFFSITE B	100%	0%	0%	0%

PROPOSED CONDITIONS

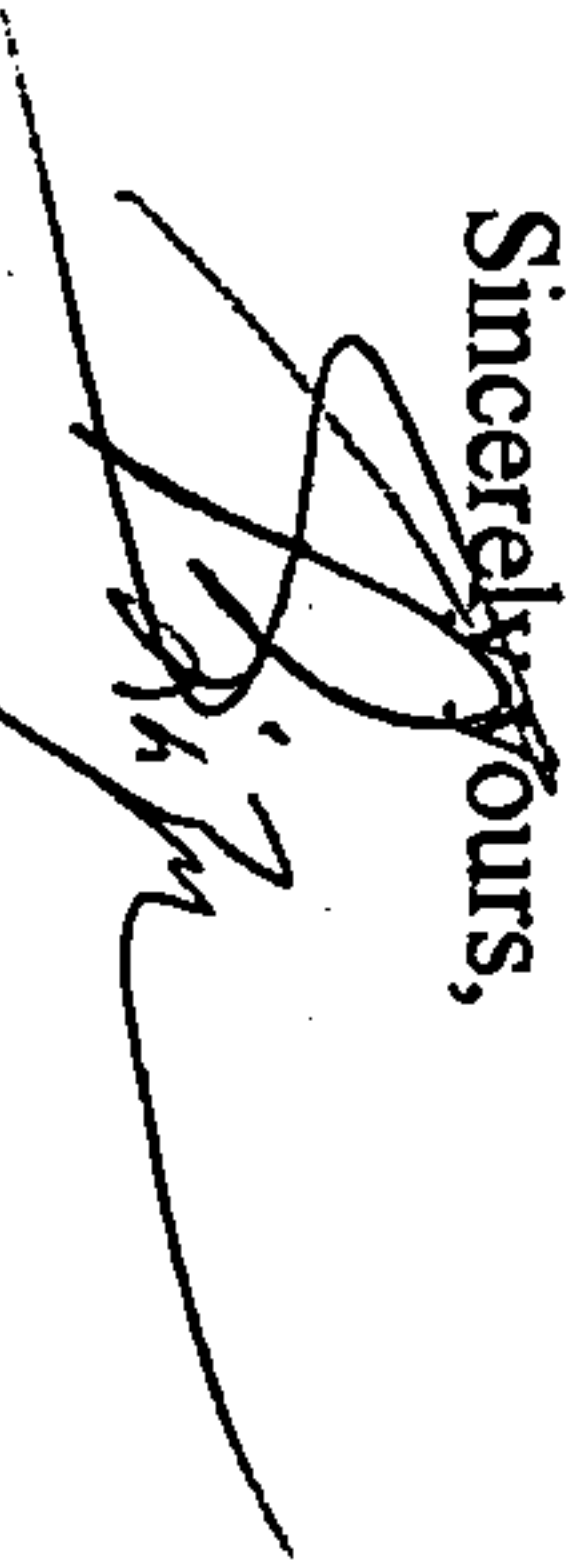
BASIN	A	B	C	D
ON-SITE A	0%	10%	0%	90%
ON-SITE B	0%	5%	0%	95%
OFFSITE A	0%	100%	0%	0%
OFFSITE B	100%	0%	0%	0%

Ms. Susan Calongne, P.E.
May 26, 2000

4. The desilting pond has been relocated to the Sunport Park site and no grading will be done within Tract A-3.
5. The spillway is design for full discharge of the runoff from Tract A-3. The desilting pond itself is not designed to any specific volume, and it is merely designed to slow down the water for desilting purposes. See Sheet 1 of 5 for the spillway calculations and typical desilting pond section.
6. The correct property line is shown on the revised grading plan. No retaining wall are being proposed with this revised grading plan. More spot elevations are added along the southern boundary line. Plans are plotted at a smaller so the grades would be more visiblle.
7. Attached is a letter from Director of the Aviation to Ricardo Chavez (owner of the Sunport Park) mentioning that the City had told them that aviation department is responsible for the removal of the flood plain (LOMR).

We had the wrong information regarding the owner of the Sunport Park on the first time submittal drainage sheet. Please revise your file with the corrected owner's name for the Sunport Park, and Please contact me if there are any questions or concerns regarding this submittal.

Sincerely Yours,



Shahab Biazar, P.E.

CITY OF ALBUQUERQUE
JIM SACA, MAYOR LAWRENCE SACK, CAO JAY J. CZAR, DIRECTOR OF AVIATION

BPL 91-11



RECEIVED

DEC 22 1999

MOLZEL-CORBIN & ASSOCIATES

December 20, 1999

Copy Sent To
Main File

Ricardo Chaves
Airport Parking
1501 Aircraft Avenue
Albuquerque, NM 87106

Re: Rental Car Facility

Dear Mr. Chaves:

The City of Albuquerque Public Works Department, Hydrology Division, has informed the Aviation Department that it is responsible for the submission of the Letter of Map Revision to FEMA to remove the flood plain from your property located between University and I-25, adjacent to Sunport Blvd. This is due to the fact that the Aviation Department was the party responsible for putting in the new storm drain which diverts flows out of the arroyo which had caused the flood plain.

This process involves preparing an application on forms provided by FEMA with the necessary hydrologic and hydraulic analysis data showing that the flows are no longer causing the flood plain. This application will be submitted to FEMA for their review.

With regard to your obtaining a Certificate of Occupancy, the Aviation Department will not be responsible for that application. The engineer or architect preparing your development plans will need to request this approval. The Aviation Department is not responsible for the issuance of these documents.

If you have any questions regarding this matter, please feel free to call.

Sincerely,

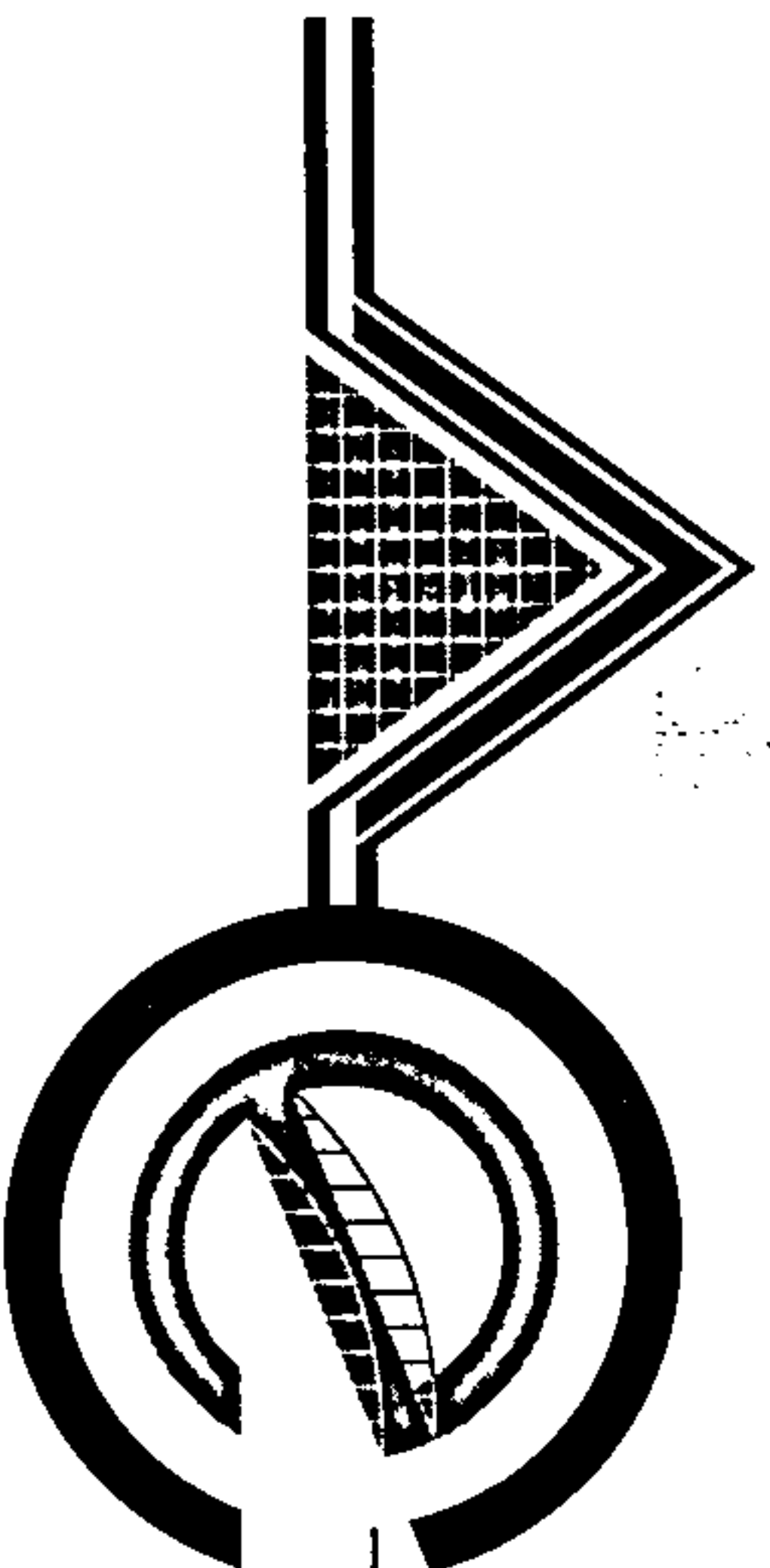
A handwritten signature in dark ink, appearing to read "Jay S. Czar".
Jay S. Czar
Director of Aviation JSC

Enclosures

Cc: Kent S. Freier, PE
Vice President, Project Engineer

Jim Hinde, Facilities Engineering/Aviation



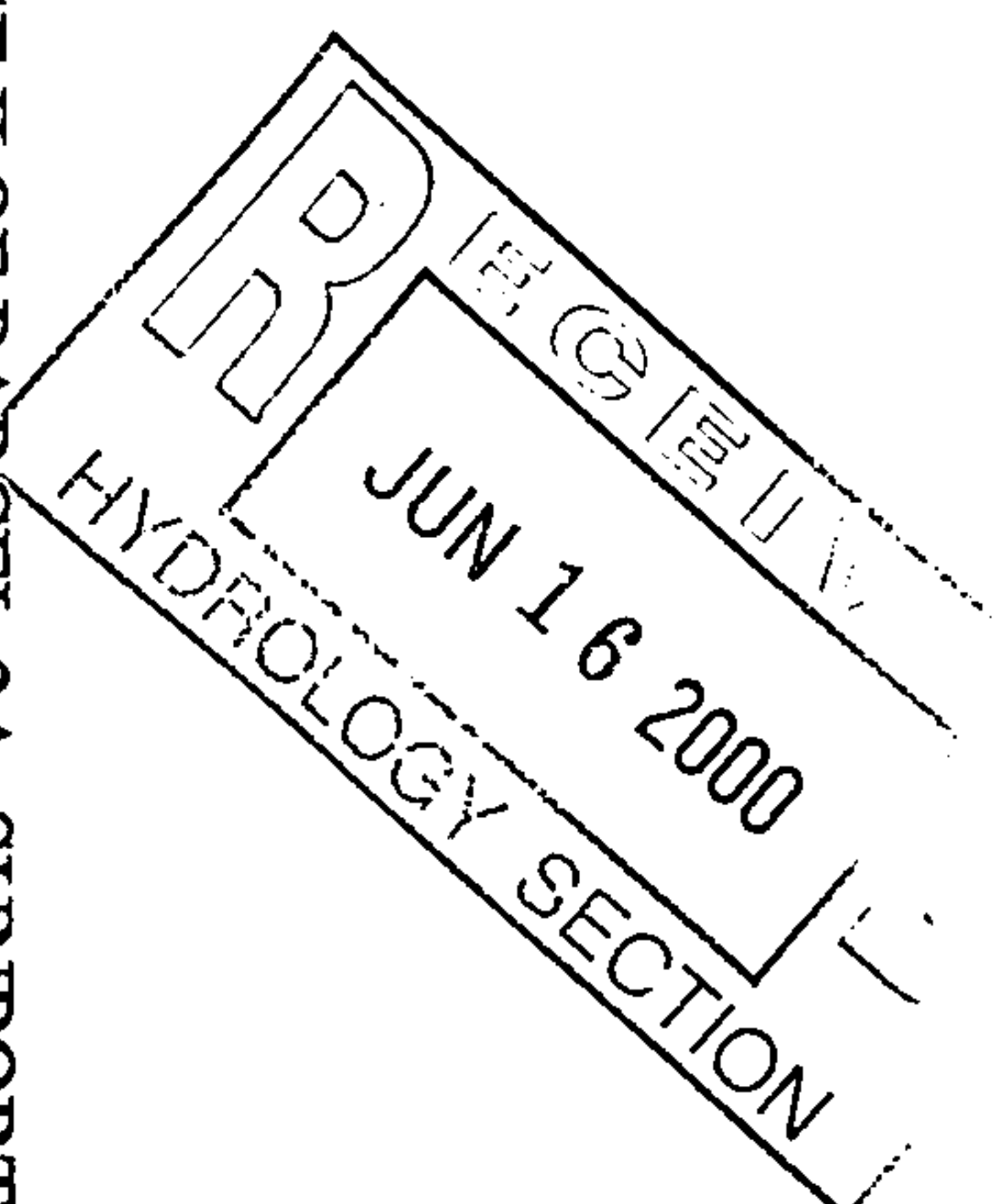


ADVANCED ENGINEERING and CONSULTING, LLC

May 26, 2000

Consulting
Design
Development
Management
Inspection

Ms. Susan Calongne, P.E.
City/County Floodplain Administrator
600 Second Street NW
Albuquerque, New Mexico 87102



RE: REVISED GRADING/DRAINAGE PLAN FOR PHASE II OF PARCEL 2A, SUNPORT PARK (M15/D23F)

Dear Ms. Calongne:

This letter is in response to your comments sent on April 10, 2000 for the above referenced site:

1. The owners have confirmed that the storm sewer has been completed, but it is still in the process of being accepted by the City. The depth of the storm sewer, based on the proposed grades, varies from 6.50' to 17.00' deep.
2. One 48" stub has been provided for the drainage purposes of this site. Since the pipe is controlled by inlet conditions, the runoff backups into the parking lot. We have used the following treatments: B=10%, C=10%, D=80% for routing calculations for Offsite Basin B. Therefore, they will not have to pond in the future. See the drainage report for the revisions.
3. The following table is treatments used under the existing and proposed conditions:

EXISTING CONDITIONS

BASIN	A	B	C	D
ON-SITE A	26%	7%	0%	67%
ON-SITE B	100%	0%	0%	0%
OFFSITE A	0%	100%	0%	0%
OFFSITE B	100%	0%	0%	0%

PROPOSED CONDITIONS

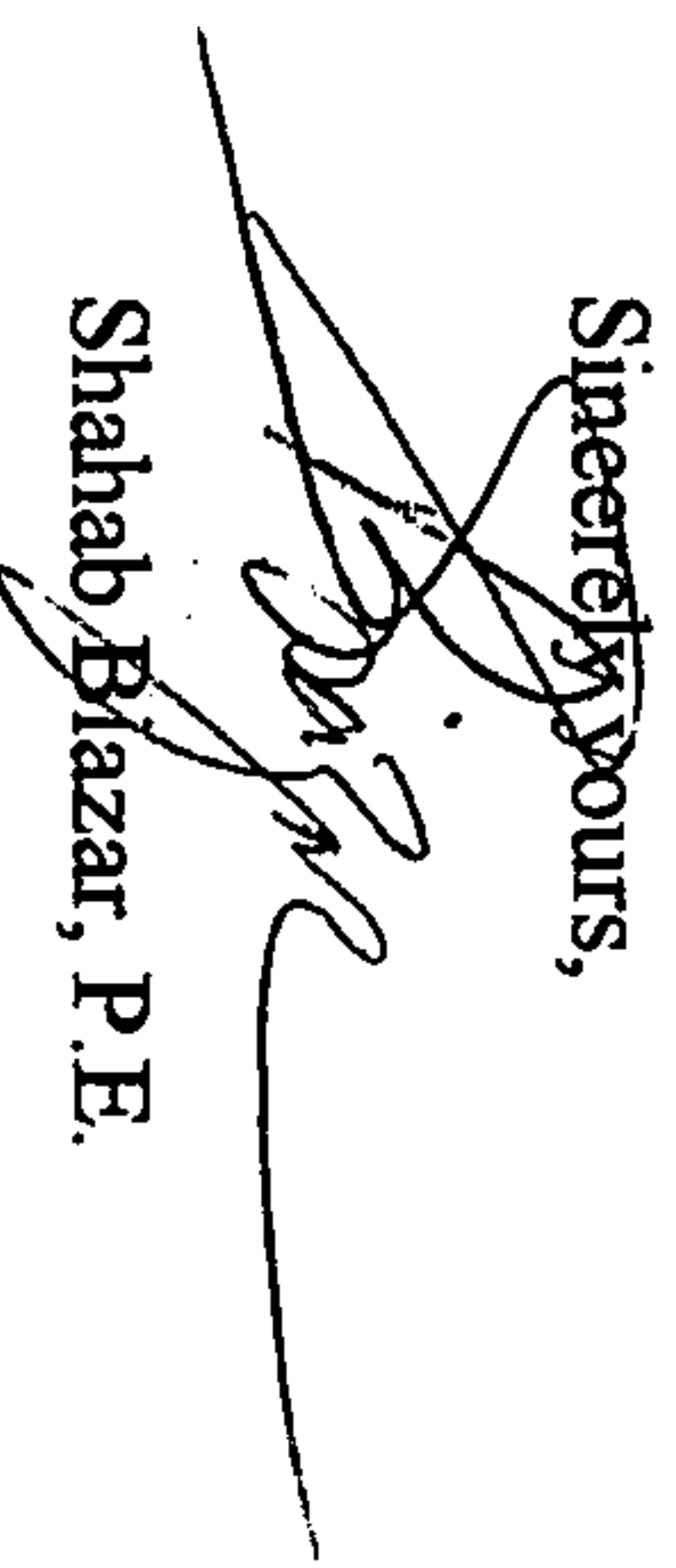
BASIN	A	B	C	D
ON-SITE A	0%	10%	0%	90%
ON-SITE B	0%	5%	0%	95%
OFFSITE A	0%	100%	0%	0%
OFFSITE B	0%	10%	10%	80%

Ms. Susan Calongne, P.E.
May 26, 2000

4. The desilting pond has been relocated to the Sunport Park site and no grading will be done within Tract A-3.
5. The spillway is design for full discharge of the runoff from Tract A-3. The desilting pond itself is not designed to any specific volume, and it is merely designed to slow down the water for desilting purposes. See Sheet 1 of 5 for the spillway calculations and typical desilting pond section.
6. The correct property line is shown on the revised grading plan. No retaining wall are being proposed with this revised grading plan. More spot elevations are added along the southern boundary line. Plans are plotted at a smaller so the grades would be more visible.
7. Attached is a letter from Director of the Aviation to Ricardo Chavez (owner of the Sunport Park) mentioning that the City had told them that aviation department is responsible for the removal of the flood plain (LOMR).

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Sincerely yours,



Shahab Biazar, P.E.

CITY OF ALBUQUERQUE
JIM BACA, MAYOR LAWRENCE RAE, CAO JAY C. ZAR, DIRECTOR OF AVIATION

BP 291-11



RECEIVED

DEC 22 1999

WOLZEL-CORRIN & ASSOCIATES

December 20, 1999

Copy Sent To
Main File

Ricardo Chaves
Airport Parking
1501 Aircraft Avenue
Albuquerque, NM 87106

Re: Rental Car Facility

Dear Mr. Chaves:

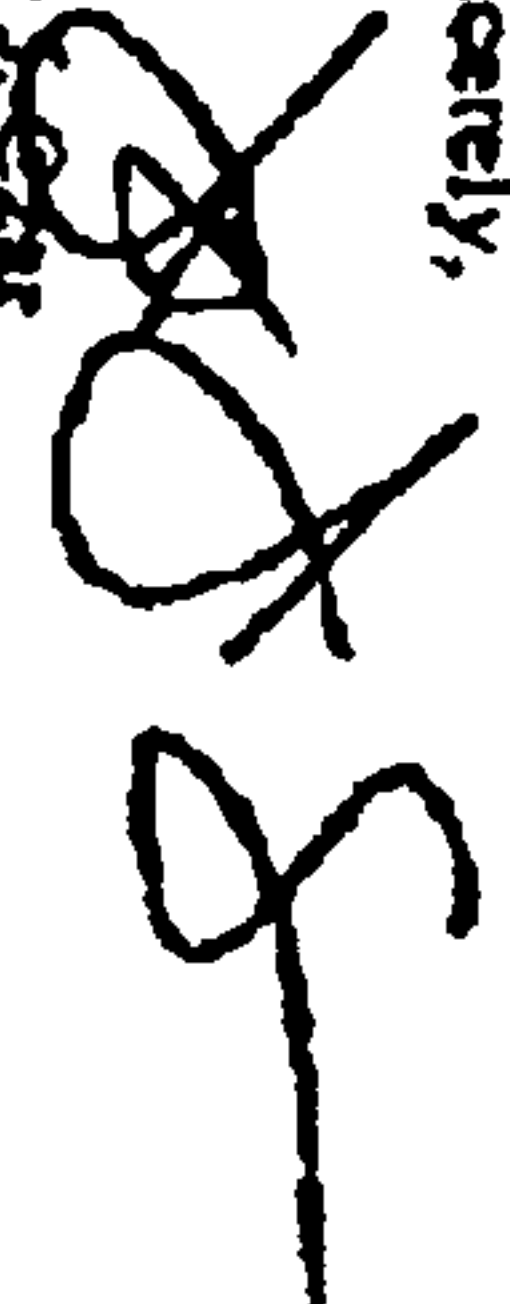
The City of Albuquerque Public Works Department, Hydrology Division, has informed the Aviation Department that it is responsible for the submission of the Letter of Map Revision to FEMA to remove the flood plain from your property located between University and I-25, adjacent to Sunport Blvd. This is due to the fact that the Aviation Department was the party responsible for putting in the new storm drain which diverts flows out of the arroyo which had caused the flood plain.

This process involves preparing an application on forms provided by FEMA with the necessary hydrologic and hydraulic analysis data showing that the flows are no longer causing the flood plain. This application will be submitted to FEMA for their review.

With regard to your obtaining a Certificate of Occupancy, the Aviation Department will not be responsible for that application. The engineer or architect preparing your development plans will need to request this approval. The Aviation Department is not responsible for the issuance of these documents.

If you have any questions regarding this matter, please feel free to call.

Sincerely,


Jay Zar
Director of Aviation JZ

Enclosures

Cc: Kent S. Preier, PE
Vice President, Project Engineer

Jim Hinde, Facilities Engineering/Aviation



the natural arroyo between University and I-25. The 48-inch storm sewer will be designed for peak discharge of 225 cfs from the new detention facility, which is reduced from a peak discharge of 250 cfs under existing conditions. The new 48-inch storm sewer will route runoff to an existing 8-foot x 6-foot CBC crossing under I-25, which has an estimated capacity of 311 cfs. This is ample capacity for the reduced flows from the University out-fall and the future fully developed paved parking lot in Phase II of the Support Park Development. A new inlet works will be constructed at the inlet of the 8-foot x 6-foot CBC to ensure that the energy in the runoff is dissipated and can easily enter the culvert entrance. Runoff from I-25 to the South Diversion Channel will be carried in a 10-foot x 6-foot CBC, which has been modeled along with the upstream confluence by Dr. Heggen at UNM, and appears to have ample capacity for the peak discharged released from the University Outfall.

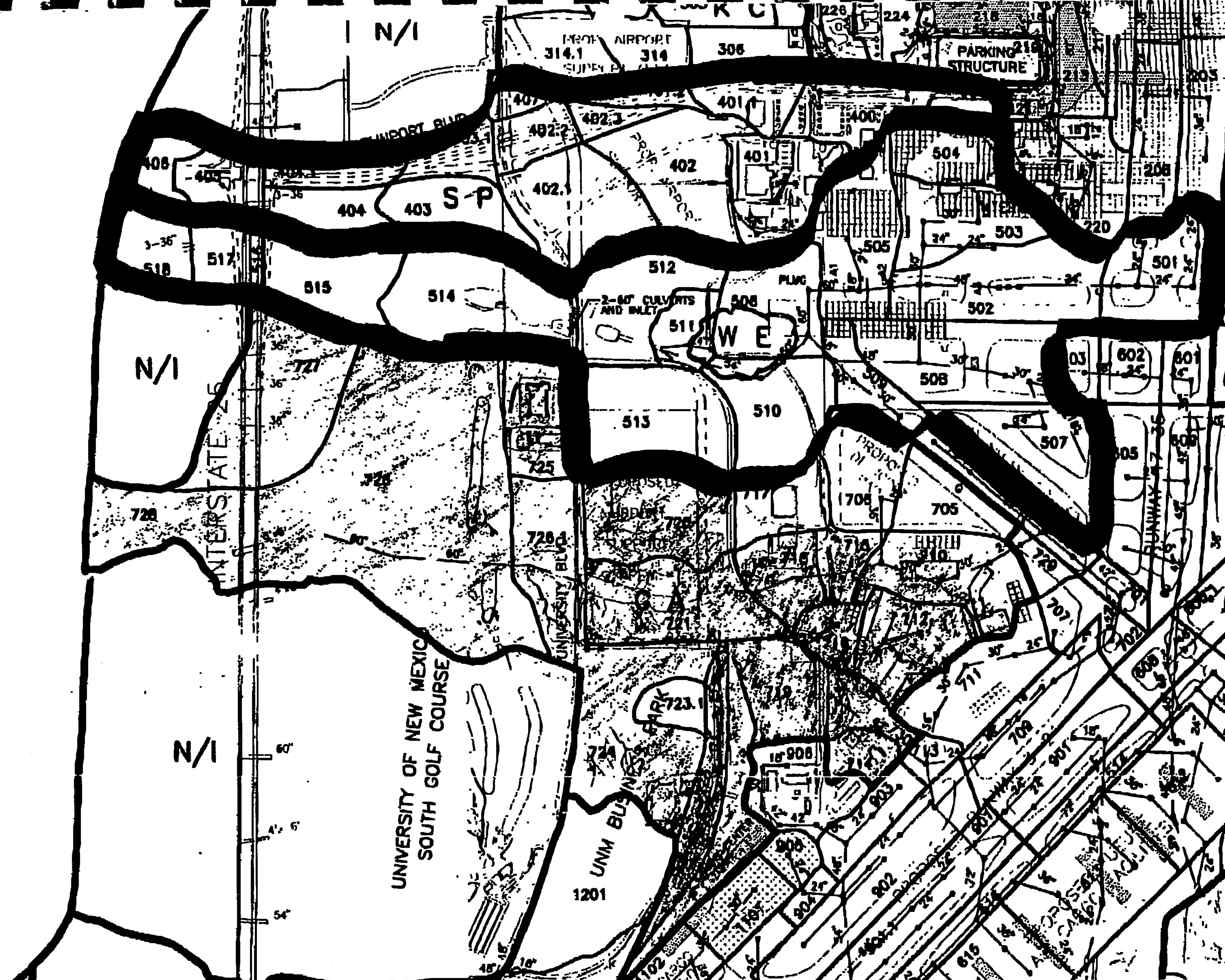
A. Interim Drainage Analysis for the North Outfall

As stated, the northernmost outfall for the RAC facility will be comprised of a storm drain pipe conveying flows from the newly enlarged detention pond just east of University to I-25. Currently, the flows are conveyed through a natural arroyo through private property. The 100 year flood plain in this area is in a dedicated easement. The new storm drain will be located south of the arroyo in a 100-foot wide drainage easement.

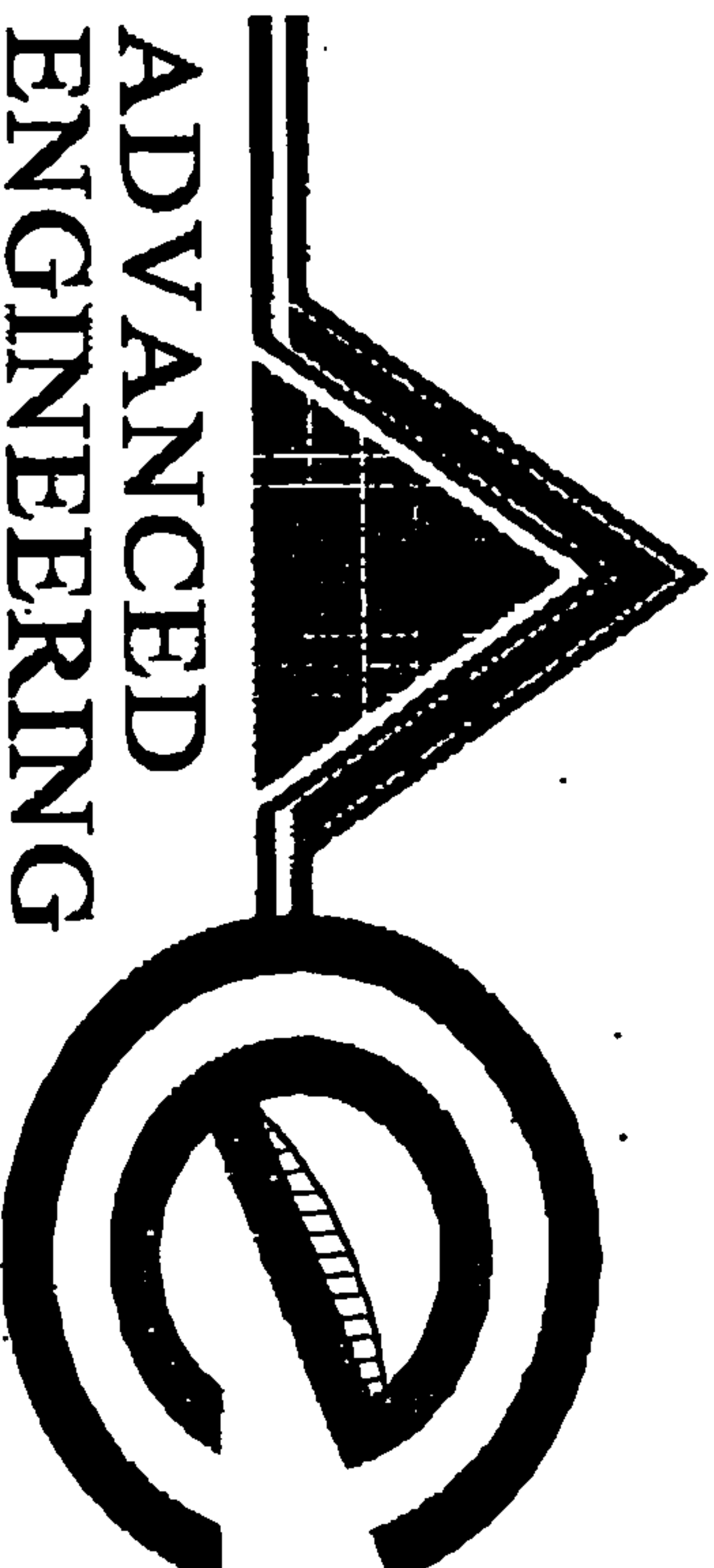
The preliminary plans for this new storm sewer called for a 48-inch storm drain from University to I-25. A hydraulic grade line analysis was performed for this storm sewer at the specified limit of 256 cfs. The pipe size was adjusted somewhat in order to maintain a hydraulic grade line within 1 to 4 feet above the top of pipe. The attached spreadsheet illustrates the results of this analysis, along with the chart which plots the profiles.

The proposed hydraulic grade line falls approximately 3-feet above the top of pipe at the University crossing. This indicates that the pipe has limited the capacity of 256 cfs. In addition, the inlet structure, accepting flows from the detention pond and conveying them into this storm drain system, was checked for capacity limitations. In particular, the crossing structure is proposed to be a 60-inch diameter pipe which ties into the pond with a side-sloped mitered pipe entrance. Under inlet control conditions, the inlet would accept up to 255 cfs at the maximum ponding depth. Therefore, no more than 255 cfs will get into this downstream system.

The hydraulic grade line for the outfall pipe was analyzed to check at which point the HGL breaks seal and becomes open pipe. This occurs at 250 cfs. This means that all flows of 250 cfs and less will cause the "culvert" entrance to operate at inlet controlled conditions. Once flow increases to above this point, the pipe surcharges and the entrance works operate under outlet controlled conditions. Outlet control has less capacity than inlet control. As a result, the entire system



10205 Snowflake Ct. NW. Albuquerque New Mexico 87114 Phone (505) 899-5570 Fax (505) 897-4996



ADVANCED
ENGINEERING
and CONSULTING, LLC

FACSIMILE TRANSMITTAL

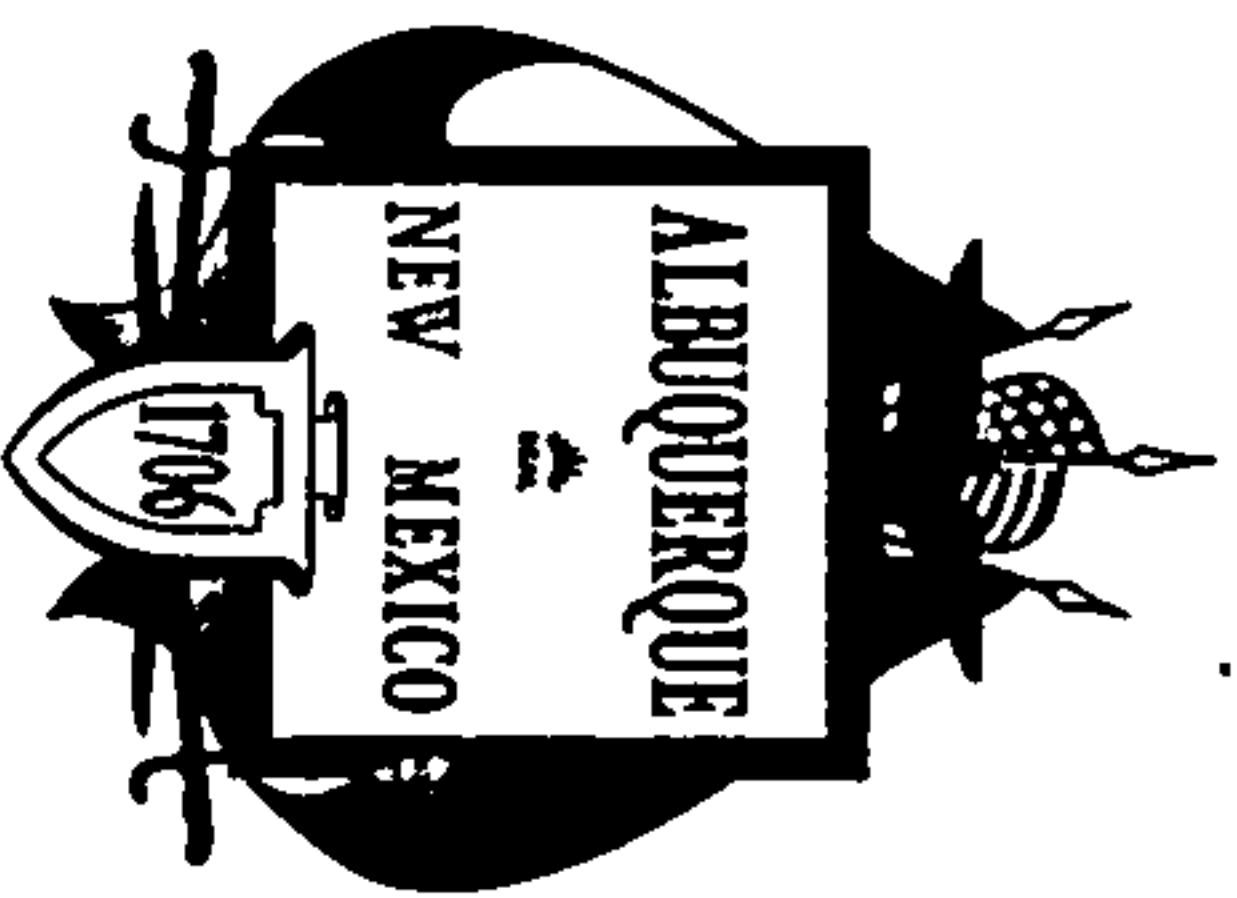
3864

To:	Susan Calongne, P.E.	FAX: 924-3982
		TOTAL OF (3) PAGE(S)
From:	Shahab Biazar	
Subject:	Sunport Park	
Date:	June 19, 2000	

Attached please find the information you requested from the Molzen-Corbin Drainage Report.

Should you have any questions regarding this transmittal or any other items pertaining to this project, please do not hesitate to contact our office.

IF YOU DO NOT RECEIVE ALL PAGES OF THIS TRANSMITTAL, OR IF MATERIAL IS NOT LEGIBLE, PLEASE CONTACT OUR OFFICE AT THE ABOVE NUMBER. THANK YOU.



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 20, 2000

Shahab Biazar, P.E.
Advanced Engineering and Consulting, LLC
10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

RE: *Drainage Report and Grading and Drainage Plan for Phase II of Parcel 2A, Sunport Park (M15/D23F) Submitted for Site Development Plan for Building Permit Approval, Grading Permit and Building Permit Approval, Engineer's Stamp Dated 5/23/00.*

Dear Mr. Biazar:

Based on the information provided, the above referenced plan dated May 23, 2000 is approved for Site Development Plan for Building Permit approval by the DRB.

The plan proposes to raise the storm drain manholes, therefore an Infrastructure List is required for these improvements. Please be aware that the Grading Permit and the Building Permit will not be released until the financial guarantees are in place.

The plan and profile sheets for the storm drain will be required at DRC. A topsoil disturbance permit must be obtained before any grading may occur on this site. The Engineer's Certification must be in compliance with this approved plan.

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: DRB
 Kathleen Chavez, Owner
 Files

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Parcel 2A, Sunport Park ZONE ATLAS/DRNG. FILE #: M-15 / D23

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Parcel 2A, Sunport Park

CITY ADDRESS: _____

ENGINEERING FIRM: Advanced Engineering and Consulting, LLC CONTACT: Shahab Biazar

ADDRESS: 10205 Snowflake Ct. NW Alb., NM 87114 PHONE: (505) 899-5570

OWNER: Kathleen Chavez CONTACT: Kathleen Chavez

ADDRESS: 1500 Aircraft Avenue, SE Alb., NM 87106 PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL: Bob- 858-0853 CHECK TYPE OF APPROVAL SOUGHT:

 DRAINAGE REPORT SKETCH PLAN APPROVAL

 DRAINAGE PLAN PRELIMINARY PLAT APPROVAL

 CONCEPTUAL GRADING & DRAINAGE PLAN S. DEV. PLAN FOR SUB'D. APPROVAL

 X GRADING PLAN X S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

 EROSION CONTROL PLAN SECTOR PLAN APPROVAL

 ENGINEER'S CERTIFICATION FINAL PLAT APPROVAL

 OTHER FOUNDATION PERMIT APPROVAL

 X BUILDING PERMIT APPROVAL

 CERTIFICATE OF OCCUPANCY APPROVAL

 X GRADING PERMIT APPROVAL

 PAVING PERMIT APPROVAL

 S. A. D. DRAINAGE REPORT

 DRAINAGE REQUIREMENTS

 OTHER

PRE-DESIGN MEETING:

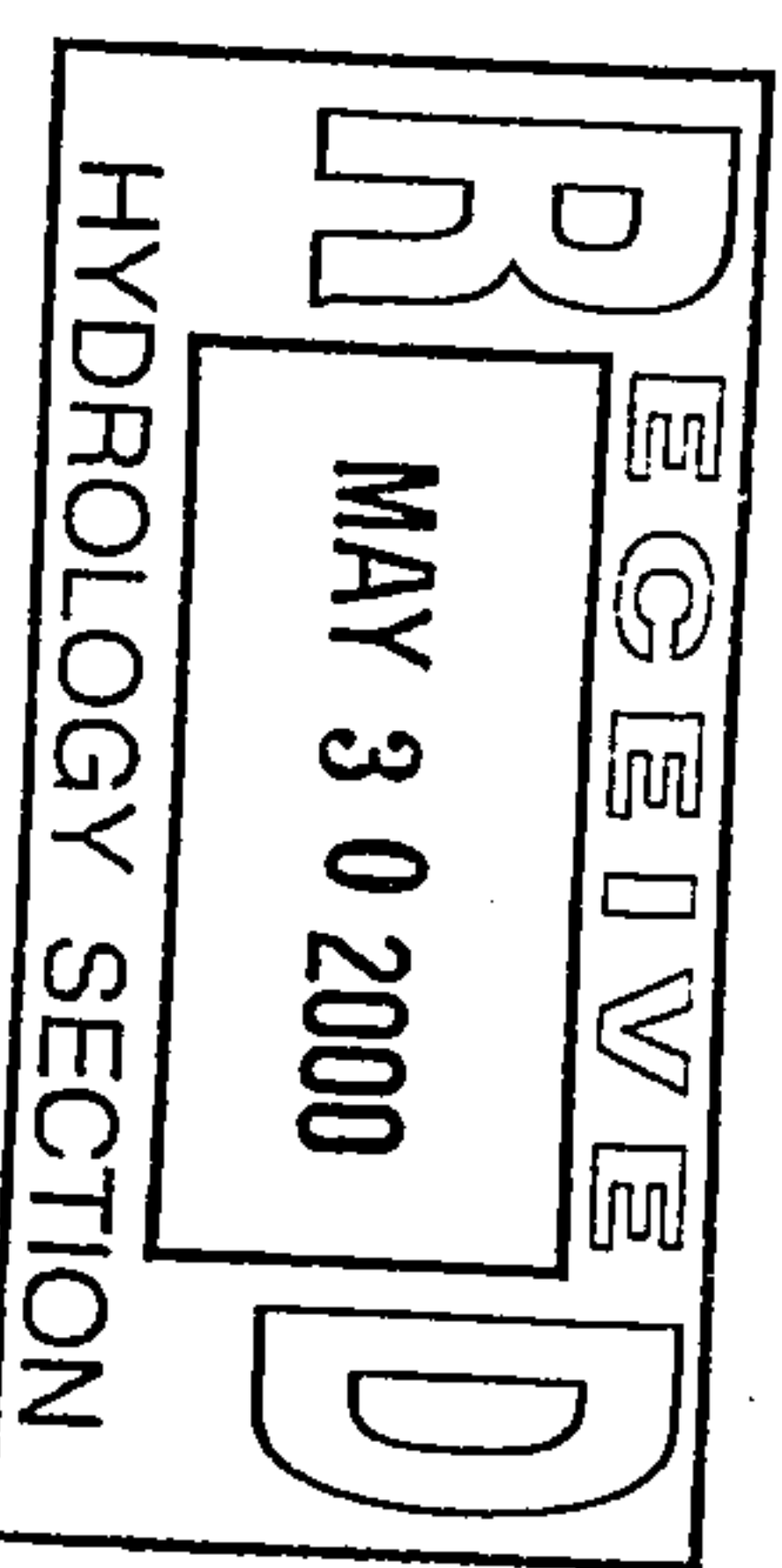
 YES

 NO

 COPY PROVIDED

DATE SUBMITTED: 05 / 26 / 00

BY: SHAHAB BIAZAR



Raising M/H rims on storm drain - SD not accepted?

Comr by airport?

Airport Inf. list?

Comr required?

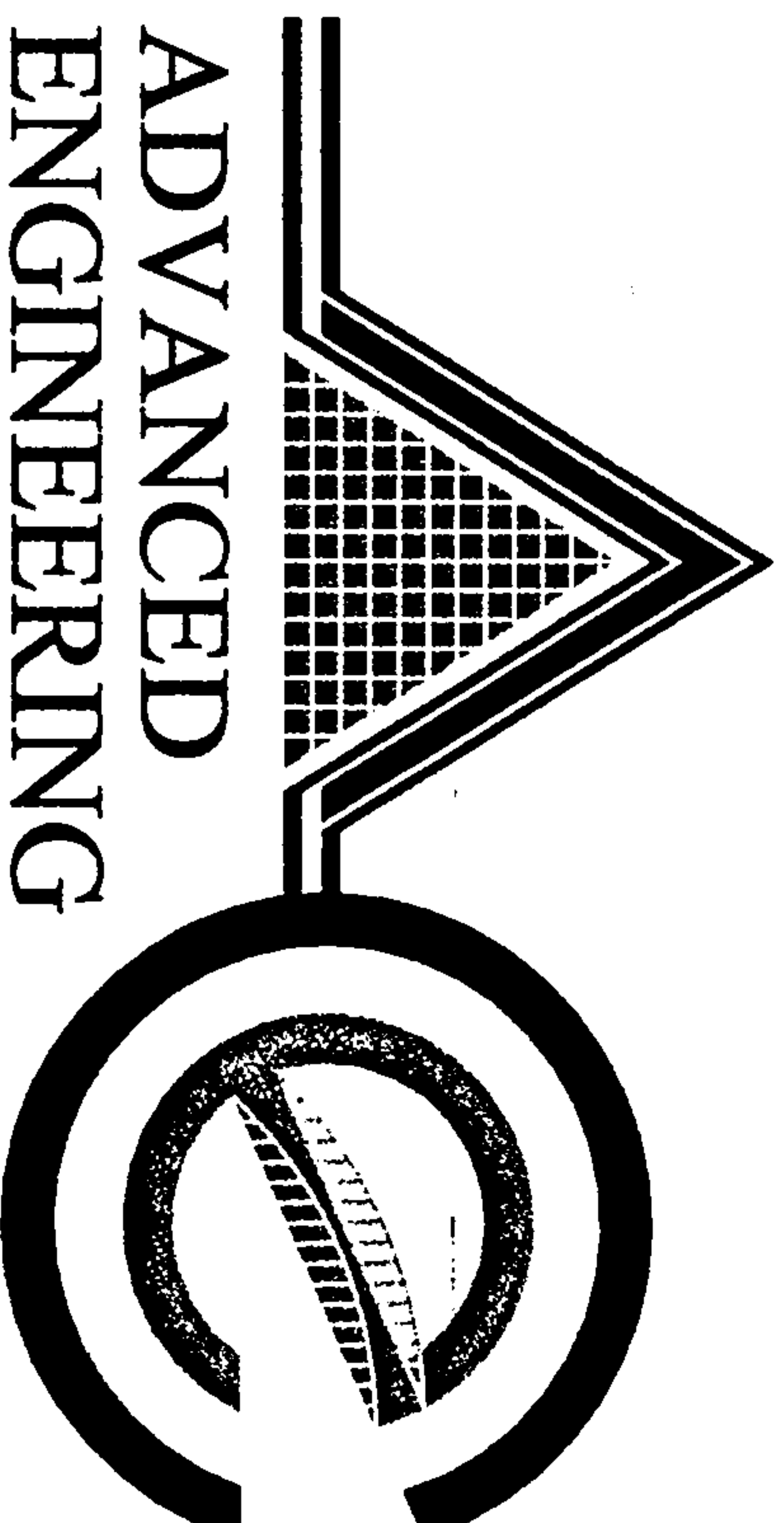
status - not accepted?
inspected - looks good

Class III? deep

DRAINAGE REPORT
FOR

PARCEL 2A
SUNPORT PARK

Prepared by:



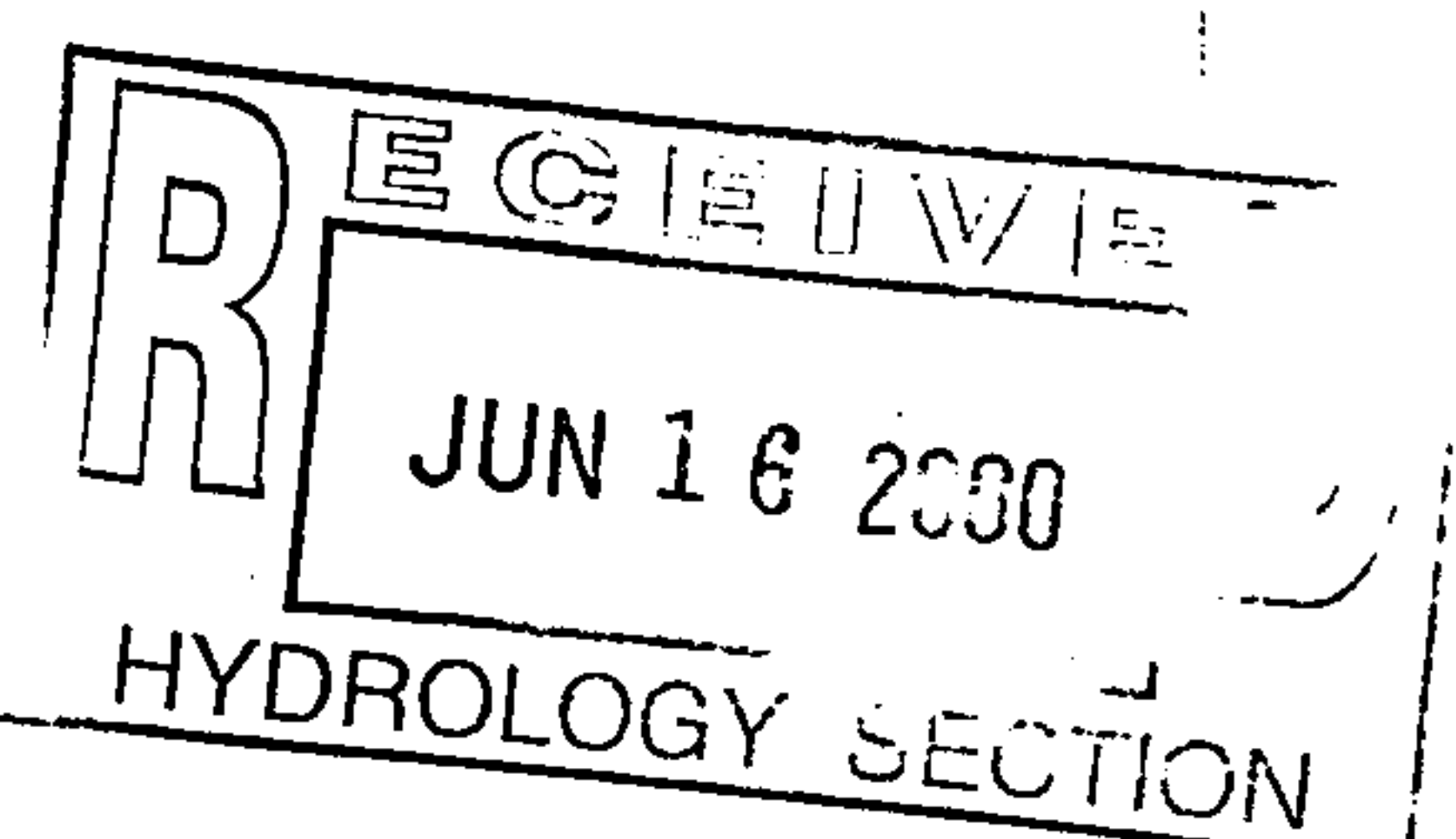
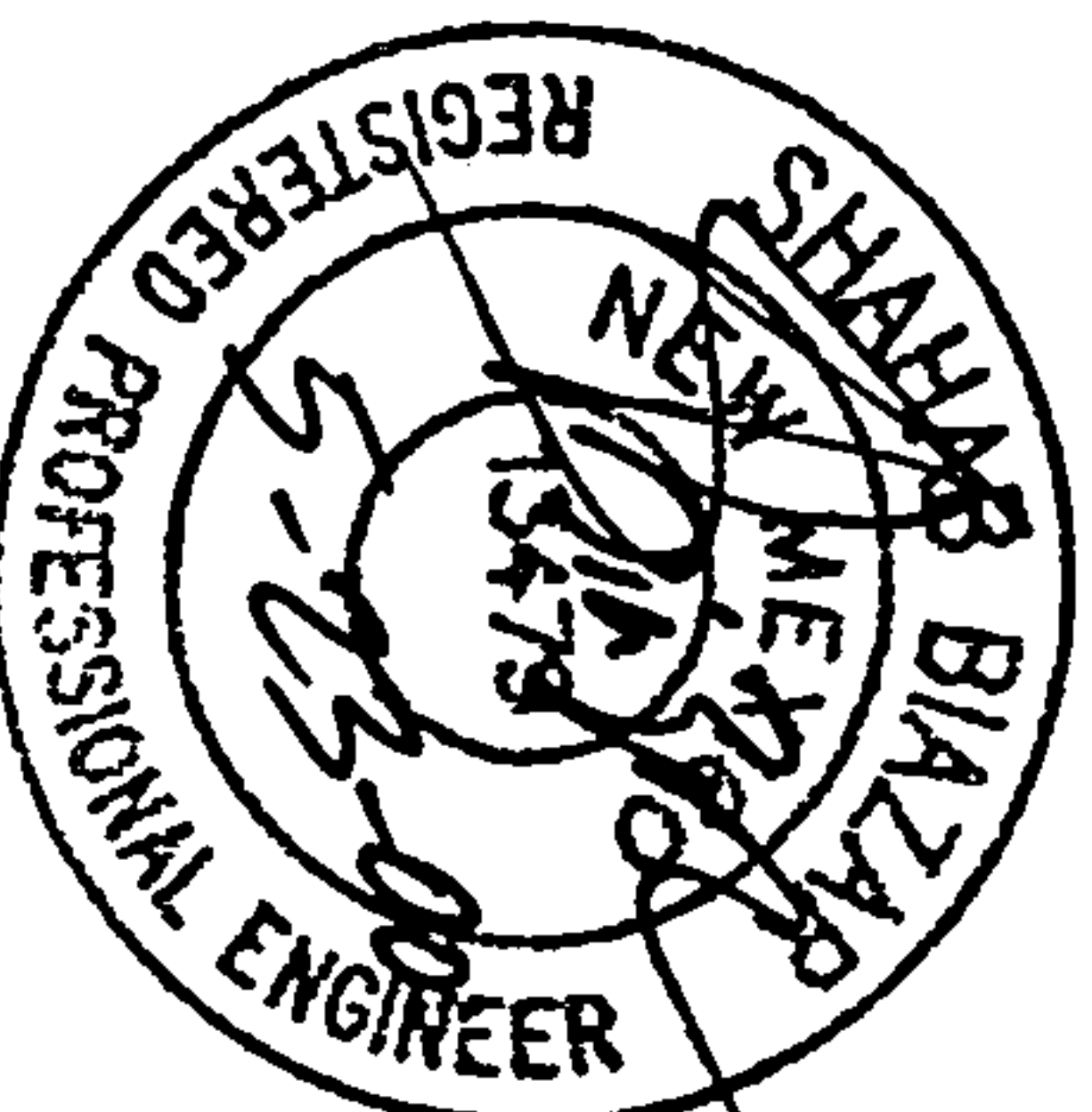
ADVANCED
ENGINEERING
and CONSULTING, LLC

10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

Prepared For:

Mr. Manuel Gorge Gonzales
2719 Mountain Road, NW
Albuquerque, NM 87104

March, 2000
Revised May, 2000



Shahab Biazar
PE NO. 13479

INTERSTATE HIGHWAY 25

SUNPORT BLVD.

SITE

UNIVERSITY BLVD.

AIRCRAFT AVE

VICINITY MAP:

M-15-Z

Location

Parcel 2A, Sunport Park is located at the southeast corner of Interstate Highway 25 and Sunport Boulevard. See attached Vicinity Map C-16-Z for the location of the site.

Purpose

The owners are proposing to build Phase II of Sunport Park. Phase II will consist of the remaining parking areas, new carwash, new building, and modified entrance. Therefore, we are requesting Site Plan, Site Plan for Building permit, Building permit, and grading permit approval.

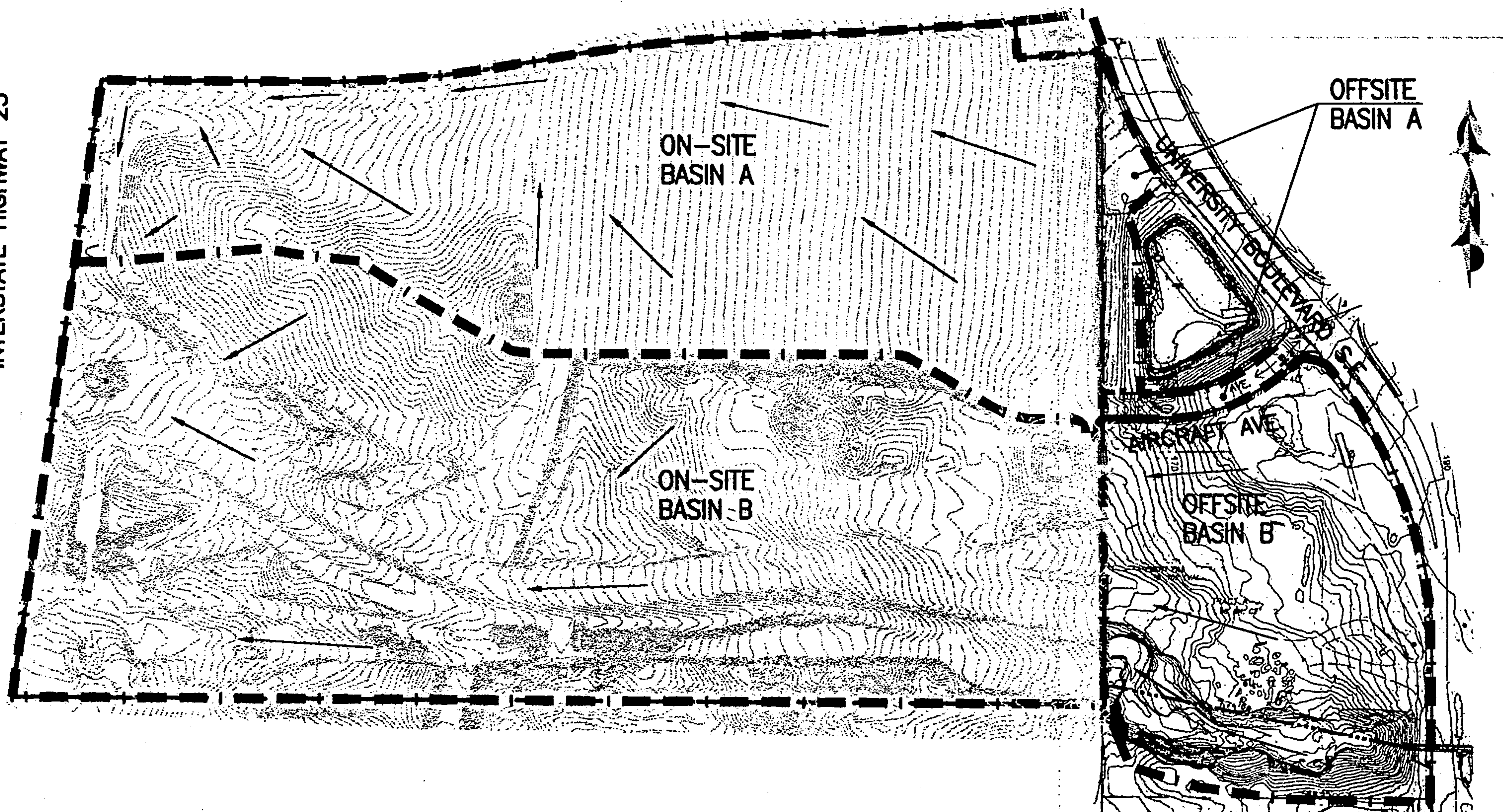
Existing Drainage Conditions

The site falls within Basin WE of the drainage report for Albuquerque International Sunport Rent-A-Car Facility Prepared by Molzen-Corbin and Associates. This drainage report calculates and analyses all the basin east of University Boulevard. This report also calculates the flow capacity of the 8x6 CBC culvert crossing under the I-25. Based on this report all the runoff on the east side of the University Boulevard within Basin WE drains to a detention pond and discharged at maximum flow rate of 225 cfs (via RCP) to the existing 8x6 CBC culvert crossing. This new RCP removes the existing floodplain from the site. One 48" RCP pipe has been extended from the 8x6 CBC to intercept the runoff from the basins west of University Boulevard. ✓

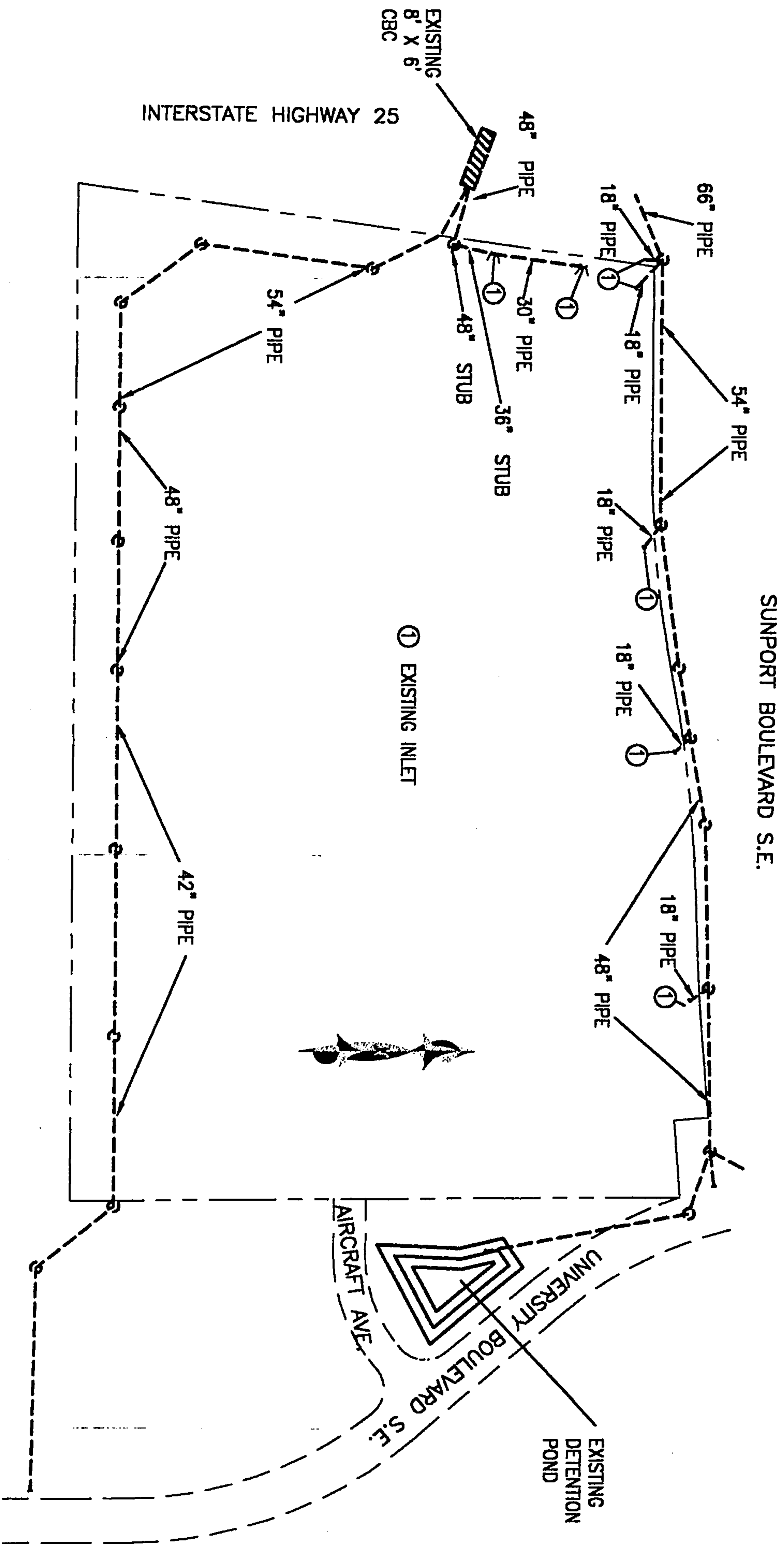
Phase I and Phase II of this project was submitted under the City Drainage number M15/D23. The site drains from east to west to existing storm sewer structures which crosses the Interstate Highway 25, and then from there the runoff drains west to south diversion

INTERSTATE HIGHWAY 25

SUNPORT BOULEVARD S.E.



EXISTING BASIN LAYOUT



EXISTING STORM SEWER

channel. Phase I was designed to drain to Sunport Boulevard storm sewer system. The remaining runoff drains west to an existing 8x6 concrete box culvert. Two offsite basins A (with runoff of 3.28 cfs) and B (with a runoff of 31.69 cfs) drain to this tract from the west.

The site falls within FIRM Map No. 35001C 0342 D. The map shows that the site lies within, Zone AO, an area within the 100-year flood plain. The site no longer falls within an actual floodplain. Aviation Division will be responsible for the filling of the LOMR. See attached letter from the Aviation department to Ricardo Chavez (owner of the Sunport Park).

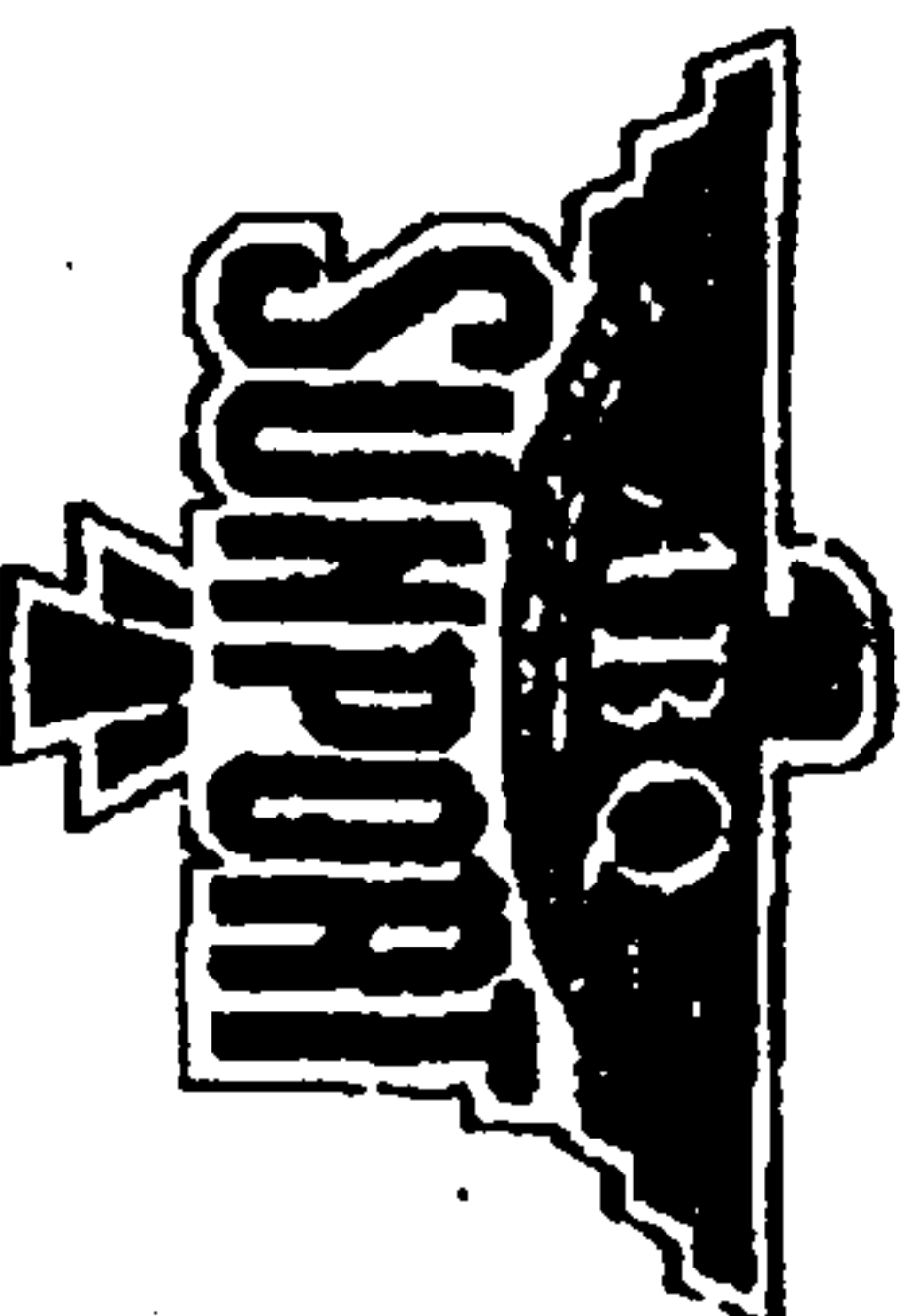
Proposed Conditions and On-Site Drainage Management Plan

The drainage patterns will remain the same. The offsite basins A and B will continue to drain to this site as the existing conditions. A very nominal amount of the runoff will be intercepted by the Sunport Boulevard storm sewer system. The remaining runoff will drain west to the existing box culvert and then will continue west to South Diversion Channel. A 48" RCP pipe was extended from the 8x6 concrete box culvert was extended for drainage purpose of this site. Since the Sunport storm sewer system intercepts a very nominal amount of the runoff from the this site, the 48" RCP was analyzed using the entire runoff from the site and fully developed conditions for offsite Basin B.

The runoff from the site (along with the runoff from offsite Basin B) will drain to a 15' opening on the west end of the property and to a concrete rundown where the runoff is intercepted by four double A inlets and then routed to the 48" RCP. Since the discharge will be controlled by the 48" RCP a AHYMO program was used to analyze the maximum discharge rate and the 100-year water surface elevation as the runoff backs up into the parking lot. The overall runoff from the on-site and offsite is 262.51 cfs and the maximum discharge rate is 164.35 cfs.

CITY OF ALBUQUERQUE
JIM BACA, MAYOR LAWRENCE BAEZ, CAO JAY J. CZAR, DIRECTOR OF AVIATION

BP 291-11



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DEC 22 1999

WALZEL-CORRIG & ASSOCIATES

December 20, 1999

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Ricardo Chaves
Airport Parking
1501 Airport Avenue
Albuquerque, NM 87106

Re: Rental Car Facility

Dear Mr. Chaves:

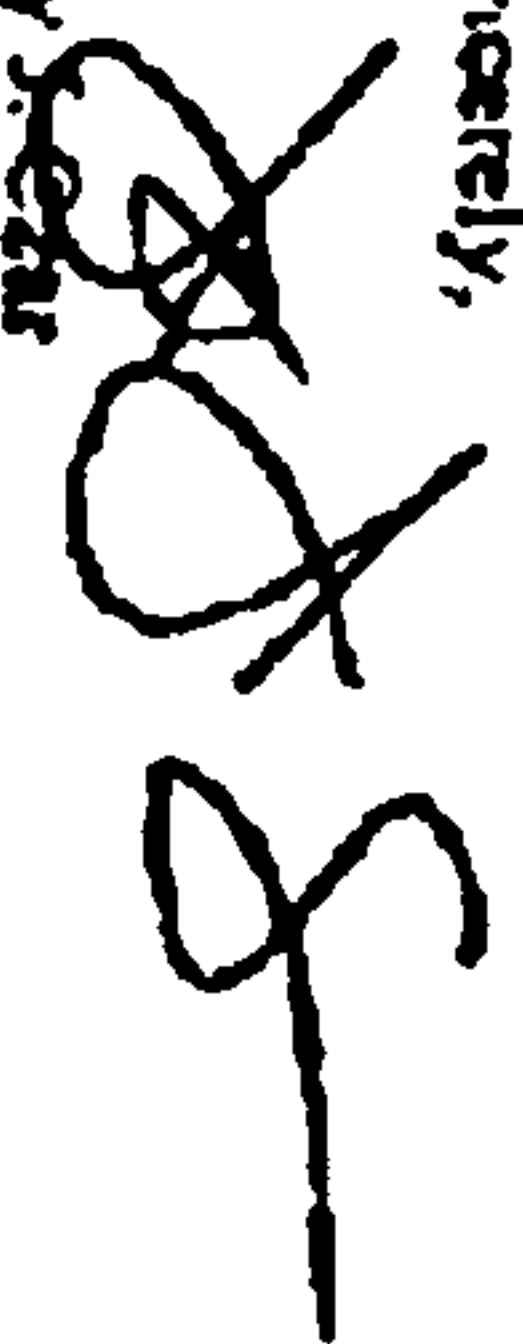
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This process involves preparing an application on forms provided by FEMA with the necessary hydrologic and hydraulic analysis data showing that the flows are no longer causing the flood plain. This application will be submitted to FEMA for their review.

With regard to your obtaining a Certificate of Occupancy, the Aviation Department will not be responsible for that application. The engineer or architect preparing your development plans will need to request this approval. The Aviation Department is not responsible for the issuance of these documents.

If you have any questions regarding this matter, please feel free to call.

Sincerely,

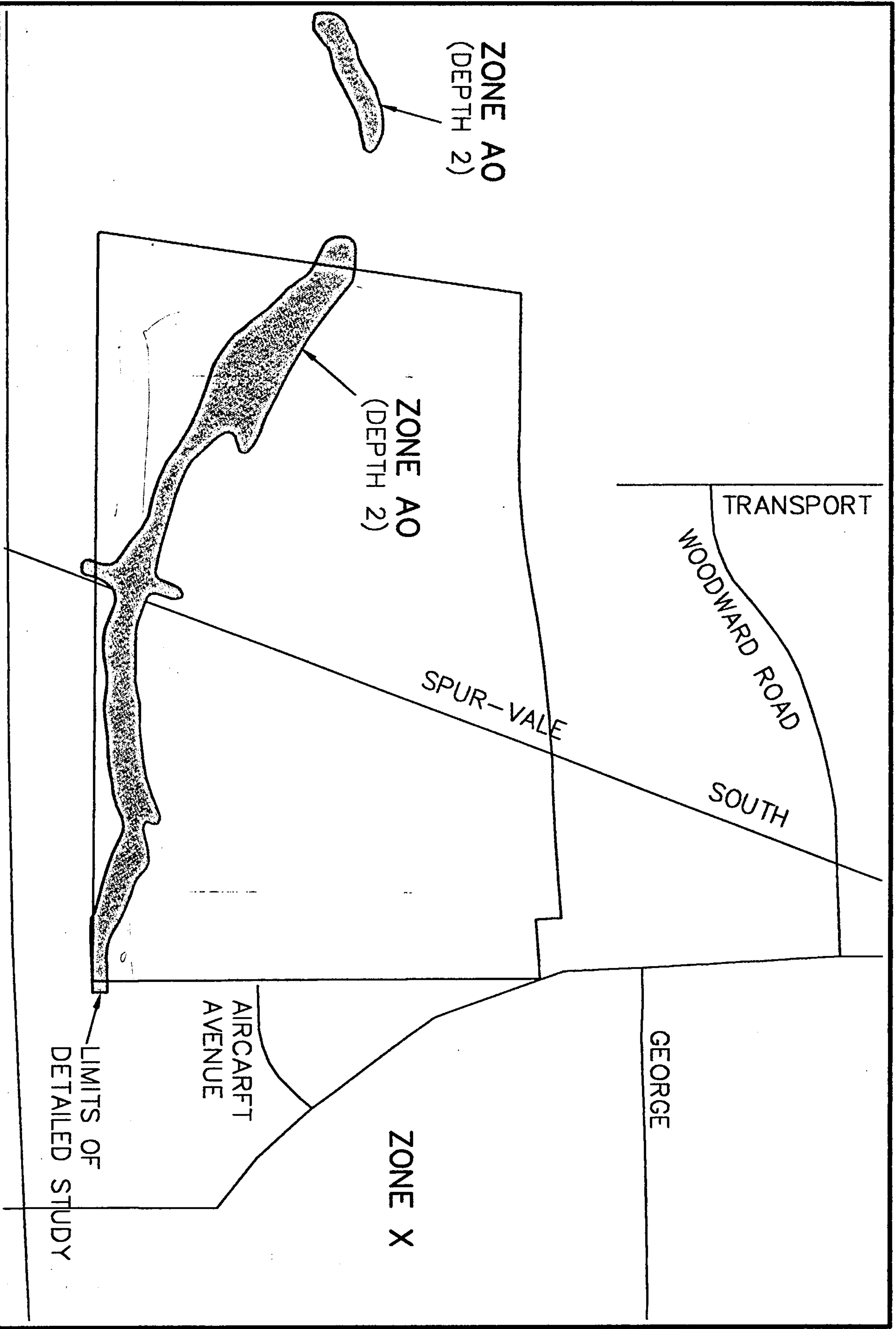

Jay J. Czar
Director of Aviation JJC

Enclosures

Cc: Kent S. Freier, PE
Vice President, Project Engineer

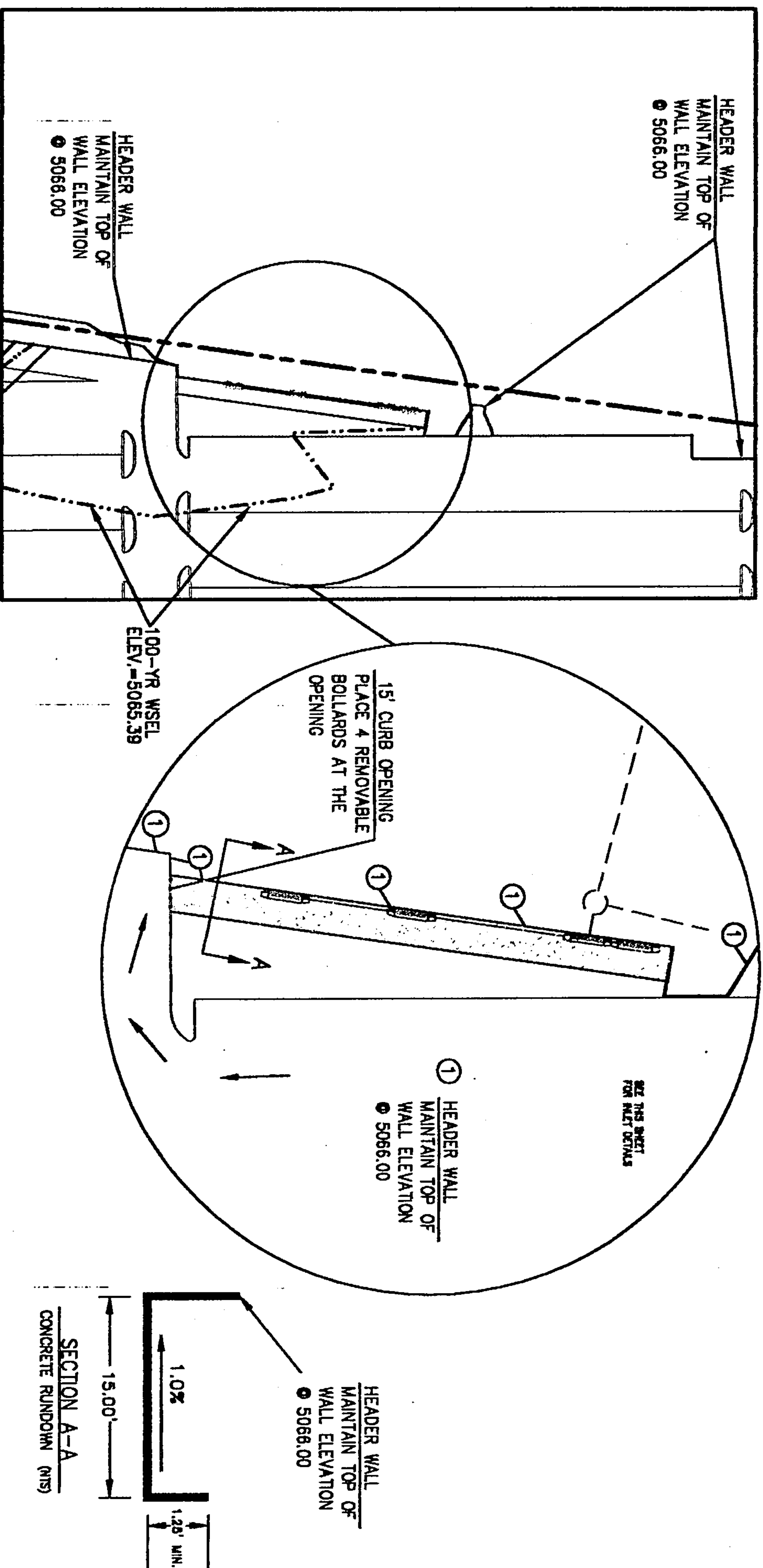
Jim Hinde, Facilities Engineering/Aviation





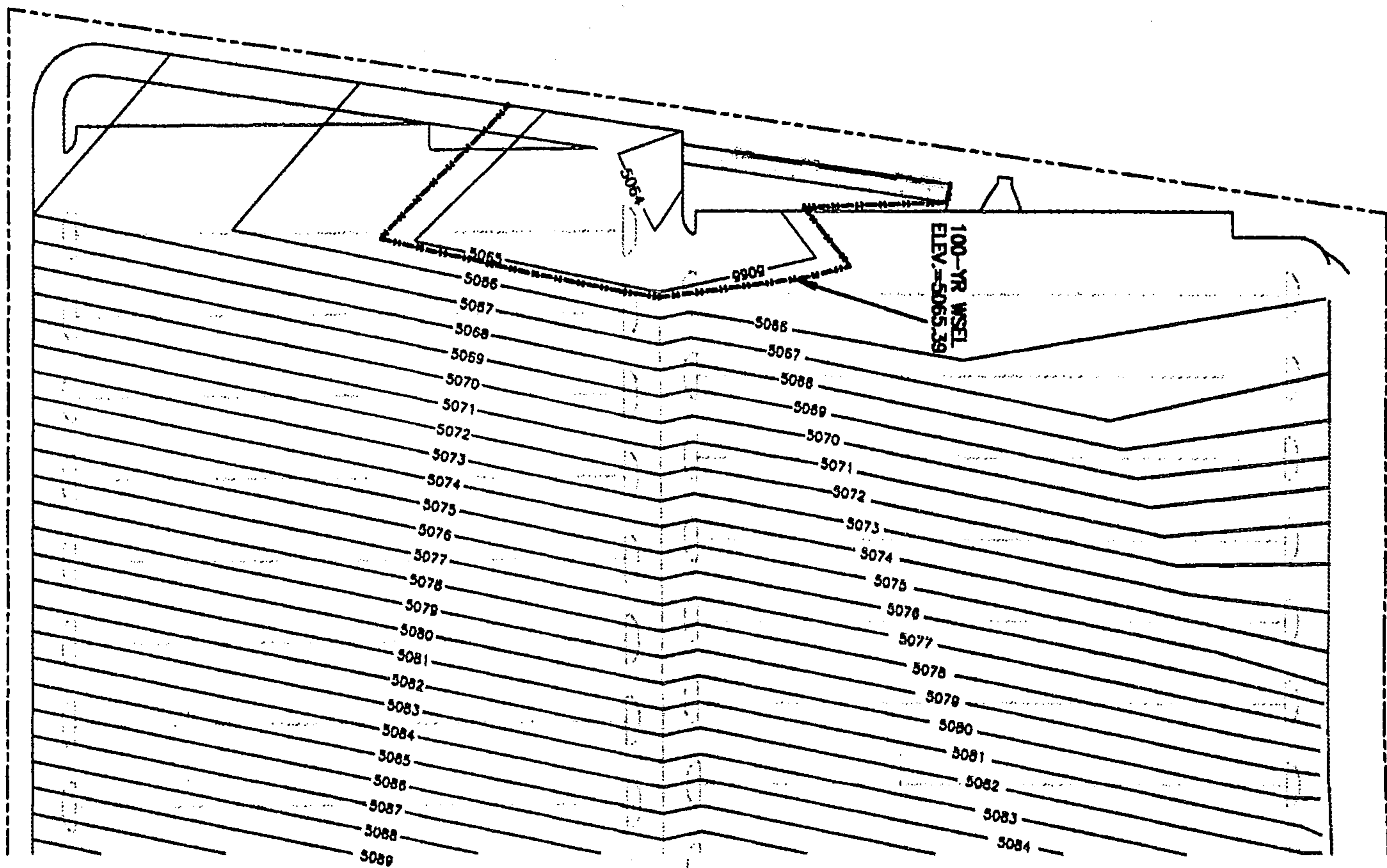
FIRM MAP:

35001C0342 D



PROPOSED DRAINAGE IMPROVEMENTS

PARKING LOT PONDING LOCATION



According to the Molzen-Corbin and Associates the 8x6 CBC culvert has a capacity of 511 cfs. Only a flow of 225 cfs is being discharged to this 8x6 CBC from the storm sewer pipe from the detention pond located on the east side of the University Boulevard. Therefore, leaving an additional 286 cfs flow capacity at the 8x6 CBC for the Sunport Parking Lot and the offsite Basin A and B. Based on the controlled discharged of 164.35 cfs from Sunport Park (via 48" RCP), the 8x6 CBC will be left with an additional flow capacity of 121.65 cfs. The 100-yr WSEL was calculated to be at 5065.39'. The 100-yr WSEL is plotted on the grading plan.

The downstream capacities has been analyzed under the City Drainage number M15/D23) and drainage study prepared by Molzen-Corbin and Associates for the Albuquerque International Sunport Rent-A-Car facility.

Calculations

City of Albuquerque, Development Process Manuel, Section 22.2, Hydrology Section, revised January 1993, was used for runoff calculations. See this report for Summary Table for runoff results. See also this report for AHYMO input and output files for runoff and ponding calculations.

RUNOFF CALCULATIONS

The site is @ Zone 2

DEPTH (INCHES) @ 100-YEAR STORM

$P_{60} = 2.01 \text{ inches}$

$P_{360} = 2.35 \text{ inches}$

$P_{1440} = 2.75 \text{ inches}$

DEPTH (INCHES) @ 10-YEAR STORM

$P_{60} = 2.01 \times 0.667$
 $= 1.34 \text{ inches}$

$P_{360} = 1.57$

$P_{1440} = 1.83$

See the summary output from AHYMO calculations.

Also see the following summary tables.

RUNOFF CALCULATION RESULTS

BASIN	AREA (SF)	AREA (AC)	AREA (MI ²)
ON-STIE A	873,828.40	20.0603	0.031344
ON-SITE B	1,246,136.50	28.6074	0.044699
OFFSITE A	62,578.48	1.4366	0.002245
OFFSITE B	383,000.55	8.7925	0.013738

EXISTING

BASIN	Q-100 CFS	Q-10 CFS
ON-STIE A	74.28	44.75
ON-SITE B	44.53	10.64
OFFSITE A	3.28	1.35
OFFSITE B	13.69	3.27

PROPOSED

BASIN	Q-100 CFS	Q-10 CFS
ON-STIE A	89.43	57.91
ON-SITE B	130.99	85.72
OFFSITE A	3.28	1.35
OFFSITE B	37.81	24.10

TREATMENT

EXISTING CONDITIONS

BASIN	A	B	C	D
ON-SITE A	26.00%	7.00%	0.00%	67.00%
ON-SITE B	100.00%	0.00%	0.00%	0.00%
OFFSITE A	0.00%	100.00%	0.00%	0.00%
OFFSITE B	100.00%	0.00%	0.00%	0.00%

PROPOSED CONDITIONS

BASIN	A	B	C	D
ON-SITE A	0.00%	10.00%	0.00%	90.00%
ON-SITE B	0.00%	5.00%	0.00%	95.00%
OFFSITE A	0.00%	100.00%	0.00%	0.00%
OFFSITE B	0.00%	10.00%	10.00%	80.00%

STORM DROP INLET DRAINAGE CAPACITY Double 'A'

Area at the grate:

$$\begin{aligned} L &= 88 \frac{3}{4}'' - 2(6'' \text{ ends}) - 6'' \text{ center piece} - 14(\frac{1}{2} \text{ middle bars}) \\ &= 63 \frac{3}{4}'' \\ &= 5.3125' \end{aligned}$$

$$\begin{aligned} W &= 25 \frac{1}{2}'' - 13(\frac{1}{2}'' \text{ middle bars}) \\ &= 19'' \\ &= 1.5833' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 5.3125' \times 1.5833' \\ &= 8.41 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= 8.41 - 8.41 (0.5 \text{ clogging factor}) \\ &= 4.21 \text{ ft}^2 \text{ at the grate} \end{aligned}$$

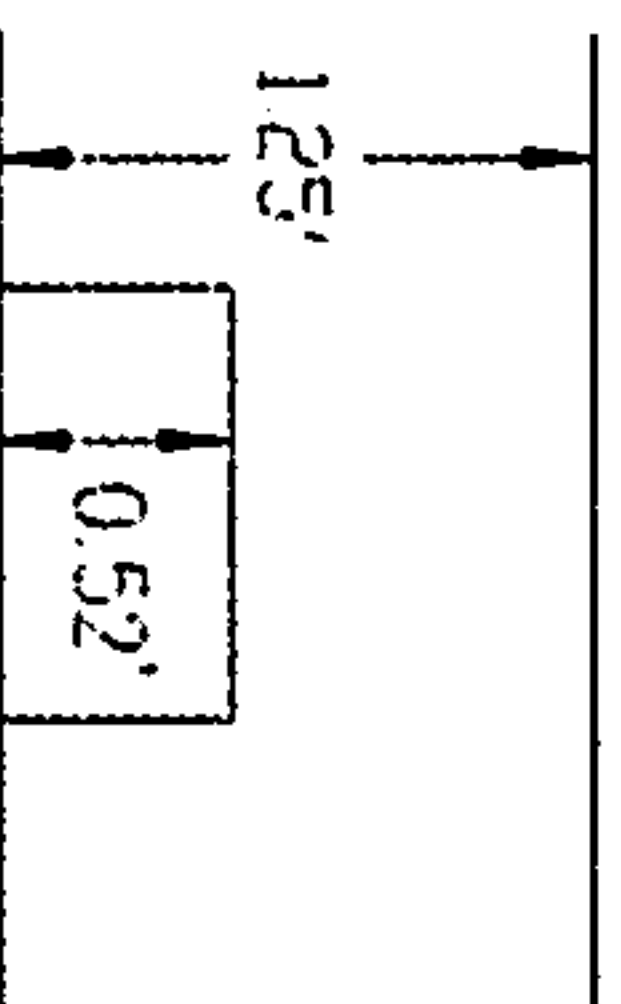
Area at the throat:

$$L = 13.50''$$

$$\begin{aligned} H &= 10 \frac{3}{4}'' - 4 \frac{1}{2}'' \\ &= 6 \frac{1}{4}'' \\ &= 0.5208' \end{aligned}$$

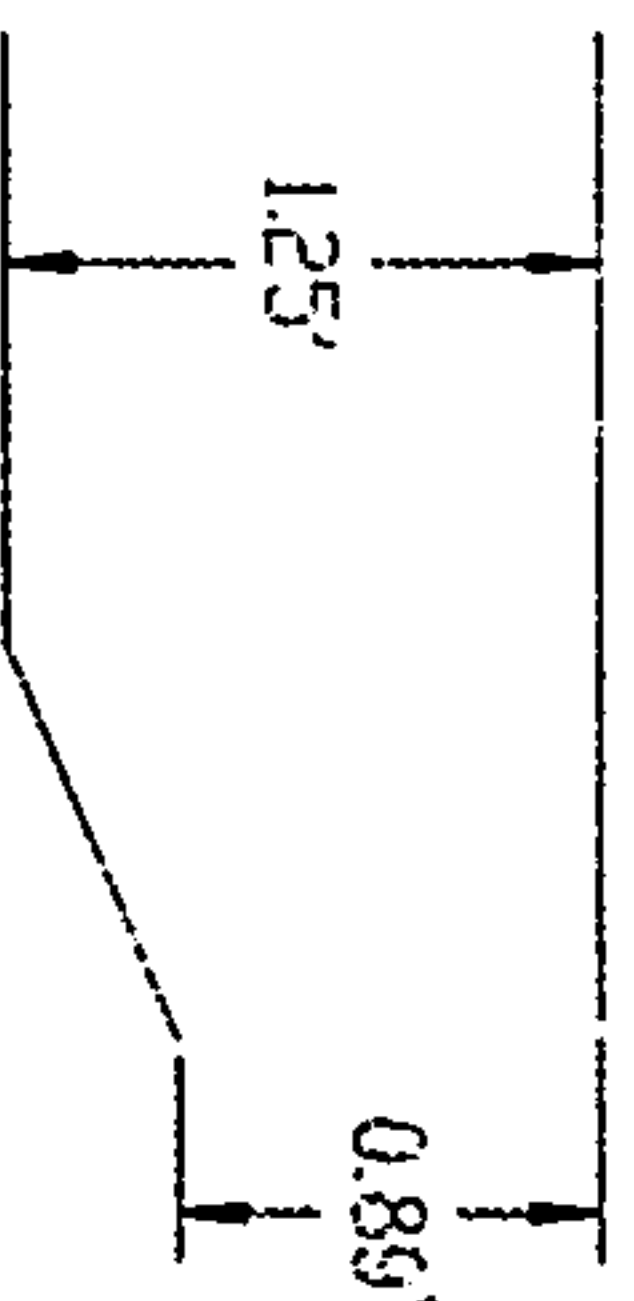
$$\begin{aligned} \text{Area} &= 13.50' \times 0.5208' \\ &= 7.03 \text{ ft}^2 \text{ at the throat} \end{aligned}$$

THROAT



$$\begin{aligned} H &= 1.25 \\ Q &= CA\sqrt{2gh} \\ Q &= 0.60(7.03)\sqrt{2(32.2)(1.25)} \\ Q &= 37.84 \text{ CFS} \end{aligned}$$

GRATE



$$\begin{aligned} H &= (1.25 + 0.89)/2 = 1.08 \\ Q &= CA\sqrt{2gh} \\ Q &= 0.60(4.21)\sqrt{2(32.2)(1.08)} \\ Q &= 21.07 \text{ CFS} \end{aligned}$$

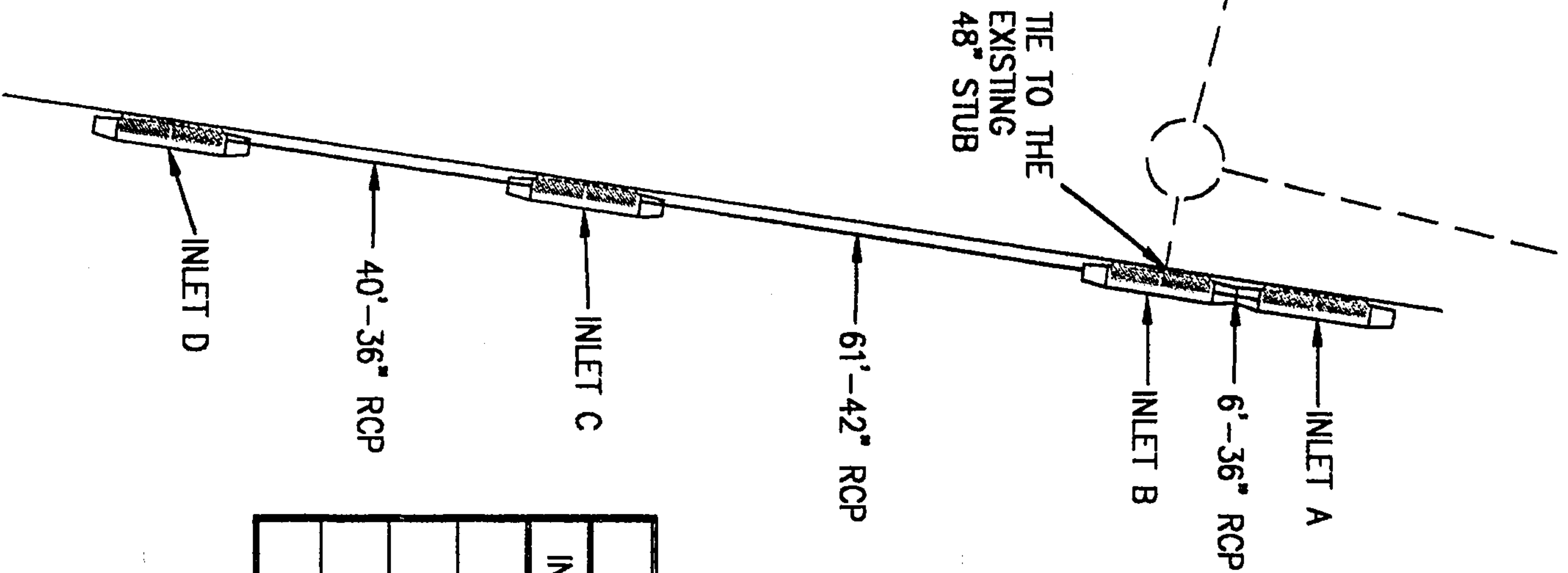
TOTAL

$$Q = 21.07 + 37.84 = 58.91 \text{ CFS}$$

Number Of Inlets Required:

$$\text{Total } Q = 262.51 \text{ cfs} - 30 \text{ cfs (intercepted by the existing inlets)} = 232.51 \text{ cfs}$$

$$\# \text{ of inlets} = 232.51/58.91 = 3.95 \quad \therefore \text{ Use 4 Inlets }$$



DBL A INLETS W/ SWEEPERS ON BOTH SIDES			
INLET	INVERT IN	INVERT OUT	RIM
A	-----	5056.30	5063.00
B	5056.10	5056.00	5063.00
C	5056.70	5056.50	5063.00
D	-----	5057.05	5063.00

DROP INLET DETAILS

```

* ZONE 2
*****
* 100-YEAR, 6-HR STORM (UNDER EXISTING CONDITIONS) *
*****
START
RAINFALL
    TIME=0.0
    TYPE=1 RAIN QUARTER=0.0 IN
    RAIN ONE=2.01 IN RAIN SIX=2.35 IN
    RAIN DAY=2.75 IN DT=0.03333 HR
*
* ON-SITE BASIN A
*
COMPUTE NM HYD
    ID=1 HYD NO=101.0 AREA=0.031344 SQ MI
    PER A=26.00 PER B=7.00 PER C=0.00 PER D=67.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* ON-SITE BASIN B
*
COMPUTE NM HYD
    ID=1 HYD NO=102.0 AREA=0.044699 SQ MI
    PER A=100.00 PER B=0.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* OFFSITE BASIN A
*
COMPUTE NM HYD
    ID=1 HYD NO=103.0 AREA=0.002245 SQ MI
    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* OFFSITE BASIN B
*
COMPUTE NM HYD
    ID=1 HYD NO=104.0 AREA=0.013738 SQ MI
    PER A=100.00 PER B=0.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*****
* 10-YEAR, 6-HR STORM (UNDER EXISTING CONDITIONS) *
*****
START
RAINFALL
    TIME=0.0
    TYPE=1 RAIN QUARTER=0.0 IN
    RAIN ONE=1.34 IN RAIN SIX=1.57 IN
    RAIN DAY=1.83 IN DT=0.03333 HR
*
* ON-SITE BASIN A
*
COMPUTE NM HYD
    ID=1 HYD NO=111.0 AREA=0.031344 SQ MI
    PER A=26.00 PER B=7.00 PER C=0.00 PER D=67.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* ON-SITE BASIN B
*
COMPUTE NM HYD
    ID=1 HYD NO=112.0 AREA=0.044699 SQ MI
    PER A=100.00 PER B=0.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* OFFSITE BASIN A
*
COMPUTE NM HYD
    ID=1 HYD NO=113.0 AREA=0.002245 SQ MI
    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* OFFSITE BASIN B
*
COMPUTE NM HYD
    ID=1 HYD NO=114.0 AREA=0.013738 SQ MI
    PER A=100.00 PER B=0.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*****
* 100-YEAR, 6-HR STORM (UNDER PROPOSED CONDITIONS) *
*****
START
RAINFALL
    TIME=0.0
    TYPE=1 RAIN QUARTER=0.0 IN
    RAIN ONE=2.01 IN RAIN SIX=2.35 IN
    RAIN DAY=2.75 IN DT=0.03333 HR
*
* ON-SITE BASIN A
*
COMPUTE NM HYD
    ID=1 HYD NO=101.1 AREA=0.031344 SQ MI
    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00

```

```
*
* ON-SITE BASIN B
*
TP=0.1333 HR MASS RAINFALL=-1

COMPUTE NM HYD
ID=1 HYD NO=102.1 AREA=0.044699 SQ MI
PER A=0.00 PER B=5.00 PER C=0.00 PER D=95.00
TP=0.1333 HR MASS RAINFALL=-1

* OFFSITE BASIN A
*
COMPUTE NM HYD
ID=1 HYD NO=103.1 AREA=0.002245 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=0.1333 HR MASS RAINFALL=-1

* OFFSITE BASIN B
*
COMPUTE NM HYD
ID=1 HYD NO=104.1 AREA=0.013738 SQ MI
PER A=0.00 PER B=10.00 PER C=10.00 PER D=80.00
TP=0.1333 HR MASS RAINFALL=-1
*****
* 10-YEAR, 6-HR STORM (UNDER PROPOSED CONDITIONS) *
*****
START
TIME=0.0
TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=1.34 IN RAIN SIX=1.57 IN
RAIN DAY=1.83 IN DT=0.03333 HR

*
* ON-SITE BASIN A
*
COMPUTE NM HYD
ID=1 HYD NO=111.1 AREA=0.031344 SQ MI
PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
TP=0.1333 HR MASS RAINFALL=-1

*
* ON-SITE BASIN B
*
COMPUTE NM HYD
ID=1 HYD NO=112.1 AREA=0.044699 SQ MI
PER A=0.00 PER B=5.00 PER C=0.00 PER D=95.00
TP=0.1333 HR MASS RAINFALL=-1

* OFFSITE BASIN A
*
COMPUTE NM HYD
ID=1 HYD NO=113.1 AREA=0.002245 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=0.1333 HR MASS RAINFALL=-1

* OFFSITE BASIN B
*
COMPUTE NM HYD
ID=1 HYD NO=114.1 AREA=0.013738 SQ MI
PER A=0.00 PER B=10.00 PER C=10.00 PER D=80.00
TP=0.1333 HR MASS RAINFALL=-1
*****
FINISH
```

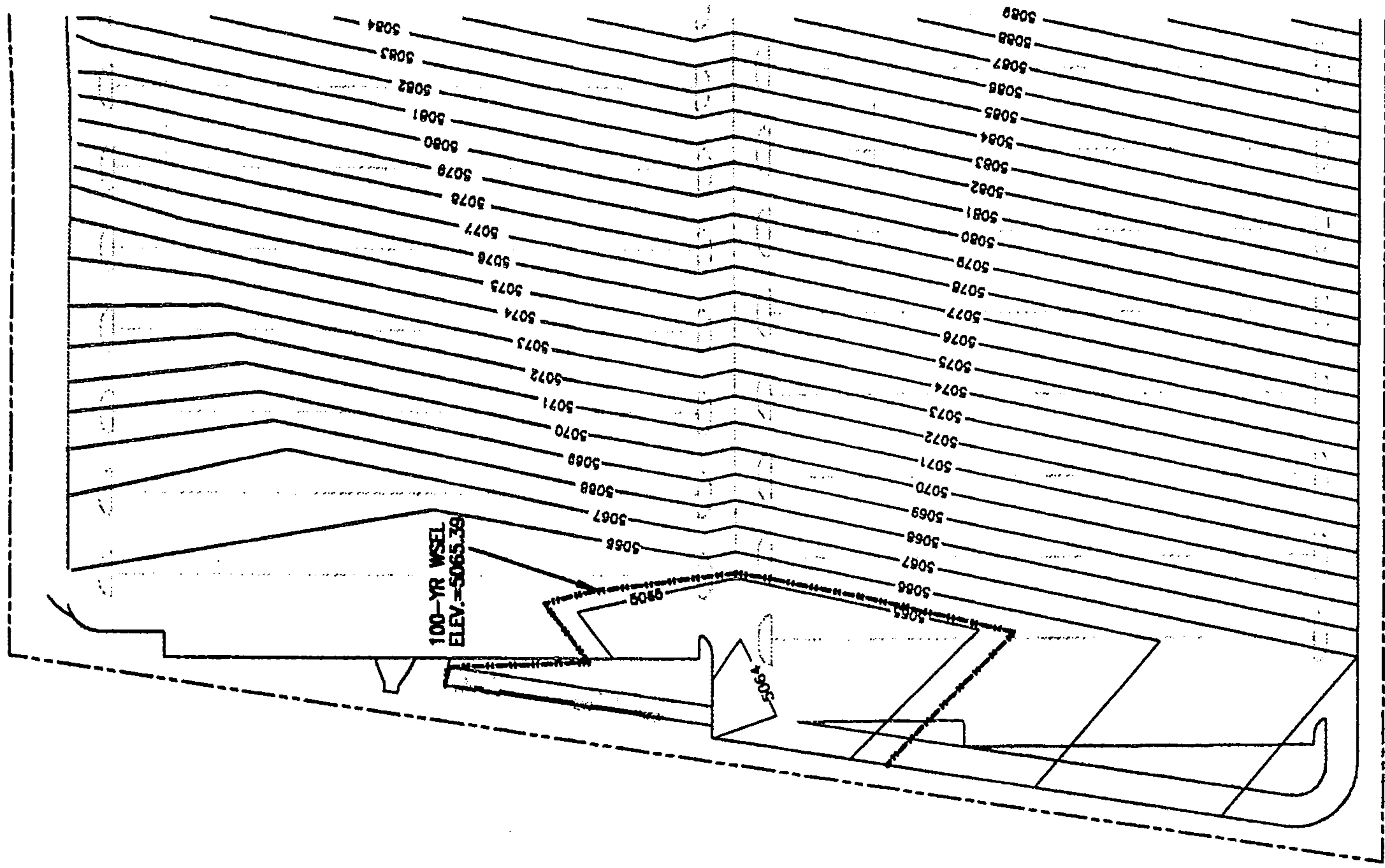
RUN DATE (MON/DAY/YR) =05/20/2000

INPUT FILE = 2008

RUN DATE (MON/DAY/YR) =05/20/2000

PAGE = 1

[illegible]



PARKING LOT PONDING LOCATION

VOLUME CALCULATIONS

PARKING LOT PONDING

SURFACE AREA (SF)	ELEV. (FT)	VOL. (CF)	VOL. (AC-FT)
25.00	5056.00	0.00	0.00000
25.00	5063.00	175.00	0.00402
5501.36	5064.00	2938.18	0.06745
32650.37	5065.00	22014.05	0.50537
98527.54	5066.00	87603.00	2.01109

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
5056.00	0	0	0.00
5060.00	4	0.00230	85.57
5061.00	5	0.00287	104.80
5062.00	6	0.00344	121.01
5063.00	7	0.00402	135.30
5064.00	8	0.06745	148.21
5065.00	9	0.50537	160.09
5066.00	10	2.01109	171.14

Orifice Equation

$Q = CA \sqrt{2gH}$

C = 0.6
Diameter (in) 48
Area (ft²)= 12.57
g= 32.2
H (Ft) = Depth of water above center of orifice
Q (CFS)= Flow

PARKING LOT PONDING ROUTING CALCULATIONS

```
*****
* 100-YEAR, 6-HR STORM (UNDER PROPOSED CONDITIONS) *
*****
START
RAINFALL
    TIME=0.0
    TYPE=1 RAIN QUARTER=0.0 IN
    RAIN ONE=2.01 IN RAIN SIX=2.35 IN
    RAIN DAY=2.75 IN DT=0.03333 HR
*
* OFFSITE BASIN A
*
COMPUTE NM HYD
    ID=1 HYD NO=101.0 AREA=0.002245 SQ MI
    PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
    TP=0.1333 HR MASS RAINFALL=-1
*
* OFFSITE BASIN B
*
COMPUTE NM HYD
    ID=2 HYD NO=102.0 AREA=0.013738 SQ MI
    PER A=0.00 PER B=10.00 PER C=10.00 PER D=80.00
    TP=0.1333 HR MASS RAINFALL=-1
*
ADD HYD
    ID=3 HYD NO=102.1 ID=1 ID=2
*
* ON-SITE BASIN A
*
COMPUTE NM HYD
    ID=4 HYD NO=103.0 AREA=0.031344 SQ MI
    PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
    TP=0.1333 HR MASS RAINFALL=-1
*
ADD HYD
    ID=5 HYD NO=103.1 ID=3 ID=4
*
* ON-SITE BASIN B
*
COMPUTE NM HYD
    ID=6 HYD NO=104.0 AREA=0.044699 SQ MI
    PER A=0.00 PER B=5.00 PER C=0.00 PER D=95.00
    TP=0.1333 HR MASS RAINFALL=-1
*
ADD HYD
    ID=7 HYD NO=104.1 ID=5 ID=6
*
*****
ROUTE RESERVOIR
    ID=8 HYD NO=500.0 INFLOW ID=7 CODE=24
    OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
        0.00          0.00000        5056.00
        85.57         0.00230        5060.00
        104.83        0.00287        5061.00
        121.01        0.00344        5062.00
        135.30        0.00402        5063.00
        148.21        0.06745        5064.00
        160.09        0.50537        5065.00
        171.14        2.01109        5066.00
*****
FINISH
```

RUN DATE (MON/DAY/YR) =05/20/2000

1

START	RAINFALL	TYPE= 1	TIME=
COMPUTE NM HYD	101.00	-	2.350
COMPUTE NM HYD	102.00	-	.00
ADD HYD	102.10	1& 2	PER IMP= 80.00
COMPUTE NM HYD	103.00	-	4.016
ADD HYD	103.10	3& 4	PER IMP= 90.00
COMPUTE NM HYD	104.00	-	4.309
ADD HYD	104.10	5& 6	PER IMP= 95.00
ROUTE RESERVOIR	500.00	7	4.440
FINISH		8	2.790 AC-FT= 1.086

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 05/20/2000
START TIME (HR:MIN:SEC) = 23:32:24
INPUT FILE = 2008PD

* ZONE 2, PARKING LOT PONDING ROUTING CALCULATIONS

* 100-YEAR, 6-HR STORM (UNDER PROPOSED CONDITIONS) *

START
RAINFALL
TIME=0.0
TYPE=1 RAIN QUARTER=0.0 IN
RAIN ONE=2.01 IN RAIN SIX=2.35 IN
RAIN DAY=2.75 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	.0016	.0033	.0049	.0066	.0084	.0102
.0120	.0139	.0158	.0178	.0199	.0219	.0241
.0263	.0286	.0309	.0333	.0358	.0384	.0411
.0439	.0467	.0497	.0529	.0561	.0596	.0631
.0669	.0709	.0751	.0807	.0866	.0930	.1066
.1371	.1840	.2514	.3434	.4644	.6186	.8106
1.0449	1.2624	1.3533	1.4300	1.4982	1.5602	1.6174
1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500	

*
* OFFSITE BASIN A
*

COMPUTE NM HYD
ID=1 HYD NO=101.0 AREA=0.002245 SQ MI
PER A=0.00 PER B=100.00 PER C=0.00 PER D=0.00
TP=0.1333 HR MASS RAINFALL=-1

K = .132088HR TP = .133300HR K/TP RATIO = .990905 SHAPE CONSTANT, N = 3.563124
UNIT PEAK = 5.4720 CFS UNIT VOLUME = .9979 B = 324.91 P60 = 2.0100
AREA = .002245 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*
* OFFSITE BASIN B
*

COMPUTE NM HYD
ID=2 HYD NO=102.0 AREA=0.013738 SQ MI
PER A=0.00 PER B=10.00 PER C=10.00 PER D=80.00
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 43.391 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.0100
AREA = .010990 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .119767HR TP = .133300HR K/TP RATIO = .898476 SHAPE CONSTANT, N = 3.944947
UNIT PEAK = 7.2448 CFS UNIT VOLUME = .9987 B = 351.48 P60 = 2.0100
AREA = .002748 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*
ADD HYD ID=3 HYD NO=102.1 ID=1 ID=2

*
* ON-SITE BASIN A
*

COMPUTE NM HYD ID=4 HYD NO=103.0 AREA=0.031344 SQ MI
PER A=0.00 PER B=10.00 PER C=0.00 PER D=90.00
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 111.37 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.0100
AREA = .028210 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .132088HR TP = .133300HR K/TP RATIO = .990905 SHAPE CONSTANT, N = 3.563124
UNIT PEAK = 7.6398 CFS UNIT VOLUME = .9986 B = 324.91 P60 = 2.0100
AREA = .003134 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*
ADD HYD ID=5 HYD NO=103.1 ID=3 ID=4
*

* ON-SITE BASIN B
*

COMPUTE NM HYD ID=6 HYD NO=104.0 AREA=0.044699 SQ MI
PER A=0.00 PER B=5.00 PER C=0.00 PER D=95.00
TP=0.1333 HR MASS RAINFALL=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 167.65 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.0100
AREA = .042464 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .132088HR TP = .133300HR K/TP RATIO = .990905 SHAPE CONSTANT, N = 3.563124
UNIT PEAK = 5.4475 CFS UNIT VOLUME = .9979 B = 324.91 P60 = 2.0100
AREA = .002235 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

*
ADD HYD ID=7 HYD NO=104.1 ID=5 ID=6
*

ROUTE RESERVOIR ID=8 HYD NO=500.0 INFLOW ID=7 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.00	0.00000	5056.00
85.57	0.00230	5060.00
104.83	0.00287	5061.00
121.01	0.00344	5062.00
135.30	0.00402	5063.00
148.21	0.06745	5064.00
160.09	0.50537	5065.00
171.14	2.01109	5066.00

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	5056.00	.000	.00
.80	.00	5056.00	.000	.00
1.60	180.76	5065.38	1.078	164.30
2.40	10.96	5056.82	.000	17.56
3.20	2.31	5056.22	.000	4.61
4.00	1.45	5056.11	.000	2.35
4.80	1.40	5056.08	.000	1.75
5.60	1.58	5056.08	.000	1.72
6.40	.14	5056.01	.000	.20
7.20	.00	5056.00	.000	.01

PEAK DISCHARGE = 164.349 CFS - PEAK OCCURS AT HOUR 1.63
MAXIMUM WATER SURFACE ELEVATION = 5065.385
MAXIMUM STORAGE = 1.0858 AC-FT INCREMENTAL TIME= .033330HRS

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 23:32:24

AIRPORT PARKING
1501 Aircraft Avenue
Albuquerque, NM 87106
505.228.9417
505.338.9431

F A C S I M I L E

To: Susan Calongne

Fax number: 924.3864

From: Kathleen Chaves

Date: June 12, 2000

Re: Drainage plan

Number of pages including cover: 2

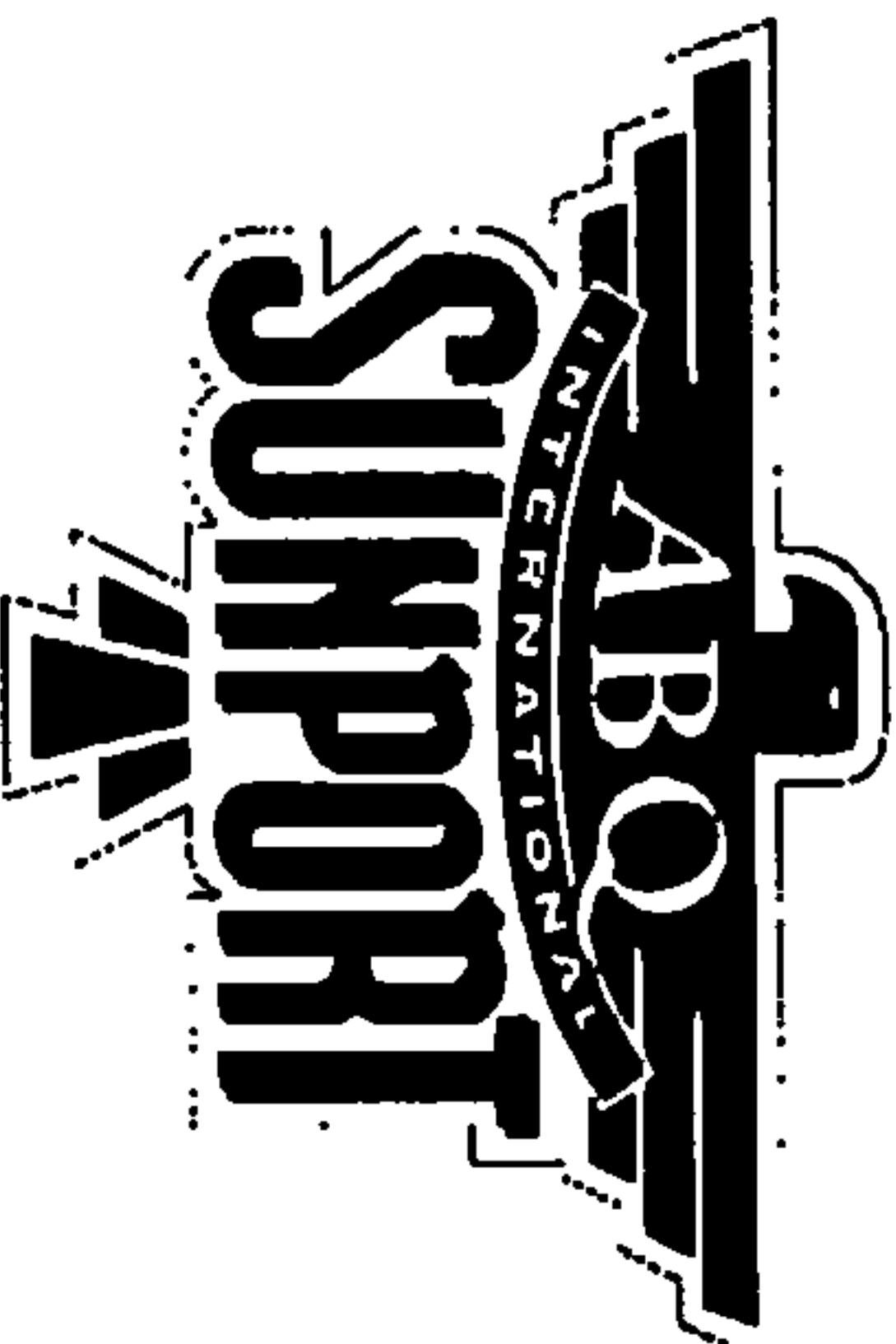
Dear Ms. Calongne:

For your review, I am enclosing letter dated December 20, 1999 from Mr. Jay Czar, Director of Aviation, stating that the Aviation Department will submit to FEMA the required application showing that the flood plain has been removed from our property.

Sincerely,

Kathleen Chaves

CITY OF ALBUQUERQUE
JIM LACCA, MAYOR LAWRENCE RAEL, CAO JAY J. C/AN, DIRECTOR OF AVIATION



December 20, 1999

Ricardo Chaves
Airport Parking
1501 Aircraft Avenue
Albuquerque, NM 87106

Re: Rental Car Facility

Dear Mr. Chaves:

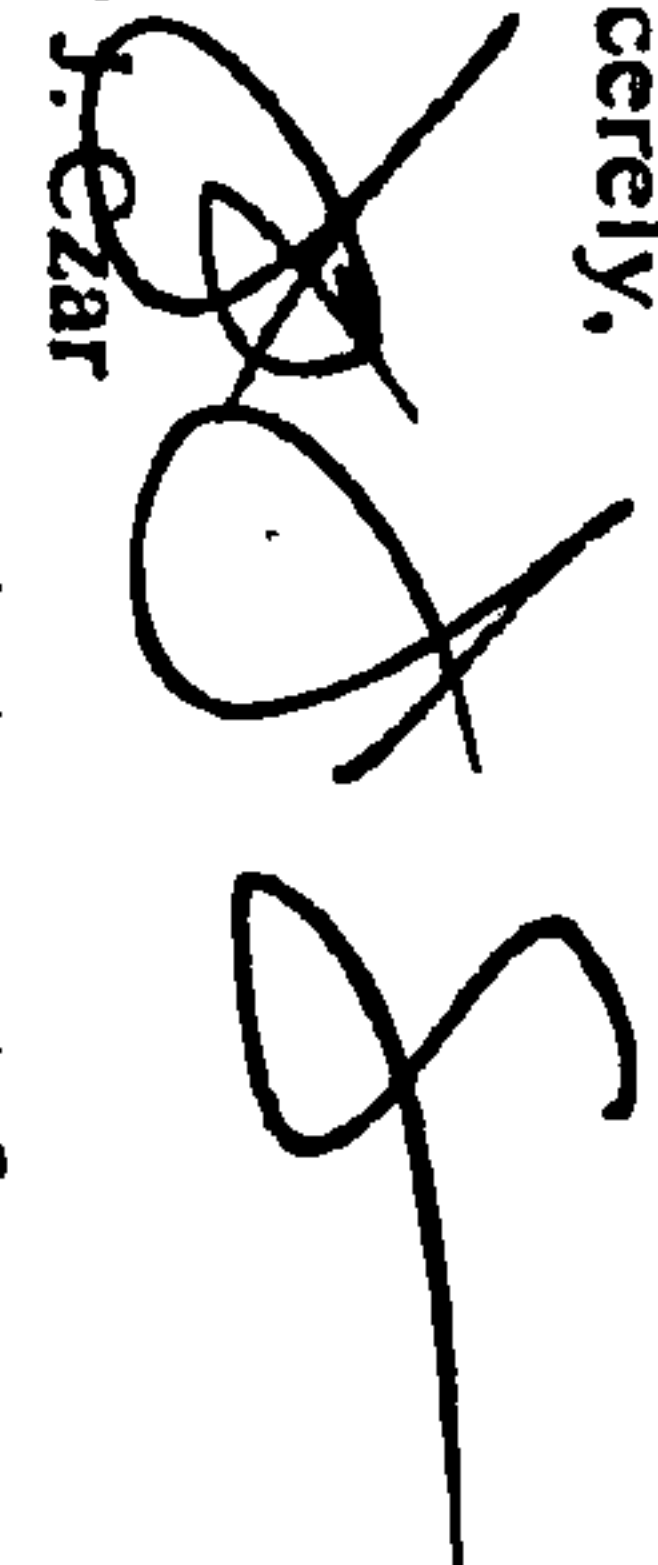
The City of Albuquerque Public Works Department, Hydrology Division, has informed the Aviation Department that it is responsible for the submission of the Letter of Map Revision to FEMA to remove the flood plain from your property located between University and I-25, adjacent to Sunport Blvd. This is due to the fact that the Aviation Department was the party responsible for putting in the new storm drain which diverts flows out of the arroyo which had caused the flood plain.

This process involves preparing an application on forms provided by FEMA with the necessary hydrologic and hydraulic analysis data showing that the flows are no longer causing the flood plain. This application will be submitted to FEMA for their review.

With regard to your obtaining a Certificate of Occupancy, the Aviation Department will not be responsible for that application. The engineer or architect preparing your development plans will need to request this approval. The Aviation Department is not responsible for the issuance of these documents,

If you have any questions regarding this matter, please feel free to call.

Sincerely,


Jay J. Czar
Director of Aviation JJC

Enclosures

Cc: Kent S. Freier, PE
Vice President, Project Engineer

Jim Hinde, Facilities Engineering/Aviation



DEVELOPMENT & BUILDING SERVICE CENTER
ONE STOP
600 SECOND ST. N.W./2ND FLOOR
ATTENTION: _____

505-924-3900

Records Withdrawal Form

Project No. M21-023 F Date: 4-12-01

Project Title: Surpac Parc

- ☒ a. File ☐ b. Mylars ☐ c. Redlines/Comments
☐ d. Other _____

Requested By: Mary S- Phone No.: 823-1000
Company Bohanna

Comments: _____

Anticipated Return Date: ASAP

Receipt Acknowledged

I here by accept full responsibility for the security of the above noted records/plans until return receipt acknowledgement is completed. Records/plans will be returned to the Development & Building Services Center on or before the indicated anticipated return date.

Delivery Picked Up By:

Name: Vern Nelson
Print

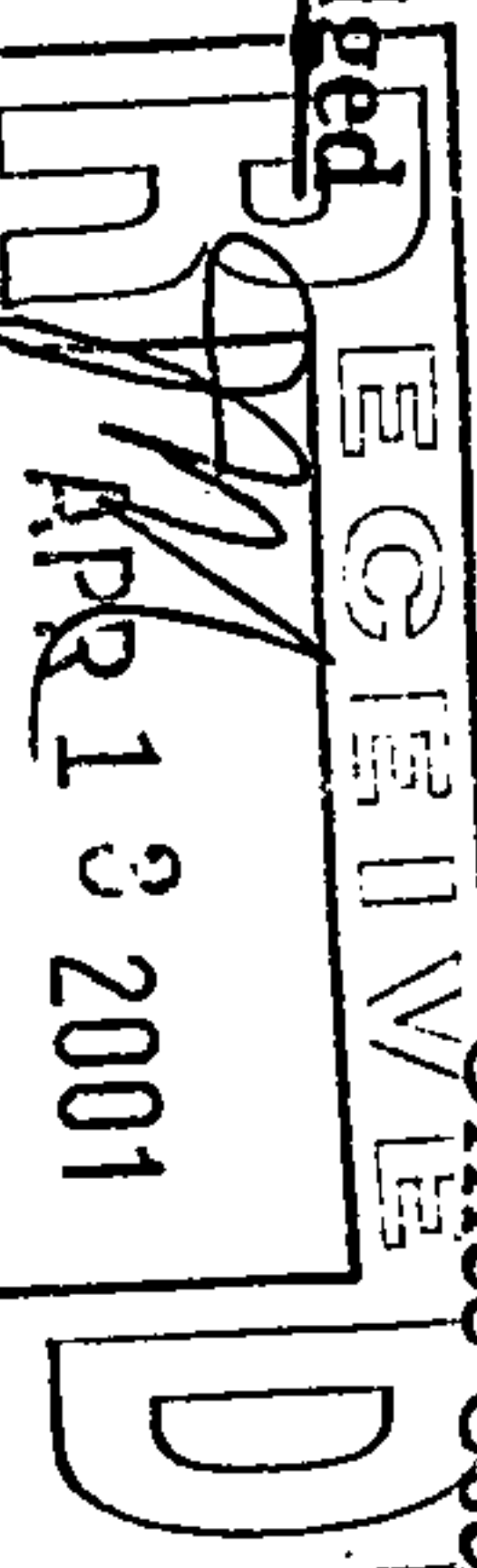
Organization: Reprographics

Signed: [Signature]
Phone No. 345-7653

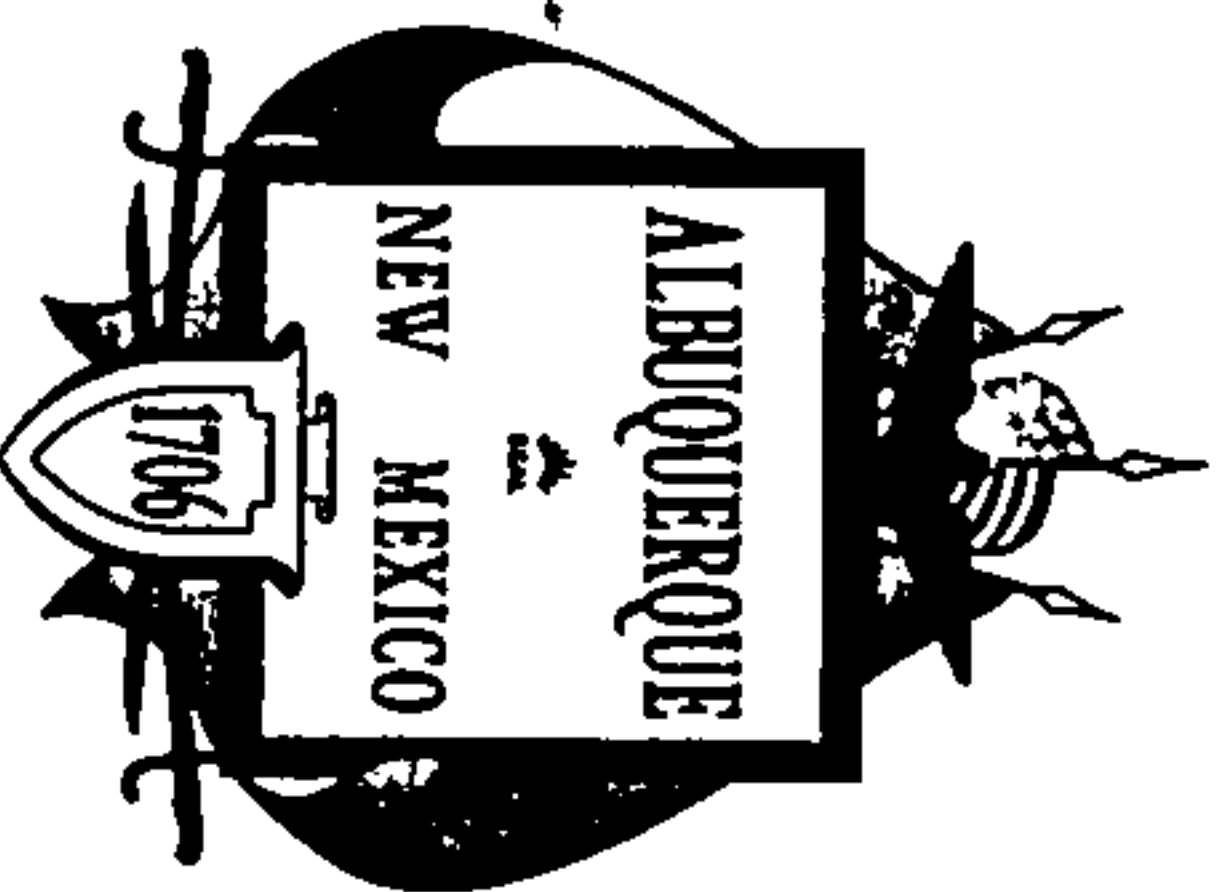
Date: 4-12-01

Return Acknowledged

Received by: _____



Date: _____



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 5, 2000

Shahab Biazar, P.E.
Advanced Engineering and Consulting, LLC
10205 Snowflake Ct. NW
Albuquerque, NM 87114

**RE: Grading and Drainage Plan for Phase II, Parcel 2A, Sunport Park
(M15/D23F) 1501 Aircraft Ave. SE, Revised Site Plan,
stamp dated October 3, 2000.**

Dear Mr. Diazar,

City Hydrology has no problem with the referenced Revised Site Plan.

A revised Grading and Drainage Plan must be submitted for the Revised Site Plan, and approved by Hydrology prior to Issuance of Building Permit.

Since the revised site plan may effect the required SO-19 work, please provide Certification of Completion of the SO-19 work prior to Issuance of Building Permit.

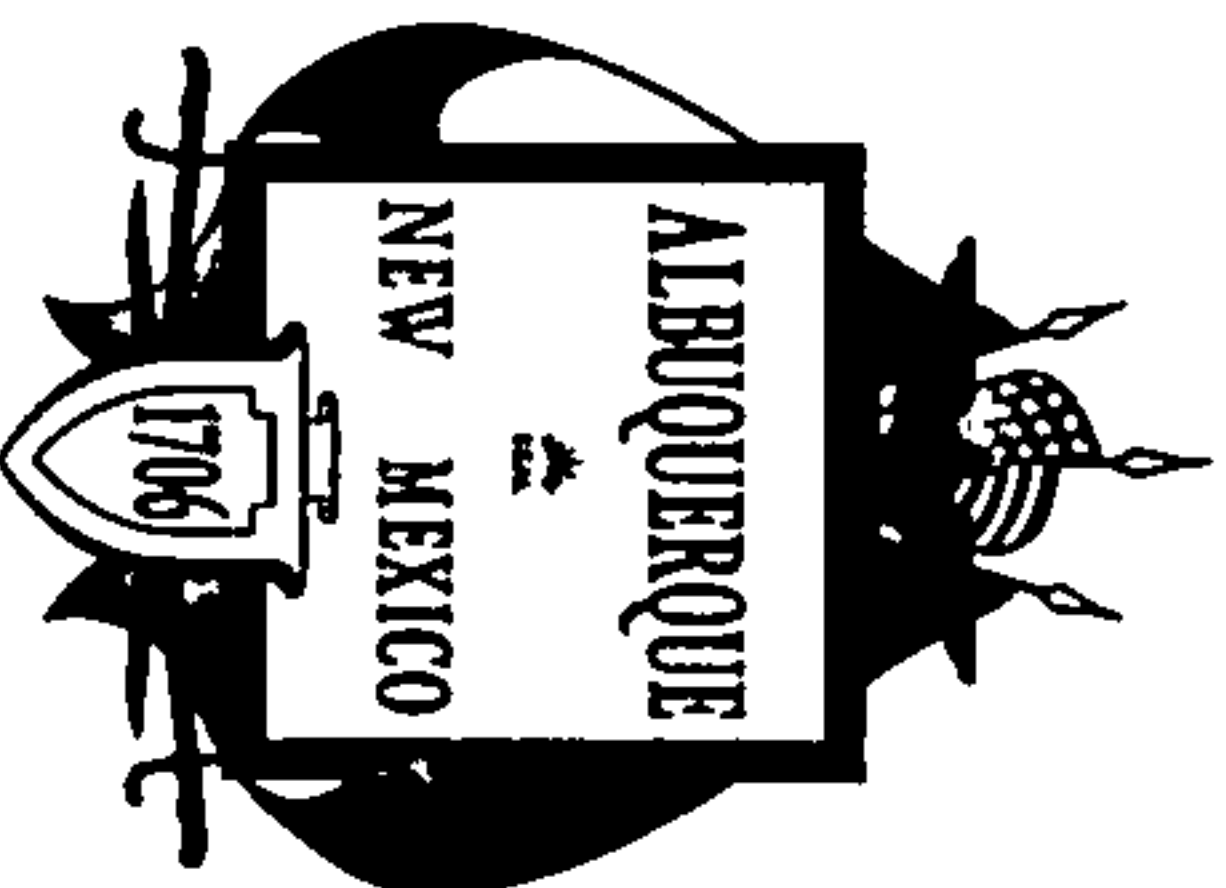
If you have any questions, please call me at 924-3980.

Sincerely,

Loren D. Mainz, P.E.

c. file

Kathleen Chavez, Owner



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

July 27, 2000

Shahab Biazar, P.E.
Advanced Engineering and Consulting, LLC
10205 Snowflake Ct. NW
Albuquerque, New Mexico 87114

RE: *Revised Grading and Drainage Plan for Phase II of Parcel 2A, Sunport Park
(M15/D23F) 1501 Aircraft Avenue SE, Engineer's Stamp Dated 7/9/00.*

Dear Mr. Biazar:

Based on the information provided, the above referenced grading plan dated July 9, 2000 is approved for Site Development Plan for Building Permit approval by the DRB.

This plan is also approved for Grading Permit release. A topsoil disturbance permit must be obtained before any grading may occur on this site.

The above referenced grading plan is also approved for Building Permit release. Please attach a copy of this revised plan to the set of construction drawings for Hydrology sign-off. The Engineer's Certification is required prior to release of the Certificate of Occupancy for this site.

The plan and profile sheet for the storm drain is approved for S.O. # 19 permit release. An additional excavation permit is required for this work within the City drainage easement.

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: Pam Lujan, COA
Kathleen Chavez, Owner
DRB
cFile

PUBLIC WORKS DEPARTMENT

July 27, 2000

INTEROFFICE CORRESPONDENCE

HYDROLOGY DIVISION

TO: Pam Lujan, Eng. Tech I, Construction Coordination Div.

FROM: Susan M. Calongne, PE, Hydrology Div., PWD 

SUBJECT: PUBLIC DRAINAGE FACILITIES WITHIN PUBLIC RIGHT-OF-WAY
DRAINAGE FILE NUMBER (M15/D23F)
PROJECT: Sunport Park - 1501 Aircraft Avenue SE

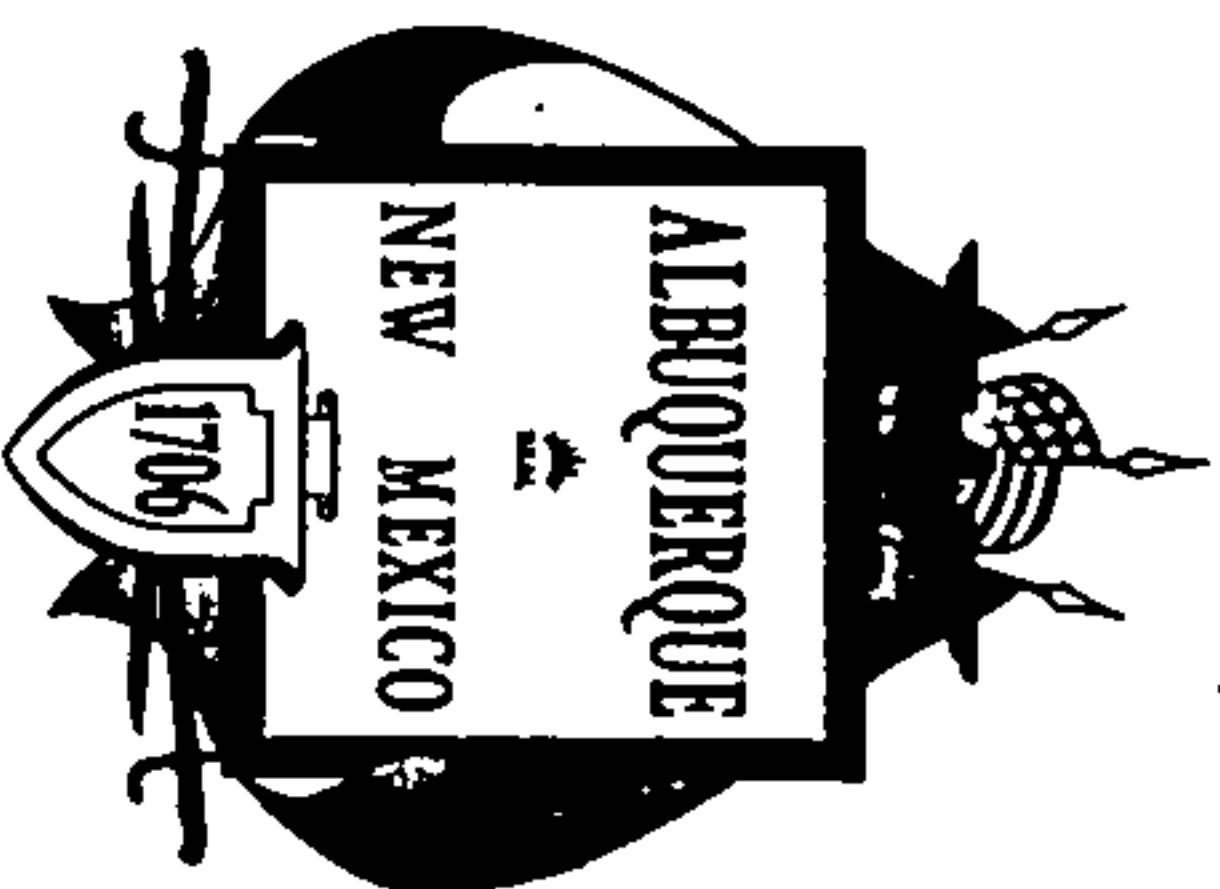
Transmitted herewith is a copy of the approved drainage plan for the referenced project incorporating the SO #19 design.

This plan is being submitted to you for permitting and inspection. Please provide this section with a signed-off copy per the signature block upon construction and acceptance by your office.

As you are aware, the signed off SO#19 is required by this office for Certificate of Occupancy release; therefore your expeditious processing of this plan would be greatly appreciated and would avoid any unnecessary delay in the release of Certificate of Occupancy.

Thank you for your cooperation. If you have any questions or comments, please call me at 924-3982.

Attachment



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 10, 2000

Shahab Biazar, P.E.
Advanced Engineering and Consulting
10209 Snowflake Ct. NW
Albuquerque, New Mexico 87114

RE: *Drainage Report and Grading and Drainage Plan for Phase II of Parcel 2A, Sunport Park (M15/D23F) Submitted for Site Development Plan for Building Permit Approval, Grading Permit and Building Permit Approval, Engineer's Stamp Dated 3/24/00.*

Dear Mr. Biazar:

The Site Development Plan must be approved by the DRB prior to Grading permit or Building permit release. Prior to Site Development Plan approval for the above referenced site, the following comments must be addressed:

1. Please verify that the storm drain system on this site has been completed and accepted by the City. How deep is the storm drain with respect to the proposed grades?
2. The master drainage plan for this site designed the storm drain for the fully developed condition. Therefore, it is unclear why ponding is proposed for this site. It appears that off-site Basin B will drain into the existing storm drain system in the fully developed condition. Or, will that site also be required to pond when it is developed?
3. What land treatments were used for the existing and the proposed conditions?
4. The plan shows off-site grading for a proposed pond on Tract A-3, and proposed grading on the property to the south. Written permission from the adjacent property owners must be obtained prior to Site Plan approval for all off-site grading.
5. What assumptions were used to design the Tract A-3 desilting pond and spillway? Provide calculations.
6. The plan shows two property lines on the south side of the site. Which is your property line? At such a small scale, it is difficult to see where the proposed retaining walls are needed. Please provide more spot elevations along the southern boundary and clearly identify the required retaining walls on the plan by top of wall elevations. You will be required to certify all retaining walls prior to release of the Certificate of Occupancy or prior to release of financial guarantees.

Shahab Biazar

page 2

April 10, 2000

7. Since the City has no confirmation that Molzen Corbin will prepare and obtain the LOMR to remove the floodplain from this site, the LOMR requirement must be included on your Infrastructure List. The LOMR must be obtained from FEMA prior to release of Financial Guarantees.

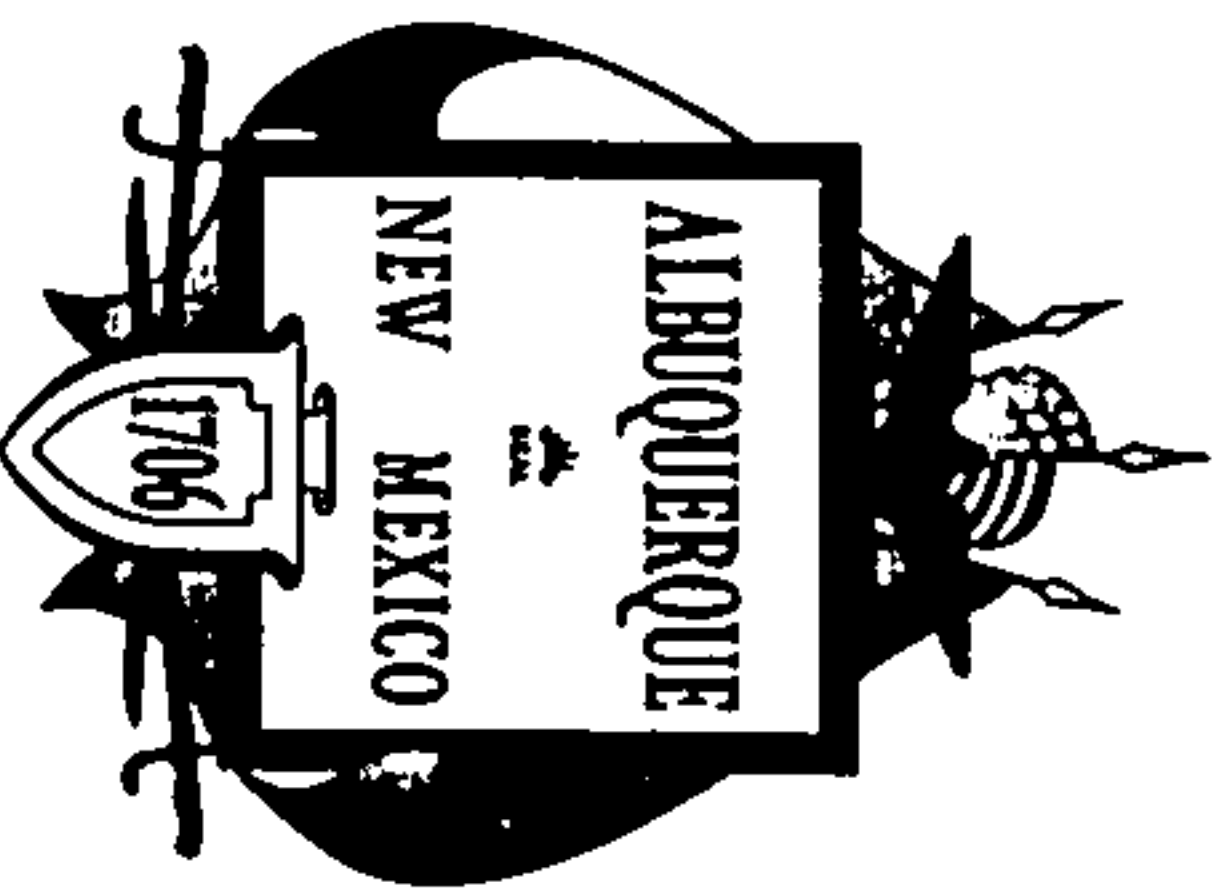
If you have any questions regarding these comments, please call me at 924-3982.

Sincerely,



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

c: Manuel George Gonzales, Owner
File



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

October 5, 2000

Shahab Biazar, P.E.
Advanced Engineering and Consulting, LLC
10205 Snowflake Ct. NW
Albuquerque, NM 87114

**RE: Grading and Drainage Plan for Phase II, Parcel 2A, Sunport Park
(M15/D23F) 1501 Aircraft Ave. SE, Revised Site Plan,
stamp dated October 3, 2000.**

Dear Mr. Diazar,

City Hydrology has no problem with the referenced Revised Site Plan.

A revised Grading and Drainage Plan must be submitted for the Revised Site Plan, and approved by Hydrology prior to Issuance of Building Permit.

Since the revised site plan may effect the required SO-19 work, please provide Certification of Completion of the SO-19 work prior to Issuance of Building Permit.

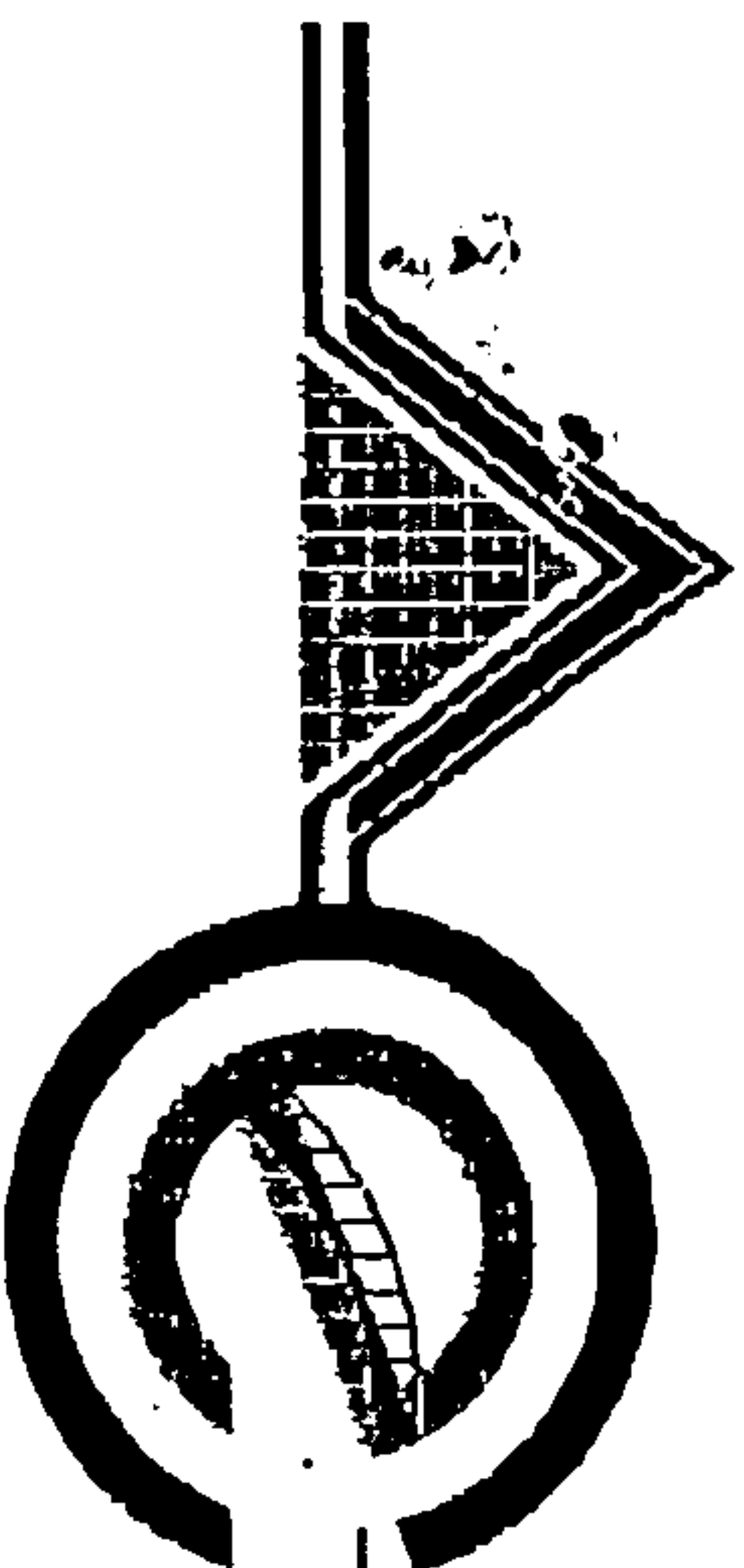
If you have any questions, please call me at 924-3980.

Sincerely,

Loren D. Mainz, P.E.

c. file

Kathleen Chavez, Owner



ADVANCED ENGINEERING and CONSULTING, LLC

Consulting
Design
Development
Management
Inspection

October 6, 2000

Mr. Loren Meinz, P.E.
City of Albuquerque
Hydrology Department
600 Second Street NW
Albuquerque, New Mexico 87102

RE: GRADING/DRAINAGE PLAN FOR PHASE II OF PARCEL 2A, SUNPORT PARK
(M15/D23F)

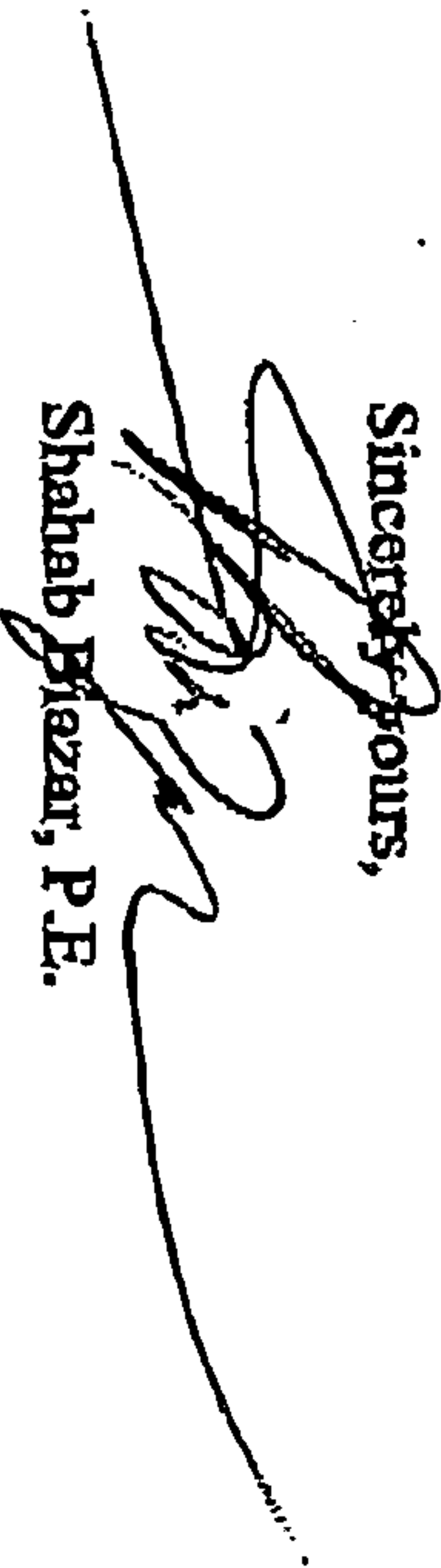
Dear Mr. Meinz:

This letter is in response to your conversation regarding the storm manhole rim modification for the above mentioned project. The manhole appear to be within $\pm 6"$ of finished grade. The rims will be built to finished grade elevations once the pavement is being placed on site. The rim elevations will be certified as part of final as-built certification.

Some changes have been made to the covered parking since the time of approval of the grading and drainage plan based on the DRB comments. We have maintained a constant grade through out the covered parking areas. The covered areas are open all around, and the runoff will drain through the covered areas. Therefore, any changes to the covered areas will not have any impact to the grading plan.

The owner will provide you with three copies of the overall grading plan dated 7/9/2000. Please contact me if there are any questions or concerns regarding this submittal.

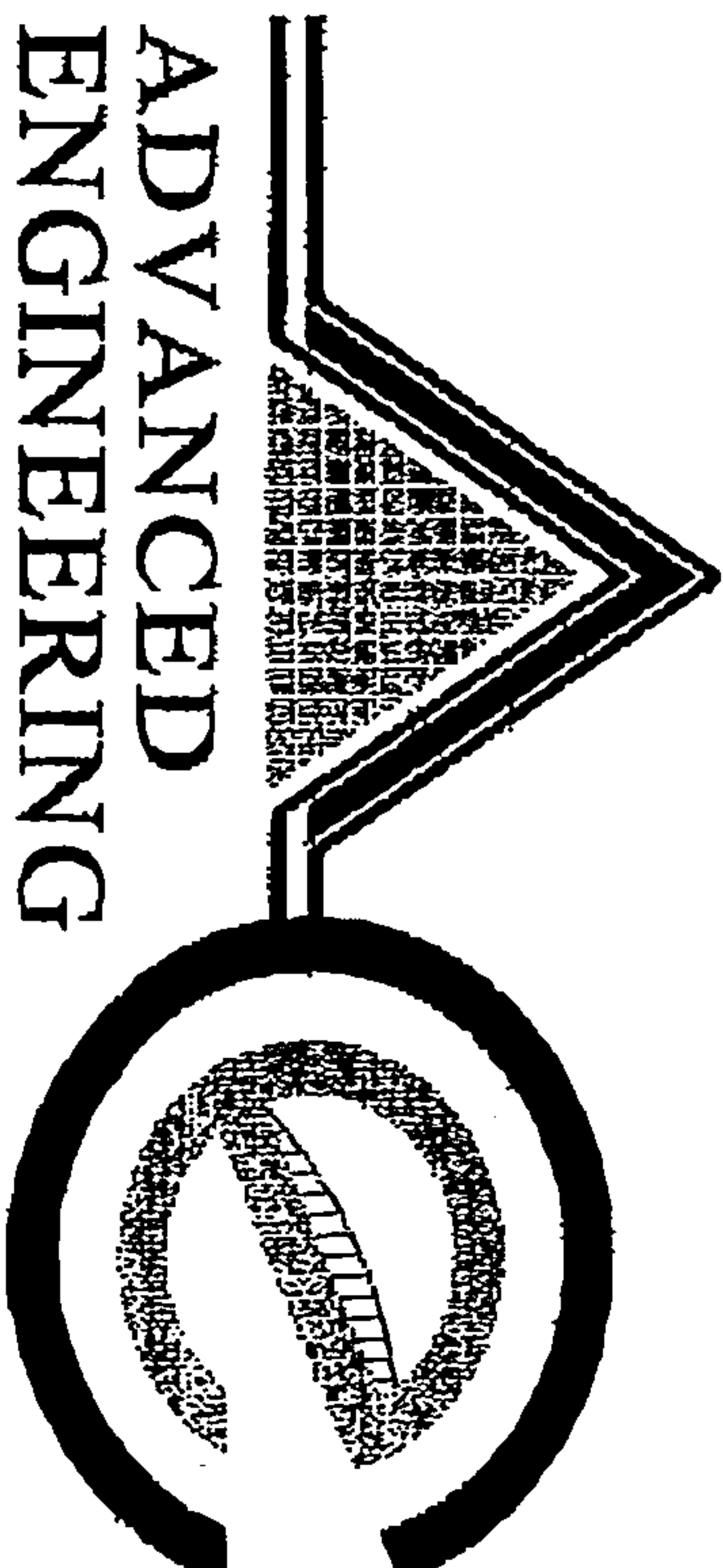
Sincerely yours,


Shahab Miazar, P.E.

RECEIVED
OCT 6 2000
HYDROLOGY SECTION

RECEIVED
OCT 6 2000
HYDROLOGY SECTION

10205 Snowflake Ct. NW Albuquerque New Mexico 87114 Phone (505) 898-5570 Fax (505) 897-4996



ADVANCED
ENGINEERING
and CONSULTING, LLC

FACSIMILE TRANSMITTAL

To:	Loren Meinz, P.E.	FAX: 924-3864
From:	Shahab Biazar	TOTAL OF (2) PAGE(S)
Subject:	Sunport Park	
Date:	July 27, 2000	

Attached is the letter you requested regarding the manhole elevations for the sunport parking addition.

Should you have any questions regarding this transmittal or any other items pertaining to this project, please do not hesitate to contact our office.

IF YOU DO NOT RECEIVE ALL PAGES OF THIS TRANSMITTAL, OR IF MATERIAL IS NOT LEGIBLE, PLEASE
CONTACT OUR OFFICE AT THE ABOVE NUMBER. THANK YOU.

*** RX REPORT ***

RECEPTION OK

TX/RX NO	8812	
CONNECTION TEL		505 897 4996
SUBADDRESS		
CONNECTION ID		
ST. TIME	10/06 14:58	
USAGE T	00'46	
PGS.	2	
RESULT	OK	

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Parcel 2A, Sunport Park ZONE ATLAS/DRNG. FILE #: M-15/D23 *FE*

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Parcel 2A, Sunport Park

CITY ADDRESS: _____

ENGINEERING FIRM: Advanced Engineering and Consulting, LLC CONTACT: Shahab Biazar

ADDRESS: 10205 Snowflake Ct. NW Alb., NM 87114 PHONE: (505) 899-5570

OWNER: Manuel George Gonzales CONTACT: Manuel George Gonzales

ADDRESS: 2719 Mountain Road, NW, Alb., NM 87104 PHONE: _____

ARCHITECT: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

CHECK TYPE OF APPROVAL SOUGHT:

☒ DRAINAGE REPORT SKETCH PLAN APPROVAL

_____ DRAINAGE PLAN PRELIMINARY PLAT APPROVAL

_____ CONCEPTUAL GRADING & DRAINAGE PLAN S. DEV. PLAN FOR SUB'D. APPROVAL

☒ GRADING PLAN S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

_____ EROSION CONTROL PLAN SECTOR PLAN APPROVAL

_____ ENGINEER'S CERTIFICATION FINAL PLAT APPROVAL

_____ OTHER FOUNDATION PERMIT APPROVAL

☒ BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY APPROVAL

☒ GRADING PERMIT APPROVAL

_____ PAVING PERMIT APPROVAL

_____ NO S. A. D. DRAINAGE REPORT

_____ COPY PROVIDED DRAINAGE REQUIREMENTS

_____ OTHER

PRE-DESIGN MEETING:

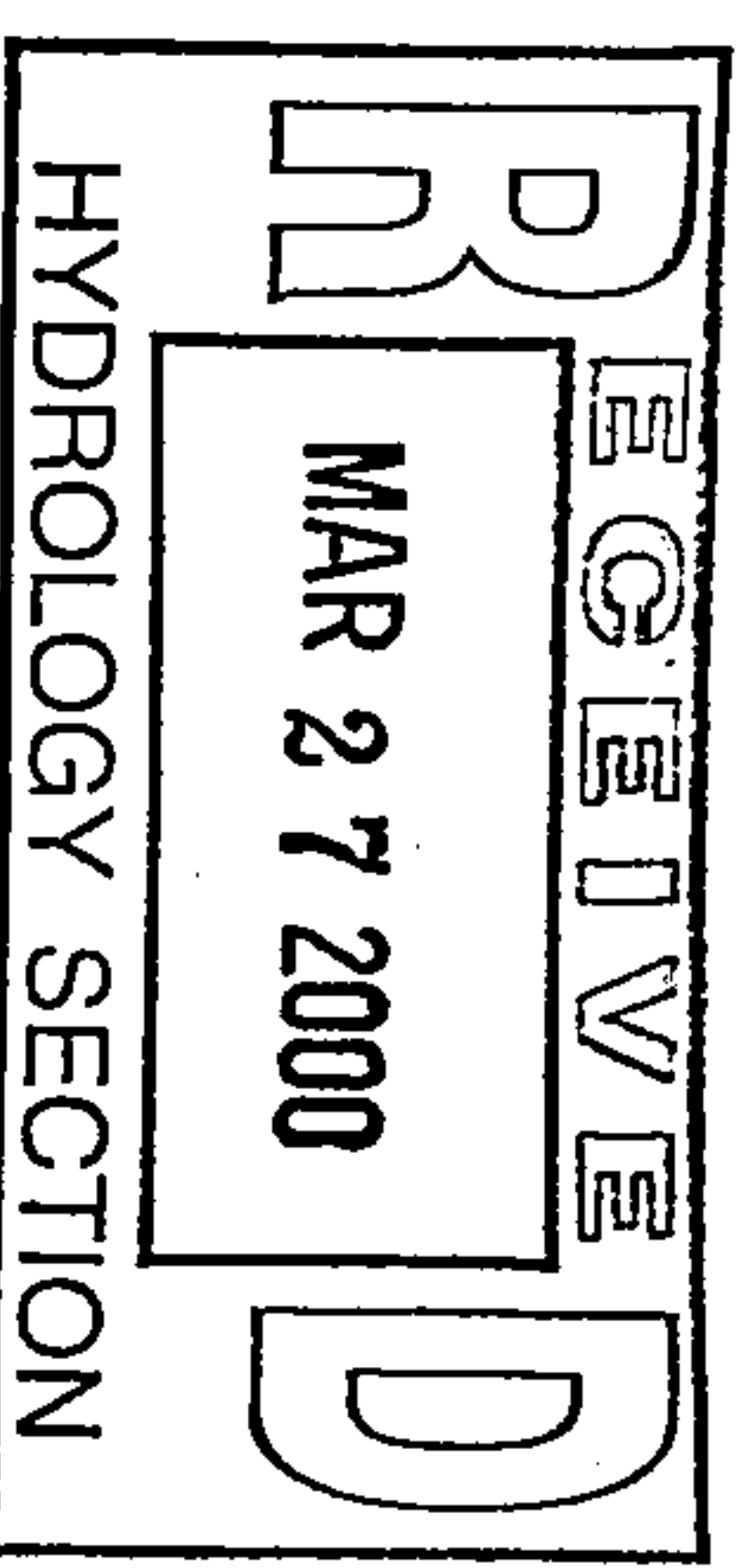
_____ YES

_____ NO

_____ COPY PROVIDED

DATE SUBMITTED: 03 / 27 / 00

BY: SHAHAB BIAZAR



ADVANCED
ENGINEERING
and CONSULTING, LLC

(505) 899-5570

TO: Susan Calongne

WE ARE SENDING YOU

1

Under Separate cover via

☐ Shop drawings



Plans

1

Samples

7

Copy of letter

□



SO-19

[illegible]

X
For approval

1

--	--

For your use

1

1

☐ As requested

For review and comments

□

FOR BIDS DUE

1

REMARKS

Attached are two copies of the plan and profile sheets for

We stamped date the grading plan the same as the previous submittal

Attached also are the load calculations.

COPY TO

RECEIVED
JUL 14 2008
HYDROLOGY SECTION

RECEIVED BY

SIGNED

Shahab Biazar, P.E.

LOADING CALCULATIONS FOR THE EXISTING RCP

FOR THE CALCULATIONS THE FOLLOWING ASSUMPTION WERE USED:

- 1) UNIT SOIL $W_t = 105$ PCF
 - 2) INITIAL INSTALLATION IN A POSITIVE PROJECTING EMBANKMENT CONDITIONS
 - 3) BEDDING A CLASS "B"
- (SEE ACPA FIG 229 AND TABLE 62.1)

ASSUME COMPLETE CONDITIONS: EQUATION 3 - SEE DESIGN DATE 22, PAGE 5

$$W_c = C_c W B_c^2 \qquad H / B_c = 17/3.52, H = \text{COVER OVER THE PIPE} \qquad C_c = 5.2$$

$$W_c = 5.2(105)(4.83)^2$$

$$W_c = 12,738 \text{ LBS/FT}$$

$$\text{D-LOAD} = W_c / (\text{ID} \times B_f), \qquad \text{ID} = \text{PIPE ID}, \qquad B_f = \text{BEDDING FACTOR CL 'B'}$$

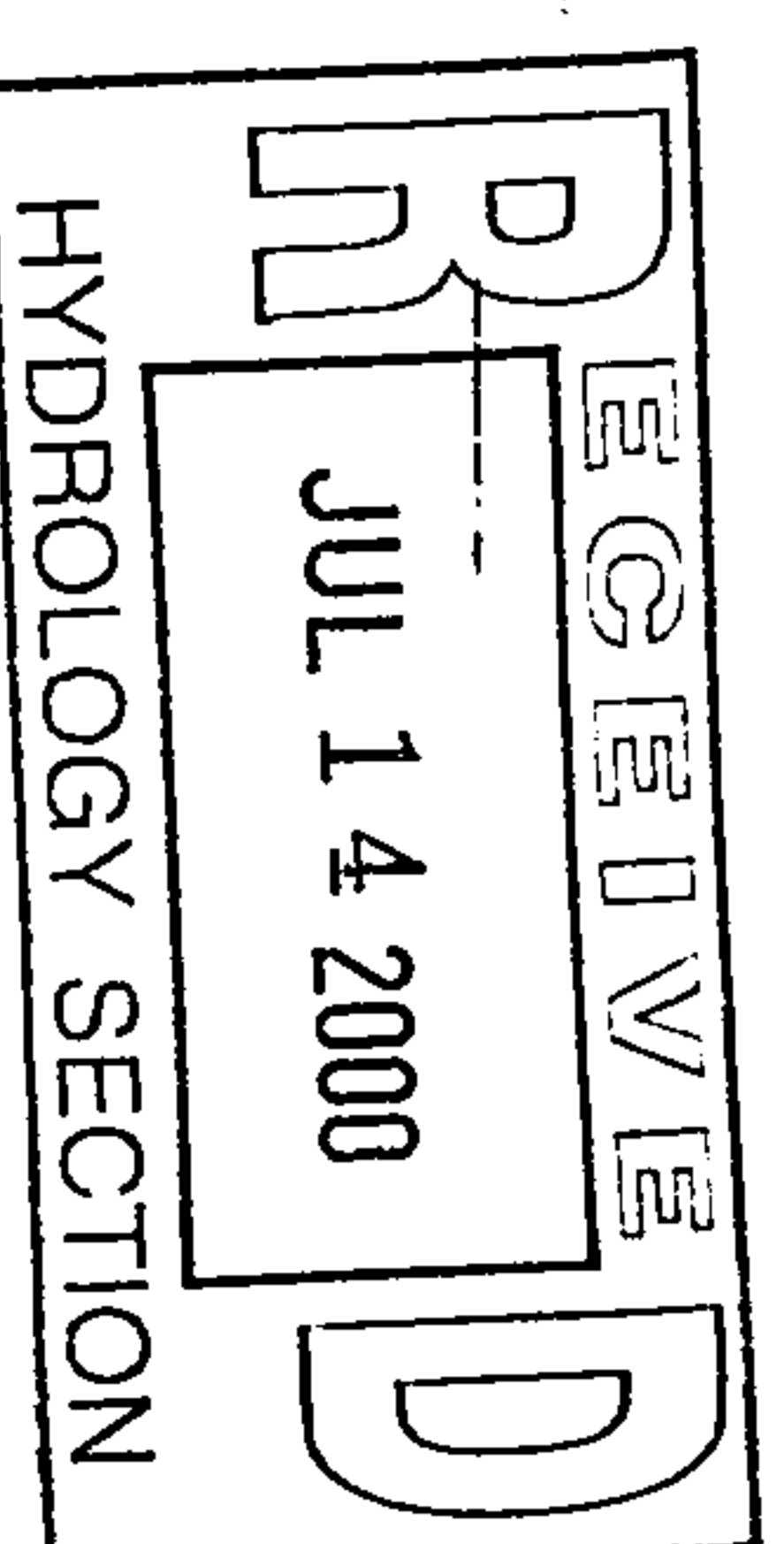
$$\text{D-LOAD} = 12738 / (4 \times 2.36)$$

$$\text{D-LOAD} = 1311$$

RCP CLASS III HAD D-LOAD CAPACITY OF 1350 > 1311

1350 IS THE INITIAL LOAD CAPACITY WHEN RCP PIPE IS RECENTLY BUILT
RCP INCREASES IN LOAD CAPACITY AS IT GOES THROUGH A CURING CYCLE
THE LOAD CAPACITY COULD INCREASE ANYWHERE FROM 15 TO 50% OVER TIME

THEREFORE, THE LOAD CAPACITY OF THE PIPE COULD REACH AS LOW AS
(1350 x 1.15) 1552 AND AS HIGH AS (1350 x 1.50) 2025



8320 old courthouse road • Vienna, Virginia 22180
© March 1971

design data 22

REGISTERED
JUL 14 2000
HYDROLOGY SECTION

american
concrete
pipe
association

SURCHARGE LOADS

Changes in land use may necessitate the placement of surcharge loads over existing pipe installations. The most common type of surcharge load is additional earth fill. If the surcharge load is a building or other surface load, the resultant uniformly distributed load can be converted to an equivalent frictionless height of fill, and therefore, evaluated as additional earth fill.

When concrete pipe has been installed underground for any period of time an ideal soil-structure stability is realized. In addition, the load carrying capacity of the pipe increases, because of increased concrete strength and favorable load distribution around the periphery of the pipe. The possibility of cohesion developing within the soil mass may result in negligible, surcharge load transmitted to the pipe. All of these time related factors contribute to the adequacy of an installed concrete pipe to withstand greater loads than the initial design loads. Through site investigations, soils analysis, tests and information on the design and construction of the initial installation, it should be possible to quantitatively evaluate

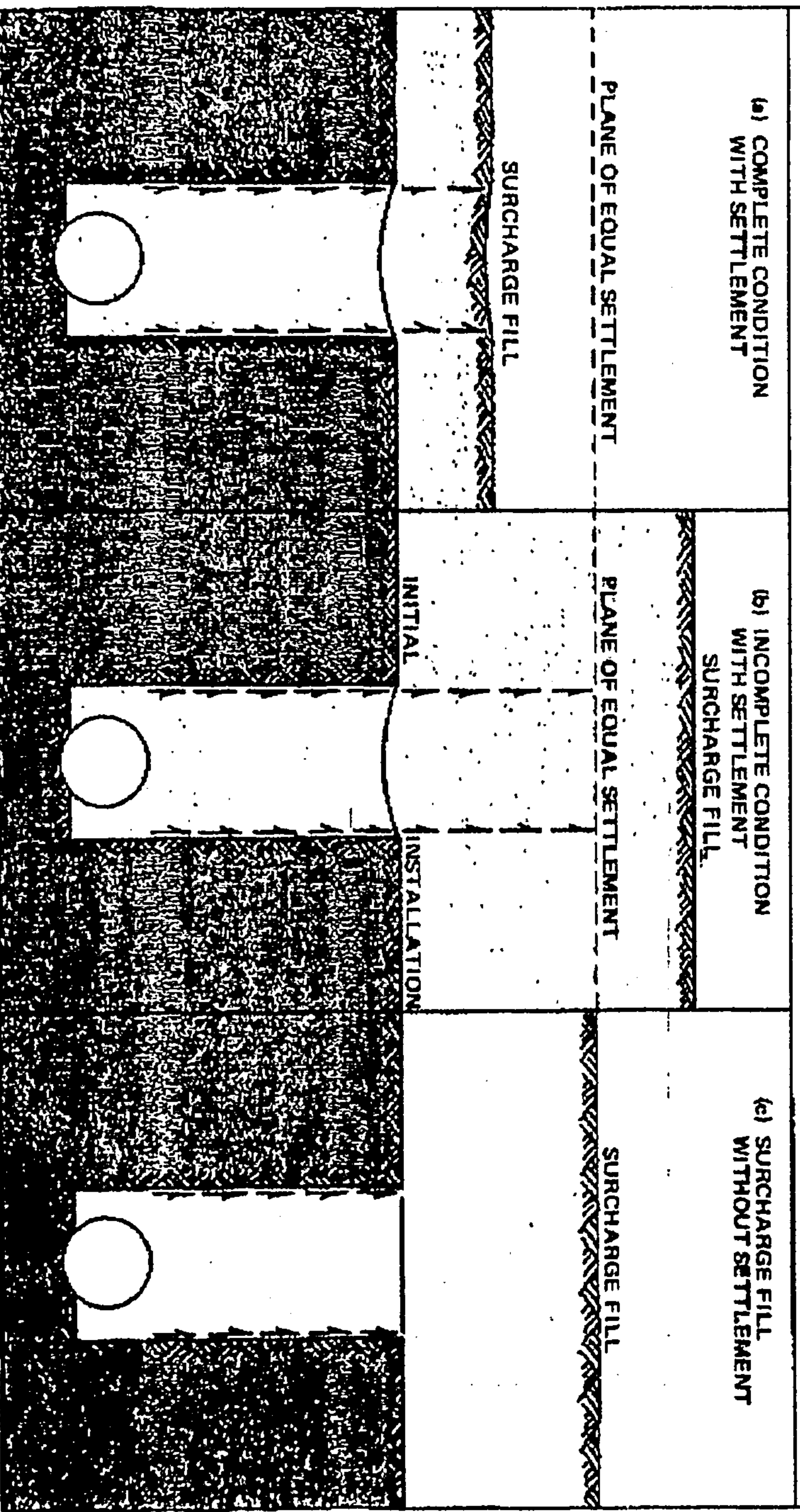
these factors. Test data on concrete pipe which have been removed from service and three-edge bearing tested, indicate an increase in load carrying capacity of 10 percent to 40 percent.

Data required for the proper evaluation of surcharge loads are:

- historical data regarding pipe size and strength class.
- installation data regarding type of installation, type of bedding and, if applicable, type of backfill material and trench width.
- soils analysis to determine whether or not differential settlements will occur between the backfill or fill material over the pipe and the soil adjacent to the sides of the pipe, after the surcharge is placed.

Assuming that the time related factors have been determined, the proper evaluation of surcharge loads is primarily dependent on the initial installation and the two most common types are trench and positive projecting embankment.

FIGURE 1: TRENCH INSTALLATIONS WITH SURCHARGE FILL LOAD



TRENCH

Trench installations are normally used in the construction of sewers. The pipe is installed in a relatively narrow trench excavated in undisturbed soil and then covered with backfill extending to the original ground surface. When pipe is installed in a narrow trench and backfilled, the backfill material will tend to settle. This downward movement generates frictional forces along the trench walls, which act upward to help support the weight of the backfill material. The magnitude of the frictional forces depends on the unit weight of the backfill material w , the value of Rankine's lateral pressure ratio K , and the coefficient of sliding friction μ' , between the backfill material and the trench walls.

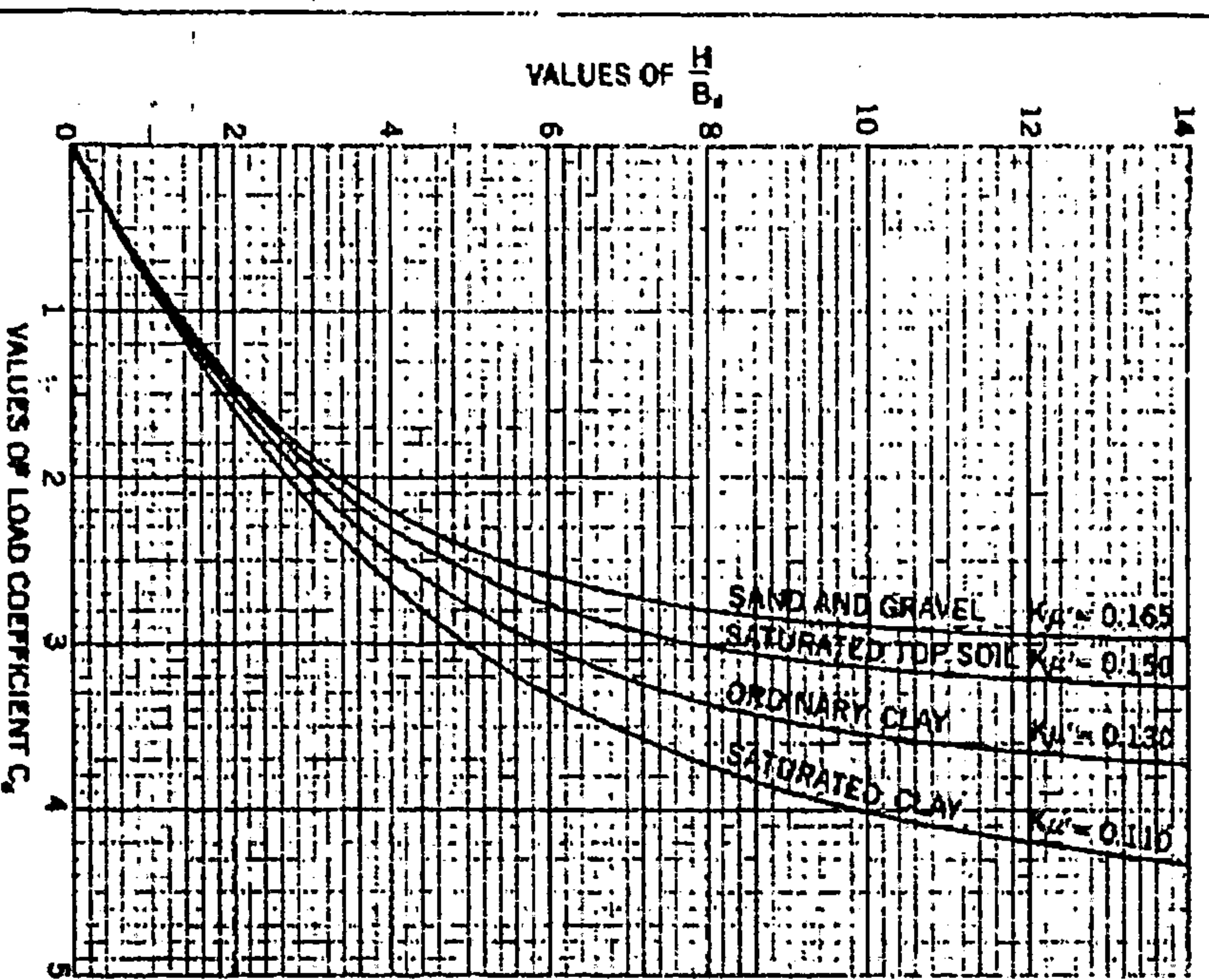
After placement of the surcharge load these frictional forces may or may not occur in the additional fill, depending on the relative compressibility of the initial backfill material and the adjacent soil in which the trench was excavated.

As illustrated in Figure 1, three possible conditions could develop when a surcharge fill is placed over an existing trench installation. The proper method of analysis depends on the height of the additional fill and relative settlements. The three conditions are:

1. complete condition with settlement
2. incomplete condition with settlement
3. surcharge fill without settlement

When a surcharge fill is placed over an existing trench installation and differential settlements are expected between the initial backfill material and the surrounding soil in which the trench was excavated, upward friction forces will be

FIGURE 2: LOAD COEFFICIENT DIAGRAM FOR TRENCH INSTALLATIONS



generated in the additional fill. The terminology *complete condition* indicates that differential settlements and friction forces act throughout the entire height of fill, and *incomplete condition* indicates that differential settlements and friction forces are dissipated within the fill with a plane of equal settlement being developed.

As illustrated in Figure 1(a), when the height of the surcharge fill is relatively shallow as compared to the depth of the initial trench, upward friction forces will be generated throughout the entire height of the additional fill. This simulates a trench condition and the total load is computed by the equation:

$$W_d = C_d w B_d^2 \quad (1)$$

where

W_d = total load including initial backfill load and surcharge load, pounds per linear foot.

C_d = load coefficient for trench installations with a relatively shallow surcharge fill.

w = unit weight of initial backfill material and/or additional fill material, pounds per cubic foot.

B_d = trench width of the initial installation, feet

Figure 2 presents values of the load coefficient, C_d , for various types of soils and H/B_d ratios. The H value to be used in Figure 2 is the total height of cover over the pipe; the height of the initial backfill plus the height of the surcharge fill.

As illustrated in Figure 1 (b), the surcharge fill is of sufficient height that a plane of equal settlement is developed within the soil mass. This simulates a negative projecting embankment installation and the total load is computed by the equation:

$$W_n = C_n w B_d^2 \quad (2)$$

where

W_n = total load including initial backfill load and surcharge load, pounds per linear foot.

C_n = load coefficient for trench installations with a relatively high surcharge fill.

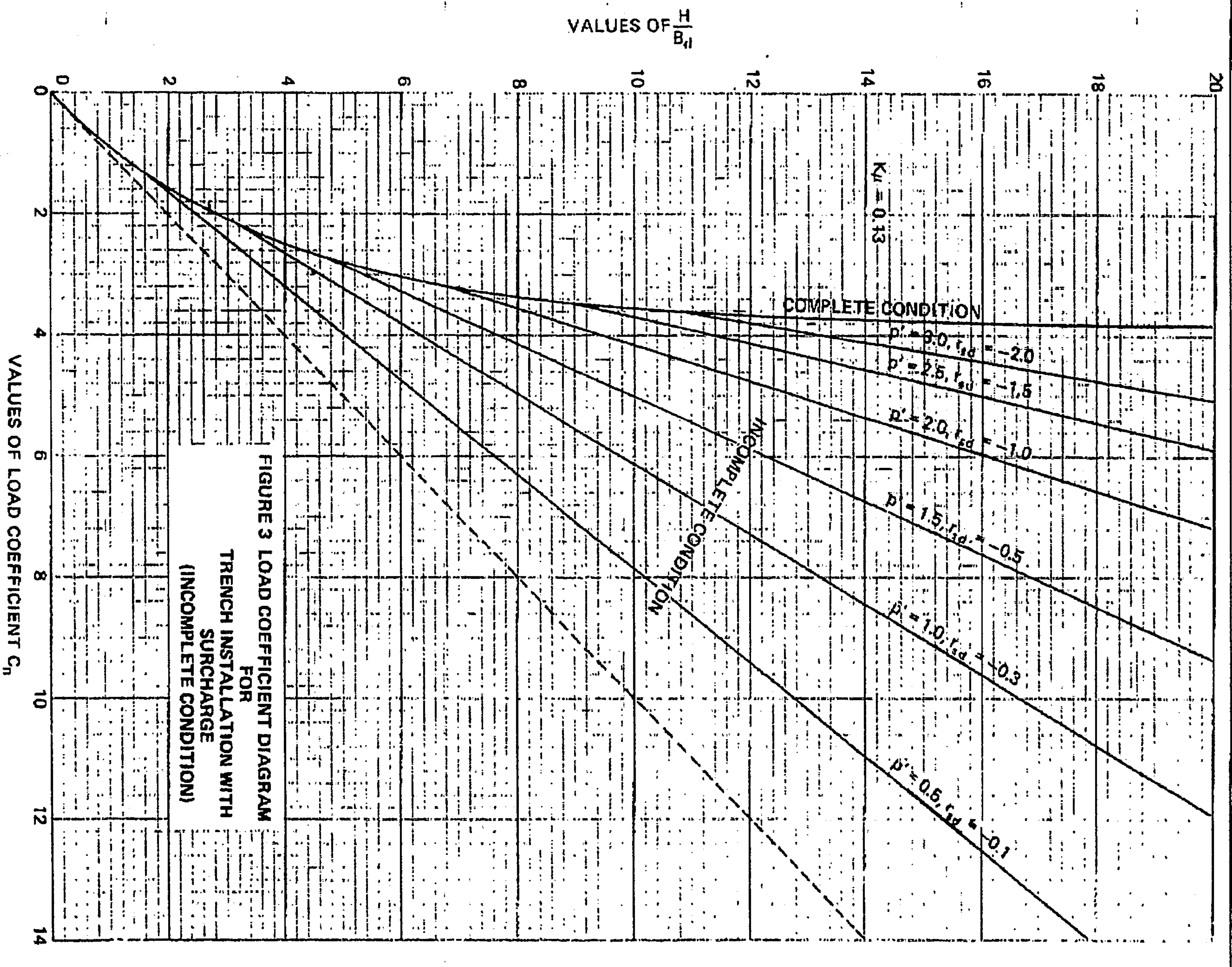
w = unit weight of initial backfill material and/or additional fill material, pounds per cubic foot.

B_d = trench width of the initial installation, feet.

Figure 3 presents values of the load coefficient, C_n , for various values of p' and r_{sd} . The p' term is the negative projection ratio and is defined as the vertical distance between the top of the pipe and the top of the trench divided by the trench width. The r_{sd} term is the settlement ratio which evaluates the differential settlements between the backfill material within the trench and the surrounding soil in which the trench was excavated. Recommended design values for the settlement ratio are listed in Table 1.

TABLE 1: NEGATIVE PROJECTING SETTLEMENT RATIO DESIGN VALUES

NEGATIVE PROJECTION RATIO p'	SETTLEMENT RATIO r_{sd}
0.5	-0.1
1.0	-0.3
1.5	-0.5
2.0	-1.0
3.0	-2.0



To determine if equation (1) or (2) is applicable, it is necessary to evaluate the height of surcharge fill required to develop a plane of equal settlement. This can be determined from Figure 3 at the points of intersections between the straight ρ' , r_{sd} lines representing the INCOMPLETE CONDITION and the curved line representing the COMPLETE CONDITION. Once the incomplete condition is realized, the fill load varies linearly for any given trench width, negative projection ratio and settlement ratio.

As illustrated in Figure 1 (c), if the backfill material and adjacent soil have developed sufficient stability over a period of time so that all material will compress equally, then differential settlements and frictional forces will not develop within the surcharge fill. For this condition the total load is computed by the equation:

$$W_d = C_d w B_d^2 + C_s w H B_d \quad (3)^*$$

where

W_d = total load including initial backfill load and surcharge load, pounds per linear foot

C_d = load coefficient for trench installations

w = unit weight of initial backfill material, pounds per cubic foot

B_d = trench width of the initial installation, feet

C_s = load coefficient for surcharge loads

H = height of surcharge fill, feet

* For uniform surcharge loads resulting from buildings or other surface loads, the second term in equation (3) is expressed as $C_s U_s B_d$, where U_s is the uniform pressure at the ground surface, pounds per square foot.

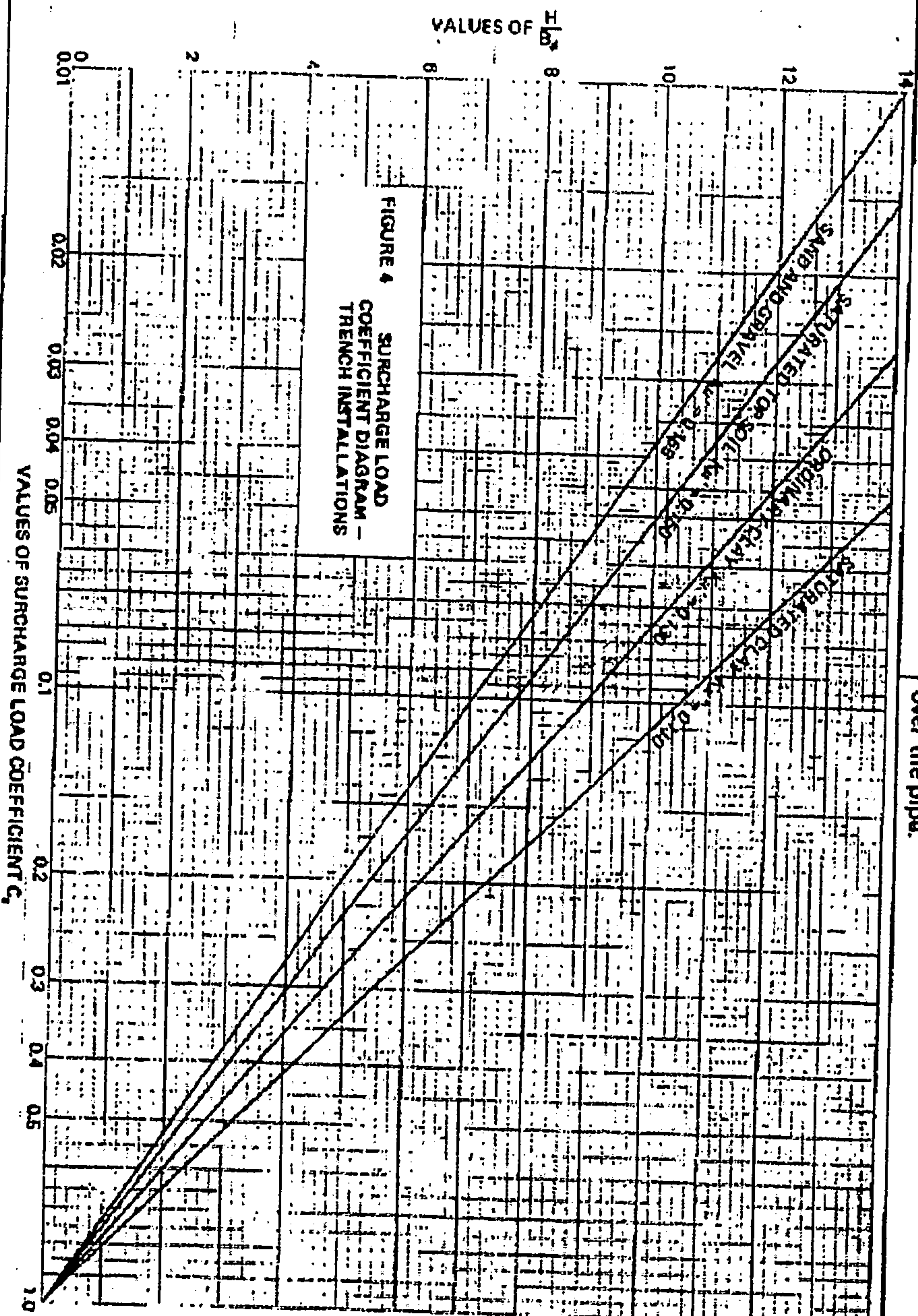
The first term in equation (3), $C_d w B_d^2$, accounts for the backfill load of the initial installation and the second term, $C_s w H B_d$, accounts for the surcharge load.

Figure 2 presents values of the backfill load coefficient, C_d' , and Figure 4 presents values of the surcharge load coefficient, C_s . Load coefficient values are presented for various types of soils and H/B_d ratios. The height of backfill, H , is measured from the top of the pipe to the original ground surface for both Figures.

POSITIVE PROJECTING EMBANKMENT

Positive projecting embankment installations are normally used in the construction of culverts. The pipe is installed on the original ground or compacted fill and then covered by an earth fill or embankment.

In considering fill loads on concrete pipe installed in a positive projecting embankment condition, it is convenient to designate the prism of fill directly above the pipe and bounded by vertical planes tangent to the sides of the pipe as the interior prism. The exterior prisms are the prisms of fill adjacent to the vertical planes on both sides of the pipe. Since the length of the exterior prisms are greater than the interior prism, the exterior prisms of fill will compress more than the interior prism as the embankment is built up. The relative settlements between the interior prism and the exterior prisms generate downward frictional forces along the vertical planes adjacent to the sides of the pipe, which increases the fill load over the pipe.



As illustrated in Figure 5, three possible conditions could develop when a surcharge fill is placed over an existing embankment installation and these conditions are:

1. complete condition with settlement
2. incomplete condition with settlement
3. surcharge fill without settlement

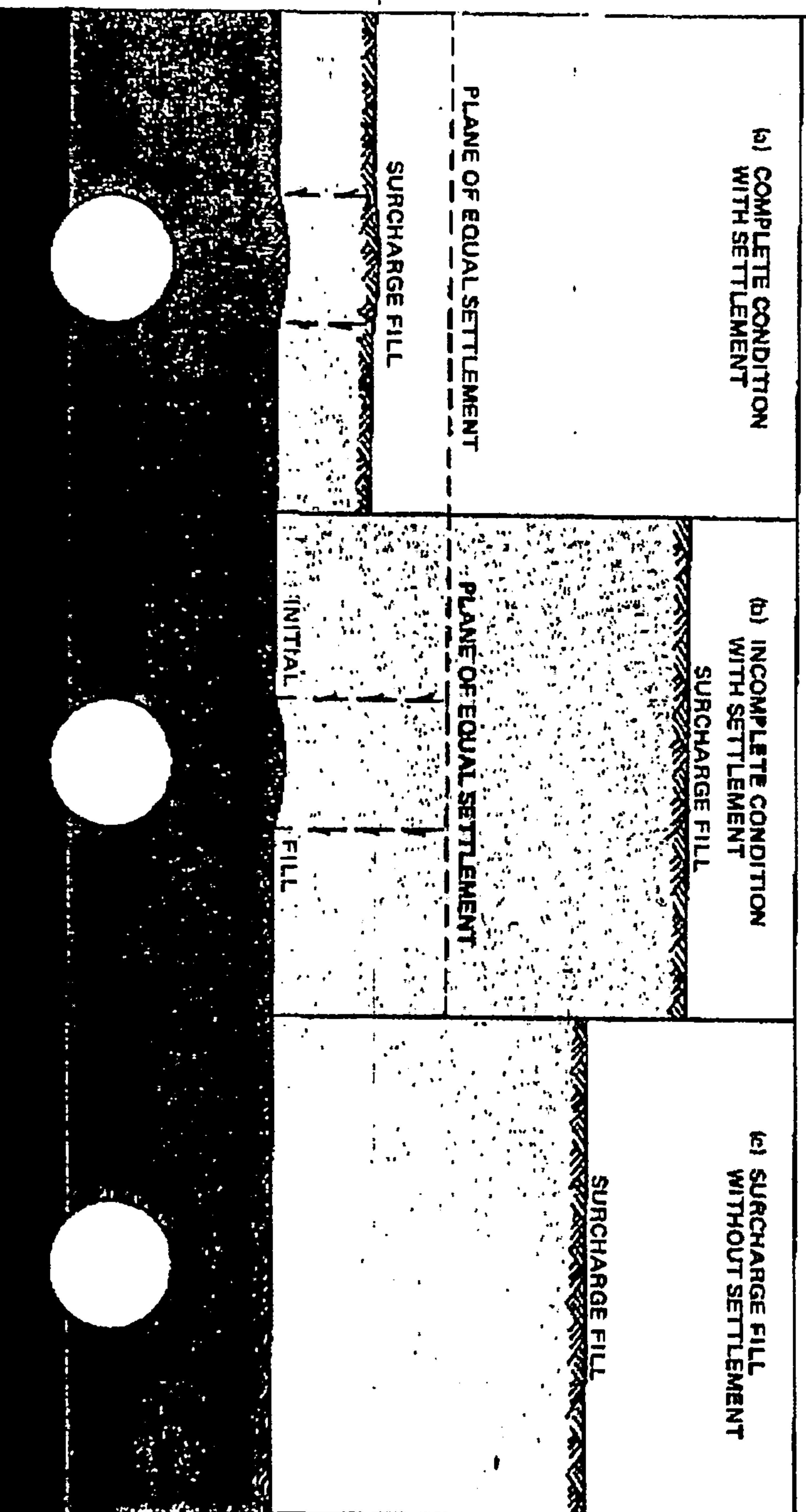
When a surcharge fill is placed over an existing embankment installation and differential settlements are expected between the interior and exterior prisms, downward frictional forces will be generated through the additional fill. Under shallow fills, differential settlements and downward frictional forces will act throughout the entire fill height and this condition is defined as the *complete condition*. If the fill is of sufficient height, a plane of equal settlement will develop within the soil mass and this condition is defined as the *incomplete condition*. If the initial installation is a complete condition, the additional fill may be of sufficient height to enable development of a plane of equal settlement and change the complete into the incomplete condition. Once the incomplete condition is realized the fill load varies linearly for any given size of pipe, projection ratio, P , and settlement ratio, r_{sd} . The projection ratio, P , is defined as the vertical distance the pipe projects above the original ground for the initial installation divided by the outside vertical height of the pipe. The settlement ratio evaluates the relative settlements between the interior and exterior prisms of fill, including the settlement of the original ground and deflection of the pipe.

Recommended design values for the settlement ratio are:

TABLE II: POSITIVE PROJECTING SETTLEMENT RATIO DESIGN VALUES

TYPE OF FOUNDATION	USUAL RANGE	DESIGN* VALUE r_{sd}
ROCK OR UNYIELDING SOIL	1.0	1.0
ORDINARY SOIL	0.5 to 0.8	0.5
YIELDING SOIL	0.0 to 0.5	0.3

FIGURE 5: POSITIVE PROJECTING EMBANKMENT INSTALLATIONS WITH SURCHARGE FILL LOAD



For both the complete and incomplete conditions the total load is computed by the equation:

$$W_c = C_c w B_c^2 \quad (3)$$

where

W_c = total load including initial fill load and surcharge fill load, pounds per linear foot

C_c = load coefficient for positive projecting embankment installations

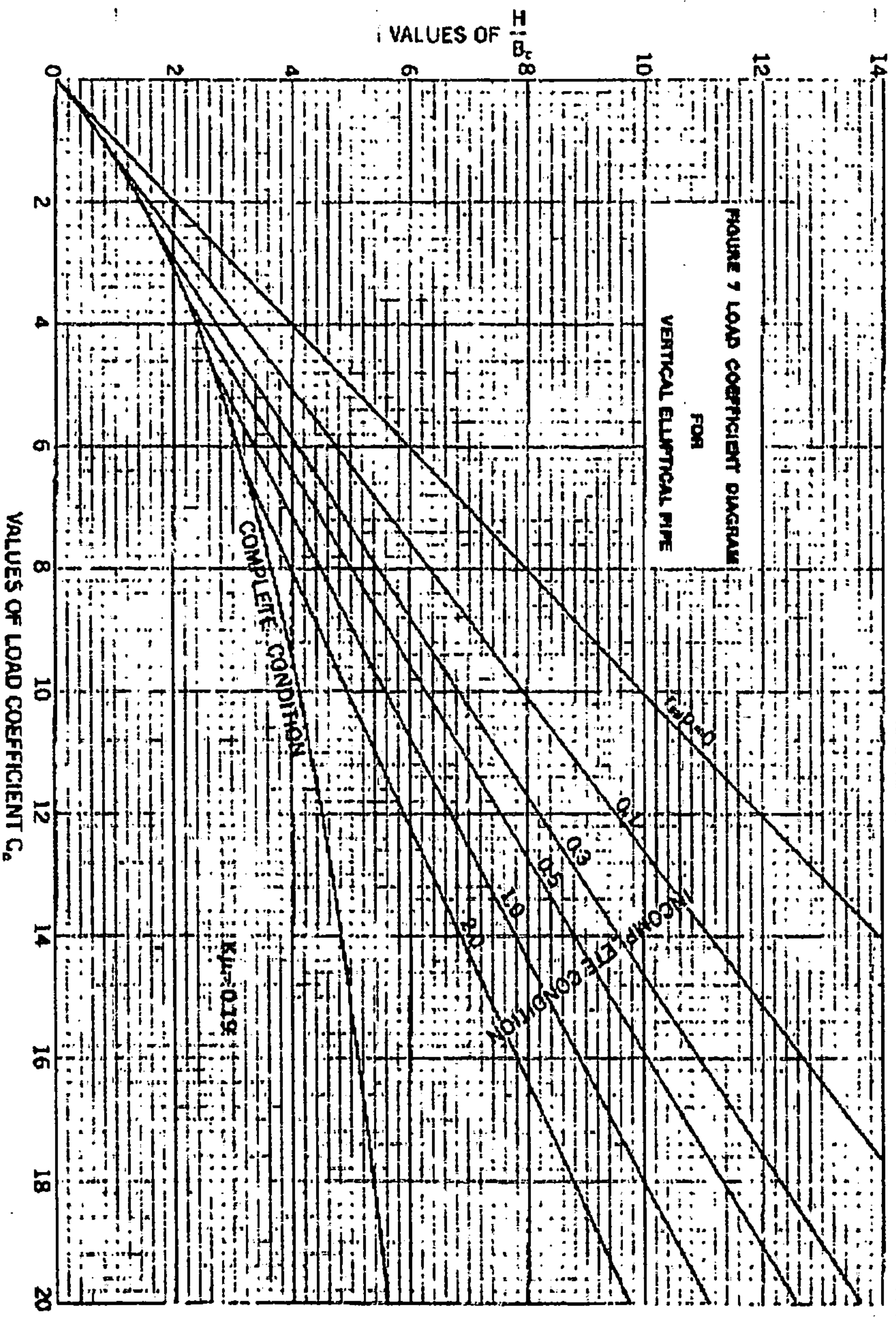
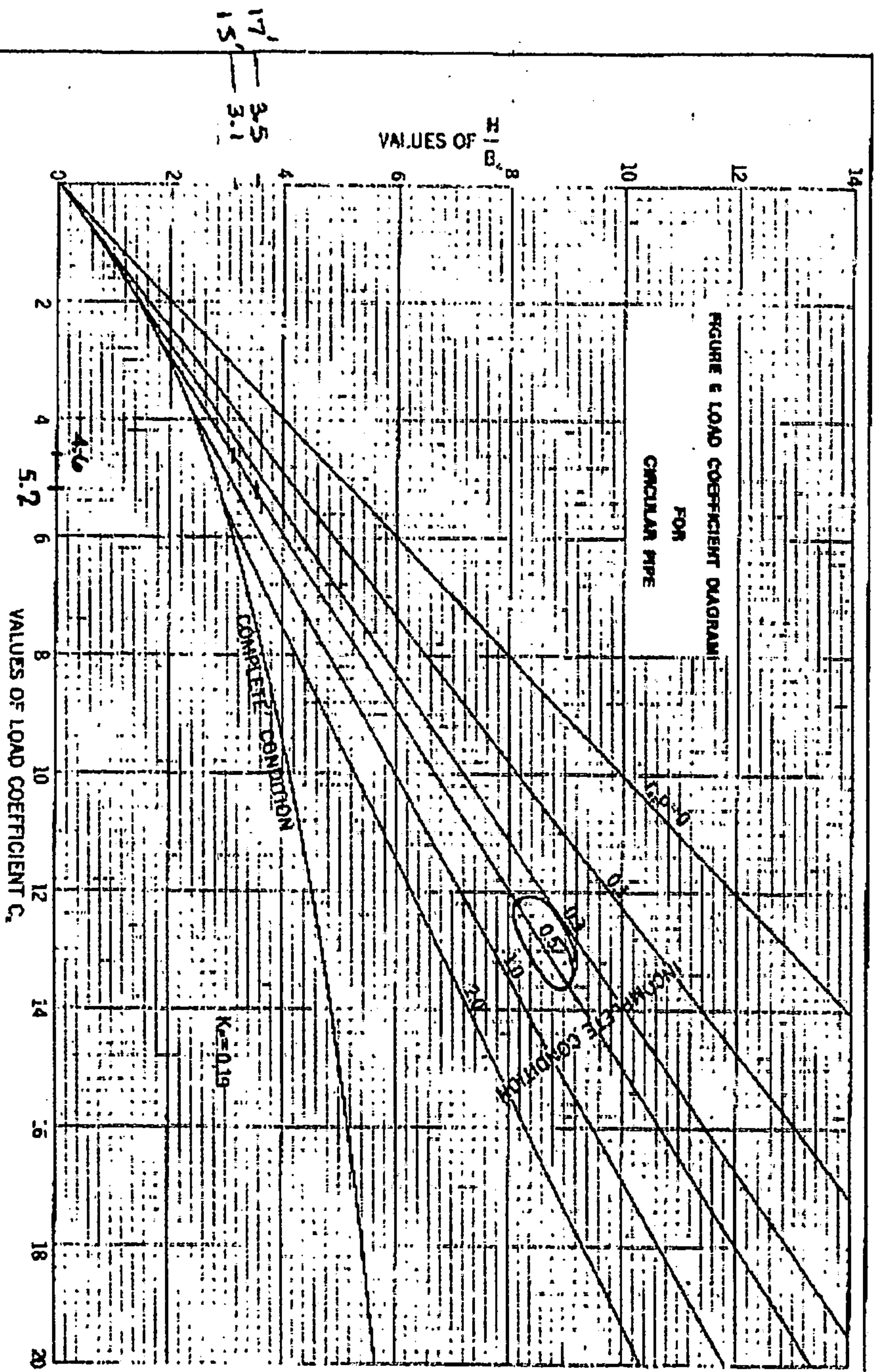
w = unit weight of fill material, pounds per cubic foot

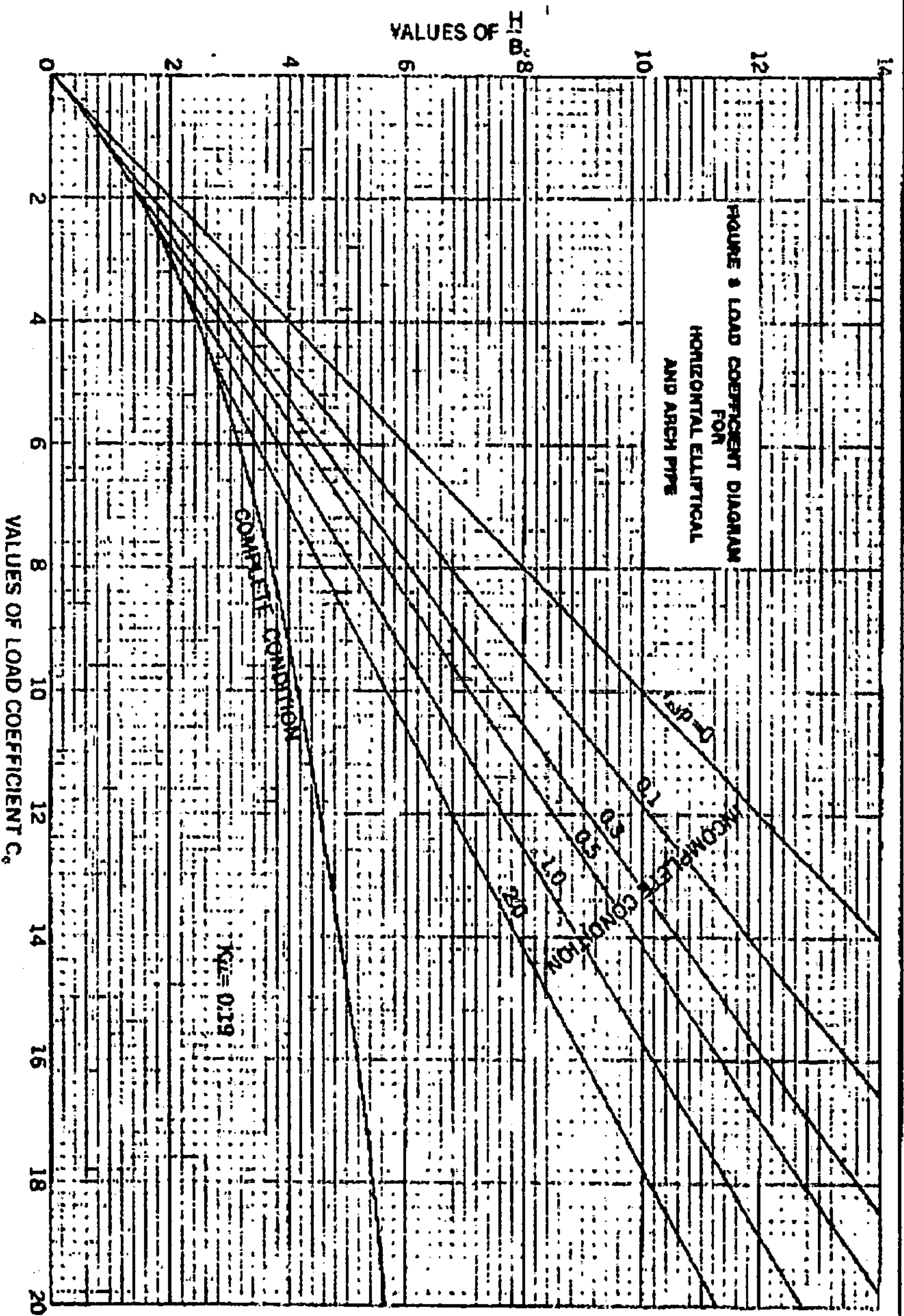
B_c = outside horizontal span of the pipe, feet

Figures 6 through 8 present values of the load coefficient for various H/B_c ratios and $r_{sd}P$ products. The H value to be used in the Figures is the total cover over the pipe; the height of the initial fill plus the height of the surcharge fill. The height of fill required to change from the complete to the incomplete condition can also be determined from Figures 6 through 8. For any given pipe size and $r_{sd}P$ product, this change occurs at the intersection of the straight $r_{sd}P$ lines indicated as INCOMPLETE CONDITION and the curved line indicated as COMPLETE CONDITION.

The complete condition usually exists for pipe installed with shallow cover and, over a period of time, sufficient stability of the surrounding fill may be realized such that placement of a surcharge load will not cause differential settlements between the fill over the pipe and the adjacent fill.

* The value of the settlement ratio depends on the degree of compaction of the fill material adjacent to the sides of the pipe. With good construction methods resulting in proper compaction of bedding and sidefill materials, lower design values of the settlement ratio may be used.





For this stabilized complete condition the total load is computed by the equation:

$$W_c = C_c w B_c^2 + C_s w H B_c \quad (5)^*$$

where

W_c = total load including initial fill load and surcharge load, pounds per linear foot

C_c = load coefficient for positive projecting embankment installations without surcharge fill

w = unit weight of initial fill material and/or surcharge fill material, pounds per cubic foot

B_c = outside horizontal span of the pipe, feet

C_s = load coefficient for surcharge loads

H = height of surcharge fill, feet

The first term in equation (5), $C_c w B_c^2$, accounts for the initial fill load and the second term, $C_s w H B_c$, accounts for the surcharge fill load. The initial fill load coefficient is determined from Figures 6 through 8 with the H/B_c ratio corresponding to the initial height of fill. Figure 9 presents values of the surcharge load coefficient, C_s , for various H/B_c ratios. The H value to be used in Figure 9 is the initial height of fill.

The examples on page 8 illustrate the proper use of the Figures.

* For uniform surcharge loads resulting from buildings or other surface loads, the second term of equation (5) is expressed as $C_s U_s B_c$, where U_s is the uniform load at the original fill surface in pounds per square foot.

FIGURE 9: SURCHARGE LOAD COEFFICIENT DIAGRAM COMPLETE EMBANKMENT INSTALLATIONS

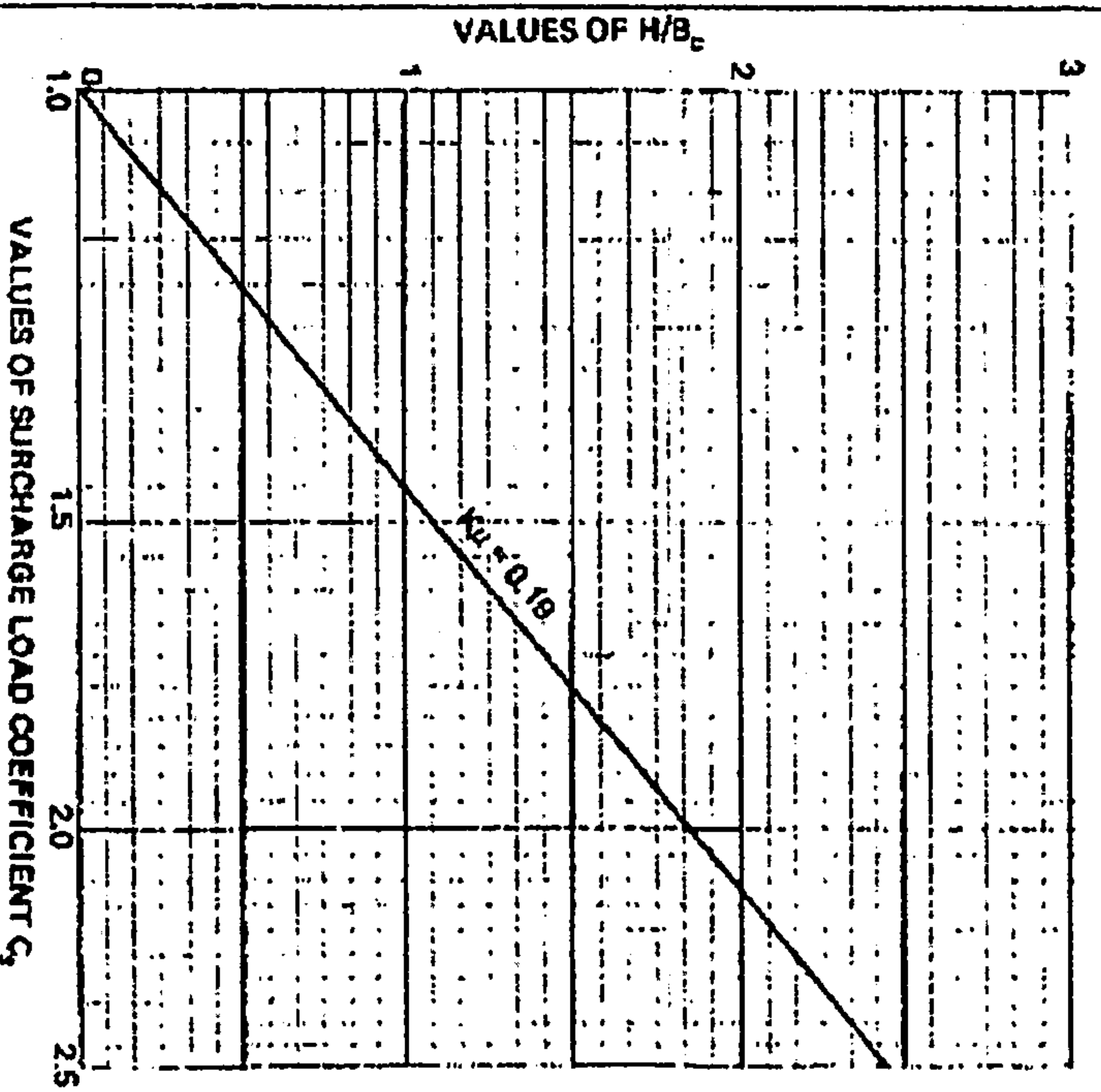


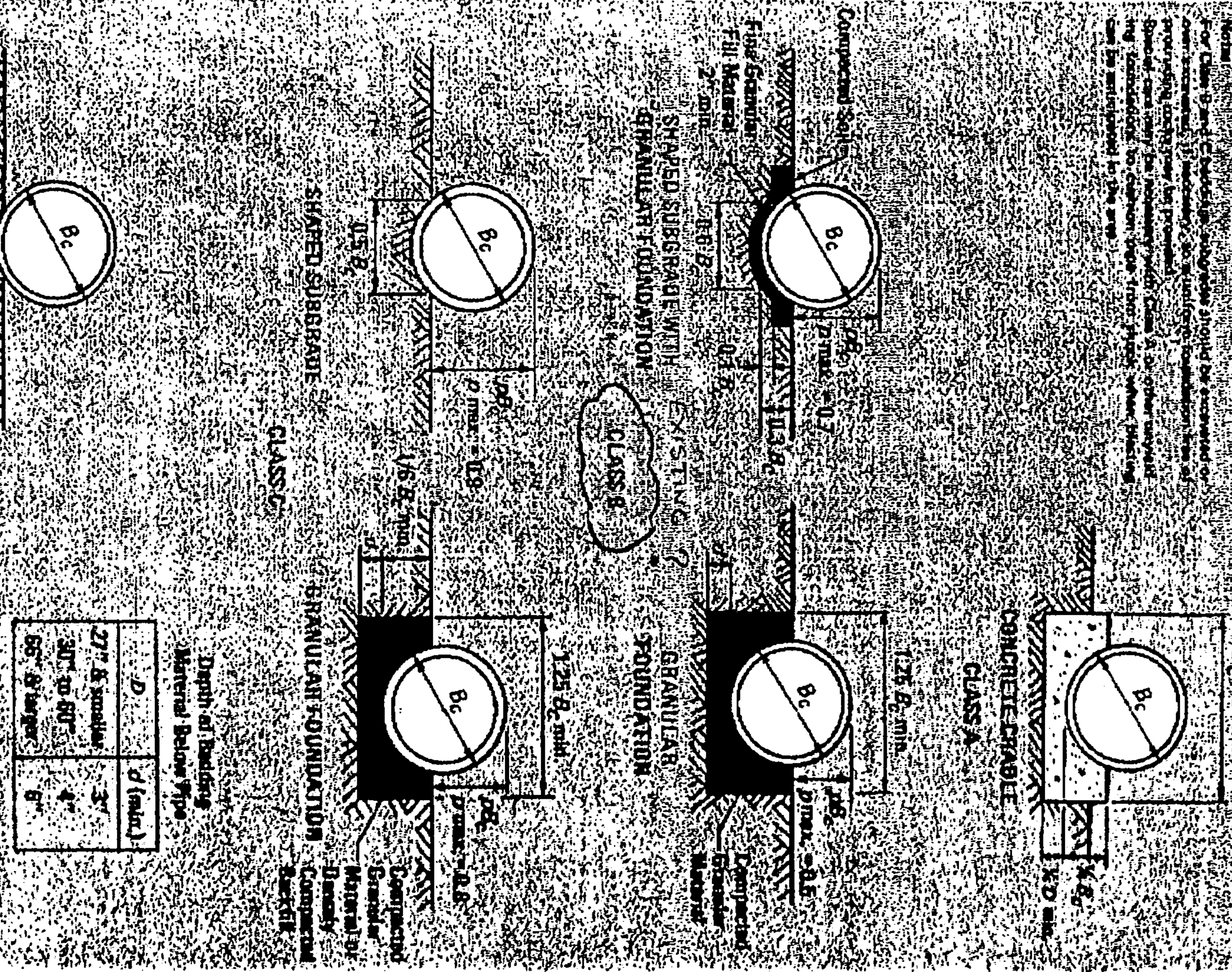
FIGURE 229

EMBANKMENT BEDDINGS

CIRCULAR PIPE

Notes:

For Class B and C beddings, subgrade should be excavated to meet minimum 12" minimum foundation below and projecting cover may be provided. Special care may be necessary with Class A or other unyielding foundation to ensure that foundation does not settle. Class A may be anticipated in the area.



180

CONCRETE PIPE DESIGN MANUAL

TABLE 62.1
BEDDING FACTORS FOR CIRCULAR PIPE
POSITIVE PROJECTING EMBANKMENT INSTALLATIONS

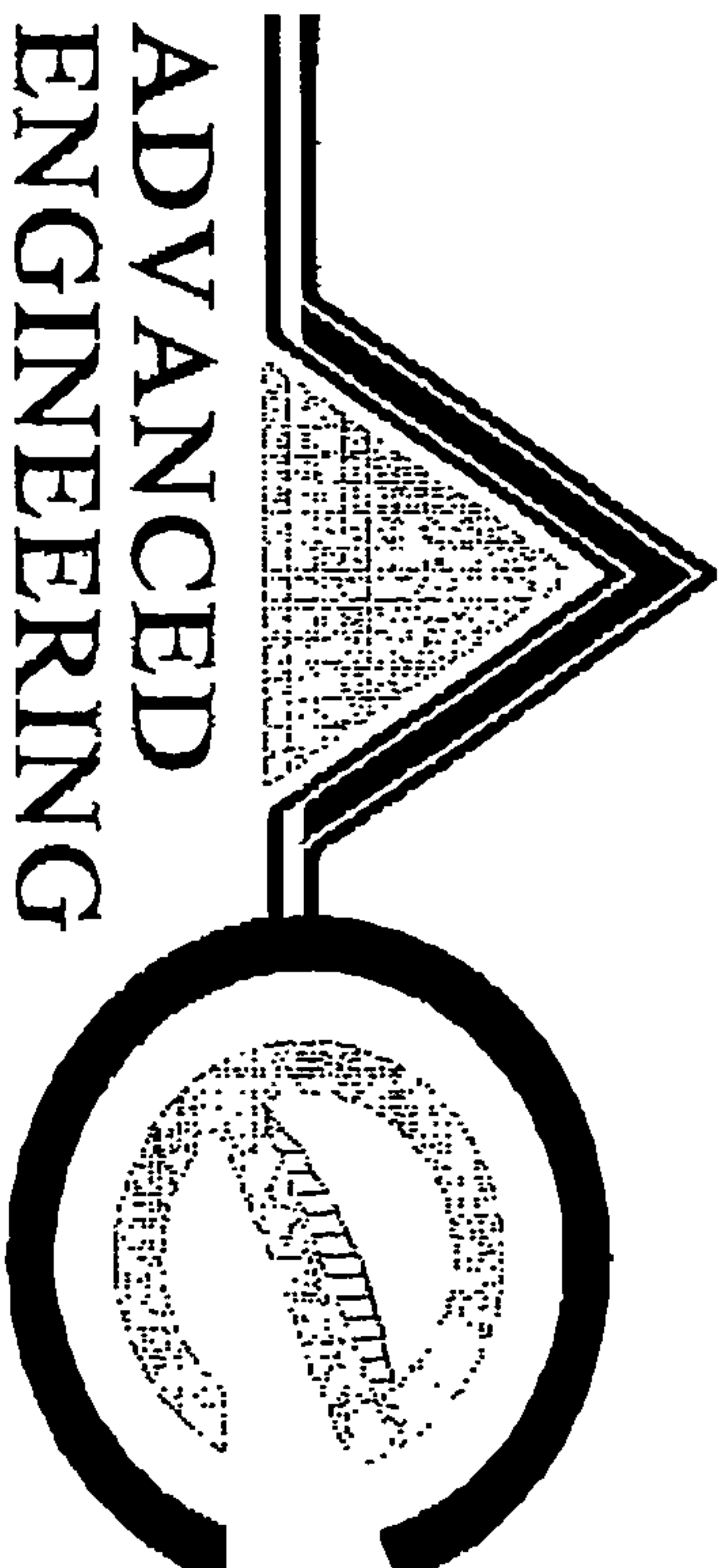
$\frac{H}{B_c}$	CLASS A BEDDING					CLASS B BEDDING				
	$p = 0.9$									
	$r_{sd} p = 0$	0.1	0.3	0.5	1.0	$r_{sd} p = 0$	0.1	0.3	0.5	1.0
0.5	11.26	8.87	8.87	8.87	8.87	4.19	3.82	3.81	3.81	3.81
1.0	6.61	5.37	5.37	5.37	5.37	3.34	3.00	3.00	3.00	3.00
1.5	5.81	4.83	4.47	4.47	4.47	3.13	2.83	2.71	2.71	2.71
2.0	5.48	4.49	4.35	4.19	4.19	3.03	2.77	2.67	2.61	2.61
3.0	5.18	4.50	4.21	4.06	3.88	2.94	2.72	2.62	2.56	2.50
5.0	4.97	4.37	4.11	3.97	3.81	2.88	2.67	2.58	2.52	2.46
10.0	4.82	4.28	4.04	3.90	3.76	2.83	2.64	2.55	2.50	2.44
15.0	4.77	4.25	4.01	3.88	3.74	2.81	2.63	2.54	2.49	2.43
$p = 0.7$										
	$r_{sd} p = 0$	0.1	0.3	0.5	1.0	$r_{sd} p = 0$	0.1	0.3	0.5	1.0
0.5	7.52	6.54	6.54	6.54	6.54	3.00	2.88	2.88	2.87	2.87
1.0	5.61	4.79	4.79	4.79	4.79	2.73	2.58	2.58	2.58	2.58
1.5	5.17	4.46	4.19	4.19	4.19	2.65	2.50	2.44	2.44	2.44
2.0	4.98	4.35	4.11	3.99	3.98	2.61	2.48	2.42	2.39	2.39
3.0	4.80	4.25	4.02	3.90	3.75	2.58	2.45	2.40	2.36	2.32
5.0	4.66	4.18	3.95	3.84	3.70	2.55	2.43	2.38	2.35	2.31
10.0	4.57	4.12	3.91	3.79	3.66	2.53	2.42	2.36	2.33	2.30
15.0	4.53	4.09	3.89	3.77	3.65	2.52	2.41	2.36	2.33	2.29
$p = 0.5$										
	$r_{sd} p = 0$	0.1	0.3	0.5	1.0	$r_{sd} p = 0$	0.1	0.3	0.5	1.0
0.5	4.84	4.54	4.55	4.55	4.55	2.37	2.33	2.33	2.33	2.33
1.0	4.33	3.97	3.97	3.97	3.97	2.31	2.25	2.25	2.25	2.25
1.5	4.18	3.83	3.68	3.68	3.68	2.28	2.23	2.20	2.20	2.20
2.0	4.11	3.79	3.65	3.58	3.58	2.27	2.22	2.20	2.19	2.18
3.0	4.04	3.75	3.62	3.54	3.45	2.26	2.22	2.19	2.18	2.16
5.0	3.99	3.72	3.58	3.51	3.43	2.26	2.21	2.19	2.17	2.16
10.0	3.95	3.69	3.56	3.49	3.41	2.25	2.20	2.18	2.17	2.15
15.0	3.94	3.68	3.56	3.48	3.40	2.25	2.20	2.18	2.17	2.15
$p = 0.3$										
	$r_{sd} p = 0$	0.1	0.3	0.5	1.0	$r_{sd} p = 0$	0.1	0.3	0.5	1.0
0.5	3.49	3.41	3.41	3.41	3.41	2.11	2.10	2.10	2.10	2.10
1.0	3.40	3.28	3.28	3.28	3.28	2.10	2.08	2.08	2.08	2.08
1.5	3.37	3.25	3.20	3.20	3.20	2.09	2.08	2.07	2.07	2.07
2.0	3.35	3.24	3.20	3.16	3.16	2.09	2.08	2.07	2.07	2.07
3.0	3.34	3.23	3.18	3.15	3.11	2.09	2.08	2.07	2.07	2.06
5.0	3.33	3.22	3.17	3.14	3.11	2.09	2.08	2.07	2.07	2.06
10.0	3.32	3.22	3.17	3.14	3.10	2.09	2.08	2.07	2.07	2.06
15.0	3.32	3.22	3.17	3.14	3.10	2.09	2.08	2.07	2.07	2.06
ZERO PROJECTING										
2.83						2.02				

TABLE 62.2

BEDDING FACTORS FOR CIRCULAR PIPE POSITIVE PROJECTING EMBANKMENT INSTALLATIONS

$\frac{H}{B_c}$	CLASS C BEDDING					CLASS D BEDDING				
	$p = 0.9$									
	$r_{sdp} = 0$	0.1	0.3	0.5	1.0	$r_{sdp} = 0$	0.1	0.3	0.5	1.0
0.5	3.01	2.82	2.82	2.82	2.82	1.51	1.46	1.46	1.46	1.46
1.0	2.55	2.35	2.35	2.35	2.35	1.39	1.33	1.33	1.33	1.33
1.5	2.42	2.26	2.16	2.16	2.16	1.35	1.29	1.27	1.27	1.27
2.0	2.37	2.20	2.14	2.10	2.10	1.33	1.28	1.26	1.24	1.24
3.0	2.31	2.17	2.10	2.07	2.02	1.31	1.27	1.24	1.23	1.22
5.0	2.27	2.14	2.08	2.04	2.00	1.30	1.26	1.24	1.22	1.21
10.0	2.24	2.12	2.06	2.03	1.99	1.29	1.25	1.23	1.22	1.20
15.0	2.23	2.10	2.05	2.02	1.98	1.29	1.25	1.23	1.21	1.20
$p = 0.7$										
	$r_{sdp} = 0$	0.1	0.3	0.5	1.0	$r_{sdp} = 0$	0.1	0.3	0.5	1.0
0.5	2.35	2.27	2.27	2.27	2.27	1.33	1.30	1.30	1.30	1.30
1.0	2.18	2.08	2.08	2.08	2.08	1.27	1.24	1.24	1.24	1.24
1.5	2.13	2.03	1.99	1.99	1.99	1.25	1.22	1.20	1.20	1.20
2.0	2.10	2.01	1.97	1.95	1.95	1.24	1.21	1.20	1.19	1.19
3.0	2.08	2.00	1.96	1.94	1.91	1.24	1.21	1.19	1.18	1.17
5.0	2.06	1.98	1.95	1.93	1.90	1.23	1.20	1.19	1.18	1.17
10.0	2.05	1.98	1.94	1.92	1.89	1.22	1.20	1.18	1.18	1.17
15.0	2.04	1.97	1.94	1.91	1.89	1.22	1.20	1.18	1.18	1.17
$p = 0.5$										
	$r_{sdp} = 0$	0.1	0.3	0.5	1.0	$r_{sdp} = 0$	0.1	0.3	0.5	1.0
0.5	1.94	1.92	1.92	1.92	1.92	1.19	1.18	1.18	1.18	1.18
1.0	1.90	1.86	1.86	1.86	1.86	1.17	1.16	1.16	1.16	1.16
1.5	1.88	1.85	1.83	1.83	1.83	1.16	1.15	1.14	1.14	1.14
2.0	1.88	1.84	1.83	1.82	1.82	1.16	1.15	1.14	1.14	1.14
3.0	1.87	1.84	1.82	1.81	1.80	1.16	1.15	1.14	1.14	1.13
5.0	1.86	1.83	1.82	1.81	1.80	1.16	1.14	1.14	1.13	1.13
10.0	1.86	1.83	1.81	1.80	1.79	1.15	1.14	1.14	1.13	1.13
15.0	1.86	1.83	1.81	1.80	1.79	1.15	1.14	1.14	1.13	1.13
$p = 0.3$										
	$r_{sdp} = 0$	0.1	0.3	0.5	1.0	$r_{sdp} = 0$	0.1	0.3	0.5	1.0
0.5	1.76	1.76	1.76	1.76	1.76	1.12	1.11	1.11	1.11	1.11
1.0	1.76	1.75	1.75	1.75	1.75	1.11	1.11	1.11	1.11	1.11
1.5	1.75	1.74	1.74	1.74	1.74	1.11	1.11	1.11	1.11	1.11
2.0	1.75	1.74	1.74	1.74	1.74	1.11	1.11	1.11	1.11	1.11
3.0	1.75	1.74	1.74	1.73	1.73	1.11	1.11	1.11	1.11	1.10
5.0	1.75	1.74	1.74	1.73	1.73	1.11	1.11	1.11	1.11	1.10
10.0	1.75	1.74	1.74	1.73	1.73	1.11	1.11	1.11	1.10	1.10
15.0	1.75	1.74	1.74	1.73	1.73	1.11	1.11	1.11	1.10	1.10
ZERO PROJECTING										
	1.70									
	1.10									

10205 Snowflake Ct. NW Albuquerque New Mexico 87114 Phone (505) 899-5570 Fax (505) 897-4996



**ADVANCED
ENGINEERING
and CONSULTING, LLC**

FACSIMILE TRANSMITTAL

To:	Susan Calongne, P.E.	FAX: 924-3864
	TOTAL OF (2) PAGE(S)	
From:	Shahab Biazar	
Subject:	Sunport Park	
Date:	July 27, 2000	

Attached is the drainage information sheet that you requested.

Should you have any questions regarding this transmittal or any other items pertaining to this project, please do not hesitate to contact our office.

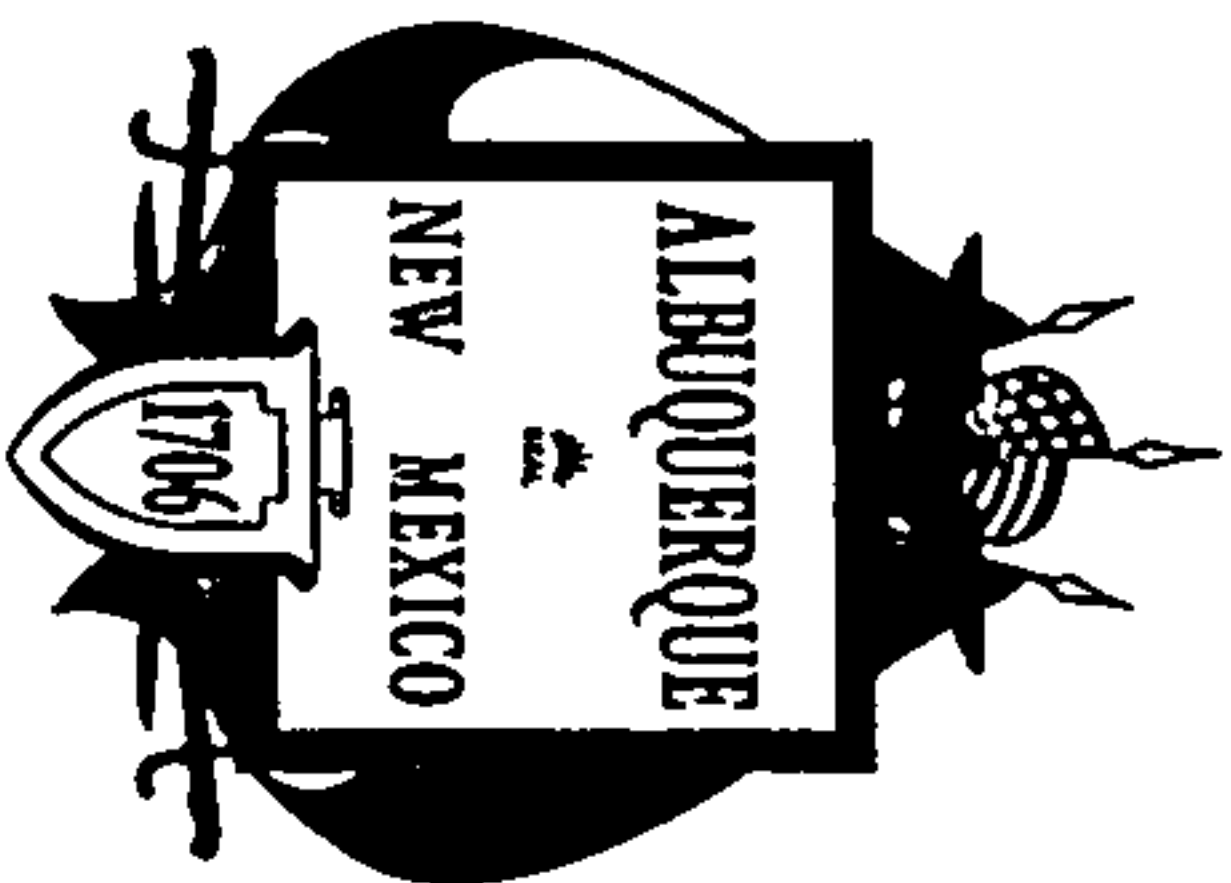
DRAINAGE INFORMATION SHEET

PROJECT TITLE: <u>Parcel 2A, Sunport Park</u>		ZONE ATLAS/DRNG. FILE #: <u>M-15 / D23</u>	
DRB #:	<u> </u>	EPC #:	<u> </u>
LEGAL DESCRIPTION: <u>Parcel 2A, Sunport Park</u>		WORK ORDER #: <u> </u>	
CITY ADDRESS: <u>1501</u>		<u>Invest On SE</u>	
ENGINEERING FIRM: <u>Advanced Engineering and Consulting, LLC</u>		CONTACT: <u>Shahab Biazar</u>	
ADDRESS: <u>10205 Snowflake Ct. NW Alb., NM 87114</u>	PHONE: <u>(505) 899-5570</u>	CONTACT: <u>Kathleen Chavez</u>	
OWNER: <u>Kathleen Chavez</u>	CONTACT: <u> </u>	PHONE: <u> </u>	
ADDRESS: <u>1500 Aircraft Avenue, SE Alb., NM 87106</u>	CONTACT: <u> </u>	PHONE: <u> </u>	
ARCHITECT: <u> </u>	CONTACT: <u> </u>	PHONE: <u> </u>	
ADDRESS: <u> </u>	CONTACT: <u> </u>	PHONE: <u> </u>	
SURVEYOR: <u> </u>	CONTACT: <u> </u>	PHONE: <u> </u>	
ADDRESS: <u> </u>	CONTACT: <u> </u>	PHONE: <u> </u>	
CONTRACTOR: <u> </u>	CONTACT: <u> </u>	PHONE: <u> </u>	
ADDRESS: <u> </u>	CONTACT: <u> </u>	PHONE: <u> </u>	

TYPE OF SUBMITTAL:	CHECK TYPE OF APPROVAL SOUGHT:
<u> </u> DRAINAGE REPORT	<u> </u> SKETCH PLAN APPROVAL
<u> </u> DRAINAGE PLAN	<u> </u> PRELIMINARY PLAT APPROVAL
<u> </u> CONCEPTUAL GRADING & DRAINAGE PLAN	<u> </u> S. DEV. PLAN FOR SUBD. APPROVAL
<u> X </u> GRADING PLAN	<u> X </u> S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
<u> </u> EROSION CONTROL PLAN	<u> </u> SECTOR PLAN APPROVAL
<u> </u> ENGINEER'S CERTIFICATION	<u> </u> FINAL PLAT APPROVAL
<u> </u> OTHER	<u> </u> FOUNDATION PERMIT APPROVAL
<u> </u> PRE-DESIGN MEETING:	<u> X </u> BUILDING PERMIT APPROVAL
<u> </u> YES	<u> </u> CERTIFICATE OF OCCUPANCY APPROVAL
<u> </u> NO	<u> X </u> GRADING PERMIT APPROVAL
<u> </u> COPY PROVIDED	<u> </u> PAVING PERMIT APPROVAL
	<u> </u> S. A. D. DRAINAGE REPORT
	<u> </u> DRAINAGE REQUIREMENTS
	<u> X </u> SO-19

DATE SUBMITTED: <u>07/09/00</u>	BY: <u>SHAHAB BIAZAR</u>
---------------------------------	--------------------------

City of Albuquerque



December 14, 1999

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: *Grading and Drainage Certification Plan for Sunport Park, Phase 1 (M15/D23F)*
Submitted for Release of Financial Guarantees, Engineer's Certification Stamp Dated
12/2/99.

Dear Mr. Lorenz:

Based on the information provided, the above referenced plan is adequate to satisfy the Grading and Drainage Certification requirement per the Infrastructure List dated June 17, 1997 for the release of financial guarantees for Sunport Park, Phase 1.

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

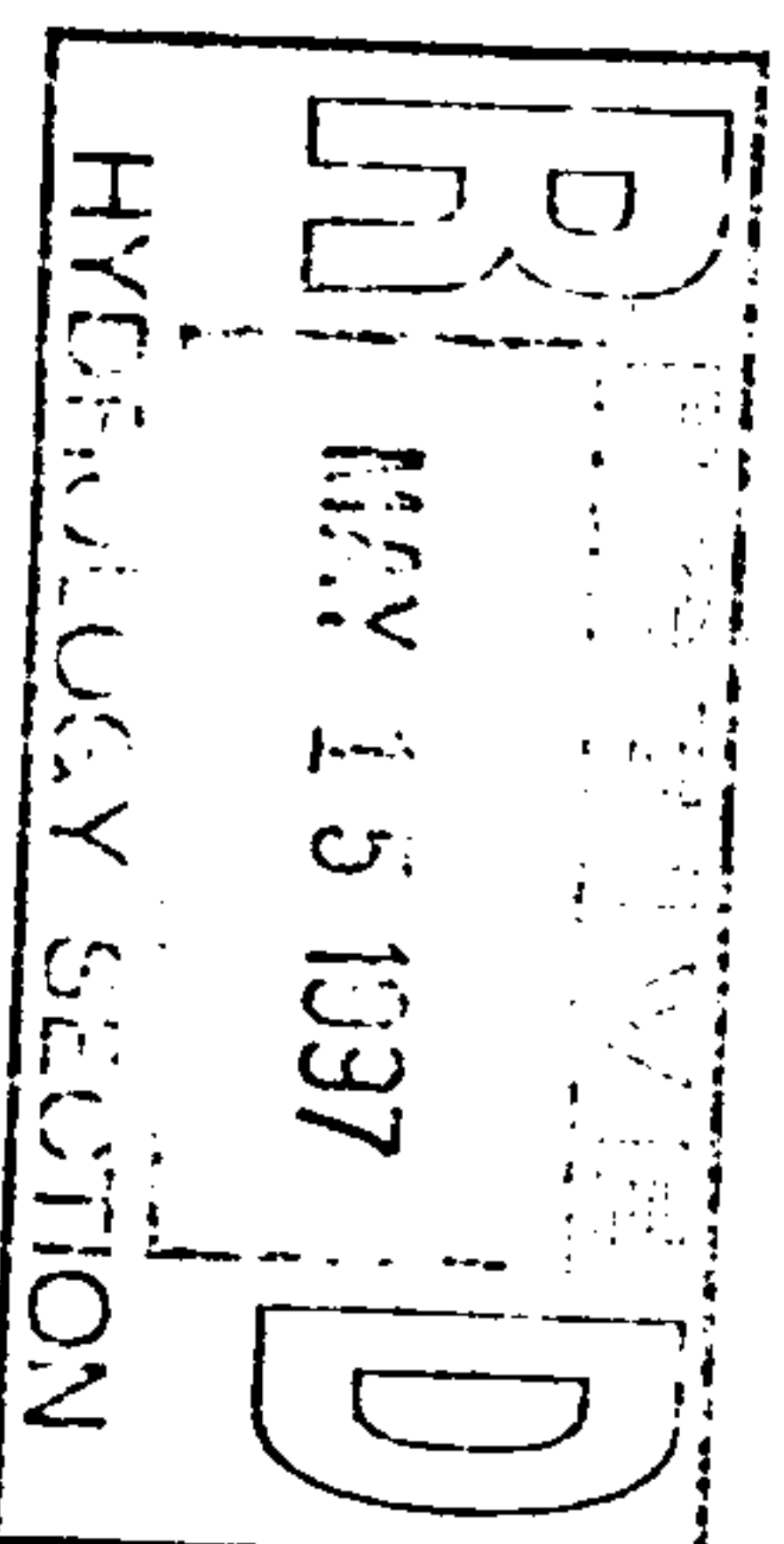
c: Terri Martin, DRB 97-68, City Project No. 5651.82
 Kathleen Chaves, Owner
 File

DRAINAGE REPORT

FOR

SUNPORT PARK, PARCEL 2A

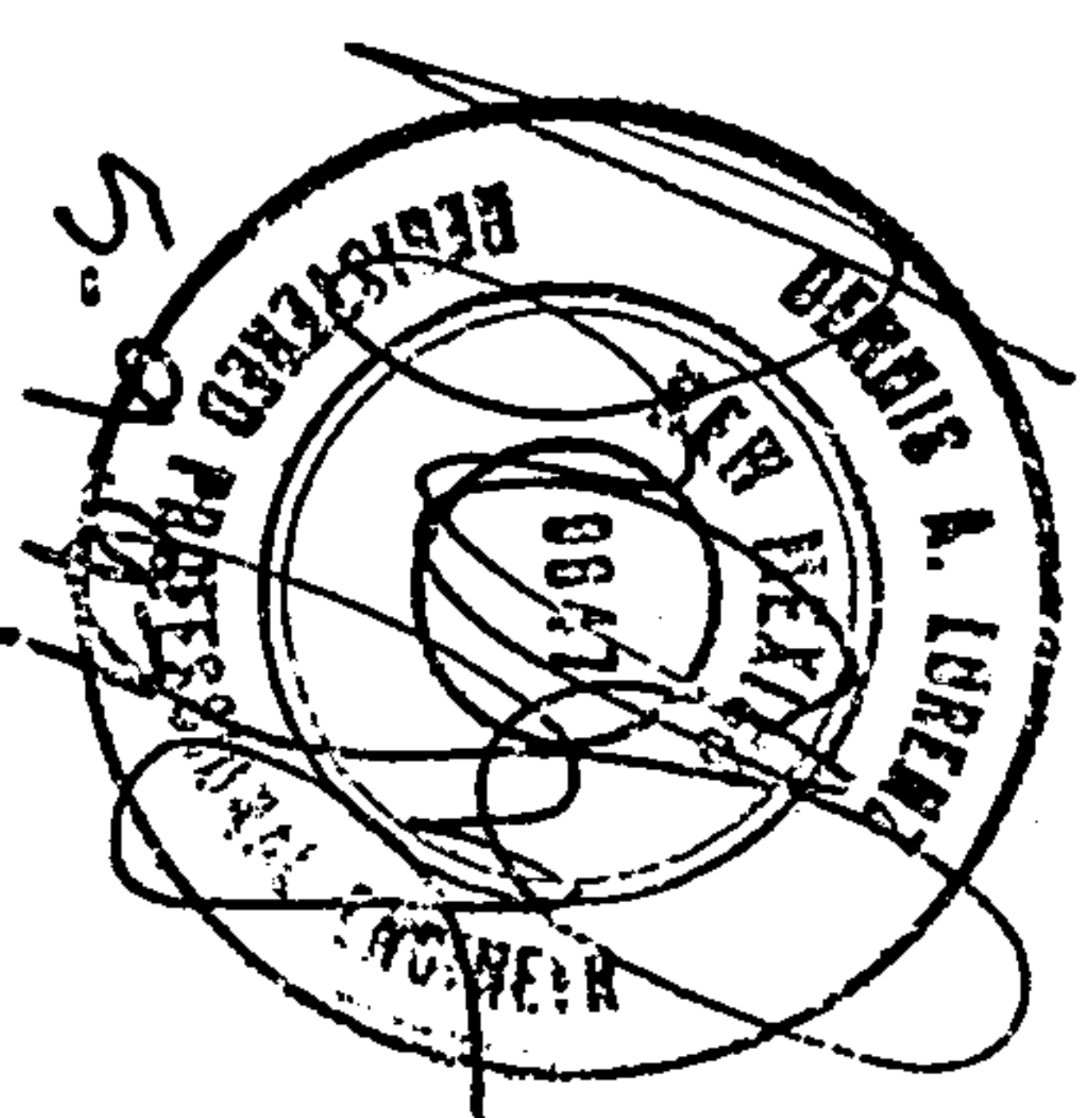
Albuquerque, New Mexico



Prepared By:

BRASHER & LORENZ, INC.
Consulting Engineers
San Pedro NE Suite 210
Albuquerque, New Mexico 87110

May 1997



Infrastructure list dated 6-17-97

DRAINAGE INFORMATION SHEET

PROJECT TITLE:

SUNPORT PARK

ZONE ATLAS/DRNG. FILE #:

M15 523 F

DRB #:

91-68

EPC #:

WORK ORDER #:

565182

LEGAL DESCRIPTION:

SUNPORT PARK PARCEL 2A

CITY ADDRESS:

AIRCRAFT AVE SE

ENGINEERING FIRM:

Brasher & Lorenz, Inc.

CONTACT:

Dennis A. Lorenz

ADDRESS:

2201 San Pedro NE Bldg. 1 Suite 210
Albuquerque, New Mexico 87110

PHONE:

888-6088

OWNER:

PARKING CO OF AMERICA

CONTACT:

K. CHAVES

ADDRESS:

2121 NIALE SE

PHONE:

228 9417

ARCHITECT:

MASTERWORKS

CONTACT:

JIM CLARK

ADDRESS:

516 ELEVENTH NW

PHONE:

242-1866

SURVEYOR:

MAQUER SURVEYING

CONTACT:

GEO MAQUER

ADDRESS:

902 FIFTH ST NW

PHONE:

842-6579

CONTRACTOR:

ALBA UNDERGRUNDS

CONTACT:

BRYCE BAVIS

ADDRESS:

PO BOX 9825 . 87119

PHONE:

242-4848

TYPE OF SUBMITTAL:

☐ DRAINAGE REPORT

☐ DRAINAGE PLAN

☐ CONCEPTUAL GRADING & DRAINAGE PLAN

☐ GRADING PLAN

☐ EROSION CONTROL PLAN

☒ ENGINEER'S CERTIFICATION

☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

☐ SKETCH PLAT APPROVAL

☐ PRELIMINARY PLAT APPROVAL

☐ S. DEV. PLAN FOR SUB'D. APPROVAL

☐ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

☐ SECTOR PLAN APPROVAL

☐ FINAL PLAT APPROVAL

☐ FOUNDATION PERMIT APPROVAL

☐ BUILDING PERMIT APPROVAL

☐ CERTIFICATE OF OCCUPANCY APPROVAL

☐ GRADING PERMIT APPROVAL

☐ PAVING PERMIT APPROVAL

☐ S.A.D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☒ OTHER FINANCIAL (SPECIFY)

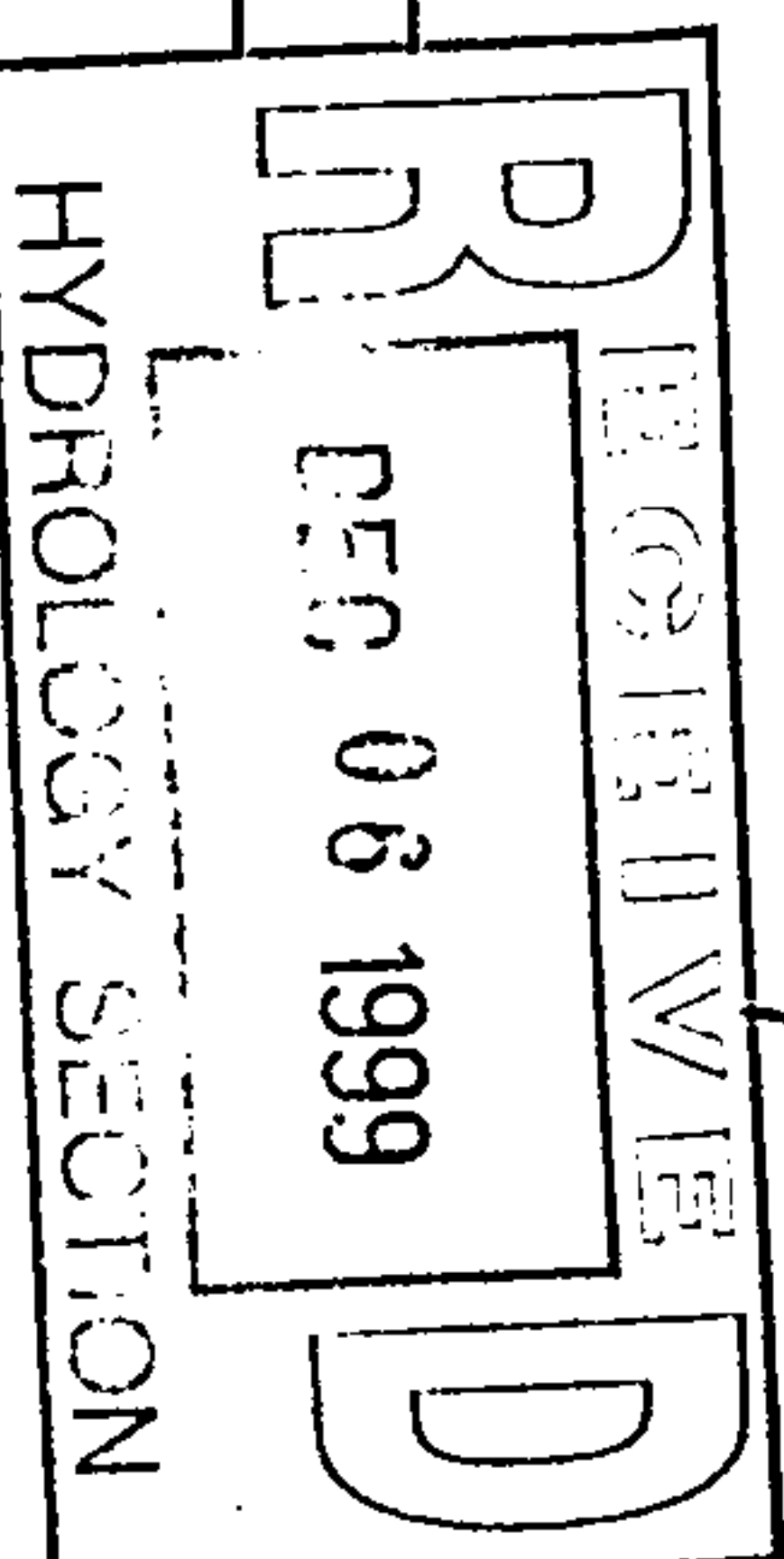
GUARANTY RELEASE

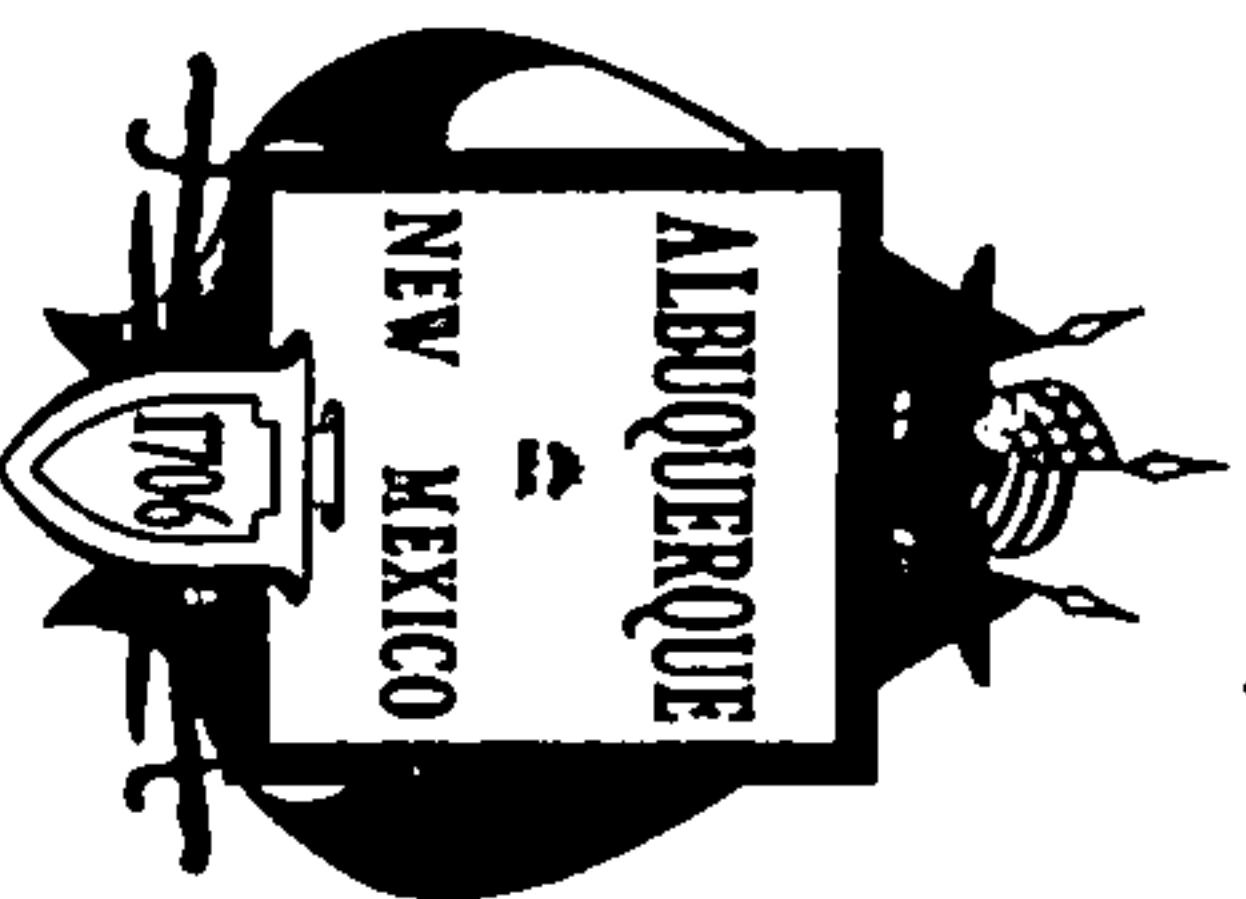
DATE SUBMITTED:

12.2.99

BY:

Dennis A. Lorenz





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 6, 2000

Jeffrey G. Mortensen, P.E.
Jeff Mortensen & Associates
6010-B Midway Park Blvd. NE
Albuquerque, New Mexico 87109

**RE: Grading Plan for Parcel 2A, Sunport Park (M15/D23F) Submitted for Grading Permit
Approval, Engineer's Stamp Dated 12/16/99.**

Dear Mr. Mortensen:

The above referenced site is subject to Site Development plan approval by the DRB. At that time, all outstanding issues will be resolved, and the DRB will approve the Grading and Drainage Plan for rough grading. Until you have DRB approval, no grading may occur on this site.

With respect to the FEMA Letter of Map Revision (LOMR), I have no indication that the LOMR request is being prepared, or will be prepared, by the City. Please provide me with written confirmation that the City Aviation Department will prepare and obtain this LOMR to remove the floodplain. Otherwise, the LOMR requirement must be included on your Infrastructure List and must be obtained prior to release of Financial Guarantees.

Prior to approval for Rough Grading for the Interim condition, please address these additional comments regarding the new storm drain system on this site:

1. Has this storm drain system been completed and accepted by the City?
2. Please show how the runoff from the graded area will be intercepted into the storm drain.

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

Sincerely,

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

c: Kathleen Chaves, Owner
File



City of Albuquerque

P. O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103
PUBLIC WORKS DEPARTMENT

September 29, 1997

CERTIFICATE OF WORK ORDER COMPLETION

Sunport Joint Venture
Mr. J. Howard Mock
P.O. Box 26841
Albuquerque, NM 87125

Re: Sunport Park, Block 4A & 4B PROJECT NO. 5651.81 (MAP NO. M-15)

Dear Sir:

This is to certify that the City of Albuquerque accepts Project No. 5651.81 as being completed according to approved plans and construction specifications. Please be advised this certificate of completion shall only become effective upon final plat approval and filing in the office of the Bernalillo County Clerk's Office.

The project is described as follows:

- Project consisted of constructing curb and gutter, arterial paving, waterlines and sanitary sewer on Sunport Place S.E. from Woodward Road S.E. to Woodward Road S.E.

The contractor's correction period began the date of this letter and is effective for a period of one (1) year.

Sincerely,

Russell B. Givler, P.E.
Chief Construction Engineer,
Engineering Group/Public Works Department

Sunport Park, Block 4A & 4B
Project No. 5651.81
September 29, 1997
Page 2

cc: New Concepts

Andrews, Asbury & Robert
Fred Aguirre, Hydrology, PWD
Tina Pohl, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Martin Barker, Materials Testing Lab
Linda Adamsko, Special Assessments, DFM
Sam Hall, Water Systems, PWD
Jim Fink, Liquid Waste, PWD
Andre Houle, Street Maintenance, PWD
Rodger Green, Water/Wastewater Group, PWD
Ray Chavez, Traffic Engineering, PWD
Josie Jaramillo, New Meter Sales, Finance Group, PWD
Richard Zamora, Maps and Records, PWD
John Ewing, Risk Management
f/Project No. 5651.81
f/Readers
f/Warranty:Contract

DEVELOPMENT & BUILDING SERVICE CENTER

ONE STOP

600 SECOND ST. N.W./2ND FLOOR

ATTENTION: _____

505-924-3900

Records Withdrawal Form

Project No. M15/D23

Date: 11/29/99

Project Title: Support Park

- ☒ a. File b. Mylars c. Redlines/Comments
d. Other _____

Graeme Means

Request by: Jeff Mortensen Assoc. Phone No.: 345-4250

Company _____

Comments: I WOULD LIKE TO HAVE MICROFILMS
REPROGRAPHICS PICKUP AND COPY THIS FILE
AND DELIVER THE COPY TO ME.

Anticipated Return Date: ASAP I HAVE ATTACHED A WORK
ORDER FOR ALB REPRO

Receipt Acknowledged

I here by accept full responsibility for the security of the above noted records/plans until return receipt acknowledgement is completed. Records/plans will be returned to the Development & Building Services Center on or before the indicated anticipated return date.

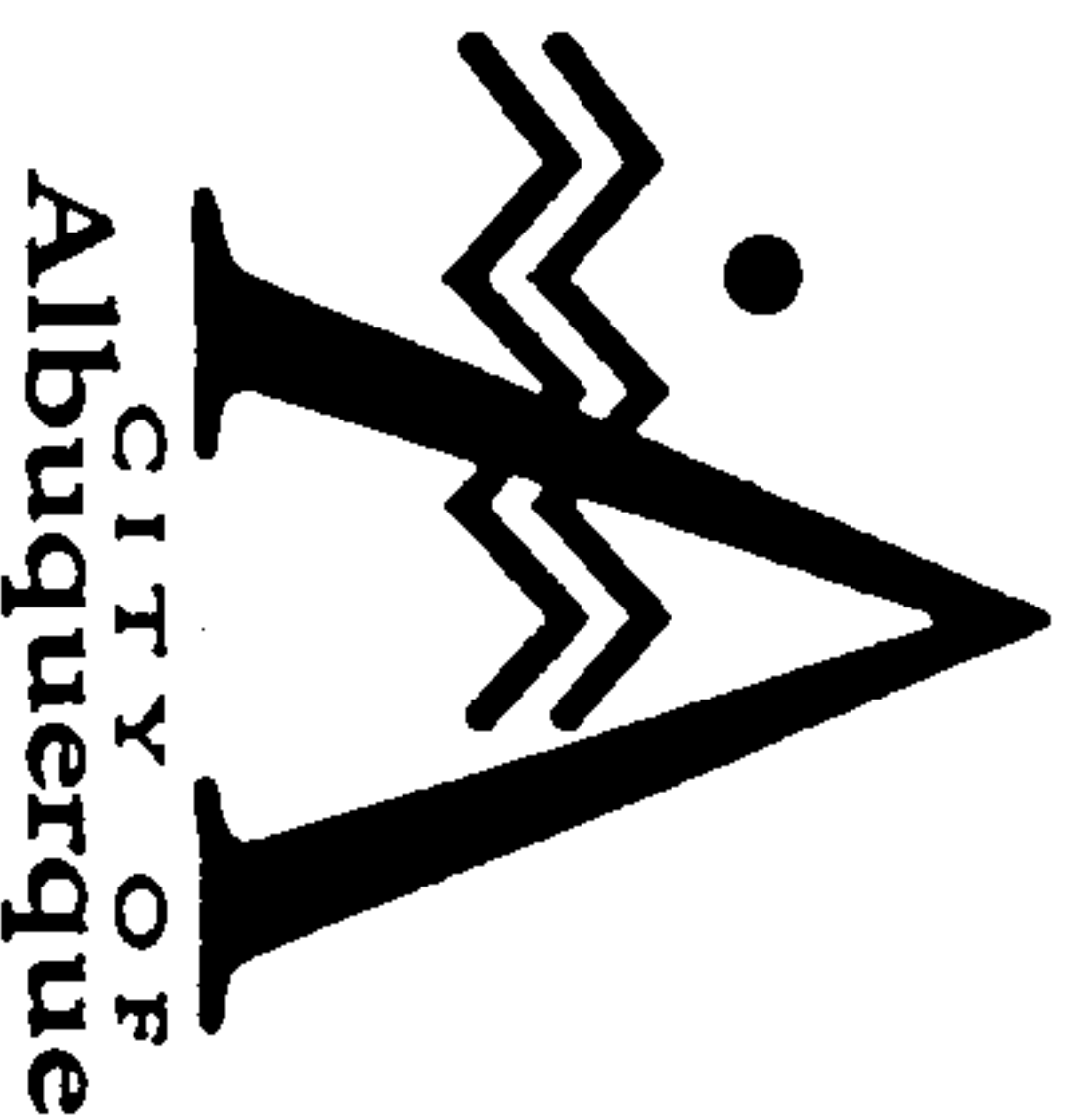
Delivery Picked Up By: _____

Name: Tammy August Organization: ASQ Reprographics
Print _____

Signed: Jany Olyed Date: 11-29-99
Phone No. 884-0185

Return Acknowledged Office Use Only _____

Received by: Denon Chavis Date: 11-30-99
Lenora Chavez Print _____



March 20, 1998

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE
Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: Grading and Drainage Plan for Parcel 2A, Sunport Park (M15/D23) Submitted for Building Permit, Grading Permit, Paving Permit and DRC Approval, Engineer's Stamp Dated 3/17/98.

Dear Mr. Lorenz:

Based on the information provided in the submittal of March 19, 1998, the above referenced plan is approved for Building Permit, Grading Permit and Paving Permit release and DRC Approval.

As you are aware, a top-soil disturbance permit must be obtained before any grading may occur. Please be advised that the Engineer's Certification must be in compliance with this approved plan.

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

Sincerely,

A handwritten signature in cursive script, appearing to read 'Susan Calongne'.

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

c: Andrew Garcia, City Hydrology
Larry Caudill, Environmental Health
Kathleen Chavez, Owner
 File

Good for You, Albuquerque!



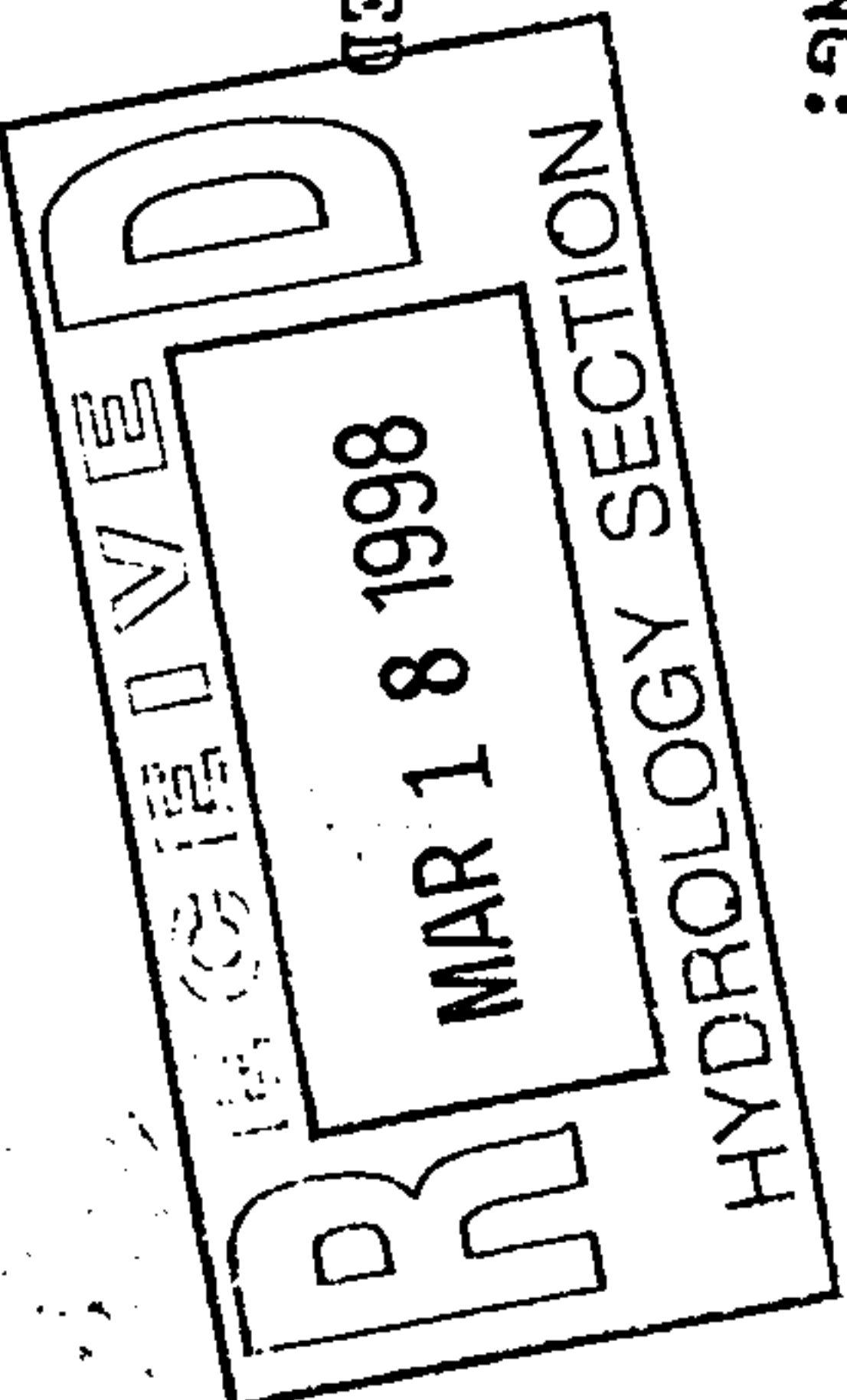
DRAINAGE INFORMATION SHEET

PROJECT TITLE: SUNPORT PARK ZONE ATLAS/DRNG. FILE #: M15 D23
 DRB #: 97.68 EPC #: WORK ORDER #: 5651.82
 LEGAL DESCRIPTION: SUNPORT PARK PARCEL 2A
 CITY ADDRESS: UNIVERSITY BLVD SE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz
 ADDRESS: 2201 San Pedro NE Bldg. 1 Suite 210 PHONE: 888-6088
 ADDRESS: Albuquerque, New Mexico 87110
 OWNER: KATHLEEN CHAVEZ CONTACT: same
 ADDRESS: 2121 YALE SE 87106 PHONE: 242-3266 228.9417
 ARCHITECT: MASTERWORKS CONTACT: JIM CLARK
 ADDRESS: 516 11TH NW PHONE: 242-1866
 SURVEYOR: PRECISION SURVEYS CONTACT: L. MEDRANO
 ADDRESS: 2929 COORS PHONE: 939-0569
 CONTRACTOR: N/A CONTACT: _____
 ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL: _____ CHECK TYPE OF APPROVAL SOUGHT: _____
☒ DRAINAGE REPORT _____ SKETCH PLAT APPROVAL _____
 _____ DRAINAGE PLAN _____ PRELIMINARY PLAT APPROVAL _____
 _____ CONCEPTUAL GRADING & DRAINAGE PLAN _____ S. DEV. PLAN FOR SUB'D. APPROVAL _____
 _____ GRADING PLAN _____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL _____
 _____ EROSION CONTROL PLAN _____ SECTOR PLAN APPROVAL _____
 _____ ENGINEER'S CERTIFICATION _____ FINAL PLAT APPROVAL _____
 _____ OTHER _____ FOUNDATION PERMIT APPROVAL _____

PRE-DESIGN MEETING: _____
 YES _____
 NO _____
 COPY PROVIDED _____
 BUILDING PERMIT APPROVAL ☒
 CERTIFICATE OF OCCUPANCY APPROVAL ☒
 GRADING PERMIT APPROVAL ☒
 PAVING PERMIT APPROVAL ☒
 S.A.D. DRAINAGE REPORT _____
 DRAINAGE REQUIREMENTS _____
 OTHER _____ (SPECIFY) _____



DATE SUBMITTED: 3-18-98

BY: Dennis A. Lorenz

ADDENDUM NO.1

DRAINAGE REPORT

FOR

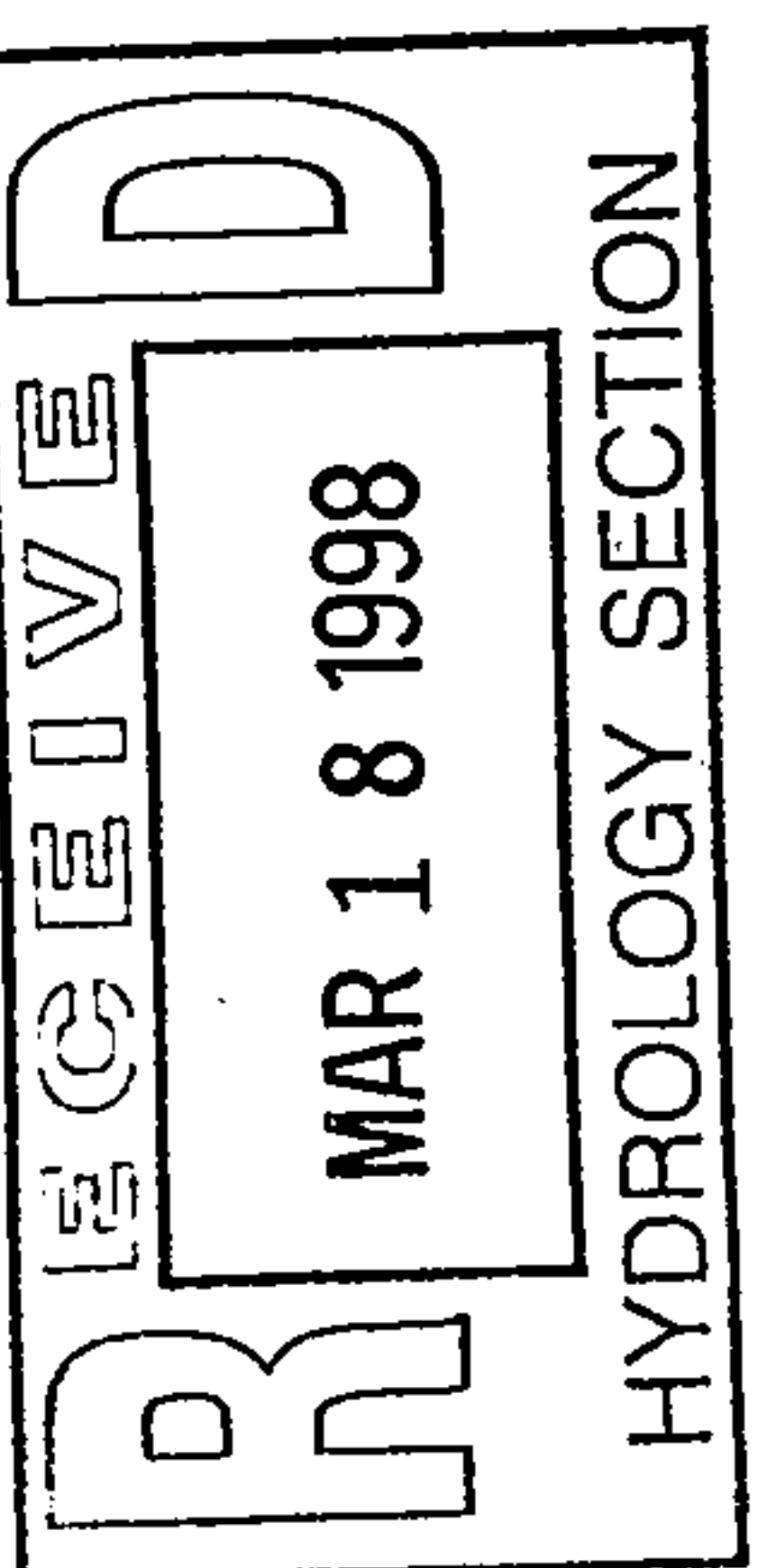
SUNPORT PARK, PARCEL 2A

Albuquerque, New Mexico

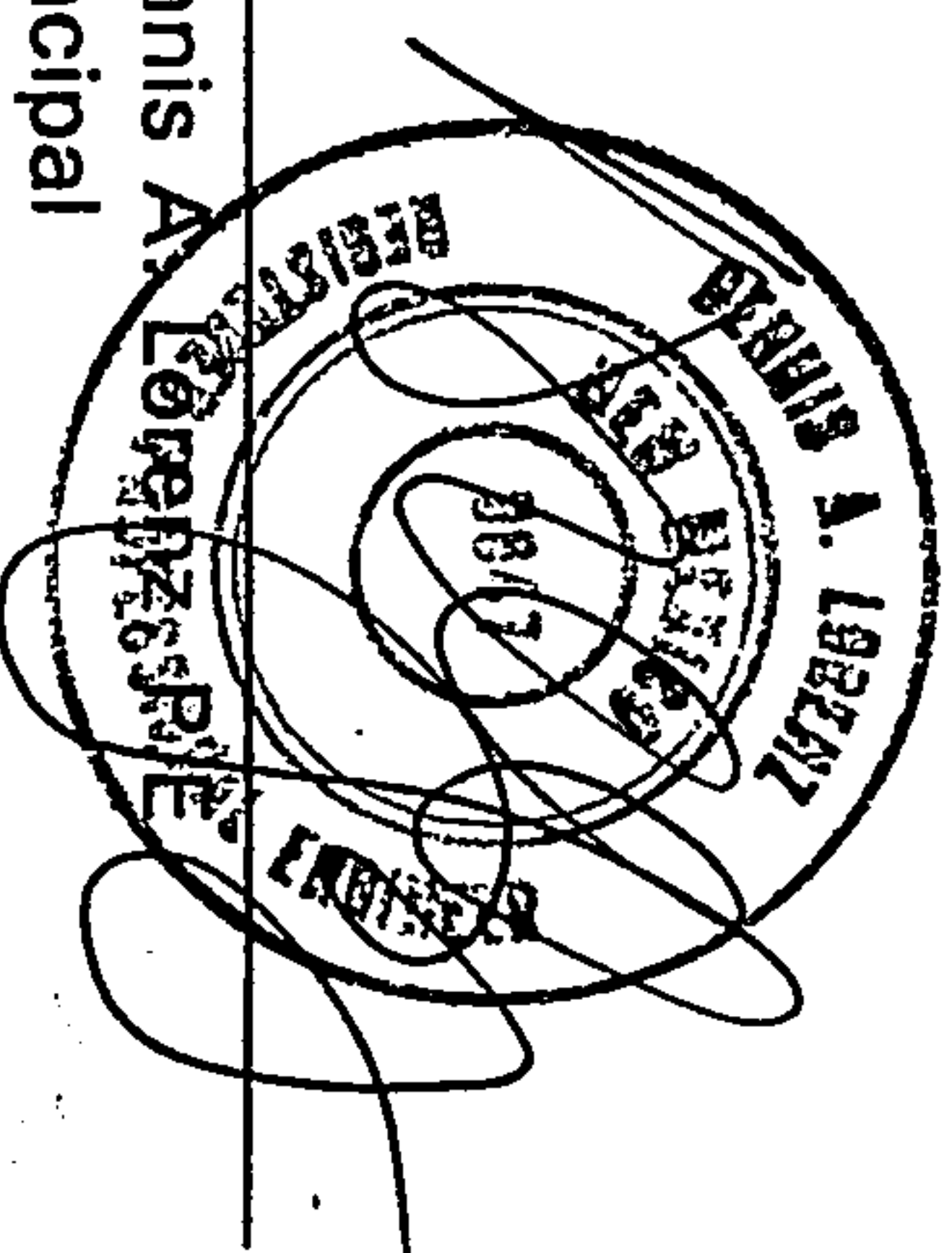
Prepared by:

BRASHER & LORENZ, INC.
Consulting Engineers
2201 San Pedro NE Building 1, Suite 210
Albuquerque, New Mexico 87110

March 18, 1998



Dennis A. Lorenz, P.E.
Principal



PROJECT NAME SUNPORT PARK JOB NO. 6039

SUBJECT AIRCRAFT POND INTERIM POND

BY CHECKED BY DATE 5-9-97 PAGE 2 OF

REV 3-17-98

① PROVIDE INTERIM POND FOR AIRCRAFT AVE
WITHIN TEMP DRAINAGE ESMT:

PER ATYMD 1 DEV BASIN'D

$$Q_{100} = 2.3 \text{ cfs} \quad V_{100} = 0.085 \text{ AF}$$

SIZE POND FOR $V_{10 \text{ DAY}}$:

$$V_{10 \text{ DAY}} = V_{100} + A_b \left((P_{100} - P_{360}) / 12 \right. \\ \left. = 0.085 + 0.48 (3.95 - 2.35) / 12 \right.$$

$$= 0.149 \text{ AF}$$

$$= 6490 \text{ CF}$$

② VOLUME CALCULATION (SEE ATTACHED SKETCH)

ELEV	DIM (LxW)	AREA (sf)	VOL (CF)
46	65'x50'	3250	
47	71'x56	3976	3613
48	77'x62	4774	8024
* 49	83'x68	5644	<u>13341</u> = 2($V_{10 \text{ DAY}}$) ✓

* SPILLWAY @ 49.0

DETE

EXISTING 10' PNM & MT
FILED 7/22/86, BK. C3

TRAC
REPLAT C
MUNICIPAL A
FILED 6/12/86,

RELOCATE
SEE SHEET

CONSTRUCT CHANNEL
SEE DETAIL B/5
SHEETS

INTERIM RETENTION PON
MINIMUM VOL= 6490 CF
BOTTOM @ 5146.0
MAX WSE= 5149.0

CONSTRUCT SPILLWAY
SEE DETAIL A/5
SHEET 5

PROPOSED
150' x 150'
INTERIM PUBLIC
DRAINAGE EASEMENT

PROPOSED PUBLIC
ACCESS EASEMENT

1"=50'

B
4

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

March 18, 1998

Susan M. Calongne
City/County Floodplain Administrator
Hydrology Section
PO Box 1293
Albuquerque, NM 87103

SUBJECT: SUNPORT PARK
(M15/D23), City Project No. 5651.82, DRB 97-68

Dear Susan:

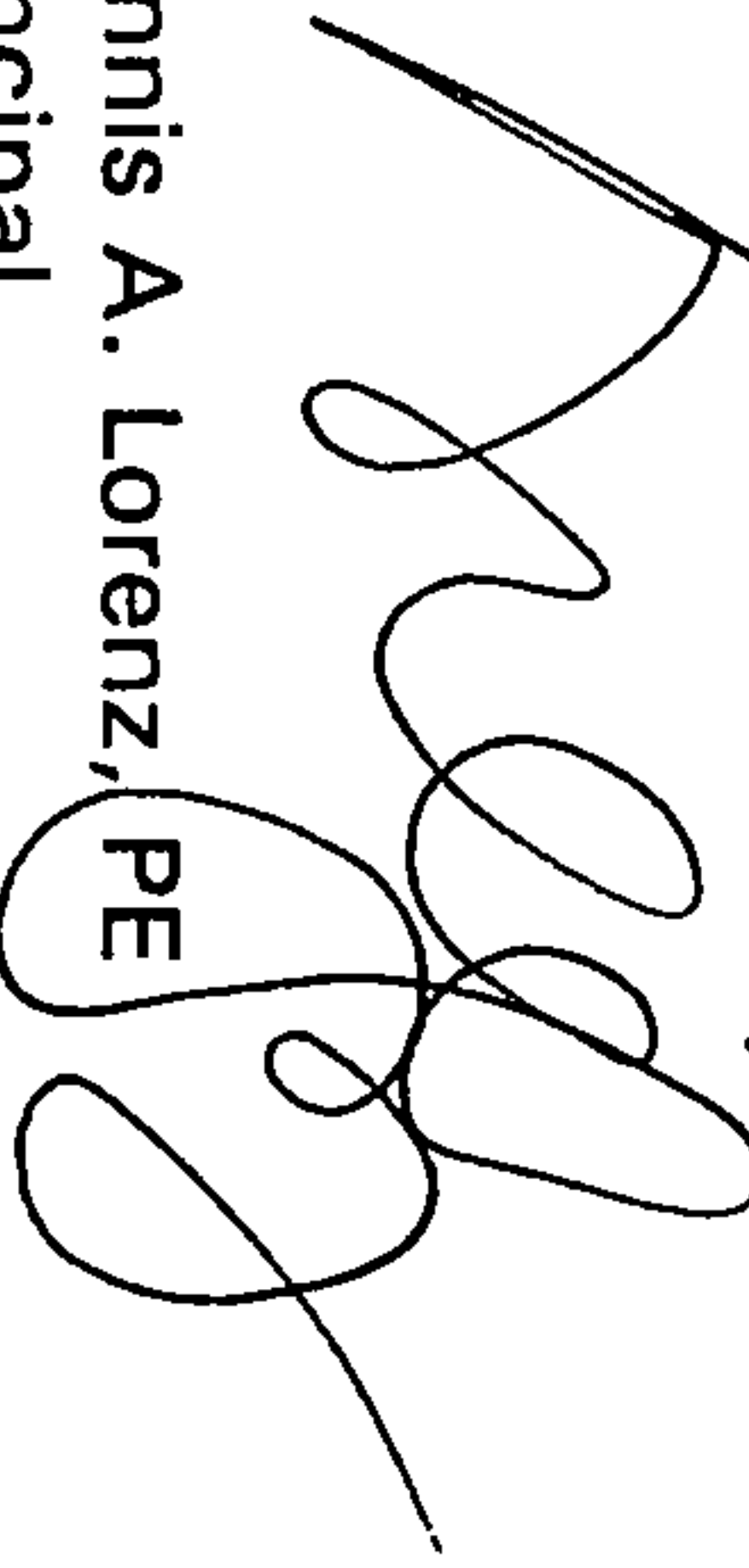
Pursuant to your June 9, 1997 letter granting Site Plan approval, enclosed is an Addendum to the Drainage Report for Sunport Park. The Addendum responds to the outstanding issues which you required to be addressed prior to Building Permit approval. Specifically, you comments are addressed as follows:

1. Volume calculations are provided for the interim pond which receives runoff from Aircraft. We will submit the required easement and covenant prior to work order.
2. We understand that no grading may occur beyond the limits of Phase One construction.
3. Erosion protection will be provided at the 36 inch storm drain outlet. Complete details are provided in the work order drawings.
4. Curbs will be constructed at the perimeter of the proposed pavement in order to direct sheet flow to the drop inlets. No sheet flow will enter Phase Two from the parking lot.

If you have any questions regarding the submittal package, please call me immediately so that we can address any remaining issues without another re-submittal.

Sincerely,

BRASHER & LORENZ, INC.


Dennis A. Lorenz, PE
Principal

/dl/6039
encl



Jim Baca, Mayor

Albuquerque International Sunport

Aviation Department

Mailings: P.O. Box 9022, Albuquerque, New Mexico 87119 9022
Phone: (505) 842 4366 FAX: (505) 842 4278

June 18, 1998

Kathleen Chaves
R&B LLC
2121 Yale Blvd. SE
Albuquerque, New Mexico 87106

Ms. Chaves,

As discussed in our meeting on June 16, 1998, the Aviation Department has agreed to the following:

- A right of entry onto airport property along the south side of the existing detention pond at University Blvd. and Aircraft Ave. to allow for construction of a retaining wall and modifications to the existing emergency spillway as noted on the attached drawing. When this work is complete, you will be responsible for restoring all fencing, grading and other features associated with the detention pond back to their existing conditions.
- A right of entry to allow for grading on airport property south of Aircraft Ave. as shown on the attached drawing. In return, you have agreed to provide our office with a grading plan of the adjoining airport property for review and approval and will complete the grading when approved.

The right of entry for both areas will be granted through October 31, 1998. If you wish to extend the right of entry(s) beyond this date, please contact Jim Hinde in our engineering division.

If you should have any questions concerning this issue, please contact me at (505)842-4366.

Sincerely,


Jay Czar, Director of Aviation

061898.1

EXISTING 10' PNM & MTN. BELL EASEMENT
FILED 7/22/86, BK. C37, PG. 15

TRACT A-2
REPLAT OF TRACT A
MUNICIPAL ADDITION NO. 9
FILED 6/12/86, BK. G24, PG. 146

DETENTION POND
VOL=

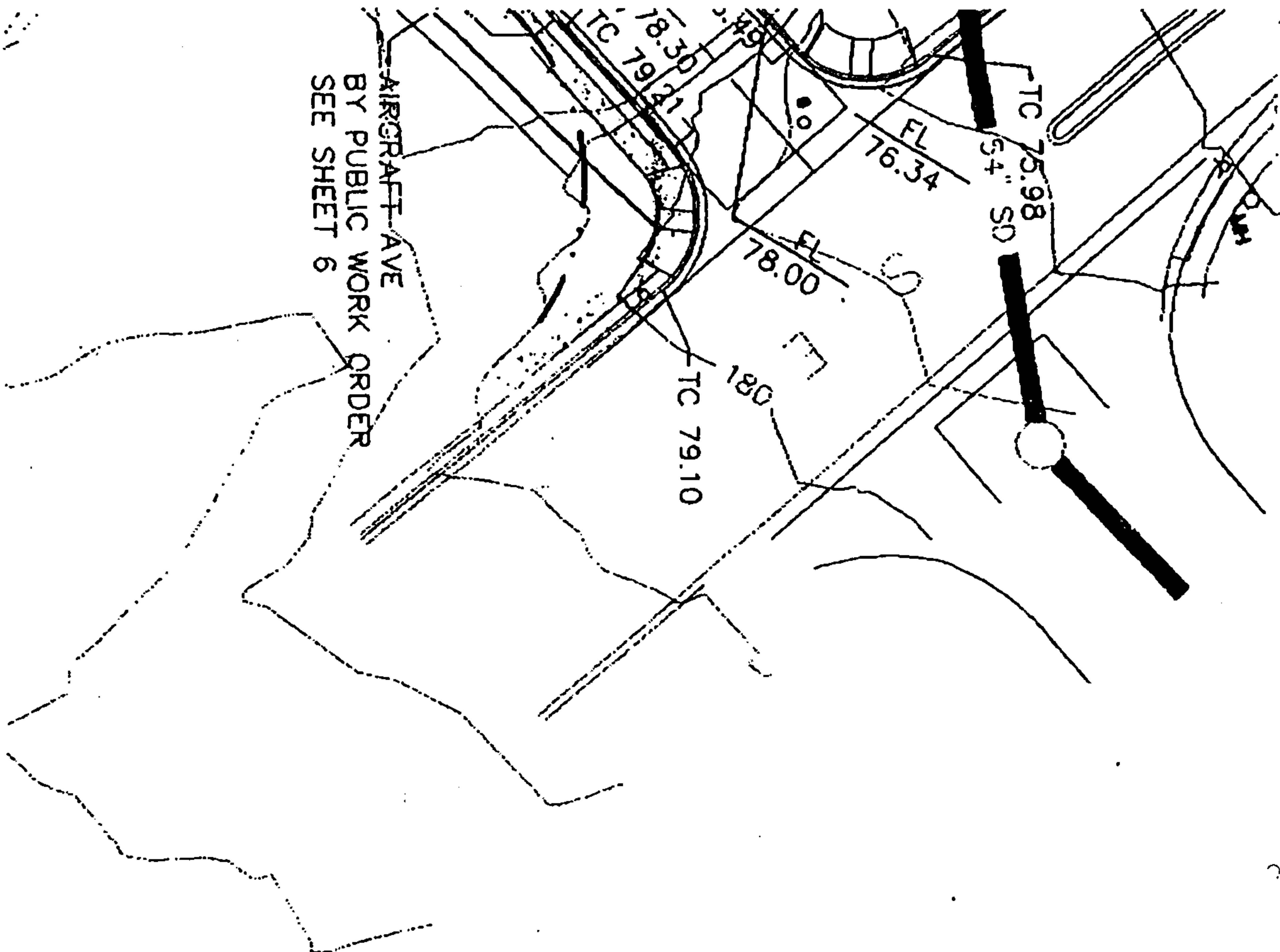
RECONSTRUCT SPILLWAY
SEE SHEET 13

CONSTRUCT RETAINING
WALL SEE SH 13

CONSTRUCT CHANNEL
SEE DETAIL B/5
SHEETS

INTERIM RETENTION POND
MINIMUM VOL= 6490 CF
BOTTOM @ 5146.0
MAX WSE= 5149.0

CONSTRUCT SPILLWAY
SEE DETAIL A/5
SHEET 51



BRASHER & LORENZ, INC.
Consulting Engineers

2201 San Pedro NE Building 1 Suite 210
Albuquerque, New Mexico 87110
Ph: 505-888-6088 Fax: 505-888-6188

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

TITLE:

SUNPORT PARK
GRADING PLAN (EAST PORTION)

Design Review Committee

City Engineer Approval

Last Design Update

Mo./Day/Yr.

Mo./Day/Yr.

ENGINEER'S SEAL



NO.	DATE	REMARKS	BY
REVISIONS			
DESIGN			
DESIGNED BY	D.A.L.	DATE	2/98
DRAWN BY	MDT	DATE	2/98
CHECKED BY	D.A.L.	DATE	2/98



Post-it Fax Note	7671	Date	6/29/98
To	Dennis Lorenz	From	L. E. Merrill
Phone #	888-6088	Phone #	827-8143
Fax #	888-6188	Fax #	827-7848

STATE OF NEW MEXICO
STATE ENGINEER OFFICE
SANTA FE

THOMAS C. TURNER
State Engineer

June 29, 1998

BATAAN MEMORIAL BUILDING, ROOM 101
POST OFFICE BOX 25102
SANTA FE, NEW MEXICO 87504-5102
(505) 827-8175
FAX: (505) 827-6188

Mr. Dennis Lorenz, P. E.
Brasher and Lorenz, Inc.
2201 San Pedro NE Bldg. 1 Suite 210
Albuquerque, NM 87110

RE: FILE # 4601

Dear Mr. Lorenz,

Reference is made to your June 24, 1998 letter concerning proposed modifications to the Support Blvd floodwater detention dam. You propose to construct a concrete retaining wall at the emergency spillway outfall where the new Aircraft Avenue will be located. To accomplish this, your plan also includes the removal and replacement of the spillway overflow section. You state in your letter that the spillway will be reconstructed at the same location.

Because the proposed work does not alter the configuration of the dam or its hydrological function, we do not consider this to be a modification. Construction is hereby authorized subject to the following conditions.

- 1.) Construction of the retaining wall and spillway shall be under the supervision of a registered professional engineer whose qualifications have been approved prior to undertaking construction.
- 2.) No changes from the original spillway design will be permitted with regard to geometry, elevation and structural integrity.
- 3.) Upon completion of construction the professional engineer supervising construction shall submit to the State Engineer:
 - a.) as built mylar drawings;
 - b.) materials test data and construction photographs; and
 - c.) a certificate that the new construction is safe for the intended use.

Page 2

Dennis Lorenz, P.E.

June 29, 1998

Please contact Mr. C.E. Merritt at (505) 827-6143, if further discussion is necessary.

Sincerely,

Thomas C. Turney
State Engineer

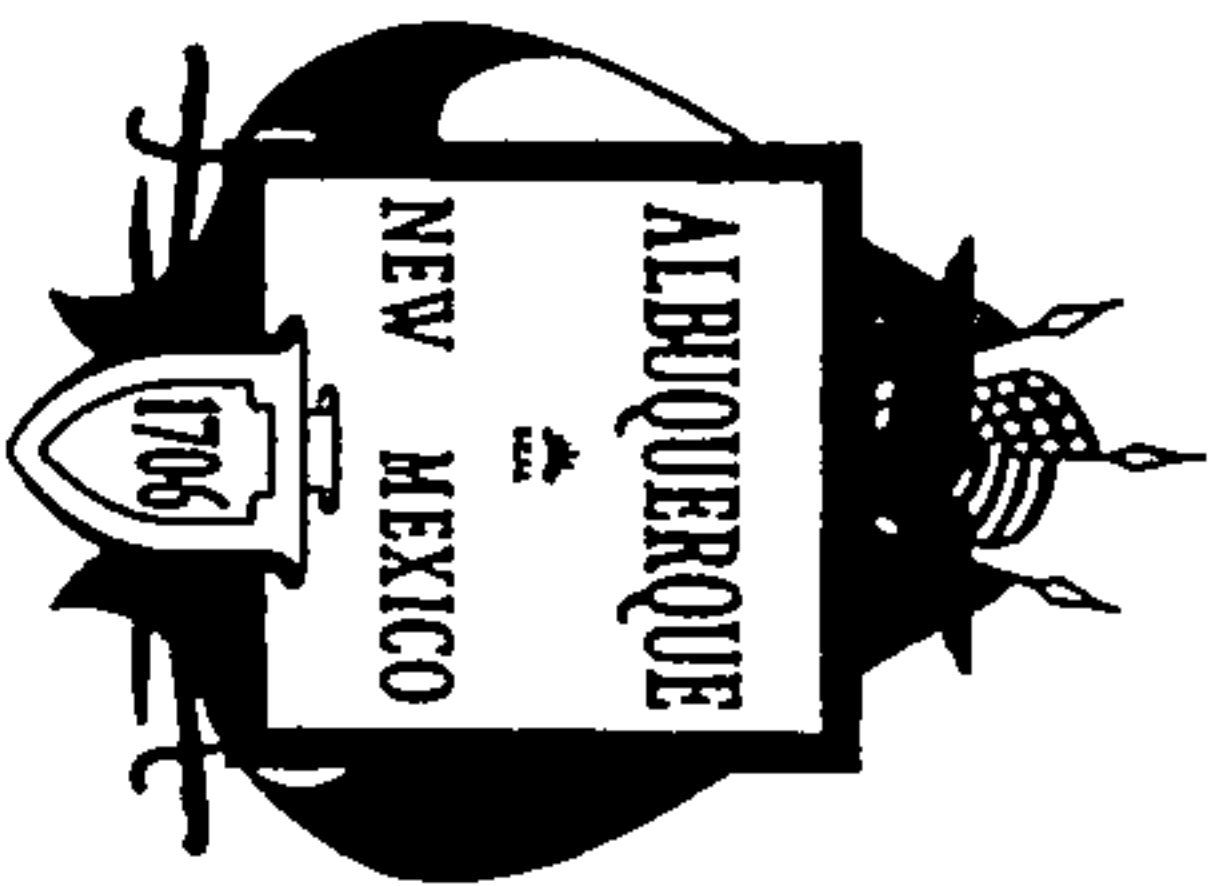
By: *Larry Ferns*
Larry Ferns, P.E., Chief
Design & Construction Bureau

CEM:sys

cc: Carlos Montoya, PWD
Jim Hinde, Aviation Department



990591



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

January 6, 2000

Jeffrey G. Mortensen, P.E.
Jeff Mortensen & Associates
6010-B Midway Park Blvd. NE
Albuquerque, New Mexico 87109

RE: *Grading Plan for Parcel 2A, Sunport Park (M15/D23F) Submitted for Grading Permit Approval, Engineer's Stamp Dated 12/16/99.*

Dear Mr. Mortensen:

The above referenced site is subject to Site Development plan approval by the DRB. At that time, all outstanding issues will be resolved, and the DRB will approve the Grading and Drainage Plan for rough grading. Until you have DRB approval, no grading may occur on this site.

With respect to the FEMA Letter of Map Revision (LOMR), I have no indication that the LOMR request is being prepared, or will be prepared, by the City. Please provide me with written confirmation that the City Aviation Department will prepare and obtain this LOMR to remove the floodplain. Otherwise, the LOMR requirement must be included on your Infrastructure List and must be obtained prior to release of Financial Guarantees.

Prior to approval for Rough Grading for the Interim condition, please address these additional comments regarding the new storm drain system on this site:

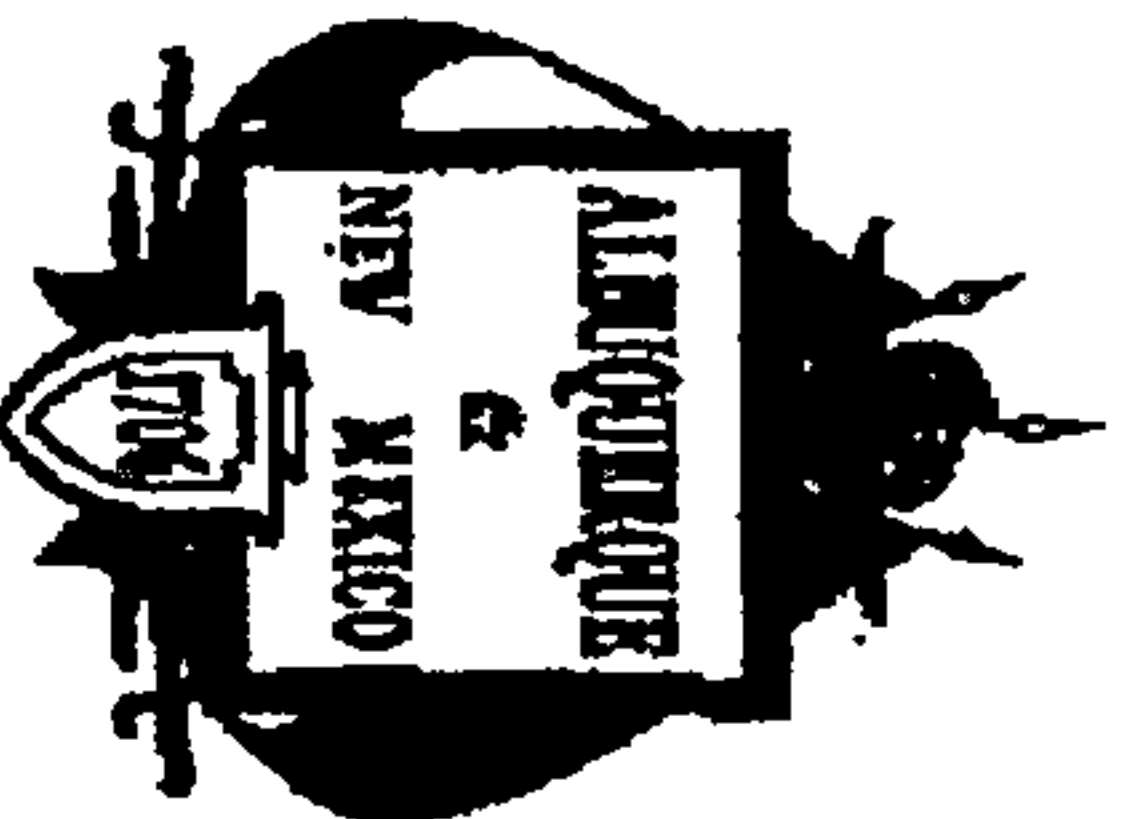
1. Has this storm drain system been completed and accepted by the City?
2. Please show how the runoff from the graded area will be intercepted into the storm drain.

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: Kathleen Chaves, Owner
File



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

July 20, 1999

Kent S. Freier
Molzen-Corbin & Associates
2701 Miles Rd. SE
Albuquerque, New Mexico 87106

RE: **Drainage Report for Rental Car Facility (M15) Submitted July 16, 1999**

Dear Mr. Freier:

I have review the referenced drainage report dated July 15, 1999 and forward the following comments. I have divided my comments into four groups: the car rental site, the north storm drain outfall, the south storm drain outfall, and University Boulevard.

The Car Rental Site:

1. The Drainage Subbasin Analysis in the appendix sheets does not match the drawing that was submitted with the report.
2. The Storm Drain Pipe Analysis in the appendix sheets does not have a drawing which calls out the storm drains.
3. Please submit a set of storm drain drawings with the hydraulic grade line.
4. Please submit a plat showing the public drainage easement for the main storm drain on the south portion of the site.
5. Please submit a plat showing the public easement for the storm drain which is adjacent to University Boulevard. What part of this storm drain is public and which is private? Please show what part of the storm drain will be publicly maintained. Please address if this area is going to be landscaped and how this will effect maintenance.
6. Please submit portions of the master drainage map and tables for the airport that apply to the upstream drainage basins.
7. Please submit portions of the master drainage map and tables for runway 3-21 that show the new drainage basins and discharges.

The North Storm Drain Outfall:

1. Please submit the dam curves such as the stage vs. storage, inflow-outflow vs. time, curves. Please submit the hydraulics for the principle and emergency outfall structures. Please submit the freeboard information.
2. The dam should have chain link fence, access roads, gates to the access road, low flow concrete channels, and minimum pond bottom slope of 0.5%.
3. Is the dam located in a trash area?
4. Please submit a plat of this area to show the public easements.
5. If the slopes are steeper than 3:1 then use an aggregate or riprap erosion control mulch.
6. Please indicate the type of seeding that will be used?
7. Please show the emergency spillway and the erosion resistant material that will be used. Please indicate the route of flow from the emergency spillway if the dam overtops.
8. Please show in plan view the north storm drain, stationing, and node numbers corresponding to the appendix analysis. Please indicate I-25, starting water surface elevation, University Boulevard, and the dam. Please include the Chavez's property and the airports runoff at I-25 structure. Please give more detail on how the Chavez's discharge will enter the storm drain. Please discuss the capacity downstream of I-25.
9. Have you received permits from the Highway Department to work in their property?
10. Please discuss who will maintain the storm drain.
11. The 100 year floodplain needs to be removed through the Chavez's property.
12. Please place more information on your GA Basin schematic map in the appendix.

The South Storm Drain Outfall:

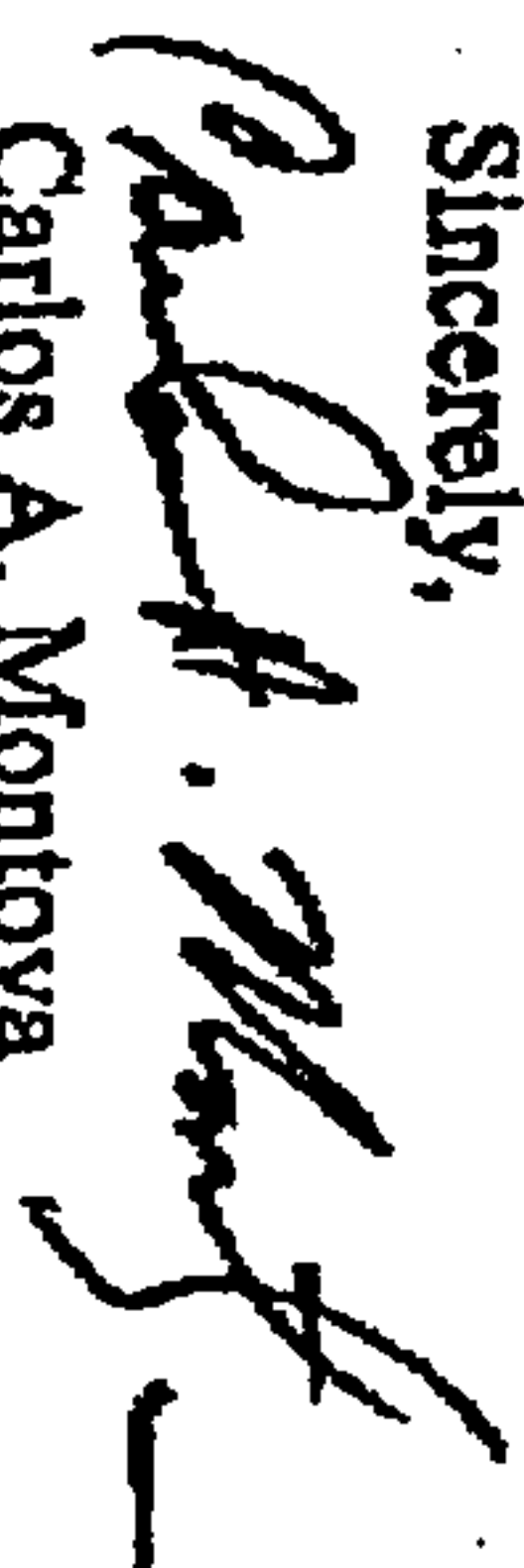
1. Does the City have drainage easements to the South Diversion Channel?
2. Does the City have downstream capacity to the South Diversion Channel? Existing flow is not the criteria for downstream discharge. Downstream easements and capacity govern the amount of flow that can be released from airport property.

University Boulevard:

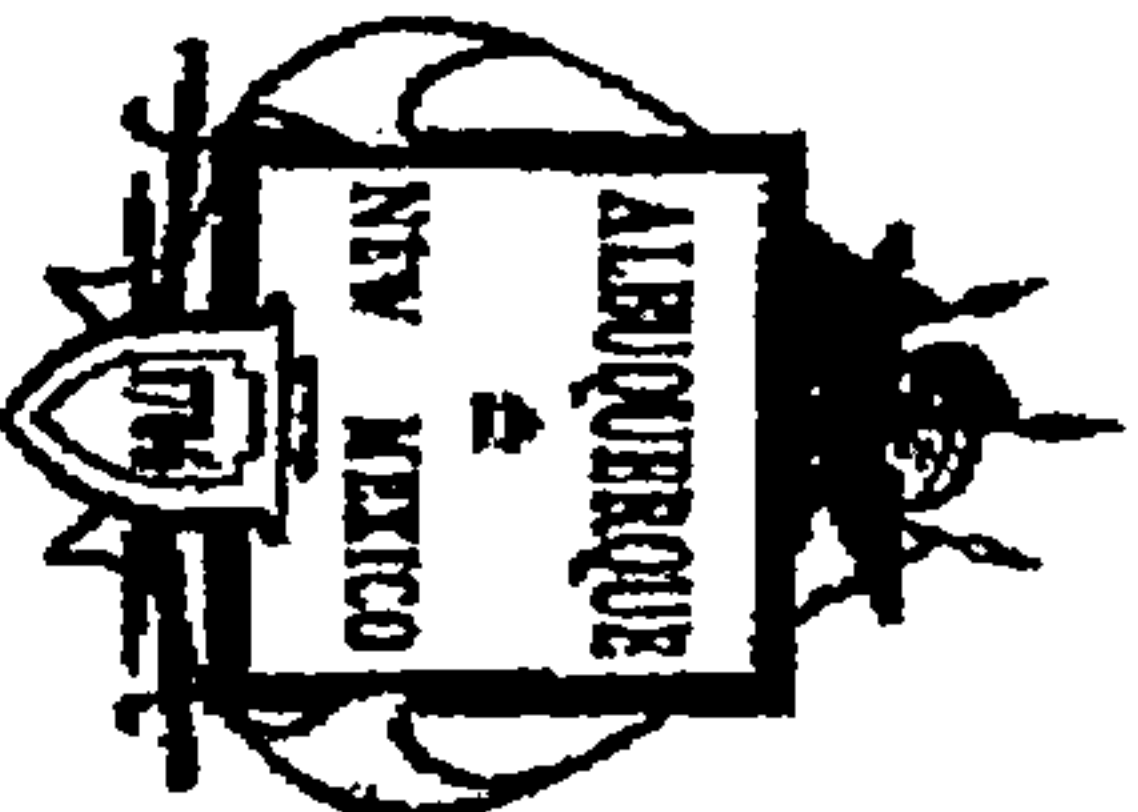
1. Please submit drainage information on arterial drainage criteria for University Boulevard.
2. Submit the hydraulic grade line information for the storm drain and the hydraulics for the inlets. Depth of flow in University Boulevard is important for arterial criteria and for the private entrances on the west.
3. Please submit grading information for University Boulevard and how it ties into the Airport Car Rental Property and the property to the west.

It was difficult reviewing the construction plans prior to reviewing the drainage plan. Please submit the appropriate construction drawing that may apply to my comments. If you have any question please call me at 768-2654.

Sincerely,


Carlos A. Montoya

c: Fred Aguirre, City Engineer
Dan Hogan, Division Manager



City of Albuquerque
P.O. BOX 1283 ALBUQUERQUE, NEW MEXICO 87103

September 28, 1999

Kent S. Freier
Molzen-Corbin & Associates
2701 Miles Road SE
Albuquerque, New Mexico 87106

RE: Airport Car Rental Expansion Drainage Report Dated September 1999

Dear Mr. Freier:

I have reviewed the referenced report dated September 13, 1999 and forward the following comments.

1. The following comments concern the detention pond north of the Car Rental Facility.
 - A. Please show details on the storm drain pipe aprons into the detention pond. Indicate the type of material, size, and elevations.
 - B. Show details on the storm drain head walls into the detention pond.
 - C. Show the concrete low flow channel in the bottom of the detention pond. Indicate the elevations.
 - D. Please show the trash liner that was used. Please give information on the liner. Indicate the type of maintenance that will be required.
 - E. Please indicate the location of the trash that was excavated.
 - F. Please give details on the trash rack.
 - G. Please indicate the detention pond slopes that are to be used.
 - H. Indicate the area which is going to be reseeded.
 - I. Please give the details on the retaining wall that is going to be used.
 - J. Submit the geotechnical report for the detention pond. The geotechnical should address the trash in the detention pond, liner, slopes, percolation, and retaining walls.
 - K. The detention pond will need an access road to the bottom of the detention pond. The road will need to be stabilized. The access road will require a gate at the entrance road to restrict access.
 - L. Will the detention pond have landscaping? If the detention pond does have landscaping who will maintain it?
 - M. Are there any off site flows into the detention pond? How will these flows be conveyed?



JEFF MORTENSEN AND ASSOCIATES, INC.
☐ 6010-B MIDWAY PARK BLVD. N.E.
☐ ALBUQUERQUE ☐ NEW MEXICO 87109
☐ ENGINEERS ☐ SURVEYORS (505) 345-4250

TRANSMITTAL

TO: Kathleen Chaves

DATE: 02-07-2000

PROJECT: Sunport Parking

JOB NO: 990593

ATTN :

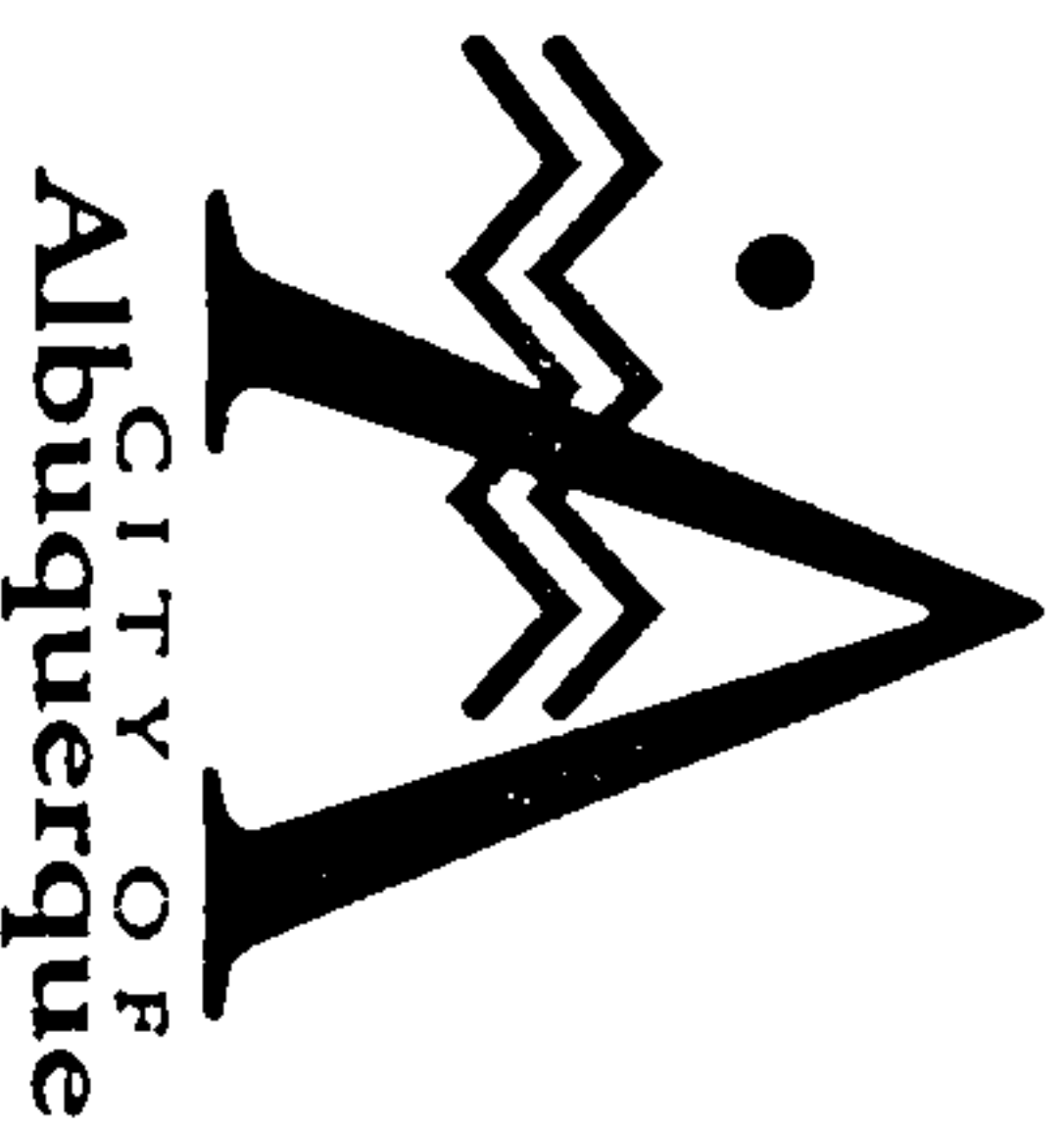
VIA: ☐ Delivery ☒ Pickup ☐ US Mail

WE ARE SENDING:

QTY.	DESCRIPTION	FOR
1	Blue-line Set of Boundary and Topographic Survey	Your Use
1	Blue-line Set of Rough Grading Plan	Your Use
1	ACAD 14 file of Boundary and Topographic Survey	Your Use
1	Molzen-Corbin Drainage Report	Your Use
1	Blackline Copy of Brasher-Lorenz Grading Plan	Return to You

REMARKS:

Transmitted herewith for your use are the above listed items relative to the subject project.



Martin J. Chávez, Mayor

June 9, 1997

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: Drainage Report for Parcel 2A, Sunport Park (M15/D23) Submitted for Site Development Plan for Building Permit Approval, Engineer's Stamp Dated 5/9/97 on Report and Dated 5/12/97 on Plans.

Dear Mr. Lorenz:

Based on the information provided in the submittal of May 15, 1997, the above referenced plan is approved for Site Development Plan for Building Permit Approval.

Prior to release of the Building Permit, Grading or Paving Permits, however, the following must be addressed:

1. Volume calculations for the interim pond for Aircraft Avenue must be provided. A temporary easement and an Agreement and Covenant are also required for this pond.
2. No grading will be allowed beyond limits of Phase I. These limits must be staked in the field.
3. Mitigation to prevent potential erosion from the 36" storm drain may be required.
4. Justification must be provided to show that the sheet flows from Phase I do not spill over the western edge of the pavement.

Prior to any development, including grading, within the Phase II boundaries, a Conditional Letter of Map Revision must be obtained from the Federal Emergency Management Agency.

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103

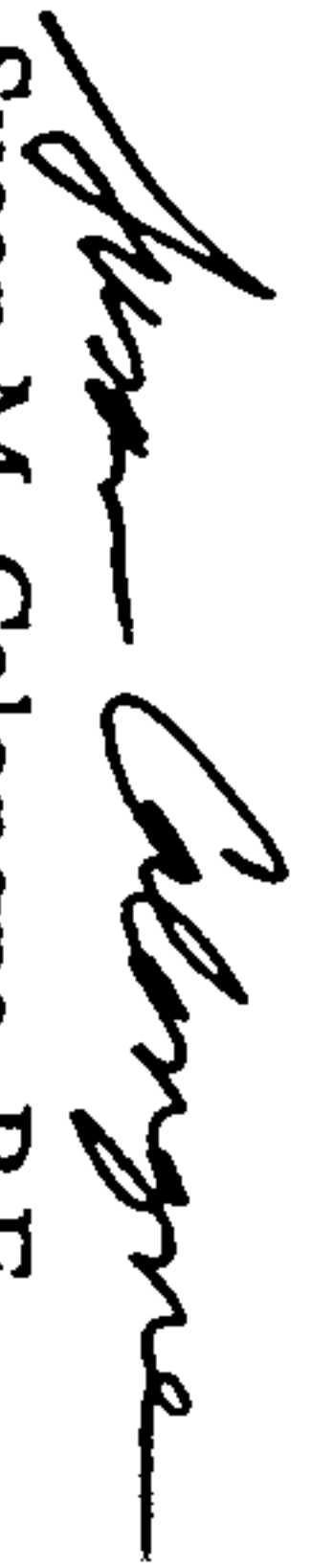


Dennis A. Lorenz, P.E.
page 2

June 9, 1997

If you should 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: Joyce Battaglia, Owner
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: SUNPOET PARK ZONE ATLAS/DRNG. FILE #: M-15/D23F

DRB #: 91.68 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: PARCEL 2A, SUNPOET PARK

CITY ADDRESS: UNIVERSITY BLVD, SE

ENGINEERING FIRM: Brasher & Lorenz, Inc. CONTACT: Dennis A. Lorenz

ADDRESS: 2201 San Pedro NE Bldg. 1 Suite 210 PHONE: _____

ADDRESS: Albuquerque, New Mexico 87110 PHONE: 888-6088

OWNER: JOYCE BATTAGLIA CONTACT: JOYCE BATTAGLIA

ADDRESS: P.O. BOX 3220 PHONE: 281-6004

EDGEWOOD, NM 87015

ARCHITECT: RIK BERNETT CONTACT: RIK BERNETT

ADDRESS: 1118 PARK AVE SW PHONE: 242-1859

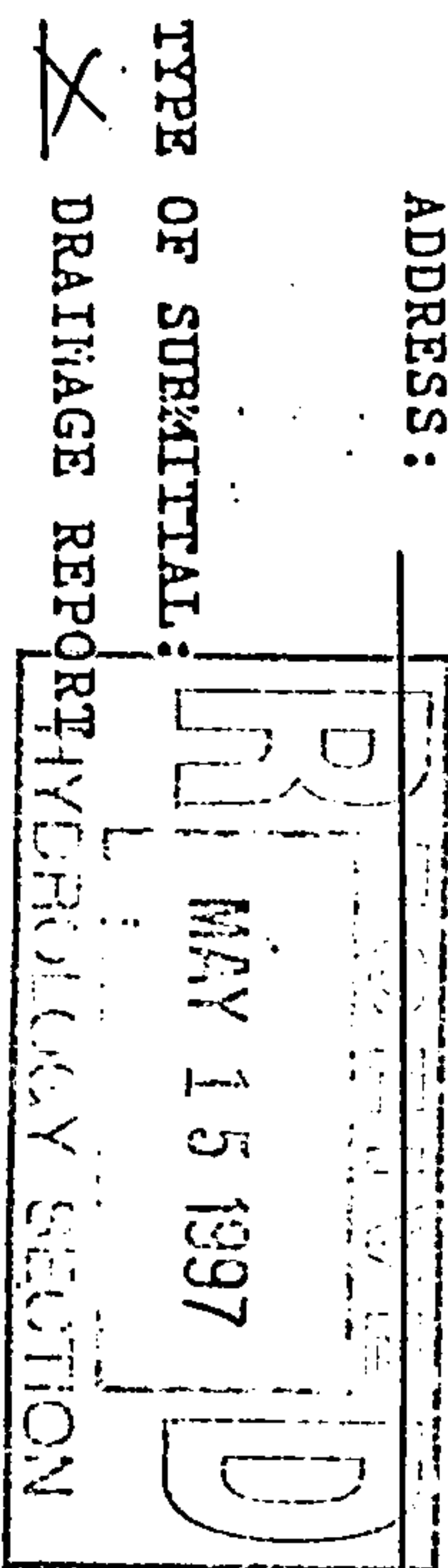
87102

SURVEYOR: PRECISION SURVEYS CONTACT: LARRY MENDANO

ADDRESS: 2929 COCAS NW PHONE: 839-0569

CONTRACTOR: _____ CONTACT: _____

ADDRESS: _____ PHONE: _____



TYPE OF SUBMITTAL: _____ CHECK TYPE OF APPROVAL SOUGHT: _____

☒ DRAINAGE REPORT HYDROLOGY SECTION ☐ SKETCH PLAT APPROVAL

☐ DRAINAGE PLAN ☐ PRELIMINARY PLAT APPROVAL

☐ CONCEPTUAL GRADING & DRAINAGE PLAN ☐ S. DEV. PLAN FOR SUB'D. APPROVAL

☐ GRADING PLAN ☒ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

☐ EROSION CONTROL PLAN ☐ SECTOR PLAN APPROVAL

☐ ENGINEER'S CERTIFICATION ☐ FINAL PLAT APPROVAL

☐ OTHER _____ ☐ FOUNDATION PERMIT APPROVAL

☐ BUILDING PERMIT APPROVAL

PRE-DESIGN MEETING: _____ ☐ CERTIFICATE OF OCCUPANCY APPROVAL

☒ YES ☐ GRADING PERMIT APPROVAL

☐ NO ☐ PAVING PERMIT APPROVAL

☐ COPY PROVIDED ☐ S.A.D. DRAINAGE REPORT

☐ DRAINAGE REQUIREMENTS

☐ OTHER _____ (SPECIFY)

DATE SUBMITTED: 5-12-97

BY: Dennis A. Lorenz

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PURPOSE AND SCOPE

Pursuant to the established Drainage Ordinance for the City of Albuquerque and the Development Process Manual, this Drainage Report outlines the drainage management criteria for controlling developed runoff from the project site. The property is to be developed as a parking complex for long term parking and car rentals. Paving, landscaping, utility, grading, and drainage improvements will be provided to support the project. The scope of this plan is to provide drainage criteria for the safe management of excess runoff, and design detail for the construction of the required grading, paving and drainage improvements.

SITE DESCRIPTION

The project site is approximately 48.67 acres in size and is located adjacent to Sunport Boulevard at University Boulevard SE. Presently the site is undeveloped. The site is vegetated with native grasses and shrubs. Site terrain is rugged, sloping east to west at approximately 5 percent. A natural ridge line is located through the midsection of the site which divides the site into 2 drainage basins. The site is described as Sunport Park, Parcel 2. The site is bounded on the north by Sunport Boulevard, on the east by University Boulevard, on the south by the University of New Mexico South Golf Course, and on the west by Interstate 25.

The site is located adjacent to the recently constructed Sunport Boulevard roadway project, which provided drainage and access improvements which benefit the site.

A public detention pond is located adjacent to the site on the east, which accepts runoff from the George Road storm drain. The detention pond drains to the Sunport storm drain.

On-site soils consist mainly of Bluepoint series soils. This soil group is formed in sandy alluvial and eolian sediments on alluvial fans and terraces. Slopes range from 1 to 15 percent. Runoff is slow, and the hazard of wind erosion is moderate to severe. This soils is classified as hydrologic soils group "A".

As shown by the attached FIRM Panel, this site is impacted by a designated flood hazard zone resulting from off-site drainage contribution from the Albuquerque International Airport (see Figure 3).

EXISTING DRAINAGE MASTERPLANS

The drainage criteria for this site is established by the following Drainage Masterplans:

1. **Albuquerque International Airport Storm Drainage Masterplan, Project No.4255.01**, prepared by Molzen-Corbin & Associates, May 1995.

This DMP studies AIA, contributing off-site drainage basins, and downstream facilities. Sunport Park, being downstream from AIA is identified as Basins 403,

404, 514 and 515. Both existing and future peak flowrates were determined for these basins. Capacity of existing downstream drainage improvements as also tested.

2. **Sunport Boulevard Final Drainage Report**, prepared by Molzen-Corbin & Associates, March 1996.

This report provided hydrologic analysis and drainage improvement recommendations for the Sunport Boulevard roadway project. Storm drainage improvements include storm drains in Sunport Boulevard and George Road, and a detention pond at University and Aircraft Avenue (Tract A-2, Replat of Municipal Addition No. 9).

EXISTING DRAINAGE CONDITIONS

As described above, the site is impacted by the Sunport Boulevard roadway project. The following improvements were provided by Sunport which benefit the site:

1. The Sunport Boulevard storm drain is located along the north property line. This storm drain is sized to accept developed runoff from the upstream basins and on-site Basin "A". The storm drain is connected to 3-36 inch culverts which convey flows under I-25 to a 60 inch storm drain, then to the South Diversion Channel.
2. Tract A-2 detention pond is located immediately east of the site. The pond is designed to detain runoff from the George Road storm drain, thereby reducing peak flow rates allowing connection to the 3-36 inch culverts at I-25.

The site is divided into 2 distinct drainage basins by a natural ridge line running east to west. The north basin (Basin "A") flows to an area drain located at the northwest corner of the site, which is connected to the Sunport storm drain. The south basin (Basin "B") flows west to an existing 8' x 6' concrete box culvert, which drains under I-25 to the South Diversion Channel. Basin "B" contains an arroyo channel which is mapped as a 100 year floodplain (see Figure 2). The arroyo accepts runoff from AIA. AIA Basin WE enters the site near the southeast corner after passing through 2-60 inch culverts located at University Boulevard. Per AIA DMP, the existing flow rate at the east property line is 256.3 cfs. No off-site flows impact Basin "A" other than minimal flows from the sides of the detention pond located on Tract A-2.

Summary of Existing Flows

1. **University Blvd. Culverts:** These two 60" culverts convey an arroyo across University Boulevard onto the subject site. The arroyo then flows across the middle of the site from east to west to the existing box culvert located at I-25. The culvert is a continuous closed conduit outfalling at the South Diversion Channel. The flow through these culverts under existing conditions is 256.3 cfs during the 100 year/6 hour storm (per AIA DMP).

2. **Sunport Boulevard Storm Drain:** This storm drain flows from east to west along the north boundary of the site. 100 year/6 hour flows after development of all upstream basins is projected to be 278.2 cfs (per AIA DMP)
3. **Basin A:** This basin consists of the north 18.8 acres of the proposed site. It currently drains to the Sunport Blvd. Storm Drain at the northwest corner of the site. The 100 year/6 hour flow is 29.3 cfs.
4. **Basin B:** This basin consists of the south 29.9 acres of the proposed site. It is drained entirely by the arroyo that flows from east to west across the middle of the site. The 100 year/6 hour flow is 46.6 cfs.
5. **Basin C:** This off-site 8.5 vacant tract is south of Aircraft Avenue, west of University Boulevard. It currently generates 13.3 cfs in the 100 year/6 hour storm. It drains onto the arroyo that runs from east to west through the middle of the site.

PROPOSED CONDITIONS

As shown by the Plan, the project consists of the development of the property into a parking complex for long term airport parking and car rentals.

The Plan shows the elevations required to properly grade and construct the recommended improvements. The direction of drainage flows are given by flow arrows and on-site drainage basins are identified. All drainage improvements recommended by the Plan are detailed on Drainage MasterPlan located in the back pocket of this report.

Stormwater will discharge from the site into two public drainage facilities:

- 1) Sunport Boulevard Storm Drain (existing)
- 2) I-25 Box Culvert (via proposed on-site storm drain system)

Drainage Facilities

I. Sunport Boulevard Storm Drain

This existing storm drain flows in a westerly direction along the north site boundary. Four stub outs will be constructed to this storm drain. Each will drain a type "A" drop inlet. The *Albuquerque International Airport Storm Drainage Master Plan*, Molzen Corbin, 1995, states that the Sunport Boulevard Storm Drain was designed to handle developed flows from about 18.8 acres of the subject site. Because of site grading, flows from only about 5.4 acres of the subject site will be discharged to the storm drain.

II. I-25 Box Culvert (via proposed on-site storm drain system)

This existing 6'x8' box culvert currently handles stormwater from the arroyo that crosses

the middle of the site from west to east. The water from the arroyo will be contained in a proposed storm drain that will drain west along the south tract line and then north along the west tract line connecting to the existing box culvert.

The site will be drained by two types of drop inlets. Curb type drop inlets will be placed along the north and south curb lines to intercept gutter flow. Four custom designed continuous drop inlets will drain directly to the storm drain on the west end of the site.

The west property line storm drain will outfall into an open channel, connecting to the existing box culvert. Side inlets will be provided to allow surface drainage along the Interstate to drain into the channel and to the box culvert.

The box culvert is a continuous closed conduit outfalling at the South Diversion Channel. The AIA DMP contains an AHYMO run for Basin WE, which proves the capacity of the system.

Basins that will drain to Sunport Boulevard Storm Drain

Basin 1: Basin 1 is comprised of the 5.4 acres of the parking complex that will drain to the north curb. Water from this basin will be intercepted by Type A drop inlets along the north curb. Stub-outs will connect these drop inlets to the Sunport Boulevard Storm Drain. Basin 1 will generate 25.4 cfs during the 100 year/6 hour storm. Each drop inlet will handle approximately one-third of that flow.

Basins that will drain to I-25 Box Culvert

Basin 2: Basin 2 is 17.1 acres and consists of that part of the site that will drain to the north half of the west curb. Much of the area in Basin 2 currently drains northwest to the Sunport Boulevard Storm Drain. The project will be graded such that all of Basin 2 will drain southeast to the I-25 Box Culvert. Basin 2 will generate 80.4 cfs during the 100 year/6 hour storm. It will drain to custom designed continuous drop inlets on the west curb of the parking complex. Those drop inlets will drain to a storm drain that will flow south to an outfall at the I-25 Box Culvert.

Basin 3: This basin is 21.3 acres and consists of that part of the site that will drain to the south half of the west curb. Like Basin 2, Basin 3 will drain from east to west into custom designed continuous drop inlets on the west curb of the parking complex. Basin 3 is projected to generate 100.1 cfs during the 100 year/6 hour storm.

Basin 4: Basin 4 is 4.9 acres and consists of that part of the project that drains to the south curb. Type A drop inlets will intercept the flow and direct it to the proposed storm drain. Basin 4 will generate 23.0 cfs during the 100 year/6 hour storm.

Basin C: This 8.5 acre vacant off-site tract currently drains to the arroyo that runs from east to west across the middle of the site. Phase 2 of the subject project will eliminate that arroyo. As such, stormwater from this tract will need to be drained by the proposed storm drain network. Developed flows from Basin C are projected to be 37.3 cfs.

Summary of Flows

Basin	Description	100 yr/6 hr Developed peak flow
1	5.4 acres of site to drain to Sunport storm drain	25.4 cfs
2	17.1 acres to drain to proposed storm drain	80.4 cfs
3	21.3 acres to drain to proposed storm drain	100.1 cfs
4	4.9 acres to drain to proposed storm drain	23.0 cfs
C	8.5 acre off-site basin to proposed storm drain	37.3 cfs
D	Aircraft Avenue	2.3 cfs
WE	2-60" culverts at University Blvd.	498.5 cfs
SD	existing Sunport Boulevard storm drain	278.2 cfs

PROJECT PHASING

Sunport Park is proposed to be developed in 2 phases as follows:

I. PHASE ONE

Phase One development consists of the construction of approximately 1485 parking spaces, Aircraft Avenue, a 1400 sf kiosk, and associated paving, drainage and utility improvements. Phase One will construct the following drainage improvements:

1. Four curb type drop inlets connecting to the Sunport Storm Drain which will drain gutter flows along the north curb.
2. The north section of the west property line storm drain, including 2 special design drop inlets.
3. A temporary retention pond located southwest of the terminus of Aircraft Avenue providing storage for public runoff exiting the roadway.

A 24 ft wide section of pavement will be constructed along the north and west property line to serve as a channel to convey developed Phase One flows to the drop inlets and west property line storm drain.

Summary of Phase One Flows

Basin	Description	100 yr/6 hr Developed peak flow
Phase 1		34.8 cfs
D	Aircraft Avenue	2.3 cfs
Under Phase 2		63.5 cfs
Ex. WE	2-60" culverts at University Blvd.	256.3 cfs
SD	Sunport Boulevard storm drain	278.2 cfs

II. PHASE TWO

Phase Two consists of the remainder of the project acreage. Development is likely to consist of an expansion of the parking facility, including park and ride as well as renal car outlets. Phase Two will construct the following drainage improvements:

1. A 60 inch storm drain along the south property line with curb type drop inlets to drain gutter flow from the south curb.
2. A 72 inch storm drain along the west property line with special drop inlets. This line connects with the storm drain from the north and outfalls into an open channel draining to the existing box culvert.

An off-site section of 60 inch storm drain is needed from the 60 inch culverts at University Boulevard to the east property line. If Tract A3 is not ready to participate when Phase Two develops, an interim sedimentation pond will be constructed at the east end of the 60 inch storm drain at the location where the existing arroyo enters Sunport Park. The interim pond will be sized to allow passage of the 100 year/6 hour developed storm from the contributing basins. Upon development of Tract A3, the interim pond will be removed and connection made to the 60 inch culverts (or equivalent upgrade) at University.

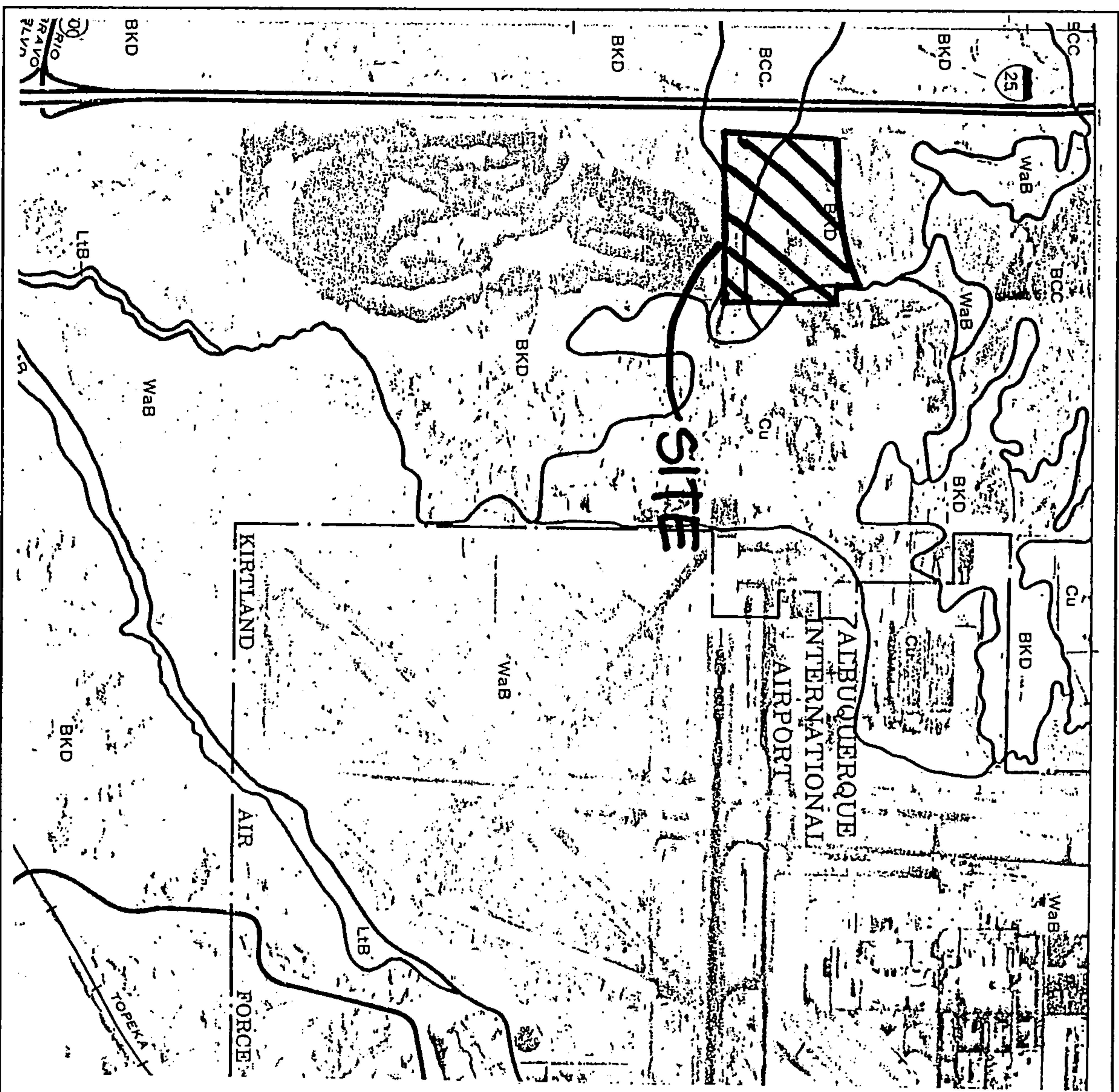
Development of Phase Two will remove the 100 year floodplain presently encumbering the site. Submittal of a LOMR after construction is a requirement of Plan approval.

TEMPORARY EROSION CONTROL PLAN

1. The intent of this temporary erosion control plan is to limit the discharge of sediment into the public street and/or storm drainage system and to protect adjacent properties from excess runoff during construction.
2. The Contractor shall obtain a Top Soil Disturbance Permit from Environmental Health prior to performing any earthwork related operations.

3. After the initial site clearing, the temporary erosion control facilities should be constructed per the Plan to direct excess runoff and sediment the outfall locations.
4. It is the Contractor's responsibility to properly maintain all temporary erosion control facilities during the construction phase of the project.

MAPS



SOILS MAP
Figure 2

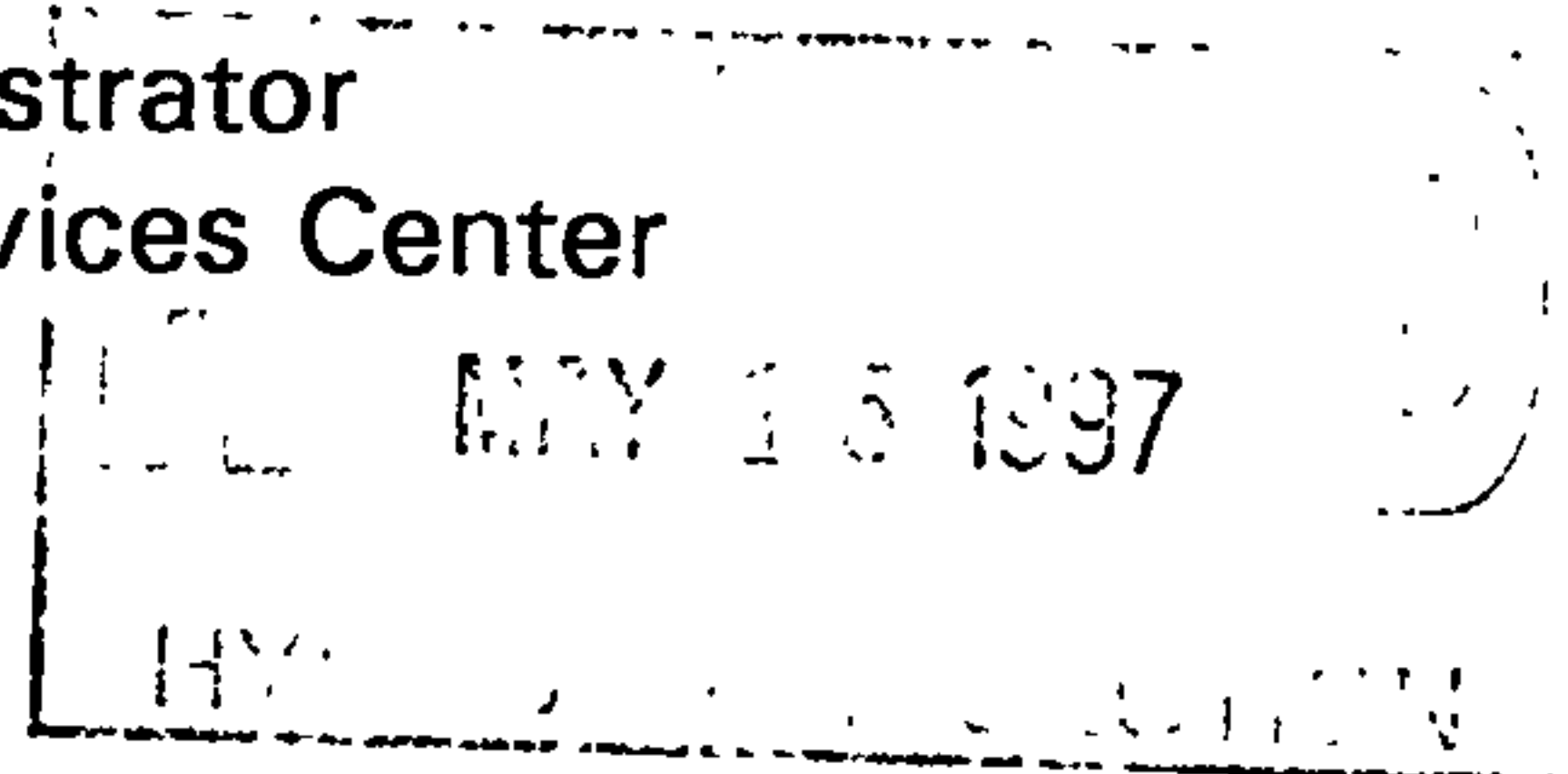
BRASHER & LORENZ, INC.

CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

May 12, 1997

Susan M. Calongne
City/County Floodplain Administrator
Development and Builders Services Center
Plaza Del Sol
Public Works Department
Albuquerque, NM 87103



SUBJECT: SUNPORT PARK
(M15/D23)

Dear Susan:

Submitted herewith for review and approval is one copy of the revised Drainage Report for the subject project. The Plan has been revised by removing all off-site improvements. All off-site flows will be managed on-site with improvements to be constructed by the developer. The comments listed in your April 21, 1997 letter are addressed as follows:

1. The existing concrete box culvert that drains portions of the site from I-25 to the South Diversion Channel (SDC) is a closed conduit from the east side of the interstate to the SDC. The section from the west side of the interstate to the SDC was recently constructed by AMAFCA. The AHYMO output file WEFUT100.dat from the AIA DMP (see Appendix) demonstrates capacity of the system.
2. We have prepared public works drawings detailing construction of the storm drainage improvements required for Phase One development which will be submitted to DRC for review following Site Development Plan and Infrastructure Listing approval by DRB.
3. Aircraft Avenue will drain westward into a channel within a public drainage easement along the east property line. A channel will outfall into the future storm drain to be constructed with Phase Two. Phase One development will provide an interim retention pond near the west terminus of Aircraft Avenue.
4. The off-site detention pond has been removed. We are now proposing to intercept flows from Tract A-3 along the east project boundary and manage all off-site flows on-site. This concept does not require any off-site easements from adjoining properties.

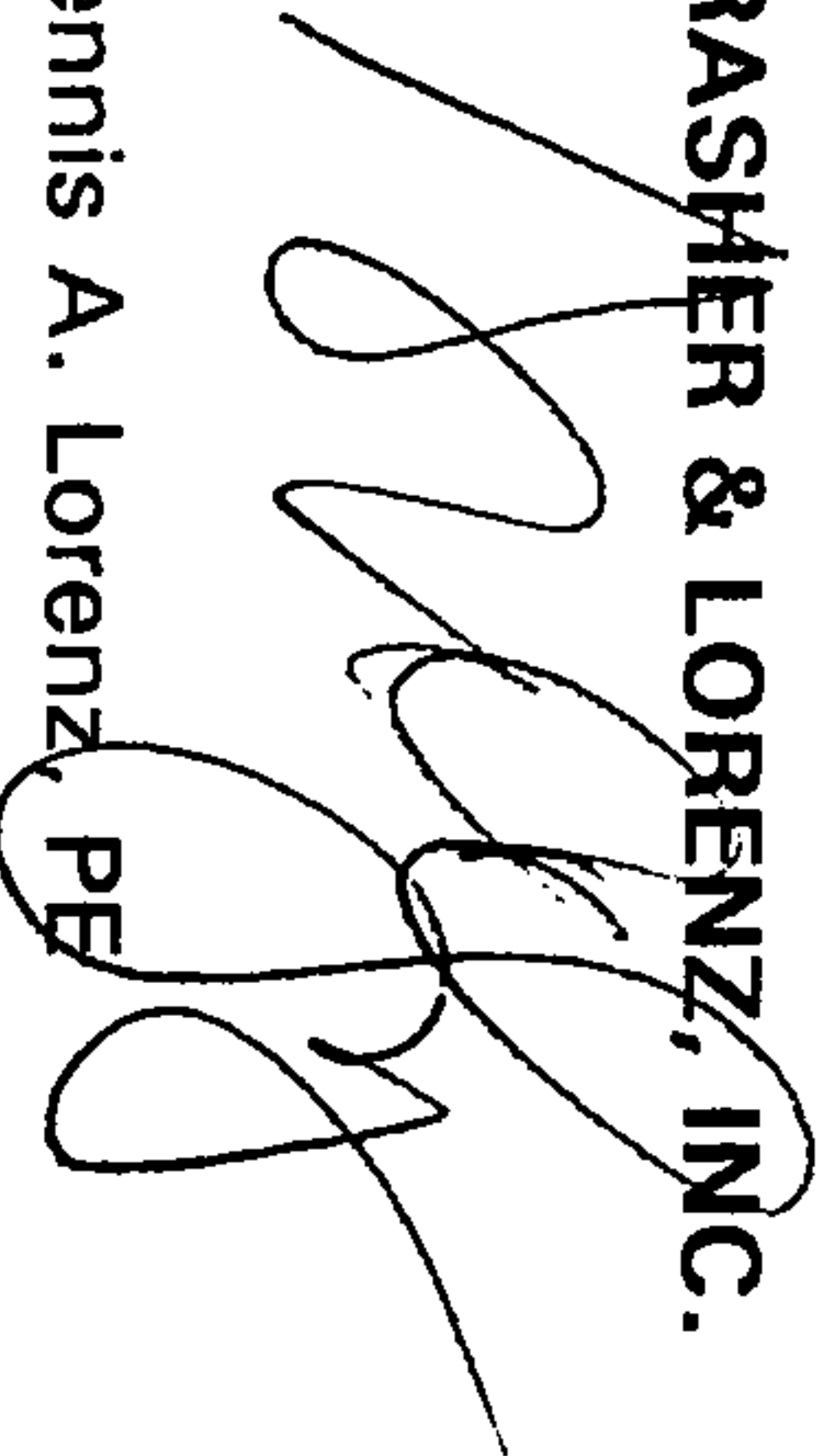
5. The Plan has been revised to accommodate fully developed flows entering the site.
6. The turn-around required by Transportation at the terminus of Aircraft Avenue will be graded to direct overflow from the public detention pond south around the proposed kiosk. If necessary, easements can be provided for the overflow path.
7. The scour wall is no longer needed for Phase One development since we are proposing to stay out of the erosion setback zone.
8. The Plan proposes to **reduce** the runoff anticipated by the Sunport Storm Drain. Per the report, the storm drain was designed to drain an 18.8 acre basin from Sunport Park. This Plan proposes a 5.4 acre basin.

As stated in Item 2, public works drawings will be submitted to DRC for review and approval.
9. The off-site detention pond has been removed from the Plan.
10. The property owner is fully aware that CLOMR is required prior to Phase Two approval.

Please review the revised Report at your earliest opportunity. We are requesting Site Development Plan and Infrastructure Listing approval by DRB, with a goal to begin Phase One construction as soon as possible. If you have any questions regarding the submittal package, please call me immediately so that we can address any remaining issues without a re-submittal.

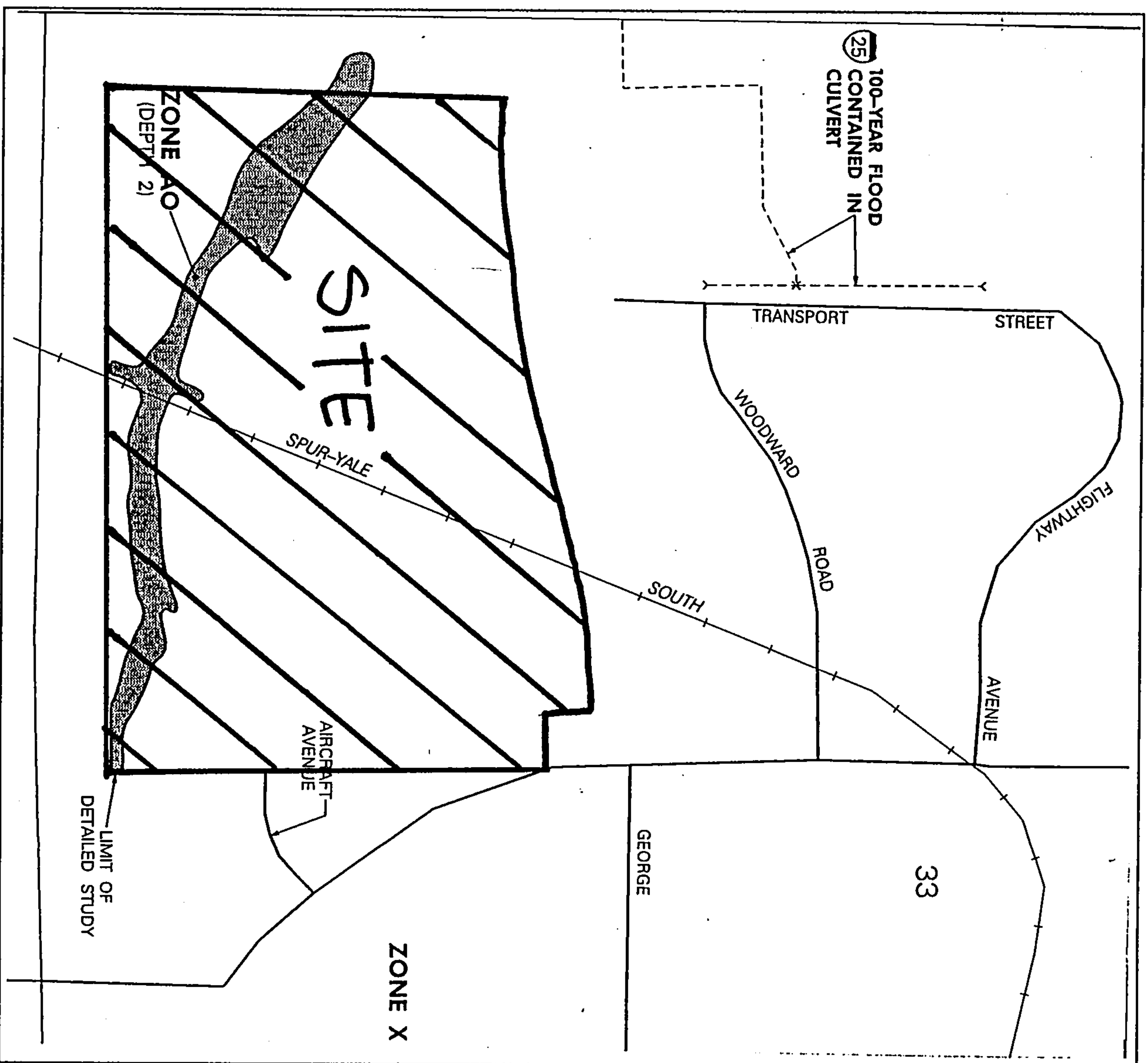
Sincerely,

BRASHER & LORENZ, INC.

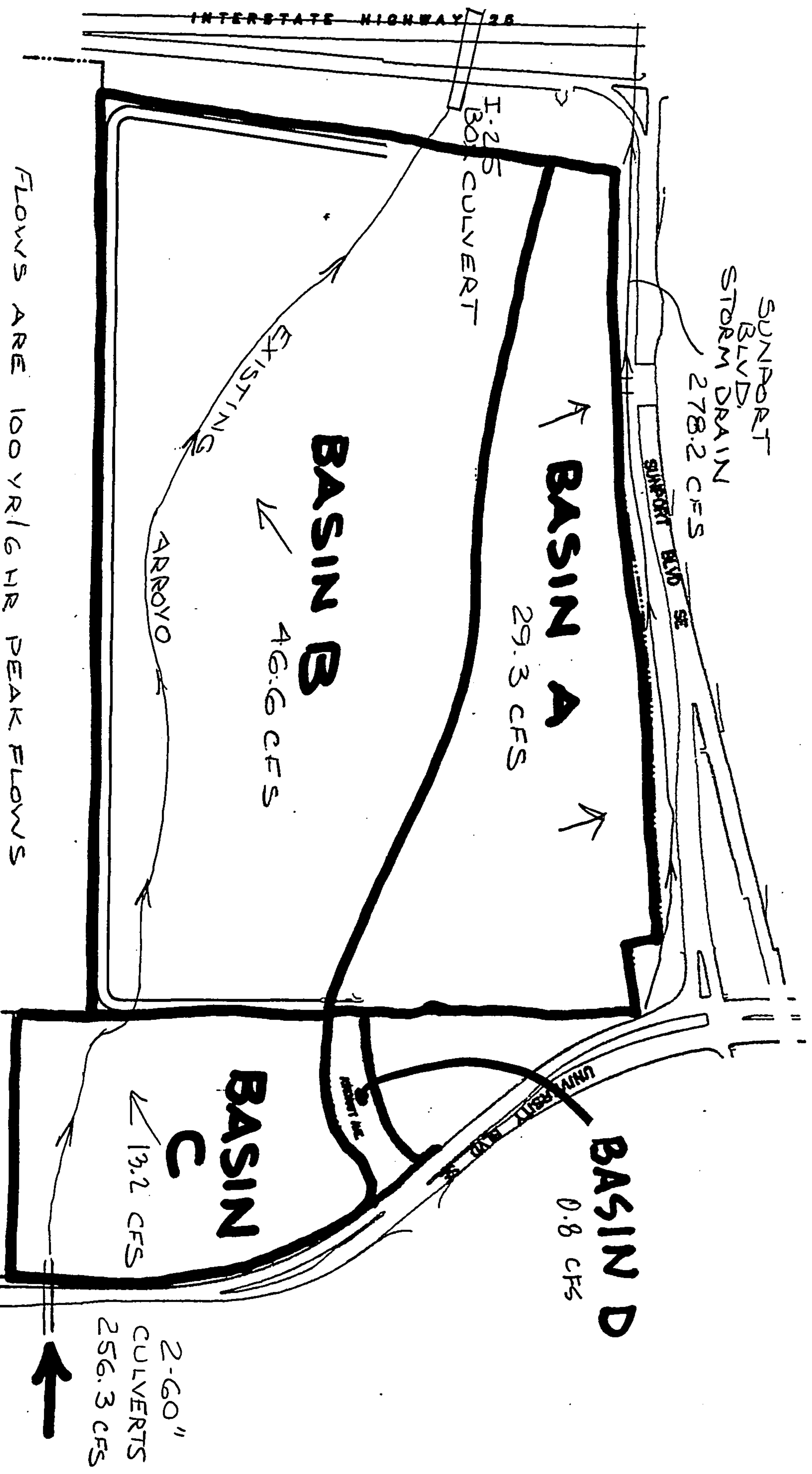


Dennis A. Lorenz, PE

/dl/6039
encl

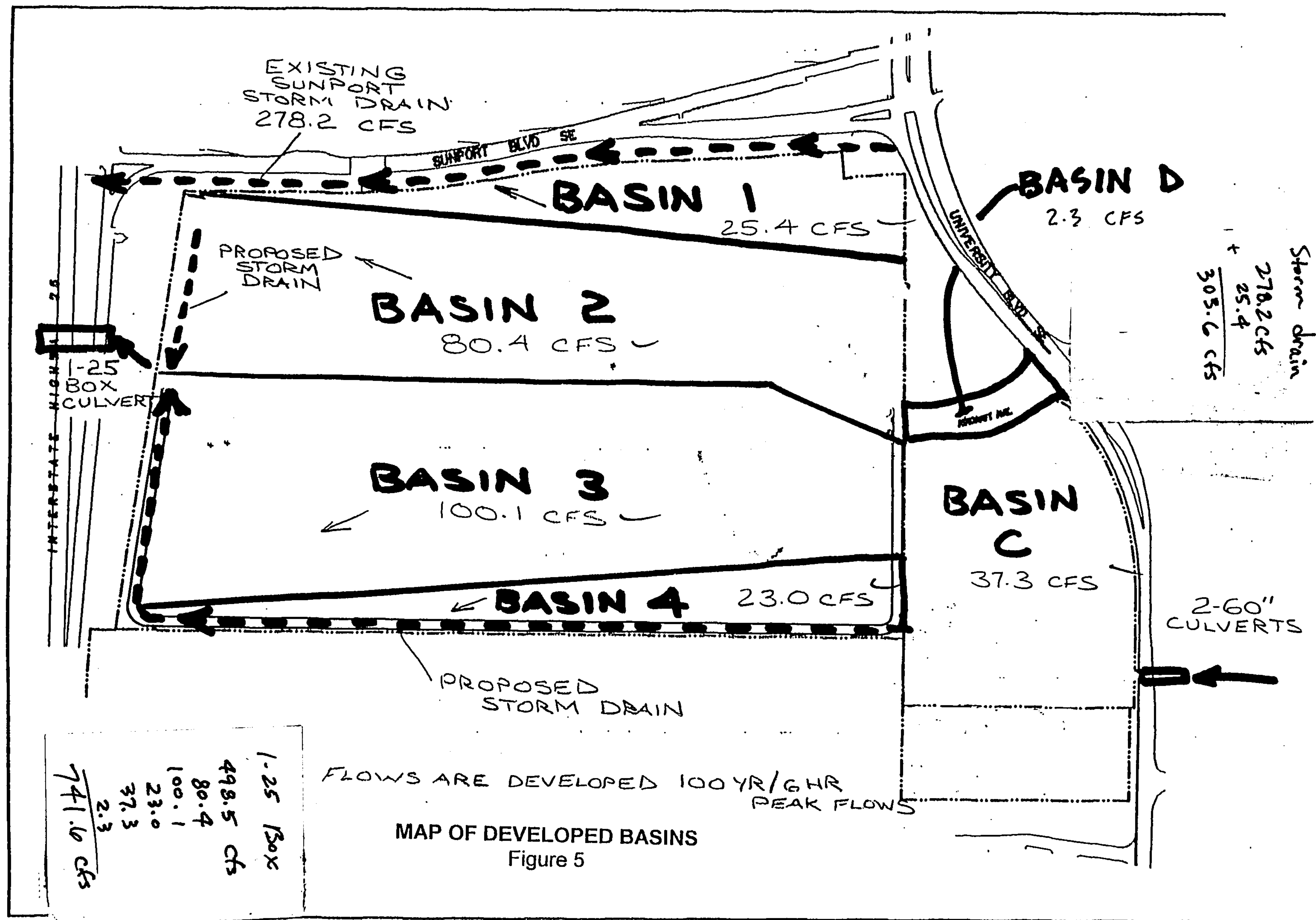


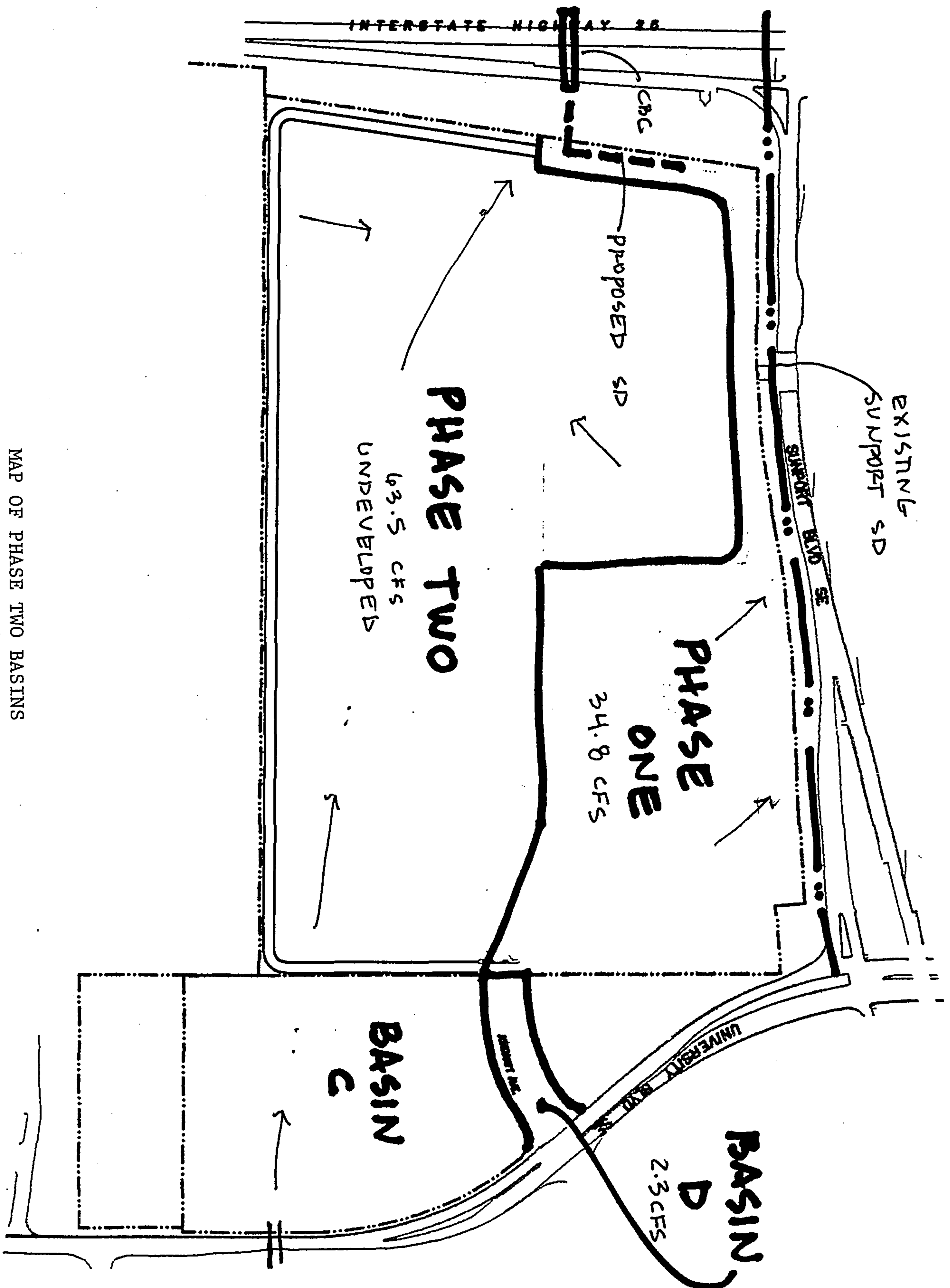
FLOOD INSURANCE RATE MAP
Figure 3



MAP OF EXISTING BASINS
Figure 4

12..

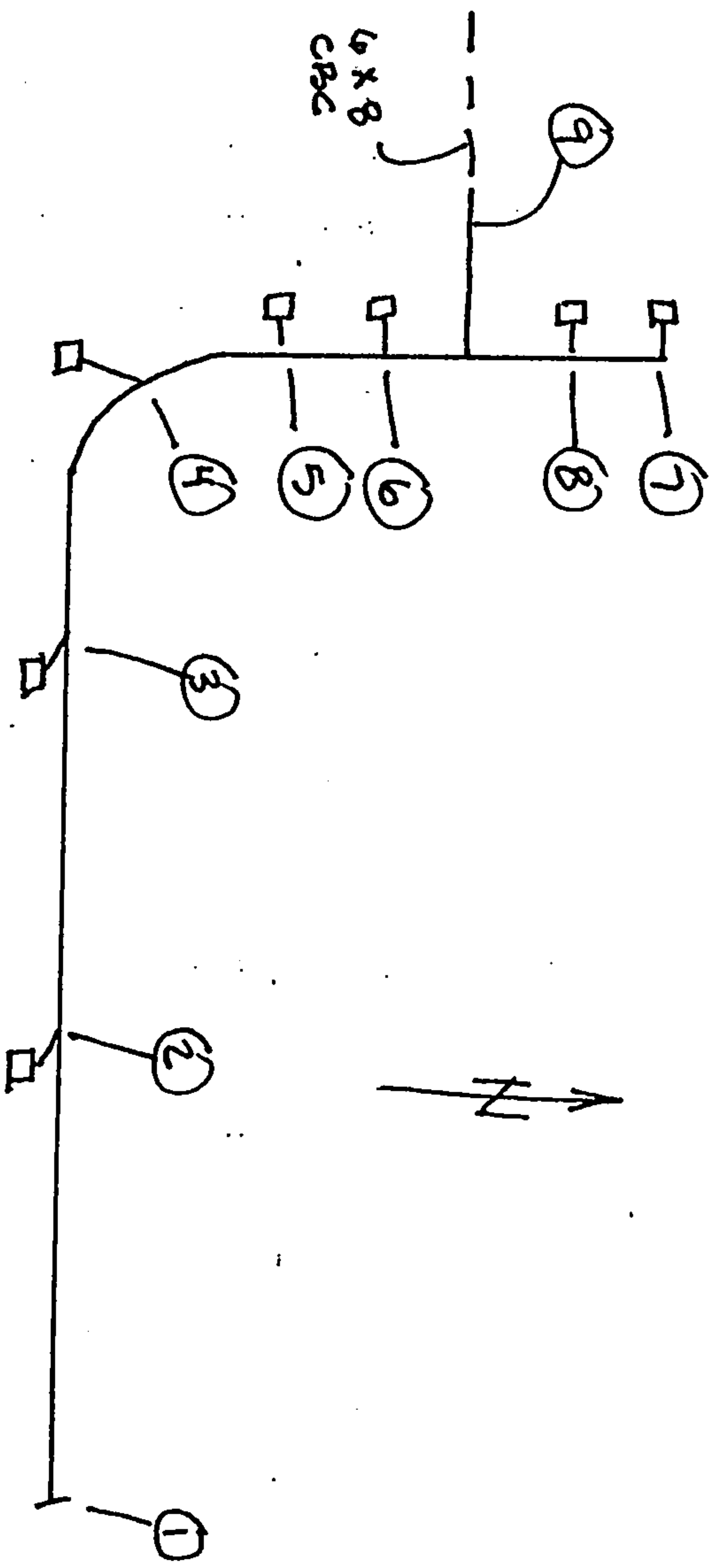




MAP OF PHASE TWO BASINS
FIGURE 6

CALCULATIONS

STORM DRAIN SIZING



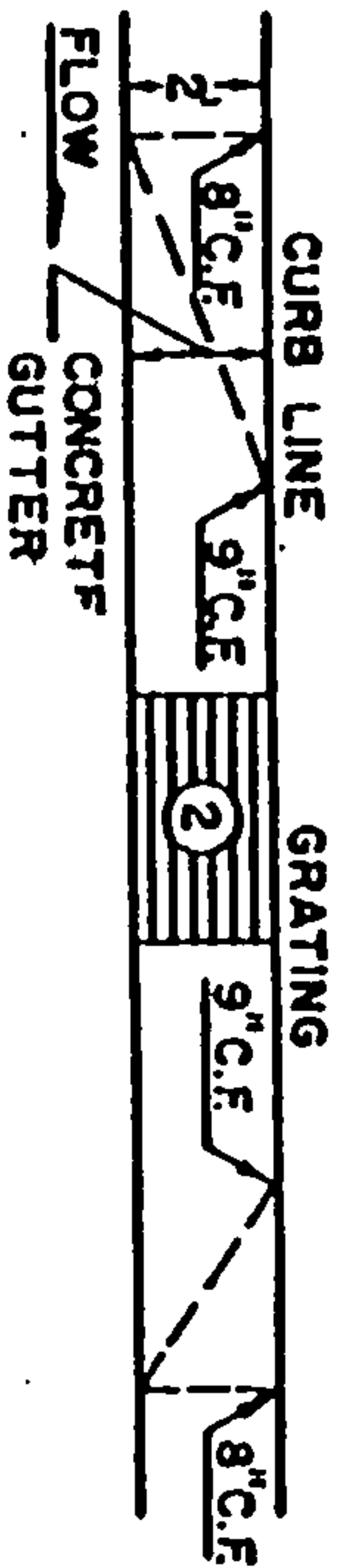
SCHEMATIC

SEWER PIPES

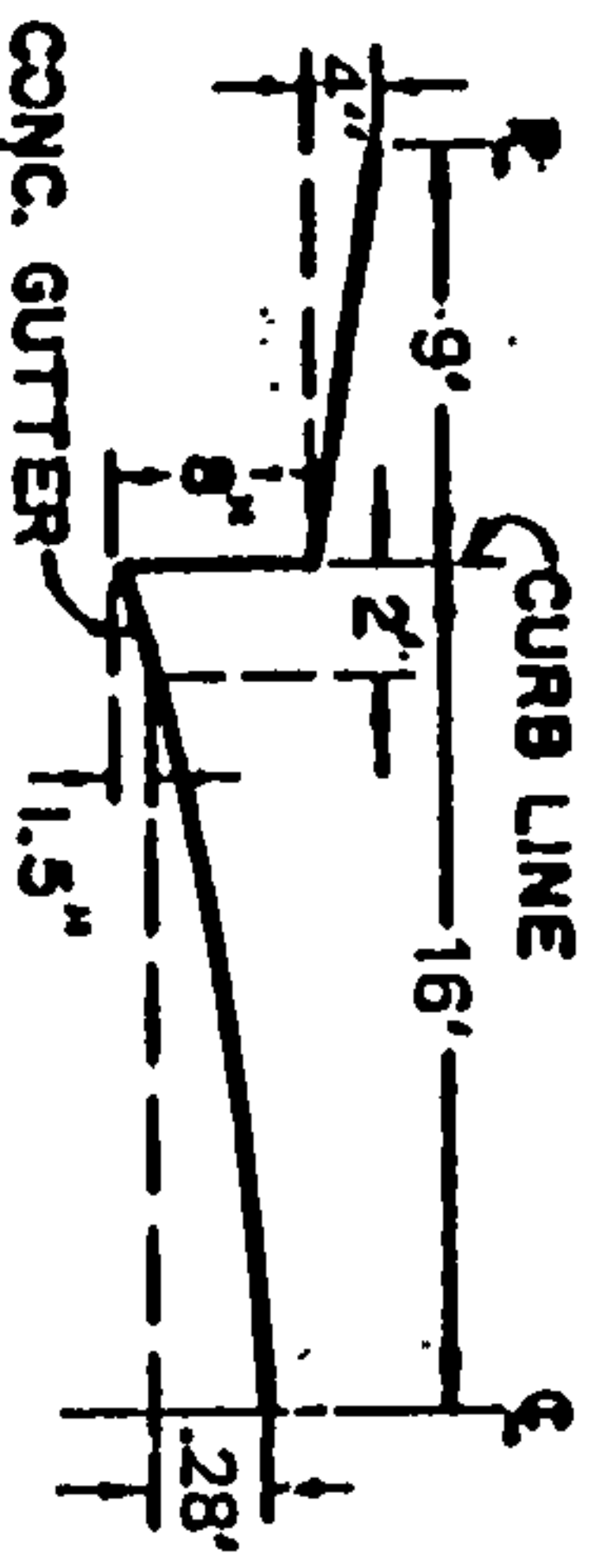
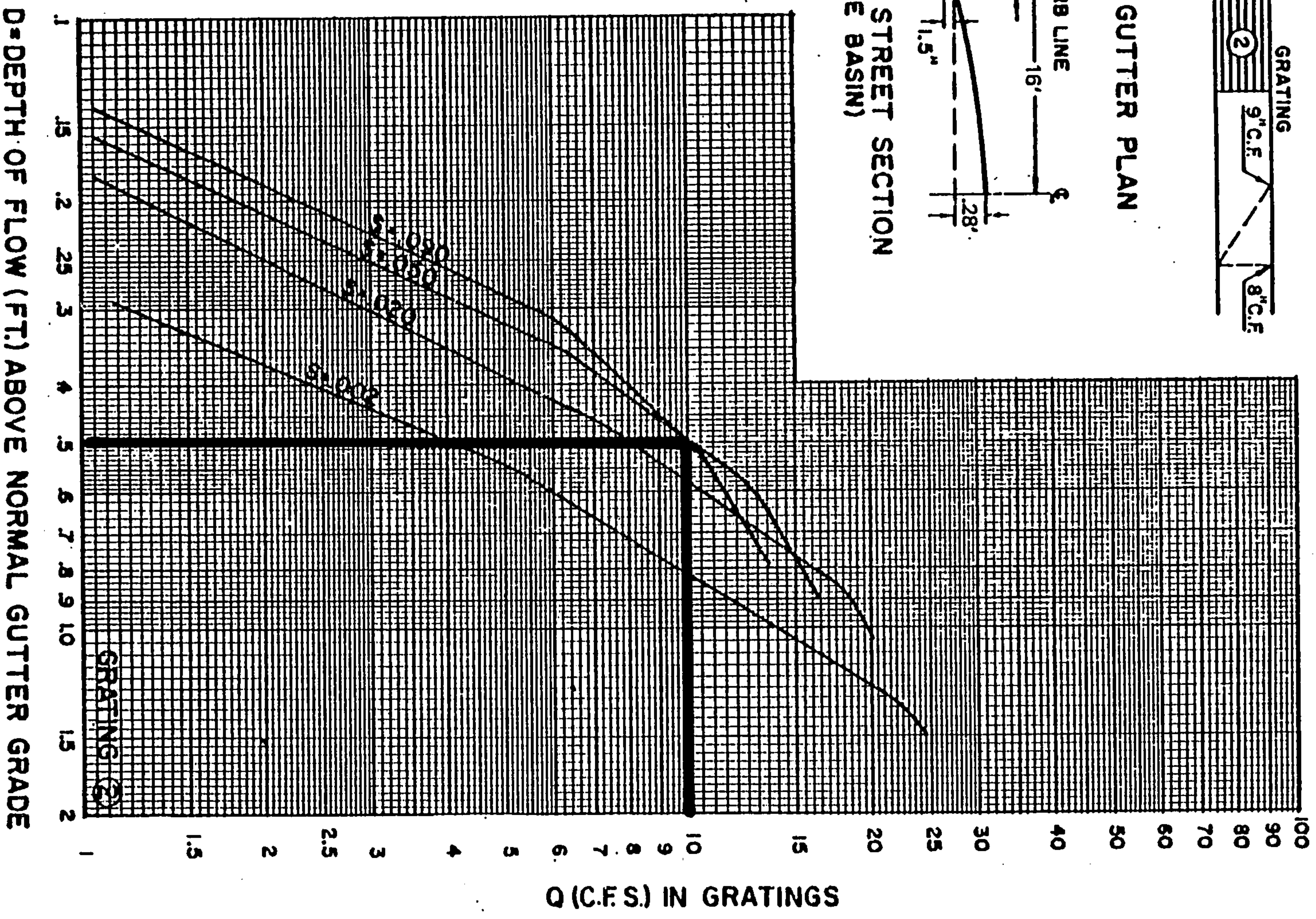
Enter up to 10 pipes.
Enter <Return> only for flowrate and diameter to end.

AP	FLOWRATE (CFS)	DIAMETER (IN)	FRICTION (FT ^{1/6})	SLOPE (%)	VELOCITY (FPS)
1	535.80	56.43	0.0120	5.00	30.85
2	545.80	56.83	0.0120	5.00	30.99
3	555.80	57.22	0.0120	5.00	31.13
4	565.80	65.59	0.0120	2.50	24.11
5	615.80	67.71	0.0120	2.50	24.63
6	665.80	69.72	0.0120	2.50	25.11
7	40.00	26.73	0.0120	1.50	10.27
8	80.00	34.66	0.0120	1.50	12.21
9	745.80	72.75	0.0120	2.50	25.84

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



GRATING & GUTTER PLAN

TYPICAL HALF STREET SECTION
(ABOVE BASIN)

5% SLOPE, 6" CURB, TYPE A INLET
CAPACITY = 10 C.F.S.

SUPPORT- STREAM DRAW E

CAPACITY OF SPECIAL DI

1. CHECK HWY DEPT GRATING CAPACITY CHART

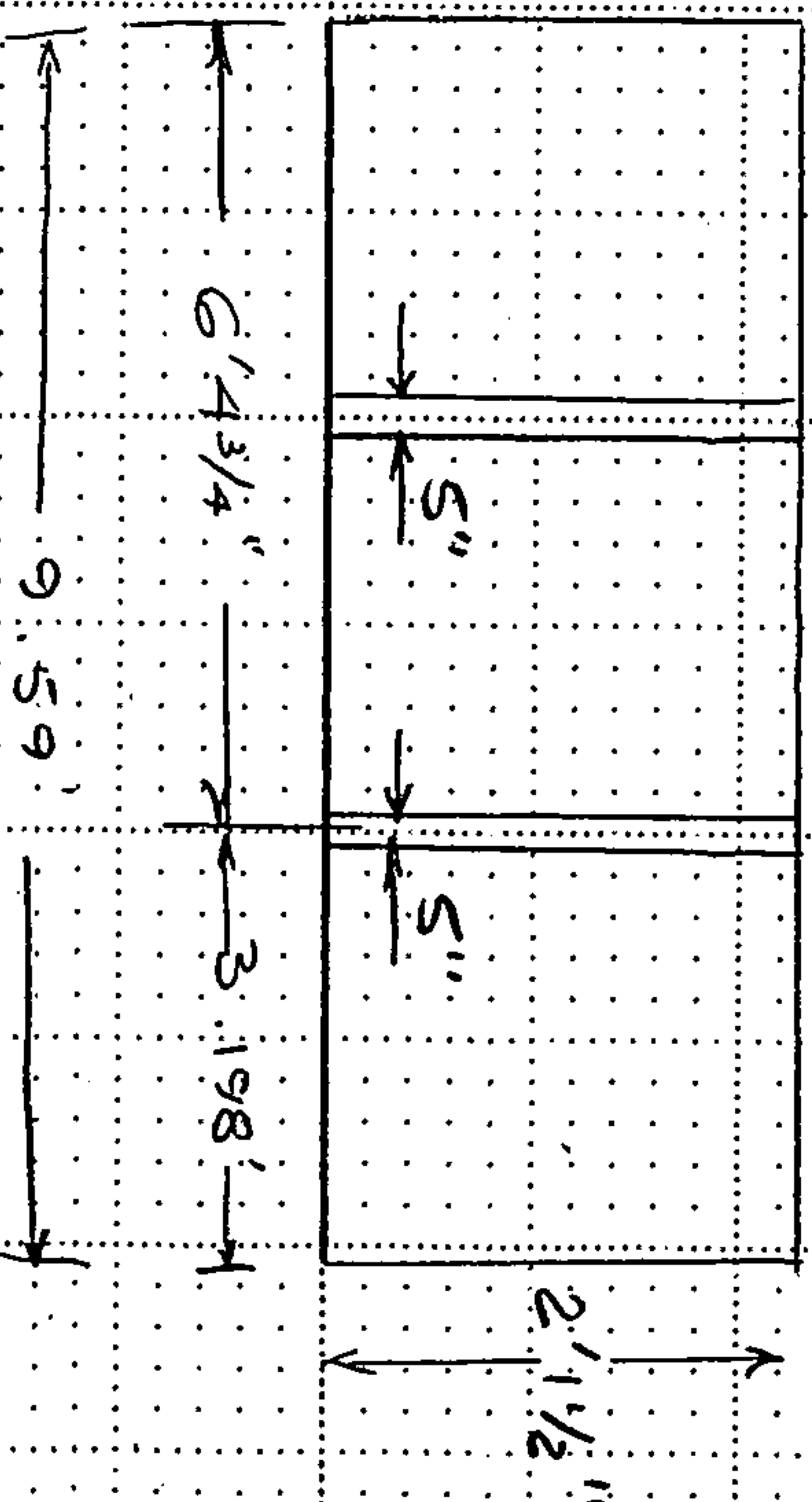
$$q = q \{ d \}$$

PER NMSHTD DESIGN MANUAL FIG 3.09.4F

d = DEPTH OF WATER OVER GRATE (FT.)

q = DISCHARGE PER SQUARE FOOT OF EFFECTIVE
CLEAR OPENING

$$d = 1 \text{ FT}$$



$$(8.76)(2.13) = 18.66 \text{ FT}^2$$

$$\text{AREA OF BARS} = 11(0.04)(8.76) + 7(0.04)(2.125)$$

$$= 4.45 \text{ FT}^2$$

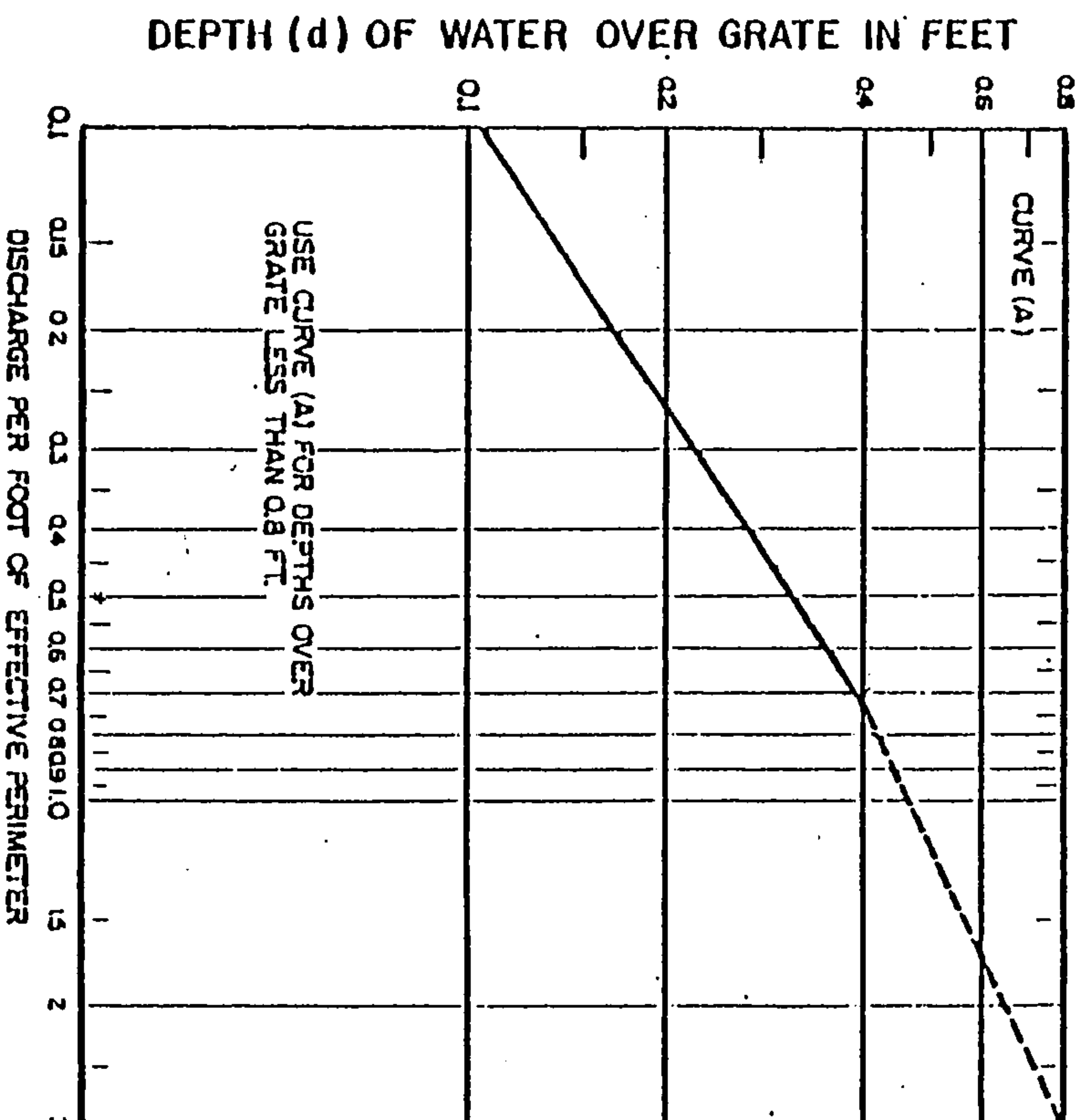
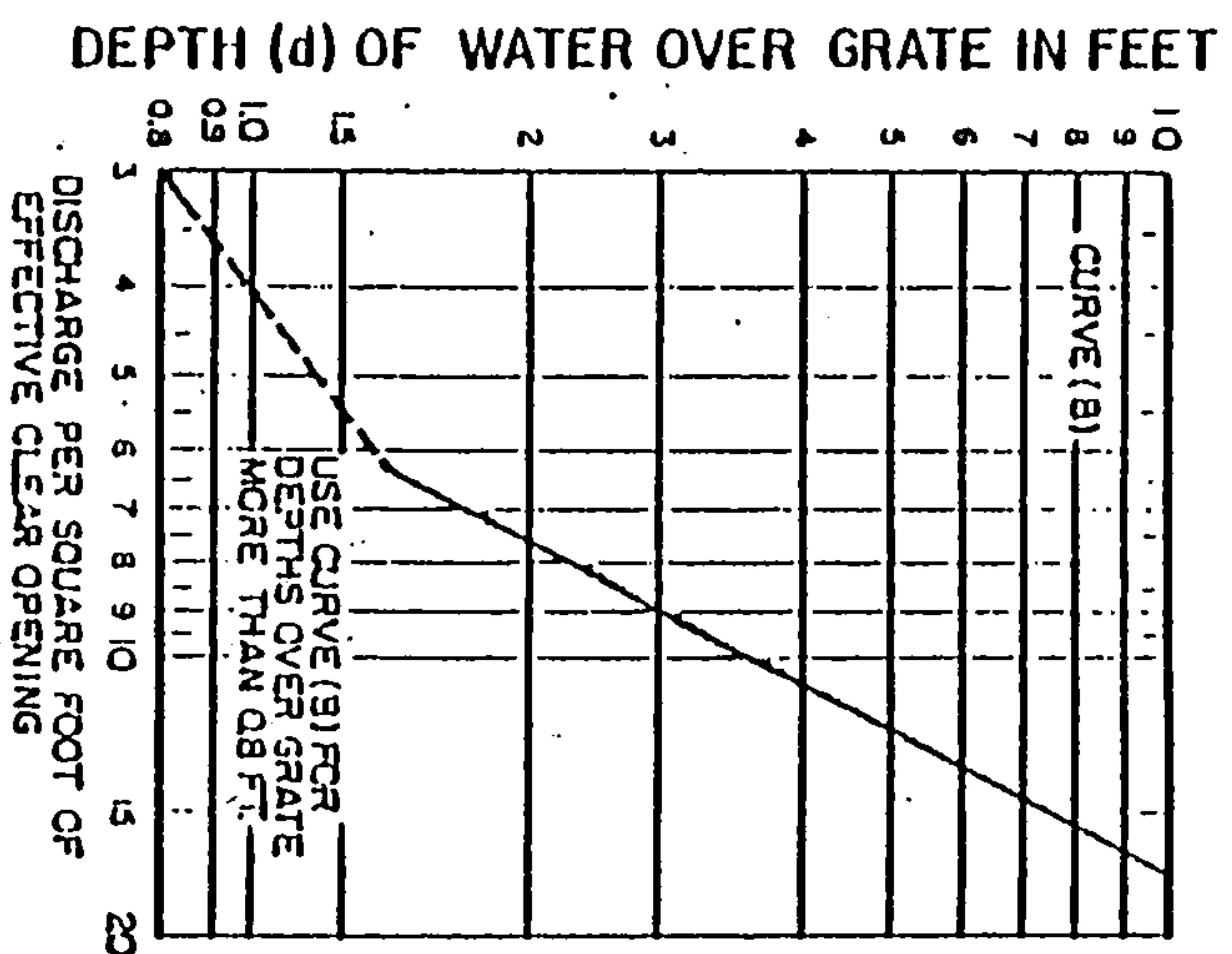
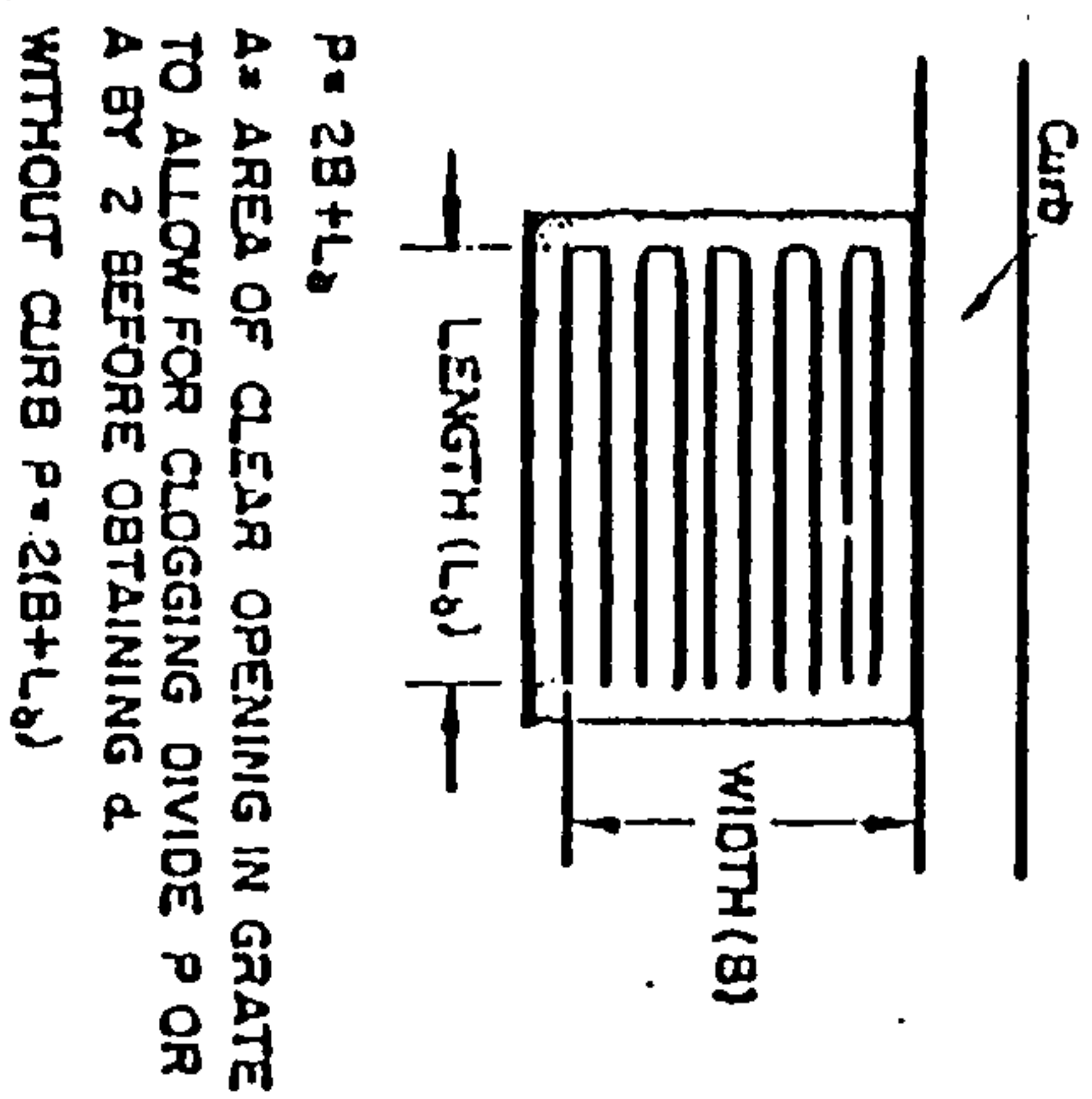
$$A = \text{TOTAL AREA} - \text{AREA OF BARS}$$

$$= 18.66 - 4.45 = 14.21 \text{ FT}^2$$

$$A = 14.21 \text{ FT}^2$$

$$q = q \{ d = 1 \text{ FT} \} = 4 \text{ CFS/FT}^2$$

$$Q = 4 \text{ CFS/FT}^2 (14.21 \text{ FT}^2) = 56.84 \text{ CFS}$$



BUREAU OF PUBLIC ROADS HYDRAULIC CAPACITY OF GRATE
REV. AUG. 1968 INLET IN SUMP

Handwritten note:
Bond
Vot.
Calc. Prior
to BP

PROJECT NAME SUNPOPT PARK

JOB NO. 60039

SUBJECT:

BY _____ CHECKED BY _____ DATE 5-9-97 PAGE 5 OF

PHASE TWO INTERIM PONS AT EAST END
OF SOUTH PL SD:

SIZE POND TO TRAP SEDIMENT + ALLOW DISCHG INTO 60" PCP

DEV : POUT RESERVE TABLE FOR ANY MD

四三二一

QUT

Vol 44

112

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156.

11943

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235.8

2-5150

118

304.15

3.9708

120

360.25

5.5005

122

408.47

7.0225

124

451.59

8.8634

PZ72 AthymD:

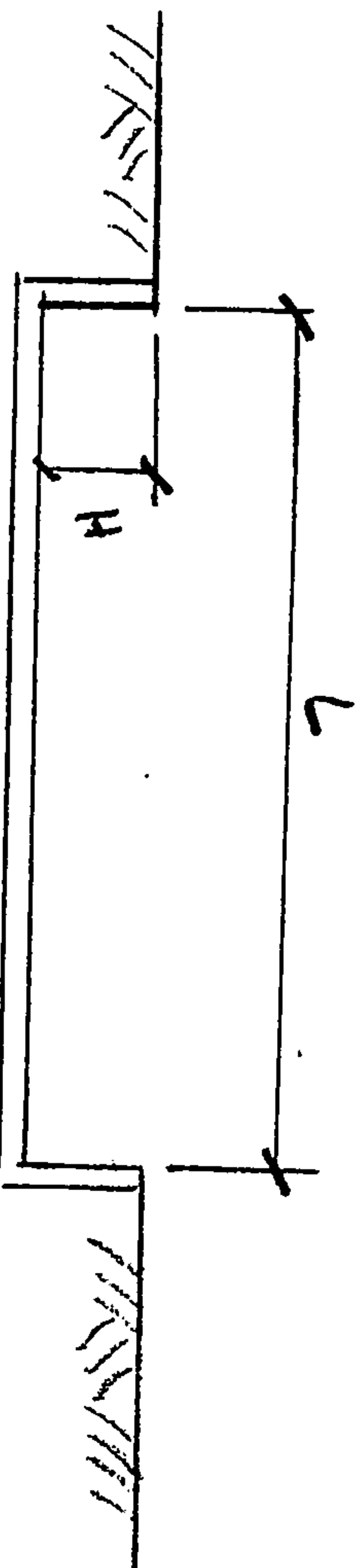
$$Q_{DVT} = 349.0 \text{ cfs}$$
$$V_{OL} = 5.1949 \text{ AF}$$
$$WSE = 119.6$$

PROJECT NAME SUNPOET PARK JOB NO. 6039

SUBJECT _____

BY _____ CHECKED BY _____ DATE 5-9-97 PAGE 6 OF _____

INTERIM PDM OVERFLOW + INLET SPILLWAYS



WEIR SECTION

NTS

DESIGN $Q_{100} = 453.5$ cfs

WEIRS

Enter up to 10 weirs.
Enter <Return> only for flowrate and length to end.

FLOWRATE (CFS)	LENGTH (FT)	COEFF (-)	HEAD (FT)
453.50	34.9	2.500	3.00

PHASE ONE CALCULATIONS

PROJECT NAME SUNPORT PARK

JOB NO. 6039

SUBJECT EROSION SETBACK

BY _____ CHECKED BY _____ DATE 5-9-97 PAGE 1 OF _____

EROSION SETBACK FROM PH 2 APPROX

$$\begin{aligned} Q_{100} (\text{UNDEV}) &= \text{FLOW FROM 2-60" CMPS @ UNIV} \\ &\quad + \text{UNDEV BASIN C} \\ &\quad + \text{UNDEV PHASE 2} \\ Q_{100} (\text{UNDEV}) &= 256.3 + 13.2 + 63.5 \\ &= 333.0 \text{ CFS} \end{aligned}$$

PETE'S SEDIMENT + EROSION GUIDE

$$Q_D = 0.2 Q_{100} = 66.6 \text{ CFS}$$

$$W_D = 4.6 Q_D^{0.4} = 24.7'$$

$$S_G = 0.037 Q_D^{-0.133} = 0.021 < 5$$

$$\Delta_{MAX} = [0.92 + 4.6 \log Q_D] Q_D^{0.4} = 49.9' = BS_B$$

$$CS_B = BS_B + 0.5 W_D = 62.2'$$

PROJECT NAME SUNPORT PARK JOB NO. 6039

SUBJECT AIRCRAFT ROAD INTERIM POND

BY _____ CHECKED BY _____ DATE 5-9-97 PAGE 2 OF _____

PROVIDE INTERIM POND FOR AIRCRAFT AVE
WITHIN TEMP DRAINAGE ESMT:

PER ATYMD 1 DEV BASIN'D

$$Q_{100} = 2.3 \text{ cfs} \quad V_{100} = 0.085 \text{ AF}$$

SIZE POND FOR $V_{10 \text{ DAY}}$

$$\begin{aligned} V_{10 \text{ DAY}} &= V_{100} + A_D (P_{100} - P_{360}) / 12 \\ &= 0.085 + 0.48 (3.95 - 2.35) / 12 \end{aligned}$$

$$= 0.149 \text{ AF}$$

$$= 6490 \text{ CF}$$

PROJECT NAME SUNPORT PARK JOB NO. 6039

SUBJECT _____

BY _____ CHECKED BY _____ DATE 5-9-97 PAGE 3 OF _____

AIRCRAFT AVE CHANNEL w/in PUBLIC
ESMT TO FUTURE SN @ SOUTH PL:

PER ANYWD BASIN 'D'

$Q_{100} = 2.3$ CFS

MAN-MADE CHANNELS

VARIABLES LIST:
Y - FLOW DEPTH
Q - FLOWRATE
B - CHANNEL BOTTOM WIDTH
M - CHANNEL SIDE SLOPE
S - CHANNEL SLOPE
N - CHANNEL ROUGHNESS

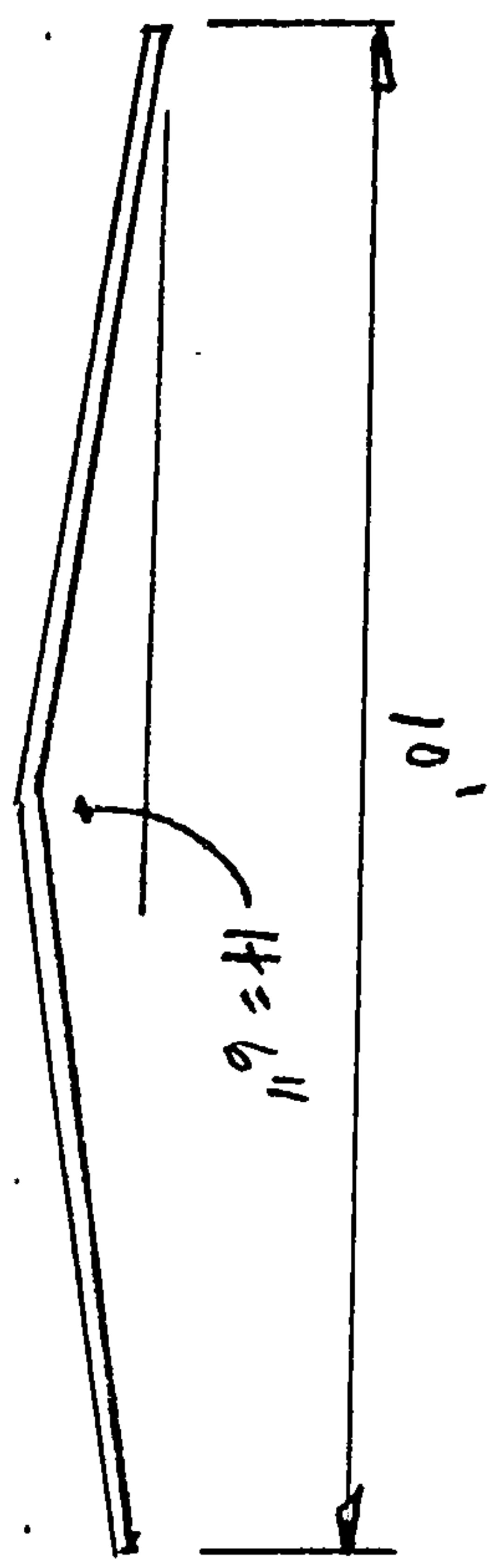
VARIABLE TO BE SOLVED (Y, Q, B, M, S OR N) ? Y

Q (CFS) ? 2.3
B (FT) ? 0
M (FT/FT) ? 10
S (FT/FT) ? .005
N (FT^{1/6}) ? .017

RESULTS
=====

Y=	0.35	FT
A=	1.20	SF
P=	6.97	FT
V=	1.91	PPS
F=	0.81	

SUB-CRITICAL FLOW



SECTION

NTS

PROJECT NAME SUNPORT PARK JOB NO. 6039

SUBJECT _____

BY _____ CHECKED BY _____ DATE 5-9-97 PAGE 4 OF _____

PHASE ONE ROWWAY (CHANNEL) TO
WEST PI STOPP DRAIN

$Q_{100} = \text{PHASE ONE DEV} = 34.8 \text{ CFS}$

VARIABLES LIST:

Y - FLOW ELEVATION Q - FLOWRATE S - CHANNEL SLOPE

VARIABLE TO BE SOLVED (Y, Q OR S) ? Y

Enter up to 20 cross-section points.
Enter <Return> only for distance to end.

Q (CFS) ? 34.8
S (FT/FT) ? .05

CROSS-SECTION POINTS
DIST ELEV COEFF DIST ELEV COEFF

0	100.5	.017			
0	100.0	.017			
24	100.12	.017			
24	100.62	.017			

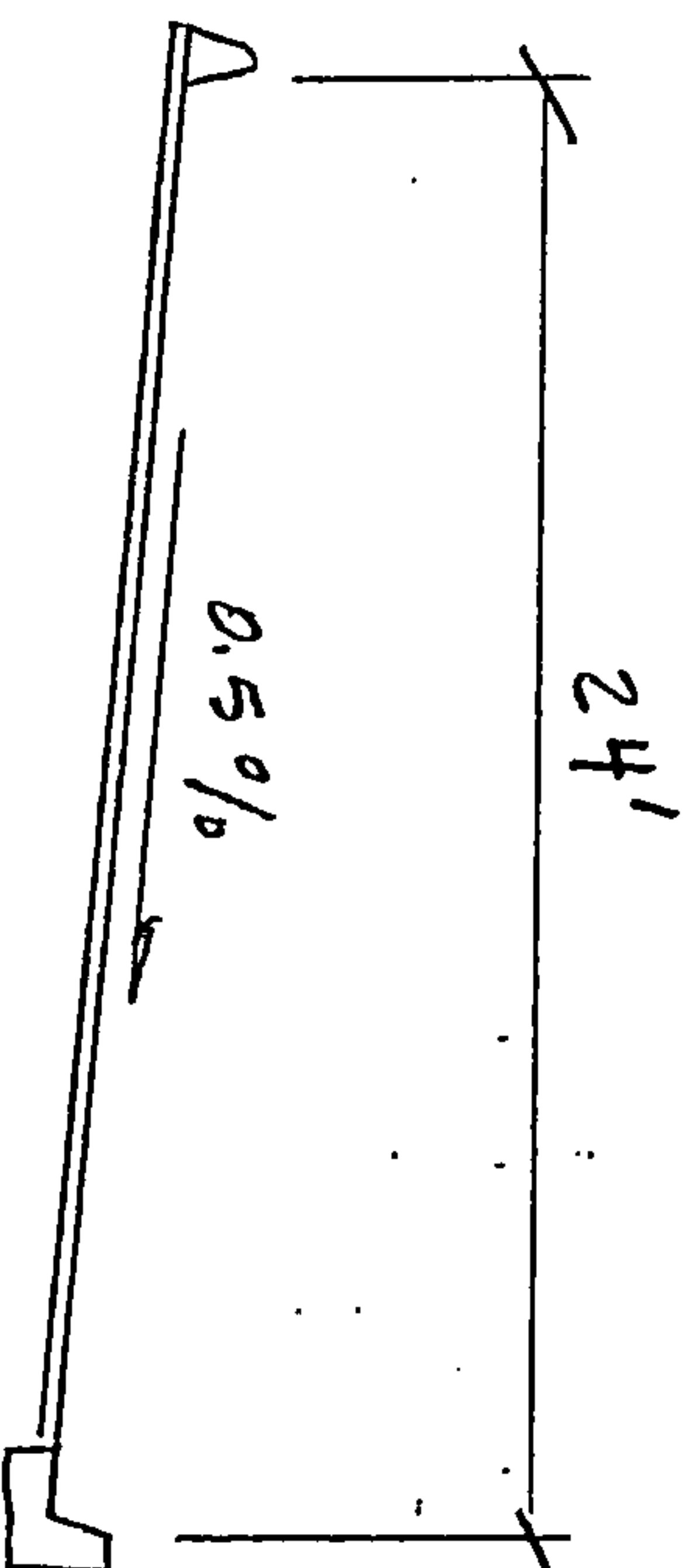
RESULTS

=====

Y=	100.27	FT
A=	5.04	SF
P=	24.42	FT
V=	6.91	FPS
F=	2.66	

=====

SUPER-CRITICAL FLOW



$S = 5\%$
 $n = 0.017$

SECTION

NTS

AIA DMP EXCERPTS

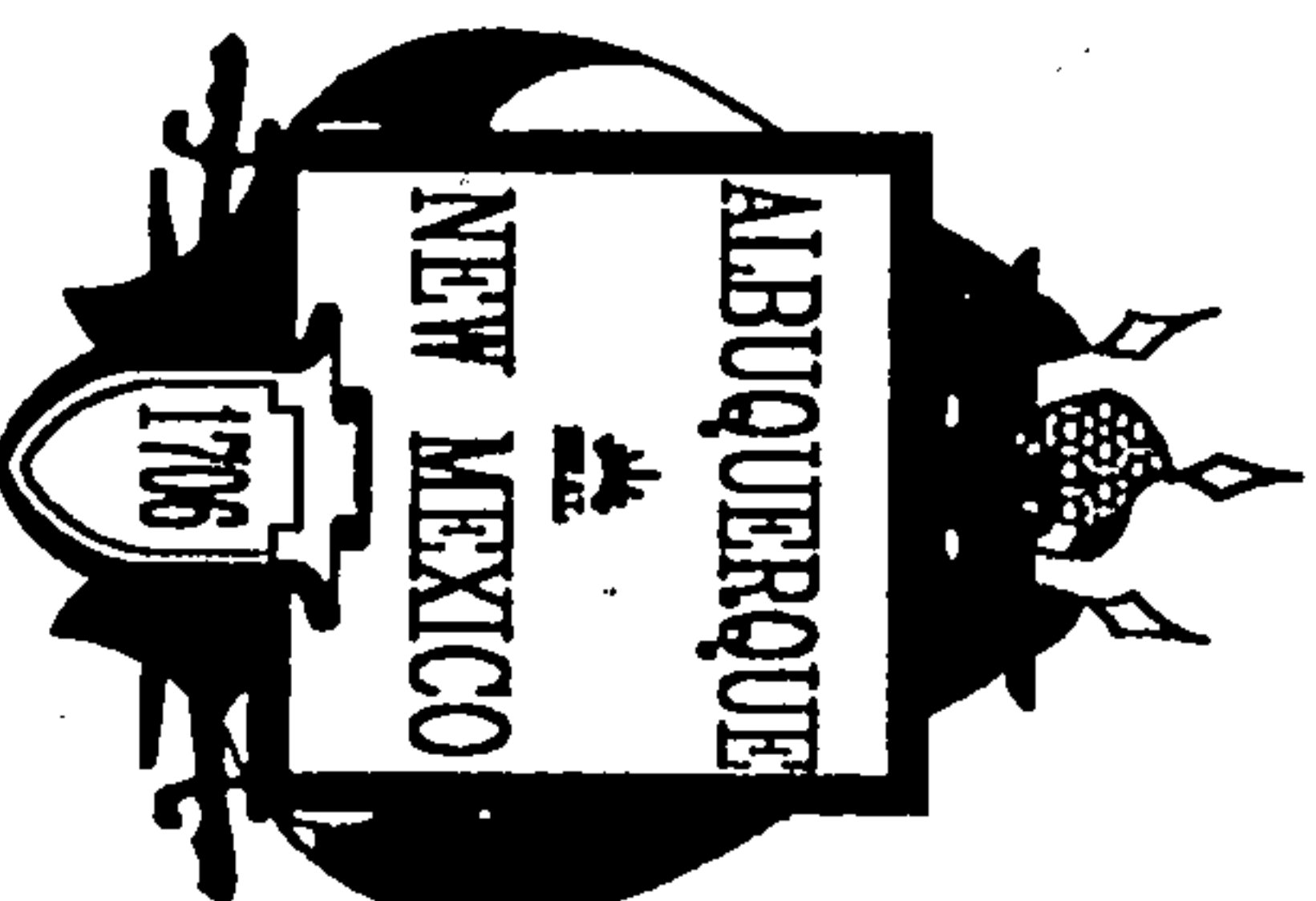
ALBUQUERQUE
INTERNATIONAL AIRPORT

**STORM DRAINAGE
MASTER PLAN**
Project No. 4255.01

City of Albuquerque, NM
Aviation Department

May 1995

(PERTINENT EXCERPTS)



SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
512						2-60" CL V	University crossing
513						surface	E of Univ, S of 8-26 overrun
514						arroyo	W of Univ
515						3-36" CL V	E of I-25
516							I-25
517						3-36" CL V	W of I-25
518						SDC	
Σ	0.3602	149.3	256.3	15.88	28.510	Open Chan.	to South Diversion Channel

G. 35SE Basin. This 0.24 square mile basin includes a small area just east of Runway 17-35. The existing drainage system drains the area only after considerable ponding occurs along Taxiway E and an extension will be constructed to provide additional inlet capacity. This extension (28 cfs capacity) was connected to the existing system. The additional runoff volume generated by the 100 year, 6 hour design storm will be contained in the existing island. The necessary improvements in this basin were made with the Taxiway E construction project.

TABLE III-6
Basin 35SE

SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
601						36" SD	SE cor 17-35/8-26
602						24" SD	SW cor 17-35/8-26
603						18" SD	W of 602
604						42" SD	17-35/3-21/TW E
605						24" SD	W of 17-35
606						24" SD	E of 3-21
607						24" SD	SE end 12-30
608						42" SD	12-30
609						24" SD	S of 12-30, E of 17-35
610						48" SD	E of 17-35
611						48" SD	Escarpment

F. WE Basin. The WE Basin incorporates the area south and west of the existing terminal area with boundaries of Runway 12-30 to the south, Taxiway C to the east, the existing terminal building to the north and its discharge point to the South Diversion Channel to the west.

Changes to the facilities in this basin that are proposed under the Master Plan include the demolition of the old Air Freight Building located within subbasin 505. Extension of the existing storm drain system is recommended to follow the demolition of the building to relieve ponding occurring on the terminal apron between the B and C concourses. The extension of the drain (a 36-inch enlarged to a 42-inch connecting to the existing 60-inch) was planned during the Taxiway E Improvements project. A stub was installed at the 60-inch tee constructed near the northwest corner of Runway 8.

Downstream of the airfield, WE Basin discharges into a rip-rap lined channel and detention pond east of University Blvd. In order to maintain the future flows to near existing conditions, it is recommended that a restrictor plate be installed upstream. A 48-inch equivalent orifice installed at the 60" x 60" x 48" junction near the southwest corner of Runway 8 would help maintain existing conditions.

There is expected to be development west of University Blvd. in the Sunport Business Park, specifically in subbasins 514 and 515. Discussions between the developer and the City indicate that the natural arroyo that carries the basin discharge may be relocated to the south property boundary, approximately on the southern border of subbasins 514 and 515. The channel will run west until it nears Interstate 25 where it will be turned north to discharge through the Interstate at the 6'x 8' concrete box culvert. The future conditions modelling does not indicate the relocation of the arroyo and does not indicate that there will be any capacity problems at the Interstate crossing.

The Table IV-2 indicates the addition of the storm drain into subbasin 504 from the 60-inch drain. There are not any other improvements recommended as far as new drain systems in WE basin.

TABLE IV-2
Improvements to WE Basin

SUBBASIN NO.	PIPE DIAMETER	FLOW, 10 AND 100-YEAR, cfs	COMMENTS
504-505A	36-inch	39.2 (10) 43.4 (100)	Pipe to collect discharge from subbasin 504.
505A-60" tee	42-inch	57.6 (10) 59.0 (100)	Pipe collects NW corner of 505

G. GA Basin. The Master Plan identifies several parcels within the GA Basin which are recommended for development. With these parcels developed, the GA Basin should be

accommodate future, additional flows under the master plan, a portion of the system has been upsized to accept runoff from areas scheduled for future development. The 24" outfall has been replaced with a 60" outfall that is sized to meet master plan requirements. Until the downstream drainage system and the matter of the unplatted arroyo is settled, an orifice plate should be installed to restrict the flow to existing levels. The storage capacity in the islands will be utilized to hold the peak discharge rate that exceeds the capacity of the orifice plate with this stored volume being released after the discharge rate falls below the orifice capacity. This 60" pipe discharges to a rip-rap lined channel that eventually outfalls at the University Boulevard culvert crossing. Several small arroyos within the escarpment area are intercepted by this channel. As a result of this project, the design flow in the channel is 166 cfs. The master plan discharge to be carried by the channel to the crossing is 347 cfs. Under the master plan, the additional runoff volume generated by the 100 year, 6 hour design storm will be contained in the islands.

Currently, subbasin 504, located between concourse C and B, has ponding problems during typical storms. A shallow swale carries the stormwater southwest from this portion of the terminal apron to an inlet and 24" drain in Subbasin 505. The flat grade and resulting shallow depth of the swale do not allow adequate drainage. Concern expressed by the Aviation Department over the life of the pavement with substantial ponding occurring concrete bring this situation up for resolution.

A tee installed during the Taxiway E project near the west end of Runway 8 can be extended to this area. See Section IV for specific details on this improvement.

TABLE III-5
WE Basin

SUB- BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
501	0.0430	77.56	121.58	2.679	4.384	24" SD	N side of 17-35/8-26
502	0.0810	61.20	94.09	4.833	8.001	54" SD	N side 8-26 W of 17-35
503	0.1020	78.32	115.51	6.312	10.348	30" SD	Terminal N ramp
504	0.0220	43.53	66.47	1.550	2.459	Surface	Terminal W ramp
505	0.1480	100.38	139.44	9.460	15.378	60" SD	8-26 W overrun
506	0.2692	159.48	246.62	14.497	24.721	60" SD	8-26 W overrun
507	0.0250	28.65	49.86	1.005	1.892	24" SD 18" SD	SW cor 17-35/8-26
508	0.0770	43.41	69.07	3.335	6.112	48" SD	S side 8-26
509	0.2372	139.91	202.20	13.537	22.713	48" SD	W end 12-30
510	0.2932	168.12	272.60	14.955	25.867	54" SD	S of 8-26 W overrun
511	0.3032	171.55	284.60	15.118	26.305	54" SD 24" SD	W 8-26 overrun, E of Univ

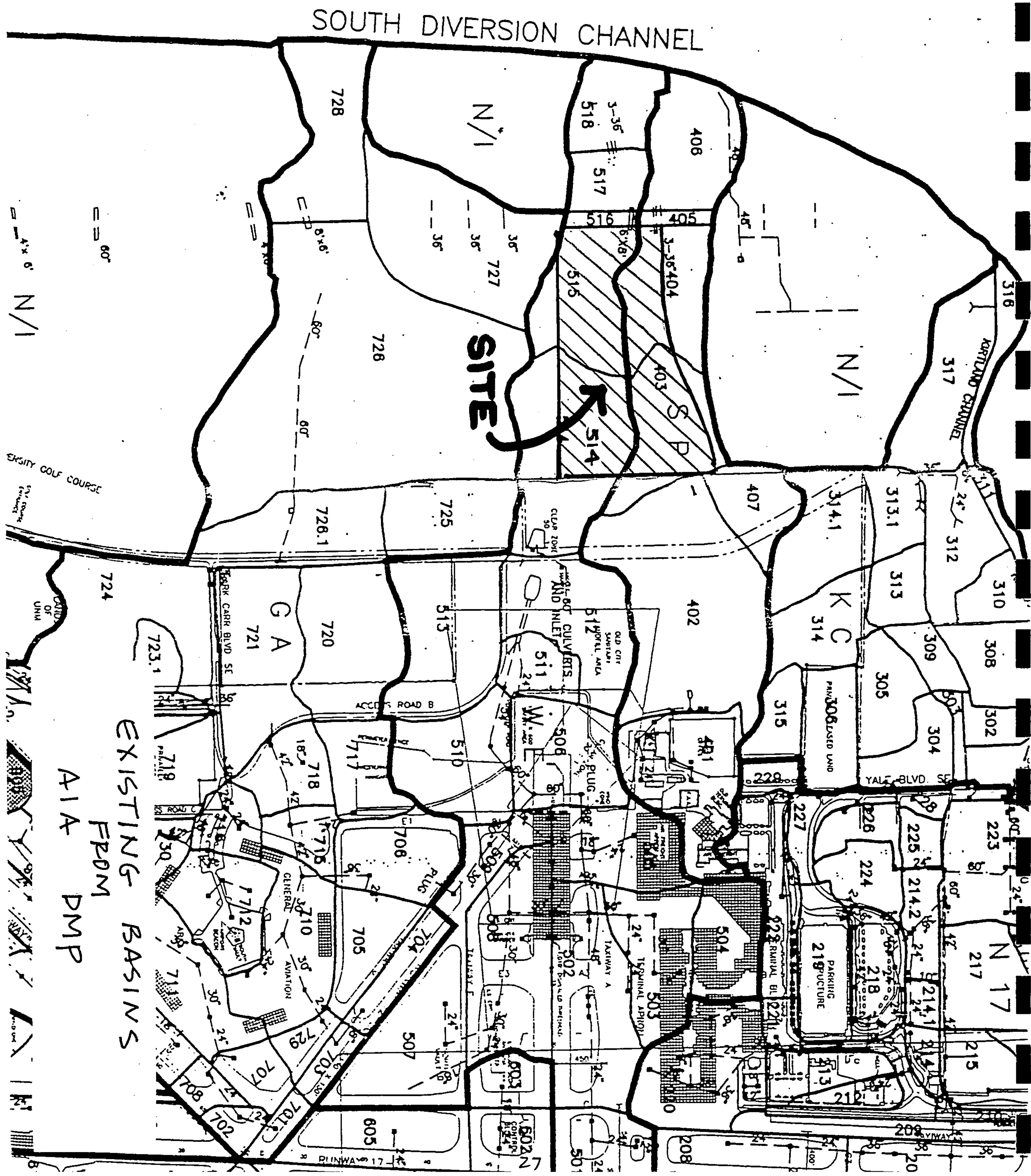
TABLE III-15
Far East Basin

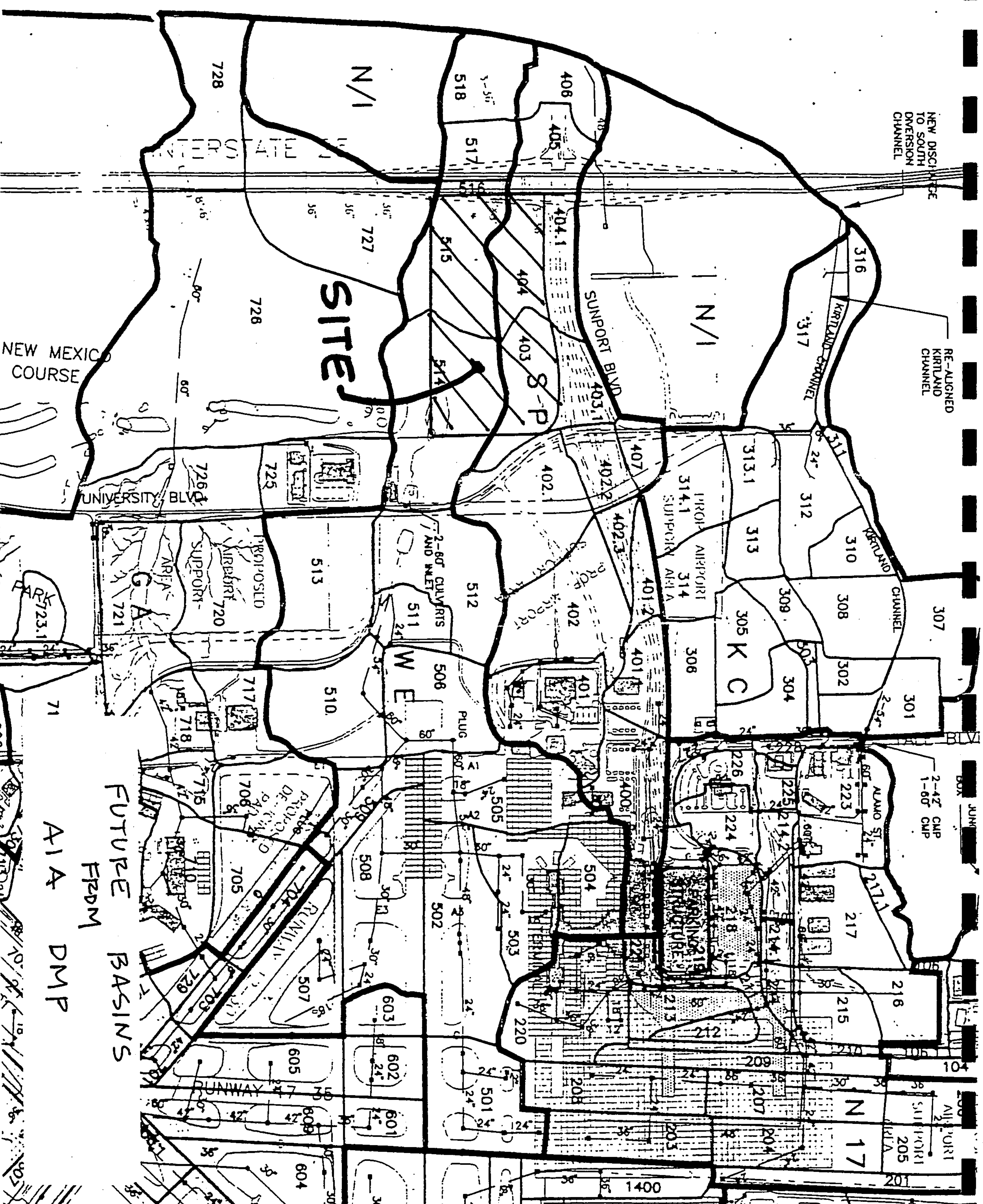
NO. BASIN NO.	AREA (sq. mi.)	Q ₁₀ (cfs)	Q ₁₀₀ (cfs)	V ₁₀ (ac-ft)	V ₁₀₀ (ac-ft)	OFFFALL	DESCRIPTION
1700	0.2260	79.46	153.96	9.261	17.265	30" SD 48" SD	NE of R/W 8-26 end
1701	0.0160	24.24	40.13	0.772	1.363	54" SD	SE of R/W 8-26 end
Σ	0.2420	46.40	96.82	10.03	18.628	54" SD	to KAFB

R. Other Areas. There are numerous other drainage areas which are technically inside the airport property and drain offsite. These areas include those steep slopes along the side of Tijeras Arroyo between the airport and the railroad at the toe of this slope. These areas do not affect airport activities, and in most cases, are not impacted by airport activities. A summary of these drainage areas is shown in the following table.

S. Summary of Existing Area Problems. The following is a summary of the problems encountered in the existing system.

1. **Basin G17.** The storm sewer collecting runoff from the areas around the extreme north end of Runway 17-35 discharges into the storm sewer in Gibson Boulevard. Approximately half way between Yale and Girard and just south of Gibson this sewer makes a 90 degree bend to enter the Gibson system. At this severe bend, water leaves the manhole and floods the surface.
2. **Basin N17.** There are two principal problems in this basin. First, there is a restrictor plate installed in the storm sewer conveying around the terminal building. Second, there is some stormwater exiting the storm sewer just north of the lower parking lot and adjacent to the commercial development areas along Alamo Drive. The restrictor plate was installed to correct the flooding problem at this location.
3. **Basin WE.** The 2-60" culverts under University have a capacity of 100 cfs whereas the existing flows are 370 cfs.
4. **Basin WE.** Subbasin 504, between the B and C Concourses on the terminal apron ponds significantly during typical storms.
5. **Basin GA.** Crossing structures on University Boulevard have inadequate inlet capacities.





site

N/1

8-P

K C

W E

FUTURE BASINS

A1A DMP

FROM

NEW DISCHARGE
TO SOUTH
DIVERSION
CHANNEL

RE-ALIGNMENT
CHANNEL

KIRTLAND CHANNEL

PROPOSED
AIRPORT
SUNPORT AREA

2-42' CMP
1-60' CMP

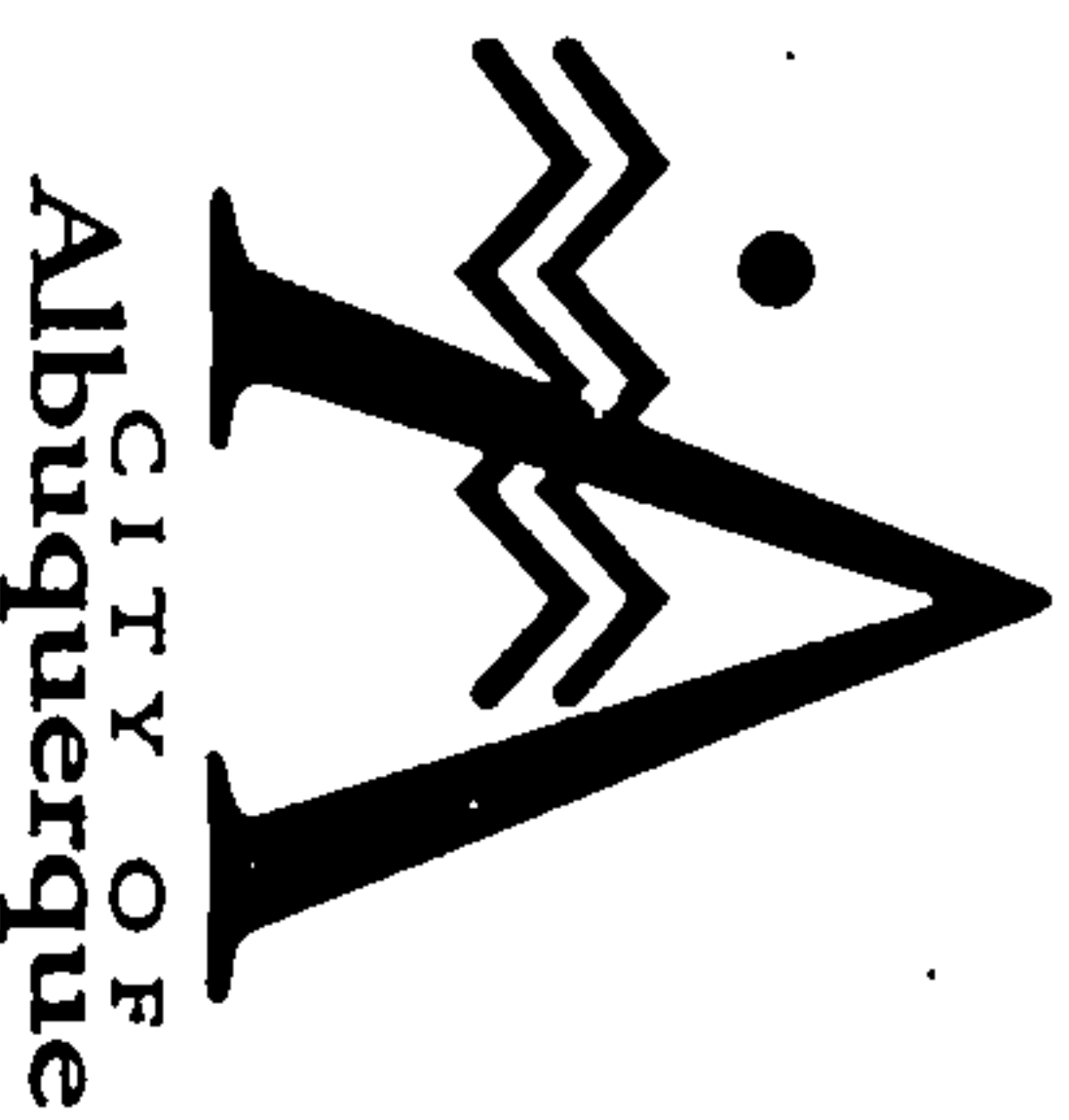
ALAMO ST

SUNPORT
AIRPORT

N 17

1400

PROJECT CORRESPONDENCE



Public Works Department

April 21, 1997

Martin J. Chávez, Mayor

Robert E. Gurrulé, Director

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.
2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

RE: Drainage Report for Parcel 2A, Sunport Park (M15/D23) Submitted for Site
Development Plan for Building Permit Approval, Engineer's Stamp Dated 4/3/97.

Dear Mr. Lorenz:

Prior to approval for Site Development, the drainage report must demonstrate that all of the drainage concepts are feasible. Therefore, prior to approval by the DRB, the following comments must be addressed:

1. Per the drainage ordinance, you must demonstrate the downstream capacity of the system connecting to the box culverts crossing I-25. Downstream of I-25, what is the treatment of this system? You must show that this system is stable and within public drainage easements all the way down.
2. Prior to approval of Phase I, provide a detail showing the outfall connection to the existing box culvert at I-25. This outfall connection must be bonded and constructed with Phase I.
3. At this time, Aircraft Avenue is a public right-of-way. The construction of this road will generate public runoff onto your site. Public waters must be conveyed within public right-of-way or easements, therefore please show how this road runoff will be addressed. You may consider vacating and dedicating this as a private road.
4. The easements required for the storm drain to cross through Tract A-3 must be obtained prior to site plan approval. Otherwise, since the existing arroyo must be intercepted on your property, the proposed detention pond may be moved onto Parcel 2A.
5. Comments from Molzen-Corbin indicate that the fully developed flow over University at the location of the 60" CMPs is 408 cfs, not 256 cfs.

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



Dennis A. Lorenz, P.E.

page 2

April 21, 1997

6. The owners should be made aware that the proposed office building is located within the path of the overflow spillway from the pond on Tract A-2.
7. A temporary easement and a maintenance covenant will be required for the soil cement scour wall.
8. With the addition of the 25 cfs from Phase I into the Sunport storm drain, will the 300 cfs capacity of the 36" culverts at I-25 be exceeded? Demonstrate the routing of these flows prior to work order approval for Phase I. Also, prior to construction, please show that the 4 inlets are above the HGL, assuming the Sunport storm drain is running at the fully developed condition.
9. An analysis will be required for the 90 degree bend in the 42" storm drain and the connection to the detention pond on Tract A-3 prior to approval of Phase 2. Also show how the proposed spillway channel from the pond on Lot 1 will work.
10. A Conditional Letter of Map Revision must be obtained from the Federal Emergency Management Agency (FEMA) prior to approval of Phase 2. The Letter of Map Revision must be obtained prior to release of financial guarantees for this phase.

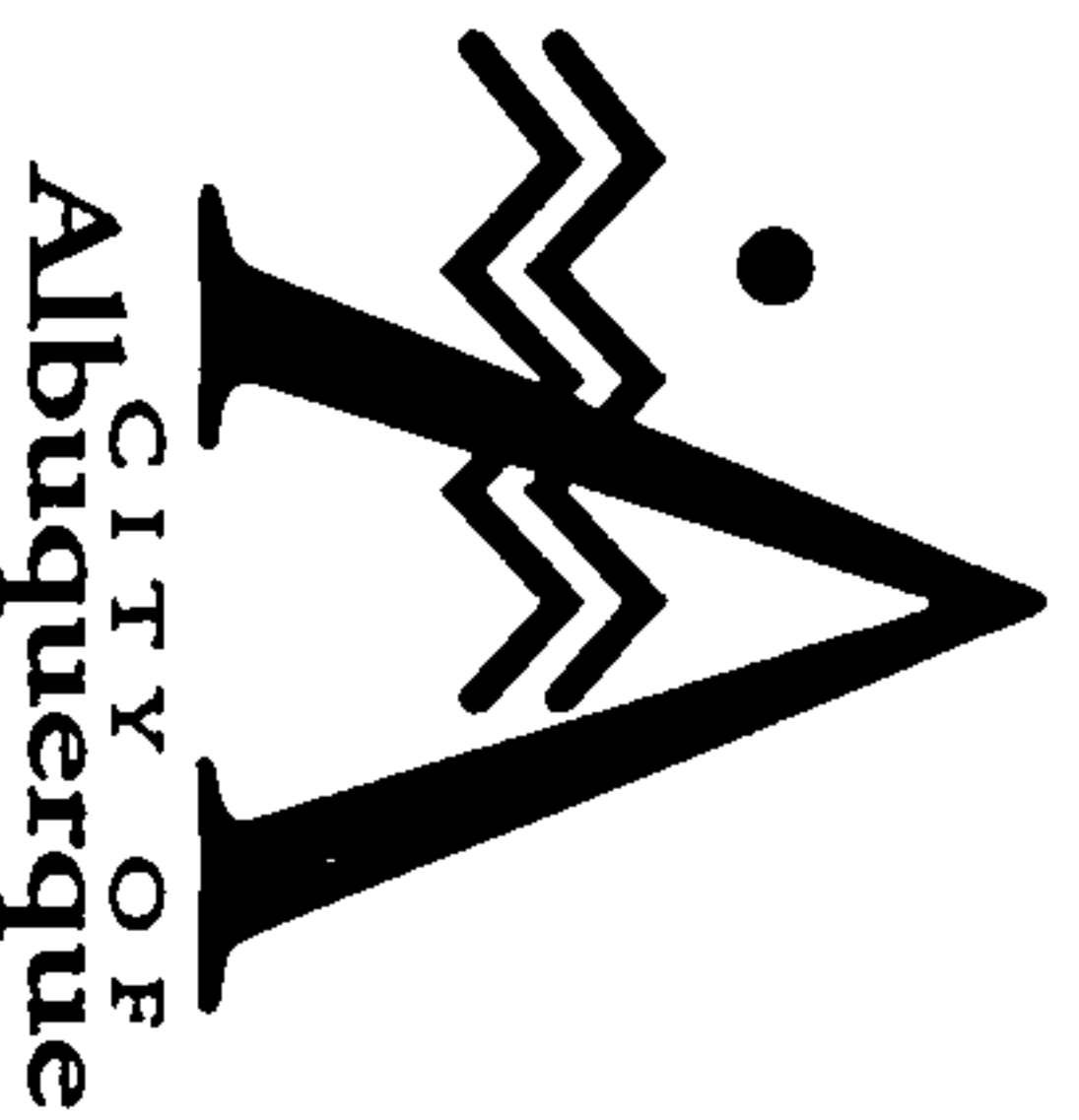
If you should have any questions regarding these comments, please call me at 924-3982.

Sincerely,



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

c: Joyce Battaglia, Owner
File



6039

March 27, 1997

Martin J. Chávez, Mayor

Dennis A. Lorenz, P.E.
Brasher & Lorenz, Inc.

2201 San Pedro NE, Building 1, Suite 210
Albuquerque, New Mexico 87110

**RE: Drainage Report for Parcel 2A, Sunport Park (M15/D23) Submitted for Site
Development Plan for Building Permit Approval, Engineer's Stamp Dated 3/6/97.**

Dear Mr. Lorenz:

Prior to approval for Site Development Plan for Building Permit Approval the following comments must be addressed:

1. Show the limits of the existing FEMA floodplain on the plan. Also plot the erosion setback line. How does the floodplain impact Phase 1? Is the proposed parking lot located within the erosion setback? If so, how do you plan to mitigate this?
2. This development proposes to remove the existing FEMA floodplain and will require a Letter of Map Revision from FEMA.
3. The report is unclear about the allowable runoff entering the existing Sunport Boulevard storm drain system. What is the downstream capacity for this storm drain? Considering the upstream basin to be fully developed, what is the allowable Q from your site?
4. Does the I-25 box culvert at the existing arroyo have limited capacity?
5. Is Tract A-3 part of the proposed development? Is this parcel to be regraded? How do you plan to pick up the runoff from this tract? Easements will be required across this parcel for the proposed drainage improvements. A public drainage easement with an Agreement and Covenant will be required for the proposed pond. It appears that the pond should be relocated to the historic low spot on the parcel.
6. Are inlets provided to intercept the street flows in University and Sunport Boulevard? If not, these may need to be included on the Infrastructure List.

Good for You, Albuquerque!

P.O. Box 1293, Albuquerque, New Mexico 87103



Dennis A. Lorenz, P.E.
page 2

March 27, 1997

7. Your development must address the interim condition as well as the fully developed condition. The information provided from the Molzen-Corbin report is unclear about the runoff from the airport in the interim as opposed to the fully developed condition. Your developed Basins map shows that 256.3 cfs enters the two 60" culverts from the east of your site. The Molzen-Corbin report, however, states that the two 60" culverts under University have a capacity of 100 cfs and the existing flows are 370 cfs. Please clarify. Is another culvert required?

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

Sincerely,



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

c: File

MOLZEN-CORBIN

& Associates



ENGINEERS/ARCHITECTS/PLANNERS

2701 Miles Road Southeast
Albuquerque, New Mexico 87106
Telephone 505-242-5700
Fax 505-242-0673

March 28, 1997

Mr. Fred Aguirre, P.E.
City of Albuquerque
Public Works Department
P.O. Box 1293
Albuquerque, New Mexico 87103

**RE: Sunport Park Drainage
DRB Case 97-119**

ABQ41-11.C01

Dear Mr. Aguirre:

We have been requested by the Aviation Department to review and comment on the Sunport Park Drainage MasterPlan submitted to the City for review. We have reviewed sheet C-2 of the masterplan dated February 25, 1997, and offer the following comments on behalf of the Aviation Department:

1. The drainage boundaries illustrated on the Phase I portion of the proposed development do not agree with the masterplan prepared by Andrews, Asbury and Robert (AAR). The land treatment shown indicates a 100 percent impervious surface. The Sunport system was designed to accept the basin as shown on that masterplan. The AAR masterplan indicated a land treatment consistent with commercial development with a maximum of 90 percent impervious surface. Undetained flow from the system, shown on the current drawing, may exceed the system capacity.
2. The capacity and structural integrity of the 3-36" RCP crossing at I-25 are of concern due to age and condition. Calculations performed during the preparation of the Sunport Boulevard Drainage Report indicate that the capacity of this structure is approximately 300 cfs. This capacity should not be exceeded in order to protect the improvements constructed in the Sunport Boulevard projects.
3. There is not an easement identified for the 42" outfall pipe from the detention pond.
4. A public detention pond is proposed. Who will be responsible for maintenance?

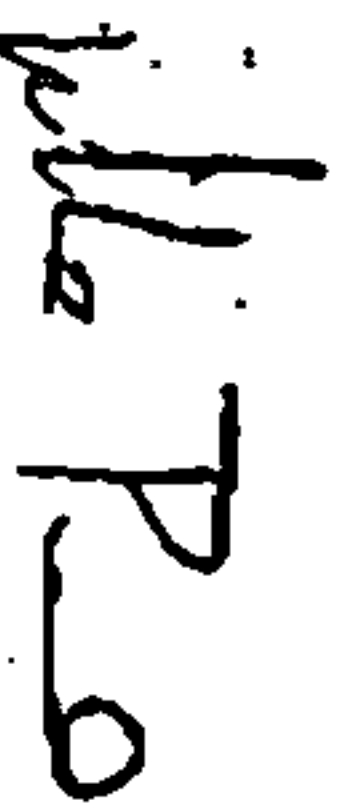
Mr. Fred Aguire, P.E.
March 28, 1997
Page 2

5. Drop inlets are indicated on the north boundary of Phase I. We assume these are intended to catch surface flows. The finished grading shown indicates a slope of approximately 5% with a cross slope. Will the drop inlets be effective in collecting the surface water prior to reaching the western boundary of the development with the cross slope indicated?
6. Will the proposed public detention pond require permitting through the State Engineer's Office?
7. What provisions will be made for an emergency spillway for the proposed pond?

Please accept these comments and questions for the hearing scheduled for Tuesday, April 1, 1997. If you have any questions concerning these comments, please contact the Mr. Dennis Parker, Assistant Director of Aviation, at 842-4366 or me at 242-5700.

Sincerely,

MOLZEN-CORBIN & ASSOCIATES



Mike Provine, P.E.

MP:cvh

cc: Mr. Dennis Parker, AAE, Assistant Director of Aviation

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

April 3, 1997

Susan M. Calongne
City/County Floodplain Administrator
Development and Builders Services Center
Plaza Dei Sol
Public Works Department
Albuquerque, NM 87103

SUBJECT: SUNPORT PARK
(M15/D23)

Dear Susan:

Submitted herewith for review and approval is copy of the revised Drainage Masterplan Plan for the subject project. The Plan has been revised to address the comments listed in your March 27, 1997 letter. Specifically your comments are addressed as follows:

1. The FEMA floodplain limits and erosion setback line are shown on all exhibits as requested. We have modified the parking lot geometry to avoid encroachments into the floodplain. The parking lot will be protected by a soil cement scour wall buried to calculated scour depth per City and AMAFCA criteria. Erosion setback and scour calculations are provided in the report.
2. The Masterplan recommends removal of the mapped floodplain. The project is to be constructed in 2 phases. Phase 1 will be constructed without modification of the floodplain. Upon development of Phase 2 the floodplain will be modified and a LOMR request will be made.
3. Per the Drainage Report for Sunport Boulevard an 18.8 acre basin contributing 85.4 cfs was planned to drain to the Sunport storm drain. This project is proposing a 5.4 developed basin contributing 25.4 cfs to the storm drain. Capacity of the storm drain should not be an issue since the project contributes less than anticipated.
4. Capacity of the I-25 box culvert is estimated at 1212 cfs. The Masterplan proposes a contribution of 387 cfs.
5. Tract A-3 is not a part of this development. The Masterplan recommends regrading of the parcel with Phase 2 construction to

provide a temporary sedimentation pond which is to drain to the Phase 2 storm drain. All easements, covenants and permits required for construction of the storm drains and ponding areas will be provided at the time of Phase 2 development.

We realize that the best position for the proposed Phase 2 detention pond is at the natural low spot on Tract A-3 within the existing floodplain arroyo. However, the developer does not own Tract A-3. The developer does own Lot 1, Cutter Industrial Park, and therefore the detention pond will be constructed there.

No regrading or improvements are proposed or necessary on Tract A-3 for Phase 1 development.

6. The project does not have frontage on University Boulevard and therefore we are not proposing to improve University either by providing street or drainage improvements.

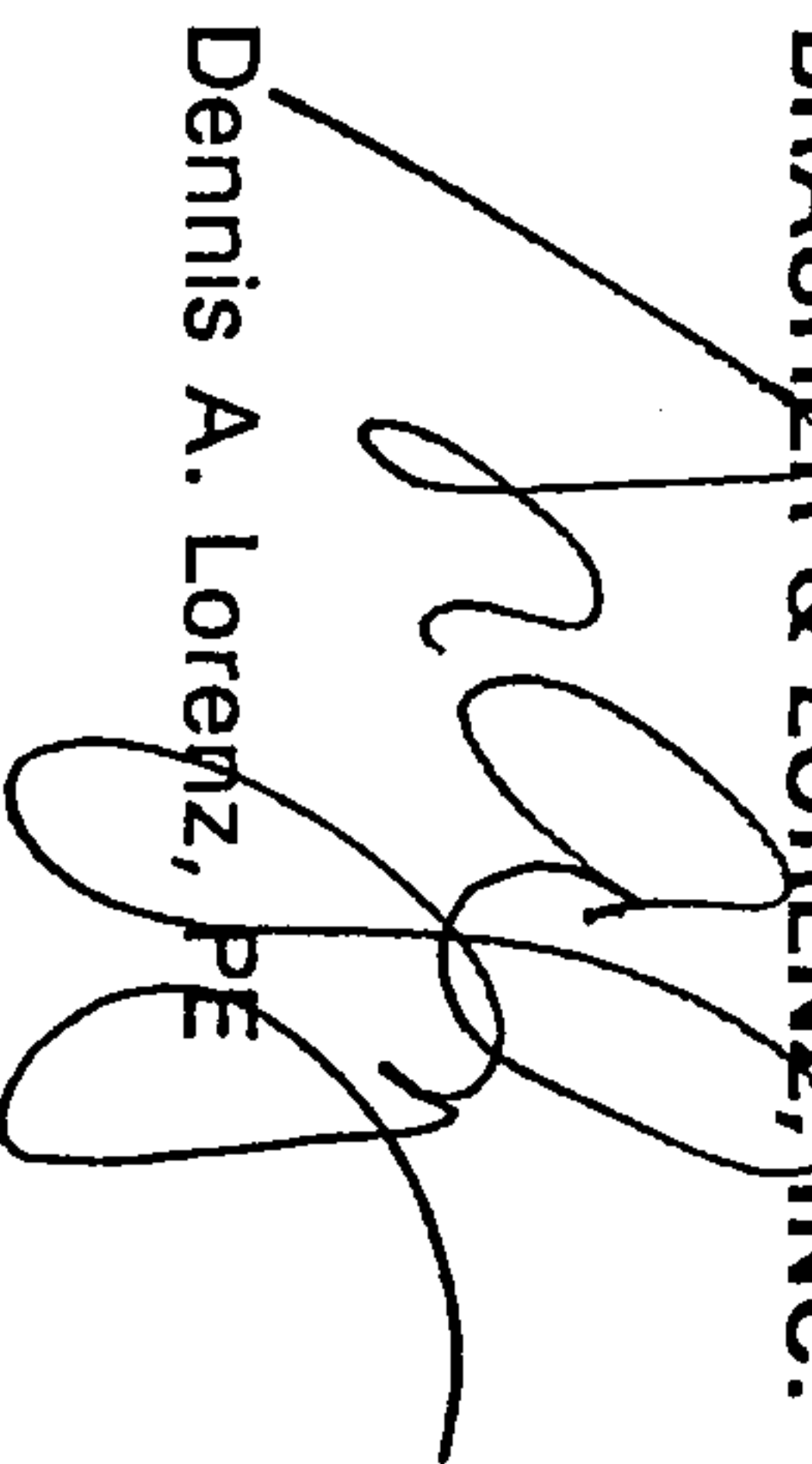
7. Per the Drainage Masterplan prepared by Molzen-Corbin the capacity of the 2-60 inch culverts at University is 256.3 cfs (see AHYMO output files). The 100 cfs capacity reported in the report text is incorrect.

The Masterplan proposes to manage the existing flows entering the site from the east through the existing culverts. Flows exceeding the capacity of the culverts presently pond in a detention area east of University. The developer is proposing to provide the 8 acre foot detention pond on Lot 1, Cutter Industrial Park and the downstream infrastructure required to remove the existing floodplain. Future development of upstream property may require detention ponding.

If you have any questions regarding the submittal package, please call me immediately so that we can address any remaining issues without a re-submittal.

Sincerely,

BRASHER & LORENZ, INC.



Dennis A. Lorenz, PE

/dl/6039
encl

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

2201 SAN PEDRO NE BUILDING 1 SUITE 210 ALBUQUERQUE, NM 87110 PHONE (505) 888-6088 FAX (505) 888-6188

April 3, 1997

Mike Provine
Molzen-Corbin & Associates
2701 Miles Road SE
Albuquerque, NM 87106

SUBJECT: SUNPORT PARK
(M15/D23)

Dear Mr. Provine:

We have received your March 28, 1997 letter via facsimile from Fred Aguirre regarding the subject project. It is my impression that your comments are based on review of sheet C-2 in the Site Development Plan submittal made by Rick Bennett, project Architect. A comprehensive Drainage Masterplan Report was submitted separately to City Hydrology, which is enclosed for your review. The DMP should contain adequate information to address your concerns. Specifically you comments are addressed as follows:

1. Per the Drainage Report for Sunport Boulevard prepared by molzen-Corbin an 18.8 acre basin contributing 85.4 cfs was planned to be intercepted by the Sunport storm drain. This project is proposing a 5.4 acre basin contributing 25.4 cfs. Capacity of the storm drain is not exceeded by this project.
2. All necessary easements will be provided for the storm drains and ponding areas prior to permitting.
3. We are proposing a public detention pond to be maintained by the City of Albuquerque. A public drainage easement and maintenance covenant will be provided per City criteria.
4. As shown by the plan the proposed drop inlet collect flows from a small drainage basin located along the north property line. The bulk of the project acreage is to be collected along the west project boundary and conveyed to the existing 8' x 6' concrete box culvert which drains through I-25 to the South Diversion Channel.
6. The proposed public detention pond is designed to have a maximum

storage of approximately 8 acre feet. The State Engineer will only review runoff impoundments exceeding 10 acre feet.

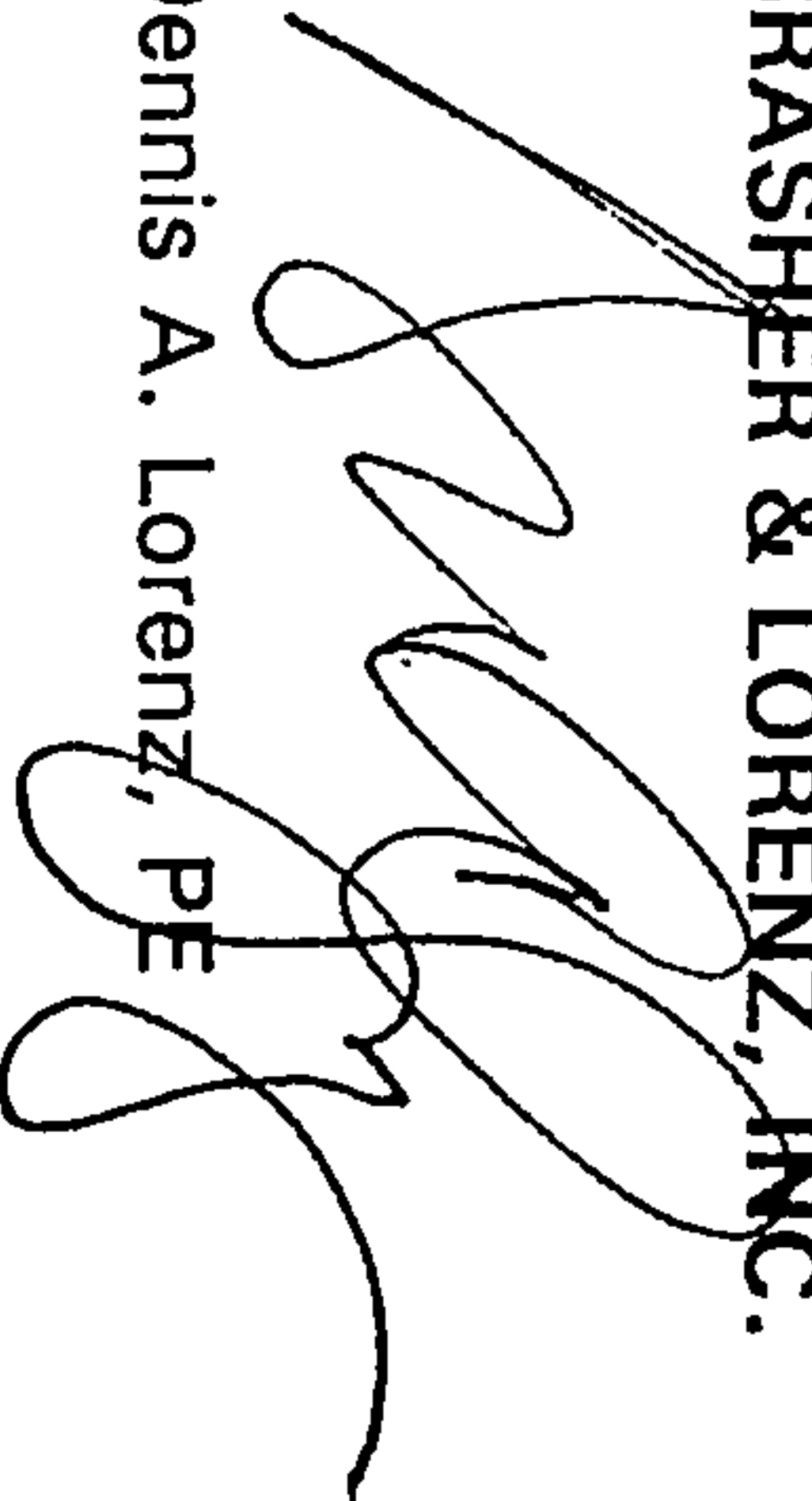
7. An emergency spillway will be provided from the proposed from the north side of the detention pond. Downstream easements and conveyances will be provided per City criteria.

We have made a re-submittal to City Hydrology addressing your comments as well as the City's. At this time we are requesting Site Development Plan approval for the entire project. The project is planned to be constructed in 2 phases. Phase 1 will construct the northern one-half of the project which includes the drop inlets along the north curblin and a short storm drain along the west curblin. The proposed detention pond and downstream storm drain will be constructed with Phase 2. Phase 2 construction will also trigger a LOMR submittal to FEMA removing the arroyo floodplain.

If you have any questions regarding the submittal package, please call.

Sincerely,

BRASHER & LORENZ, INC.



Dennis A. Lorenz, PE

/dl/6039
encl

AHYMO OUTPUT FILES

SUNPORT PARK DMP
AHYMO OUTPUT FILE

AHYMO PROGRAM (AHYMO194) - AMAPCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 05/12/1997
START TIME (HR:MIN:SEC) = 20:45:52 USER NO. = BRASHERE.101
INPUT FILE = 6039-P2.DAT

* SUNPORT PARK
* PROJECT HYDROLOGY

START TIME=0.0 PUNCH CODE=0
RAINFALL TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
RAIN SIX=2.35 RAIN DAY=2.75 DT=0.03333 HRS

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400 HOURS

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.1371	.1840	.2514	.3434	.4644	.6186	.8106
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1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500	

* UNDEVELOPED SITE 48.7 AC
COMPUTE NM HYD ID=1 HYD NO=EX.SITE DA=0.07609 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .158508HR TP = .133300HR K/TP RATIO = 1.189105 SHAPE CONSTANT, N = 2.986142
UNIT PEAK = 160.22 CFS UNIT VOLUME = .9997 B = 280.69 P60 = 2.0100
AREA = .076090 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=20

HYDROGRAPH FROM AREA EX.SITE

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.666	1.7	4.000	.1	5.333	.0

.667 .0 2.000 7.2 3.333 .4 4.666 .0

RUNOFF VOLUME = .53121 INCHES = 2.1557 ACRE-FeET
PEAK DISCHARGE RATE = 76.33 CFS AT 1.533 HOURS BASIN AREA = .0761 SQ. MI.

* UNDEVELOPED BASIN "A" 18.8 AC

COMPUTE NM HYD ID=2 HYD NO=UNDEV.A DA=0.02938 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160154HR TP = .133300HR K/TP RATIO = 1.201459 SHAPE CONSTANT, N = 2.957910
UNIT PEAK = 61.355 CFS UNIT VOLUME = .9995 B = 278.37 P60 = 2.0100
AREA = .029380 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=20

HYDROGRAPH FROM AREA UNDEV.A

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.0	2.666	.7	4.000	.0
.667	.0	2.000	2.8	3.333	.2	4.666	.0

RUNOFF VOLUME = .53121 INCHES = .8324 ACRE-FeET
PEAK DISCHARGE RATE = 29.27 CFS AT 1.533 HOURS BASIN AREA = .0294 SQ. MI.

* UNDEVELOPED BASIN "B" 29.9 AC

COMPUTE NM HYD ID=3 HYD NO=UNDEV.B DA=0.04672 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160154HR TP = .133300HR K/TP RATIO = 1.201459 SHAPE CONSTANT, N = 2.957910
UNIT PEAK = 97.566 CFS UNIT VOLUME = .9996 B = 278.37 P60 = 2.0100
AREA = .046720 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=20

HYDROGRAPH FROM AREA UNDEV.B

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.0	2.666	1.1	4.000	.1
.667	.0	2.000	4.4	3.333	.3	4.666	.0

RUNOFF VOLUME = .53121 INCHES = 1.3236 ACRE-FeET
PEAK DISCHARGE RATE = 46.54 CFS AT 1.533 HOURS BASIN AREA = .0467 SQ. MI.

* UNDEVELOPED BASIN "C" 8.5 AC

COMPUTE NM HYD ID=4 HYD NO=UNDEV.C DA=0.01328 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160154HR TP = .133300HR K/TP RATIO = 1.201459 SHAPE CONSTANT, N = 2.957910
UNIT PEAK = 27.733 CFS UNIT VOLUME = .9992 B = 278.37 P60 = 2.0100
AREA = .013280 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=20

HYDROGRAPH FROM AREA UNDEV.C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.666	.3	4.000	.0
.667	.0	2.000	1.3	3.333	.1		

RUNOFF VOLUME = .53121 INCHES = .3762 ACRE-FEET
PEAK DISCHARGE RATE = 13.23 CFS AT 1.533 HOURS BASIN AREA = .0133 SQ. MI.

* UNDEVELOPED BASIN "D" 0.48 AC

COMPUTE NM HYD ID=5 HYD NO=UNDEV.D DA=0.000753 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160154HR TP = .133300HR K/TP RATIO = 1.201459 SHAPE CONSTANT, N = 2.957910
UNIT PEAK = 1.5725 CFS UNIT VOLUME = .9905 B = 278.37 P60 = 2.0100
AREA = .000753 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=20

HYDROGRAPH FROM AREA UNDEV.D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	.667	.0	1.333	.0	2.000	.1
						2.666	.0

RUNOFF VOLUME = .53121 INCHES = .0213 ACRE-FEET
PEAK DISCHARGE RATE = .76 CFS AT 1.533 HOURS BASIN AREA = .0008 SQ. MI.

* DEVELOPED BASIN "C" 8.5 AC

COMPUTE NM HYD ID=6 HYD NO=DEV.C DA=0.01328 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 44.566 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.0100
AREA = .011288 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 5.2816 CFS UNIT VOLUME = .9980 B = 353.43 P60 = 2.0100
AREA = .001992 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=6 CODE=20

HYDROGRAPH FROM AREA DEV.C

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	8.8	4.000	.2	5.999	.2
.667	.0	2.666	.8	4.666	.2	6.666	.0
1.333	10.7	3.333	.3	5.333	.2		

RUNOFF VOLUME = 1.94031 INCHES = 1.3742 ACRE-PEAT
 PEAK DISCHARGE RATE = 37.44 CFS AT 1.500 HOURS BASIN AREA = .0133 SQ. MI.

* DEVELOPED BASIN "D" 0.48 AC

COMPUTE NM HYD ID=7 HYD NO=DEV.D DA=0.000753 SQ MI
 PER A=0 PER B=0 PER C=0 PER D=100
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 2.9729 CFS UNIT VOLUME = .9955 B = 526.28 P60 = 2.0100
 ARBA = .000753 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=7 CODE=20

HYDROGRAPH FROM AREA DEV.D

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0
.667	.0	2.000	.6	3.333	.0	4.666	.0
						5.999	.0

RUNOFF VOLUME = 2.11537 INCHES = .0850 ACRE-PEAT
 PEAK DISCHARGE RATE = 2.27 CFS AT 1.500 HOURS BASIN AREA = .0008 SQ. MI.

* DEVELOPED BASIN "1" 5.4 AC

COMPUTE NM HYD ID=8 HYD NO=DEV.1 DA=0.008438 SQ MI
 PER A=0 PER B=7 PER C=8 PER D=85
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 28.317 CFS UNIT VOLUME = .9990 B = 526.28 P60 = 2.0100
 ARBA = .007172 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
 UNIT PEAK = 3.3559 CFS UNIT VOLUME = .9965 B = 353.43 P60 = 2.0100
 ARBA = .001266 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=8 CODE=20

HYDROGRAPH FROM AREA DEV.1

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	5.6	4.000	.1	5.999	.2

.667 .0 2.666 .5 4.666 .1 6.666 .0
1.333 6.8 3.333 .2 5.333 .1

RUNOFF VOLUME = 1.94031 INCHES = .8732 ACRE-Feet
PEAK DISCHARGE RATE = 23.79 CFS AT 1.500 HOURS BASIN AREA = .0084 SQ. MI.

* DEVELOPED BASIN #2* 17.1 AC

COMPUTE NM HYD ID=9 HYD NO=DEV.2 DA=0.02672 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 89.668 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0100
ARBA = .022712 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 10.627 CFS UNIT VOLUME = .9992 B = 353.43 P60 = 2.0100
ARBA = .004008 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=9 CODE=20

HYDROGRAPH FROM AREA DEV.2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	17.8	4.000	.4	5.999	.5
.667	.0	2.666	1.6	4.666	.4	6.666	.0
1.333	21.5	3.333	.6	5.333	.4		

RUNOFF VOLUME = 1.94031 INCHES = 2.7650 ACRE-Feet
PEAK DISCHARGE RATE = 75.31 CFS AT 1.500 HOURS BASIN AREA = .0267 SQ. MI.

* DEVELOPED BASIN #3* 21.3 AC

COMPUTE NM HYD ID=10 HYD NO=DEV.3 DA=0.03328 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 111.68 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.0100
ARBA = .028288 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 13.236 CFS UNIT VOLUME = .9995 B = 353.43 P60 = 2.0100
ARBA = .004992 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=10 CODE=20

HYDROGRAPH FROM AREA DEV.3

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
------	------	------	------	------	------	------	------

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	22.2	4.000	.5	5.999	.6
.667	.0	2.666	2.0	4.666	.5	6.666	.0
1.333	26.8	3.333	.7	5.333	.5		

RUNOFF VOLUME = 1.94031 INCHES = 3.4439 ACRE-FEET
 PEAK DISCHARGE RATE = 93.79 CFS AT 1.500 HOURS BASIN AREA = .0333 SQ. MI.

* DEVELOPED BASIN "4" 5.4 AC
 COMPUTE NM HYD ID=11 HYD NO=DEV.4 DA=0.007656 SQ MI
 PER A=0 PER B=7 PER C=8 PER D=85
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 25.692 CFS UNIT VOLUME = .9989 B = 526.28 P60 = 2.0100
 AREA = .006508 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
 UNIT PEAK = 3.0449 CFS UNIT VOLUME = .9961 B = 353.43 P60 = 2.0100
 AREA = .001148 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=11 CODE=20

HYDROGRAPH FROM AREA DEV.4

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	5.1	4.000	.1	5.999	.1
.667	.0	2.666	.5	4.666	.1	6.666	.0
1.333	6.2	3.333	.2	5.333	.1		

RUNOFF VOLUME = 1.94031 INCHES = .7923 ACRE-FEET
 PEAK DISCHARGE RATE = 21.59 CFS AT 1.500 HOURS BASIN AREA = .0077 SQ. MI.

* DEVELOPED OFF-SITE BASIN "WB" AT UNIVERSITY FROM AIA OUTPUT FILE
 STORE HYD ID=12 HYD NO=DEV.WB DT=0.333 HR DA=0.3752 SQ MI
 FLOW RATES= 0 0 0 0 19.9 433.7 332.6 126.5
 33.1 16.8 10.0 6.5 5.0 4.0 3.6 3.4 3.4 3.6
 3.8 2.8 1 .3 .1 0 0 0 0
 PRINT HYD ID=12 CODE=10

HYDROGRAPH FROM AREA DEV.WB

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	3.330	10.0	6.660	1.0		

RUNOFF VOLUME = 1.38919 INCHES = 27.7985 ACRE-FEET
 PEAK DISCHARGE RATE = 433.70 CFS AT 1.665 HOURS BASIN AREA = .3752 SQ. MI.

* ADD DEVELOPED BASINS "C" & "D"

ADD HYD ID=13 HYD NO=DEV.C+D ID I=6 ID II=7
PRINT HYD ID=13 CODE=20

HYDROGRAPH FROM AREA DEV.C+D

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	9.4	4.000	.2	5.999	.3
.667	.0	2.666	.8	4.666	.2	6.666	.0
1.333	11.4	3.333	.3	5.333	.2		

RUNOFF VOLUME = 1.94966 INCHES = 1.4592 ACRE-FEET
PEAK DISCHARGE RATE = 39.71 CFS AT 1.500 HOURS BASIN AREA = .0140 SQ. MI.

* ADD DEVELOPED BASIN "WB" TO DEV.C+D
ADD HYD ID=14 HYD NO=POND.IN ID I=12 ID II=13
PRINT HYD ID=14 CODE=20

HYDROGRAPH FROM AREA POND.IN

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	340.9	4.000	5.2	5.999	4.0
.667	.0	2.666	33.8	4.666	3.8	6.666	1.0
1.333	32.8	3.333	10.3	5.333	3.6		

RUNOFF VOLUME = 1.40933 INCHES = 29.2562 ACRE-FEET
PEAK DISCHARGE RATE = 453.47 CFS AT 1.667 HOURS BASIN AREA = .3892 SQ. MI.

* ROUT BASINS "C" & "WB" THRU POND WITH 60" OUTLET
ROUTE RESERVOIR ID=15 HYD NO=POND.OUT INFLOW ID=14 CODE=5
OUTFLOW (CFS) STORAGE(AF) ELBV (FT)

0	0	112
136.1	1.1943	114
235.8	2.5150	116
304.15	3.9708	118
360.25	5.5005	120
408.47	7.0225	122
451.59	8.8634	124

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	112.00	.000	.00
.17	.00	112.00	.000	.00
.33	.00	112.00	.000	.00
.50	.00	112.00	.000	.00
.67	.00	112.00	.000	.00
.83	.00	112.00	.000	.00
1.00	.05	112.00	.000	.01
1.17	10.13	112.07	.044	4.98
1.33	32.78	112.27	.162	18.47
1.50	268.19	114.15	1.292	143.46
1.67	453.47	117.15	3.350	275.01

1.83	395.67	119.18	4.876	337.36
2.00	340.89	119.59	5.188	348.80
2.17	232.62	118.66	4.473	322.58
2.33	127.92	116.56	2.924	254.98
2.50	80.41	114.47	1.504	159.50
2.67	33.81	113.13	.673	76.69
2.83	25.42	112.57	.338	38.47
3.00	17.19	112.35	.211	24.00
3.17	13.69	112.25	.148	16.86
3.33	10.26	112.19	.111	12.63
3.50	8.48	112.14	.087	9.87
3.67	6.72	112.12	.069	7.89
3.83	5.96	112.10	.058	6.58
4.00	5.20	112.08	.050	5.71
4.17	4.70	112.07	.044	5.06
4.33	4.20	112.07	.040	4.52
4.50	4.00	112.06	.037	4.17
4.67	3.80	112.06	.035	3.94
4.83	3.70	112.06	.033	3.78
5.00	3.61	112.05	.032	3.67
5.17	3.61	112.05	.032	3.63
5.33	3.62	112.05	.032	3.62
5.50	3.73	112.05	.032	3.68
5.67	3.84	112.06	.033	3.77
5.83	3.95	112.06	.034	3.88
6.00	4.04	112.06	.035	3.98
6.17	3.39	112.05	.033	3.72
6.33	2.80	112.05	.028	3.16
6.50	1.88	112.04	.021	2.42
6.67	.99	112.02	.014	1.55
6.83	.64	112.01	.008	.93
7.00	.30	112.01	.005	.53
7.17	.20	112.00	.003	.29
7.33	.00	112.00	.001	.15
7.50	.00	112.00	.000	.03
7.67	.00	112.00	.000	.01
7.83	.00	112.00	.000	.00

PEAK DISCHARGE = 349.043 CFS - PEAK OCCURS AT HOUR 1.97
MAXIMUM WATER SURFACE ELEVATION = 119.600
MAXIMUM STORAGE = 5.1949 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=15 CODE=2

HYDROGRAPH FROM AREA POND.OUT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.600	230.5	3.200	15.9	4.800	3.8	6.399	2.9
.067	.0	1.667	275.0	3.266	14.2	4.866	3.8	6.466	2.6
.133	.0	1.733	311.0	3.333	12.6	4.933	3.7	6.533	2.2
.200	.0	1.800	330.6	3.400	11.3	4.999	3.7	6.599	1.9
.267	.0	1.866	342.4	3.466	10.3	5.066	3.6	6.666	1.5
.333	.0	1.933	348.1	3.533	9.4	5.133	3.6	6.733	1.3
.400	.0	2.000	348.8	3.600	8.6	5.199	3.6	6.799	1.0
.467	.0	2.066	343.4	3.666	7.9	5.266	3.6	6.866	.8
.533	.0	2.133	331.0	3.733	7.3	5.333	3.6	6.933	.7
.600	.0	2.200	312.9	3.800	6.8	5.399	3.6	6.999	.5
.667	.0	2.266	286.7	3.866	6.4	5.466	3.7	7.066	.4
.733	.0	2.333	255.0	3.933	6.0	5.533	3.7	7.133	.3
.800	.0	2.400	217.1	4.000	5.7	5.599	3.7	7.199	.3

.867	.0	2.466.	176.8	4.066	5.4	5.666	3.8	7.266	.2
.933	.0	2.533	143.7	4.133	5.2	5.733	3.8	7.333	.2
1.000	.0	2.600	107.3	4.200	4.9	5.799	3.9	7.399	.1
1.067	1.0	2.666	76.7	4.266	4.7	5.866	3.9		
1.133	3.5	2.733	55.7	4.333	4.5	5.933	3.9	7.466	.0

SUNPORT PARK - PHASE ONE

AHYMO OUTPUT FILE

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 05/12/1997
START TIME (HR:MIN:SEC) = 21:10:10
INPUT FILE = 6039-P1.DAT
USER NO. = BRASHERRE.101

SUNPORT PARK
PROJECT HYDROLOGY

START TIME=0.0 PUNCH CODE=0
TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
RAIN FALL RAIN SIX=2.35 RAIN DAY=2.75 DT=0.03333 HRS

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0016	.0033	.0049	.0066	.0084	.0102
.0120	.0139	.0158	.0178	.0199	.0219	.0241
.0263	.0286	.0309	.0333	.0358	.0384	.0411
.0439	.0467	.0497	.0529	.0561	.0596	.0631
.0669	.0709	.0751	.0807	.0866	.0930	.1066
.1371	.1840	.2514	.3434	.4644	.6186	.8106
1.0449	1.2624	1.3533	1.4300	1.4982	1.5602	1.6174
1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500	

* UNDEVELOPED PHASE ONE 7.9 AC
COMPUTE NM HYD ID=1 HYD NO=EX.PH1 DA=0.01234 SQ MI
PFR A=100 PFR B=0 PFR C=0 PFR D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160154HR TP = .133300HR K/TP RATIO = 1.201459 SHAPE CONSTANT, N = 2.957910
UNIT PEAK = 25.770 CFS UNIT VOLUME = .9992 B = 278.37 P60 = 2.0100
ARBA = .012340 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBR METHOD - DT = .033330

PRINT HYD ID=1 CODE=20
HYDROGRAPH FROM ARBA EX.PH1

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.0	2.666	.3	4.000	.0

.667 .0 2.000 1.2 3.333 .1

RUNOFF VOLUME = .53121 INCHES = .3496 ACRE-FEET
PEAK DISCHARGE RATE = 12.30 CFS AT 1.533 HOURS BASIN AREA = .0123 SQ. MI.

* UNDEVELOPED BASIN "D" 0.48 AC

COMPUTE NM HYD ID=2 HYD NO=UNDEV.D DA=0.000753 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160154HR TP = .133300HR K/TP RATIO = 1.201459 SHAPE CONSTANT, N = 2.957910
UNIT PEAK = 1.5725 CFS UNIT VOLUME = .9905 B = 278.37 P60 = 2.0100
ARBA = .000753 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=2 CODE=20

HYDROGRAPH FROM AREA UNDEV.D

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	.667	.0	1.333	.0	2.000	.1
						2.666	.0

RUNOFF VOLUME = .53121 INCHES = .0213 ACRE-FEET
PEAK DISCHARGE RATE = .76 CFS AT 1.533 HOURS BASIN AREA = .0008 SQ. MI.

* DEVELOPED PHASE ONE 7.9 AC

COMPUTE NM HYD ID=3 HYD NO=DEV.PH1 DA=0.01234 SQ MI
PER A=0 PER B=7 PER C=8 PER D=85
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 41.411 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 2.0100
ARBA = .010489 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .118945HR TP = .133300HR K/TP RATIO = .892314 SHAPE CONSTANT, N = 3.973983
UNIT PEAK = 4.9077 CFS UNIT VOLUME = .9977 B = 353.43 P60 = 2.0100
ARBA = .001851 SQ MI IA = .42000 INCHES INF = 1.02600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=3 CODE=20

HYDROGRAPH FROM AREA DEV.PH1

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	8.2	4.000	.2	5.999	.2
.667	.0	2.666	.7	4.666	.2	6.666	.0
1.333	9.9	3.333	.3	5.333	.2		

RUNOFF VOLUME = 1.94031 INCHES = 1.2770 ACRE-FEET
PEAK DISCHARGE RATE = 34.79 CFS AT 1.500 HOURS BASIN AREA = .0123 SQ. MI.

* DEVELOPED BASIN "D" 0.48 AC

COMPUTE NM HYD ID=4 HYD NO=DEV.D DA=0.000753 SQ MI
PER A=0 PER B=0 PER C=0 PER D=100
TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.9729 CFS UNIT VOLUME = .9955 B = 526.28 P60 = 2.0100
ARBA = .000753 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=20

HYDROGRAPH FROM ARBA DEV.D

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0
.667	.0	2.000	.6	3.333	.0	4.666	.0
						5.333	.0
						5.999	.0

RUNOFF VOLUME = 2.11537 INCHES = .0850 ACRE-FeET
PEAK DISCHARGE RATE = 2.27 CFS AT 1.500 HOURS BASIN AREA = .0008 SQ. MI.

* UNDEVELOPED PHASE TWO 40.8 AC

COMPUTE NM HYD ID=5 HYD NO=UNDEV.PH2 DA=0.06375 SQ MI
PER A=100 PER B=0 PER C=0 PER D=0
TP=-0.1333 HR MASS RAIN=-1

K = .160003HR TP = .133300HR K/TP RATIO = 1.200323 SHAPE CONSTANT, N = 2.960477
UNIT PEAK = 133.23 CFS UNIT VOLUME = .9997 B = 278.58 P60 = 2.0100
ARBA = .063750 SQ MI IA = .65000 INCHES INF = 1.67000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=20

HYDROGRAPH FROM ARBA UNDEV.PH2

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.0	2.666	1.5	4.000	.1
.667	.0	2.000	6.0	3.333	.4	4.666	.0
						5.333	.0

RUNOFF VOLUME = .53121 INCHES = 1.8061 ACRE-FeET
PEAK DISCHARGE RATE = 63.54 CFS AT 1.533 HOURS BASIN AREA = .0638 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 21:10:12

AIA DMP - EXISTING BASIN WE

AHYMO OUTPUT FILE

AHYMO PROGRAM (AHYMO491) - AMAFCA VERSION OF HYMO - APRIL, 1991

RUN DATE (MON/DAY/YR) = 04/14/1995

START TIME (HR:MIN:SEC) = 08:43:10 USER NO. = MOLZCONM.101

INPUT FILE = weex100.dat

***** MOLZEN-CORBIN AND ASSOCIATES *****
***** MAY 1993 *****
***** ALBUQUERQUE INTERNATIONAL AIRPORT DRAINAGE MASTER PLAN*****
***** 100 YEAR STORM *****
***** WEST END BASIN - 500'S *****
***** SUB-BASIN 6 NOT INCLUDED*****
FLOW TO BASIN WEST OF 8 RUNWAY; ARROYO TO SOUTH DIVERSION CHANNEL

START 0.00

RAINFALL

TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01
RAIN SIX=2.35 RAIN DAY=0.0 DT=0.03333

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
DT = .033330 HOURS END TIME = 5.999400 HOURS

.0000	.0016	.0033	.0049	.0066	.0084	.0102
.0120	.0139	.0158	.0178	.0199	.0219	.0241
.0263	.0286	.0309	.0333	.0358	.0384	.0411
.0439	.0467	.0497	.0529	.0561	.0596	.0631
.0669	.0709	.0751	.0807	.0866	.0930	.1066
.1371	.1840	.2514	.3434	.4644	.6186	.8106
1.0449	1.2624	1.3533	1.4300	1.4982	1.5602	1.6174
1.6704	1.7200	1.7664	1.8102	1.8514	1.8904	1.9273
1.9622	1.9953	2.0268	2.0566	2.0850	2.0915	2.0976
2.1033	2.1088	2.1140	2.1191	2.1239	2.1285	2.1329
2.1373	2.1414	2.1454	2.1494	2.1531	2.1568	2.1604
2.1639	2.1673	2.1706	2.1739	2.1771	2.1802	2.1832
2.1862	2.1891	2.1919	2.1947	2.1975	2.2002	2.2028
2.2054	2.2080	2.2105	2.2130	2.2154	2.2178	2.2202
2.2225	2.2248	2.2270	2.2293	2.2315	2.2336	2.2358
2.2379	2.2399	2.2420	2.2440	2.2460	2.2480	2.2500
2.2519	2.2538	2.2557	2.2576	2.2594	2.2612	2.2631
2.2648	2.2666	2.2684	2.2701	2.2718	2.2735	2.2752
2.2769	2.2785	2.2802	2.2818	2.2834	2.2850	2.2866
2.2881	2.2897	2.2912	2.2928	2.2943	2.2958	2.2973
2.2987	2.3002	2.3017	2.3031	2.3045	2.3060	2.3074
2.3088	2.3102	2.3115	2.3129	2.3143	2.3156	2.3169
2.3183	2.3196	2.3209	2.3222	2.3235	2.3248	2.3261
2.3273	2.3286	2.3298	2.3311	2.3323	2.3335	2.3348
2.3360	2.3372	2.3384	2.3396	2.3408	2.3419	2.3431
2.3443	2.3454	2.3466	2.3477	2.3488	2.3500	

CALCULATE FLOW FROM BASIN 501
** BASIN B501 - A= .043 SQ MI

COMPUTE NM HYD

ID=3 HYD NO=501 DA= .043 SQ MI
PER A=2 PER B=0 PER C=17.0 PER D=81.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 141.00 CFS UNIT VOLUME = 1.000 B = 526.28 P60 = 2.0100
AREA = .034830 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .110197HR TP = .130000HR K/TP RATIO = .847669 SHAPE CONSTANT, N = 4.200377
UNIT PEAK = 23.147 CFS UNIT VOLUME = .9999 B = 368.32 P60 = 2.0100
AREA = .008170 SQ MI IA = .38158 INCHES INF = .91842 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 501.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	60.4	3.333	.9	5.000	.6	6.666	.0
.333	.0	2.000	27.8	3.666	.7	5.333	.6	6.999	.0
.667	.0	2.333	5.8	4.000	.6	5.666	.7		
1.000	.0	2.666	2.4	4.333	.6	5.999	.7		
1.333	34.8	3.000	1.3	4.666	.6	6.333	.1		

RUNOFF VOLUME = 1.91155 INCHES = 4.3838 ACRES-FEET
PEAK DISCHARGE RATE = 121.58 CFS AT 1.500 HOURS BASIN AREA = .0430 SQ. MI.

**** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF 24" PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=3 CODE=20
OUTFLOW STORAGE DEPTH
0
9
13.21
13.22
5.0
1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	34.81	.16	.161	2.91
2.00	27.76	.87	2.975	13.21
2.67	2.39	.86	2.752	13.21
3.33	.86	.81	2.101	13.21
4.00	.62	.77	1.412	13.21
4.67	.60	.61	.755	10.79
5.33	.64	.32	.318	5.72
6.00	.73	.14	.142	2.56
6.67	.02	.06	.058	1.04
7.33	.00	.02	.022	.39
8.00	.00	.01	.008	.14
8.67	.00	.00	.003	.05
9.33	.00	.00	.001	.02
10.00	.00	.00	.000	.01
10.67	.00	.00	.000	.00

PEAK DISCHARGE = 13.215 CFS - PEAK OCCURS AT HOUR 2.17
MAXIMUM WATER SURFACE ELEVATION = .877
MAXIMUM STORAGE = 3.0809 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	13.2	4.666	10.8	6.999	.6	9.332	.0
.333	.0	2.666	13.2	5.000	9.0	7.333	.4	9.666	.0
.667	.0	3.000	13.2	5.333	5.7	7.666	.2	9.999	.0
1.000	.0	3.333	13.2	5.666	3.7	7.999	.1	10.332	.0
1.333	2.9	3.666	13.2	5.999	2.6	8.333	.1	10.666	.0
1.666	13.2	4.000	13.2	6.333	1.7	8.666	.1	10.999	.0
2.000	13.2	4.333	13.0	6.666	1.0	8.999	.0	11.332	.0

RUNOFF VOLUME = 1.91154 INCHES = 4.3838 ACRE-FEET
 PEAK DISCHARGE RATE = 13.22 CFS AT 2.166 HOURS BASIN AREA = .0430 SQ. MI.

ROUTE CAP. THROUGH 24" RCP
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.003
 DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE BLBY	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.1
.21	.2	.3
.31	.3	.7
.42	.5	1.2
.52	.7	1.8
.63	.8	2.6
.73	1.0	3.5
.83	1.2	4.5
.94	1.4	5.5
1.04	1.7	6.6
1.15	1.9	7.8
1.25	2.1	8.9
1.35	2.3	9.9
1.46	2.5	10.9
1.56	2.6	11.8
1.67	2.8	12.6
1.77	2.9	13.1
1.88	3.1	13.3
2.00	3.1	13.3

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=1270 SLP=0.003

TRAVEL TIME TABLE
 REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.104	.062	.06	.3389
.208	.174	.28	.2172
.313	.314	.66	.1687
.417	.475	1.18	.1419
.521	.651	1.84	.1247
.625	.839	2.63	.1127
.730	1.037	3.52	.1039

.834	1.240	4.50	.0972
.938	1.447	5.55	.0920
1.042	1.655	6.64	.0879
1.146	1.863	7.75	.0847
1.251	2.067	8.86	.0823
1.355	2.265	9.93	.0805
1.459	2.456	10.93	.0792
1.563	2.635	11.83	.0786
1.668	2.799	12.58	.0785
1.772	2.943	13.11	.0792
1.876	3.061	13.33	.0810
2.000	3.142	13.33	.0831

ROUTE
ID=7 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	13.2	5.333	6.3	7.999	.2
.333	.0	3.000	13.2	5.666	4.1	8.333	.1
.667	.0	3.333	13.2	5.999	2.8	8.666	.1
1.000	.0	3.666	13.2	6.333	1.9	8.999	.1
1.333	.7	4.000	13.2	6.666	1.2	9.332	.0
1.666	12.7	4.333	13.2	6.999	.8	9.666	.0
2.000	13.2	4.666	11.3	7.333	.5	9.999	.0
2.333	13.2	5.000	9.3	7.666	.3	10.332	.0

RUNOFF VOLUME = 1.91153 INCHES = 4.3837 ACRE-FEET
PEAK DISCHARGE RATE = 13.21 CFS AT 2.900 HOURS BASIN AREA = .0430 SQ. MI.

CALCULATE FLOW FROM BASIN 502**

***BASIN B502 - A=.038 SQ MI ***

COMPUTE NM HYD ID=3 HYD NO=502 DA=.038 SQ MI

PER A=3.0 PER B=0.0 PER C=28.0 PER D=69.0
TP=-.20 RAIN=-1

K = .109000HR TP = .200000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 68.995 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 2.0100
AREA = .026220 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .168862HR TP = .200000HR K/TP RATIO = .844312 SHAPE CONSTANT, N = 4.218638
UNIT PEAK = 21.763 CFS UNIT VOLUME = .9995 B = 369.49 P60 = 2.0100
AREA = .011780 SQ MI IA = .37903 INCHES INF = .91129 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 502.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	67.2	3.333	1.1	5.000	.5
.333	.0	2.000	26.8	3.666	.7	5.333	.5
.667	.0	2.333	8.3	4.000	.6	5.666	.5
1.000	.0	2.666	3.6	4.333	.5	5.999	.5

1.333 11.2 3.000 1.8 4.666 .5 6.333 .1

RUNOFF VOLUME = 1.78487 INCHES = 3.6173 ACRE-FeET
PEAK DISCHARGE RATE = 82.37 CFS AT 1.567 HOURS BASIN AREA = .0380 SQ. MI.

*** ADD B502 TO B501 ROUTE ***
ADD HYD ID=2 HYD=234.5 ID I=3 II=7
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	16.8	5.333	6.8	7.999	.2	10.666	.0
.333	.0	3.000	15.1	5.666	4.6	8.333	.1	10.999	.0
.667	.0	3.333	14.3	5.999	3.3	8.666	.1	11.332	.0
1.000	.0	3.666	13.9	6.333	2.0	8.999	.1	11.665	.0
1.333	11.9	4.000	13.8	6.666	1.2	9.332	.0		
1.666	79.9	4.333	13.7	6.999	.8	9.666	.0		
2.000	39.9	4.666	11.7	7.333	.5	9.999	.0		
2.333	21.5	5.000	9.8	7.666	.3	10.332	.0		

RUNOFF VOLUME = 1.85210 INCHES = 8.0010 ACRE-FeET
PEAK DISCHARGE RATE = 94.09 CFS AT 1.567 HOURS BASIN AREA = .0810 SQ. MI.

****ROUTE CAP. THROUGH 48" RCP****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.0066
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.6
.42	.7	2.7
.63	1.3	6.2
.83	1.9	11.1
1.04	2.6	17.3
1.25	3.4	24.8
1.46	4.1	33.2
1.67	5.0	42.4
1.88	5.8	52.3
2.08	6.6	62.6
2.29	7.5	73.0
2.50	8.3	83.4
2.71	9.1	93.5
2.92	9.8	103.0
3.13	10.5	111.4
3.34	11.2	118.4
3.54	11.8	123.5
3.75	12.2	125.5
4.00	12.6	125.5

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=550 SLP=0.0066

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.61	.0623
.417	.695	2.66	.0400
.625	1.255	6.18	.0310
.834	1.898	11.11	.0261
1.042	2.604	17.35	.0229
1.251	3.358	24.75	.0207
1.459	4.146	33.16	.0191
1.668	4.960	42.40	.0179
1.876	5.788	52.27	.0169
2.084	6.621	62.55	.0162
2.293	7.451	73.03	.0156
2.501	8.267	83.44	.0151
2.710	9.062	93.52	.0148
2.918	9.823	102.96	.0146
3.127	10.539	111.41	.0145
3.335	11.195	118.44	.0144
3.544	11.773	123.46	.0146
3.752	12.243	125.53	.0149
4.000	12.566	125.53	.0153

ROUTE ID=7 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	16.9	5.333	6.9	7.999	.2	10.666	.0
.333	.0	3.000	15.1	5.666	4.7	8.333	.1	10.999	.0
.667	.0	3.333	14.3	5.999	3.4	8.666	.1	11.332	.0
1.000	.0	3.666	13.9	6.333	2.1	8.999	.1	11.665	.0
1.333	8.3	4.000	13.8	6.666	1.3	9.332	.0		
1.666	82.6	4.333	13.7	6.999	.8	9.666	.0		
2.000	40.6	4.666	11.8	7.333	.5	9.999	.0		
2.333	21.9	5.000	9.9	7.666	.3	10.332	.0		

RUNOFF VOLUME = 1.85210 INCHES = 8.0010 ACRES-FEET
PEAK DISCHARGE RATE = 93.44 CFS AT 1.600 HOURS BASIN AREA = .0810 SQ. MI.

***CALC BASIN 503 ***
B503 A=.021 SQ MI **

COMPUTE NM HYD ID=5 HYD NO=503 DA=.021 SQ MI
PER A=0.0 PER B=0.0 PER C =2.0 PER D=98.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 83.313 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
AREA = .020580 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
UNIT PEAK = 1.2392 CFS UNIT VOLUME = .9901 B = 383.55 P60 = 2.0100

AREA = .000420 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 503.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	31.2	3.333	.5	5.000	.4	6.666	.0
.333	.0	2.000	15.4	3.666	.4	5.333	.4	6.999	.0
.667	.0	2.333	3.2	4.000	.4	5.666	.4		
1.000	.0	2.666	1.3	4.333	.4	5.999	.4		
1.333	19.9	3.000	.7	4.666	.4	6.333	.0		

RUNOFF VOLUME = 2.09562 INCHES = 2.3471 ACRE-FOOT
PEAK DISCHARGE RATE = 63.45 CFS AT 1.500 HOURS BASIN AREA = .0210 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=5 CODE=20

OUTFLOW	STORAGE	DEPTH
0	0	0
17	.5	.5
27	1.1	.75
27.90	2.2	1.0

* * * * *

TIME	INFLOW	ELBV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	19.94	.09	.089	3.02
2.00	15.40	.64	.842	22.71
2.67	1.30	.23	.233	7.92
3.33	.49	.05	.052	1.78
4.00	.36	.02	.018	.61
4.67	.35	.01	.011	.39
5.33	.38	.01	.011	.37
6.00	.43	.01	.012	.41
6.67	.01	.00	.003	.12
7.33	.00	.00	.001	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 24.108 CFS - PEAK OCCURS AT HOUR 1.77
MAXIMUM WATER SURFACE ELEVATION = .678
MAXIMUM STORAGE = .9265 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	22.7	4.000	.6	5.999	.4	7.999	.0
.333	.0	2.333	17.1	4.333	.5	6.333	.3	8.333	.0
.667	.0	2.666	7.9	4.666	.4	6.666	.1		

1.000	.0	3.000	3.7	5.000	.4	6.999	.0
1.333	3.0	3.333	1.8	5.333	.4	7.333	.0
1.666	23.7	3.666	1.0	5.666	.4	7.666	.0

RUNOFF VOLUME = 2.09560 INCHES = 2.3471 ACRE-FOOT
PEAK DISCHARGE RATE = 24.11 CFS AT 1.766 HOURS BASIN AREA = .0210 SQ. MI.

ROUTE CAP. THROUGH 30" RCP**
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=2.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0				
WATER DEPTH	AVERAGE AREA	FLOW RATE	FLOW RATE	TRAVEL TIME
FEET	SQ.FT.	CFS	CFS	HRS
.00		.0	.0	
.13		.1	.1	
.26		.3	.6	
.39		.5	1.4	
.52		.7	2.5	
.65		1.0	3.9	
.78		1.3	5.5	
.91		1.6	7.4	
1.04		1.9	9.4	
1.17		2.3	11.6	
1.30		2.6	13.9	
1.43		2.9	16.2	
1.56		3.2	18.5	
1.69		3.5	20.8	
1.82		3.8	22.9	
1.95		4.1	24.8	
2.08		4.4	26.3	
2.21		4.6	27.4	
2.35		4.8	27.9	
2.50		4.9	27.9	

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=320 SLP=0.004

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH	AVERAGE AREA	FLOW RATE	TRAVEL TIME
FEET	SQ.FT.	CFS	HRS
.130	.098	.14	.0637
.261	.271	.59	.0408
.391	.490	1.37	.0317
.521	.741	2.47	.0267
.651	1.017	3.86	.0234
.782	1.312	5.50	.0212
.912	1.620	7.37	.0195
1.042	1.937	9.42	.0183
1.173	2.261	11.62	.0173
1.303	2.586	13.91	.0165
1.433	2.910	16.23	.0159
1.563	3.229	18.55	.0155
1.694	3.540	20.79	.0151
1.824	3.837	22.89	.0149
1.954	4.117	24.77	.0148

2.084	4.373	26.33	.0148
2.215	4.599	27.45	.0149
2.345	4.783	27.91	.0152
2.500	4.909	27.91	.0156

ROUTE
PRINT HYD ID=3 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	22.8	4.000	.6	5.999	.4	7.999	.0
.333	.0	2.333	17.4	4.333	.5	6.333	.3	8.333	.0
.667	.0	2.666	8.2	4.666	.4	6.666	.1		
1.000	.0	3.000	3.8	5.000	.4	6.999	.1		
1.333	2.2	3.333	1.9	5.333	.4	7.333	.0		
1.666	23.5	3.666	1.0	5.666	.4	7.666	.0		

RUNOFF VOLUME = 2.09560 INCHES = 2.3471 ACRE-FEET
PEAK DISCHARGE RATE = 24.09 CFS AT 1.766 HOURS BASIN AREA = .0210 SQ. MI.

*** ADD B503 ROUTE TO B501/B502 AT MIDDLE ISLAND*****
ADD HYD ID=2 HYD=234.5 ID I=3 II=7
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	25.1	5.333	7.3	7.999	.2	10.666	.0
.333	.0	3.000	18.9	5.666	5.1	8.333	.1	10.999	.0
.667	.0	3.333	16.2	5.999	3.8	8.666	.1	11.332	.0
1.000	.0	3.666	14.9	6.333	2.4	8.999	.1	11.665	.0
1.333	10.5	4.000	14.4	6.666	1.5	9.332	.0		
1.666	106.1	4.333	14.1	6.999	.9	9.666	.0		
2.000	63.5	4.666	12.2	7.333	.5	9.999	.0		
2.333	39.3	5.000	10.3	7.666	.3	10.332	.0		

RUNOFF VOLUME = 1.90223 INCHES = 10.3480 ACRE-FEET
PEAK DISCHARGE RATE = 115.51 CFS AT 1.600 HOURS BASIN AREA = .1020 SQ. MI.

*** ROUTE THRU NEW 54* TO NEXT ISLAND*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.008
DIA=4.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	WATER	FLOW
SURFACE	AREA	SURFACE	RATE
ELEV	SQ FT	ELEV	CFS
.00	.0	.00	.0
.23	.3	.23	.9
.47	.9	.47	4.0
.70	1.6	.70	9.3
.94	2.4	.94	16.7
1.17	3.3	1.17	26.1
1.41	4.2	1.41	37.3

1.64	5.2	50.0
1.88	6.3	63.9
2.11	7.3	78.8
2.35	8.4	94.3
2.58	9.4	110.1
2.81	10.5	125.8
3.05	11.5	141.0
3.28	12.4	155.2
3.52	13.3	167.9
3.75	14.2	178.5
3.99	14.9	186.1
4.22	15.5	189.2
4.50	15.9	189.2

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=500 SLP=0.008

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.235	.316	.92	.0476
.469	.880	4.01	.0305
.704	1.588	9.31	.0237
.938	2.402	16.75	.0199
1.173	3.296	26.15	.0175
1.407	4.249	37.31	.0158
1.641	5.248	49.98	.0146
1.876	6.277	63.90	.0136
2.111	7.325	78.78	.0129
2.345	8.380	94.28	.0123
2.579	9.430	110.07	.0119
2.814	10.463	125.76	.0116
3.049	11.468	140.95	.0113
3.283	12.432	155.18	.0111
3.518	13.338	167.92	.0110
3.752	14.169	178.51	.0110
3.987	14.900	186.09	.0111
4.221	15.495	189.20	.0114
4.500	15.904	189.20	.0117

ROUTE ID=3 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	25.5	5.333	7.5	7.999	.2	10.666	.0
.333	.0	3.000	19.1	5.666	5.2	8.333	.1	10.999	.0
.667	.0	3.333	16.2	5.999	3.9	8.666	.1	11.332	.0
1.000	.0	3.666	15.0	6.333	2.5	8.999	.1	11.665	.0
1.333	6.5	4.000	14.4	6.666	1.5	9.332	.0		
1.666	108.0	4.333	14.2	6.999	1.0	9.666	.0		
2.000	64.2	4.666	12.3	7.333	.6	9.999	.0		
2.333	39.9	5.000	10.3	7.666	.4	10.332	.0		

RUNOFF VOLUME = 1.90223 INCHES = 10.3481 ACRE-FOOT
PEAK DISCHARGE RATE = 115.46 CFS AT 1.600 HOURS BASIN AREA = .1020 SQ. MI.

** NOW COMPUTE BASIN B504 ***
***BASIN B504 A=.022 SQ MI ***

COMPUTE NM HYD ID=1 HYD NO=504.0 DA=.022 SQ MI
PER A=0.0 PER B=0.0 PER C=2.0 PER D=98.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 87.281 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
AREA = .021560 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
UNIT PEAK = 1.2982 CFS UNIT VOLUME = .9901 B = 383.55 P60 = 2.0100
AREA = .000440 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 504.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	32.7	3.333	.5	5.000	.4
.333	.0	2.000	16.1	3.666	.4	5.333	.4
.667	.0	2.333	3.3	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	20.9	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.09562 INCHES = 2.4588 ACRE-FOOT
PEAK DISCHARGE RATE = 66.47 CFS AT 1.500 HOURS BASIN AREA = .0220 SQ. MI.

***** ROUTE THROUGH SWALE TO INLET NEAR WEST ISLAND *****
COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=1.0
CH SLP=.004 FP SLP=.004 N=.017 DIST=20
DIST ELKV DIST ELKV DIST ELKV
0 1 8 0 12 0
20 1

RATING CURVE VALLEY SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
ELKV	SQ FT	CFS
.00	.0	.0
.05	.2	.2
.11	.5	.6
.16	.8	1.2
.21	1.2	2.0
.26	1.6	3.0
.32	2.1	4.2
.37	2.6	5.7
.42	3.1	7.5
.47	3.7	9.5
.53	4.3	11.8
.58	5.0	14.4
.63	5.7	17.2
.68	6.5	20.5

.74	7.3	24.0
.79	8.1	27.9
.84	9.0	32.1
.89	10.0	36.7
.95	11.0	41.6
1.00	12.0	47.0

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=1700 SLP=.004

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.053	.233	.17	.6468
.105	.510	.56	.4270
.158	.831	1.16	.3382
.211	1.197	1.96	.2876
.263	1.607	2.99	.2541
.316	2.061	4.24	.2298
.368	2.560	5.73	.2110
.421	3.102	7.47	.1961
.474	3.690	9.48	.1837
.526	4.321	11.78	.1733
.579	4.997	14.36	.1643
.632	5.717	17.25	.1565
.684	6.482	20.45	.1497
.737	7.291	23.99	.1435
.789	8.144	27.86	.1380
.842	9.042	32.09	.1331
.895	9.983	36.68	.1285
.947	10.970	41.65	.1244
1.000	12.000	47.00	.1206

ROUTE ID=4 HYD NO=110.3 INFLOW ID=1 DF=.03333 HR

TRAVEL TIME TABLE EXCEEDED

*** CHANNEL DISCHARGE TO INLET NEAR MUELLER****

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 110.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	20.7	4.000	.5	5.999	.4	7.999	.0
.333	.0	2.333	6.9	4.333	.4	6.333	.3	8.333	.0
.667	.0	2.666	2.7	4.666	.4	6.666	.2	8.666	.0
1.000	.0	3.000	1.4	5.000	.4	6.999	.1	8.999	.0
1.333	5.5	3.333	.8	5.333	.4	7.333	.1	9.332	.0
1.666	46.4	3.666	.6	5.666	.4	7.666	.0	9.666	.0

RUNOFF VOLUME = 2.09563 INCHES = 2.4589 ACRE-FeET

PEAK DISCHARGE RATE = 51.28 CFS AT 1.633 HOURS BASIN AREA = .0220 SQ. MI.

** NOW COMPUTE BASIN B505 ***

BASIN B505 A=.024 SQ MI *

COMPUTE NM HYD ID=1 HYD NO=505.0 DA=.024 SQ MI

PRR A=1.0 PRR B=0.0 PRR C=9.0 PRR D=90.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 87.443 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
AREA = .021600 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .109926HR TP = .130000HR K/TP RATIO = .845587 SHAPE CONSTANT, N = 4.211669
UNIT PEAK = 6.8131 CFS UNIT VOLUME = .9985 B = 369.04 P60 = 2.0100
AREA = .002400 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 505.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	34.8	3.333	.5	5.000	.4	6.666	.0
.333	.0	2.000	16.6	3.666	.4	5.333	.4	6.999	.0
.667	.0	2.333	3.4	4.000	.4	5.666	.4		
1.000	.0	2.666	1.4	4.333	.4	5.999	.5		
1.333	21.2	3.000	.8	4.666	.4	6.333	.0		

RUNOFF VOLUME = 2.00850 INCHES = 2.5709 ACRES-FEET
PEAK DISCHARGE RATE = 70.31 CFS AT 1.500 HOURS BASIN AREA = .0240 SQ. MI.

*** ADD B504 ROUTE TO B505 *****
ADD HYD ID=1 HYD=234.5 ID I=1 II=4
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	37.3	4.000	.8	5.999	.9	7.999	.0
.333	.0	2.333	10.4	4.333	.8	6.333	.3	8.333	.0
.667	.0	2.666	4.1	4.666	.8	6.666	.2	8.666	.0
1.000	.0	3.000	2.1	5.000	.8	6.999	.1	8.999	.0
1.333	26.7	3.333	1.3	5.333	.8	7.333	.1	9.332	.0
1.666	81.2	3.666	1.0	5.666	.8	7.666	.0	9.666	.0

RUNOFF VOLUME = 2.05014 INCHES = 5.0297 ACRES-FEET
PEAK DISCHARGE RATE = 107.77 CFS AT 1.533 HOURS BASIN AREA = .0460 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=1 CODE=20

OUTFLOW STORAGE DEPTH
0
14 .5 .4
24 1.1 .7
24.30 2.2 1.0

STORAGE-DISCHARGE TABLE EXCEEDED.

* * * * *

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

.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	26.67	.09	.112	3.14

WARNING - OUTFLOW EXCEEDS RESERVOIR CAPACITY

2.00	37.26	6.13	20.993	29.43
2.67	4.13	.94	1.962	24.24
3.33	1.33	.55	.802	19.04
4.00	.84	.17	.207	5.80
4.67	.75	.05	.066	1.84
5.33	.78	.03	.036	1.00
6.00	.89	.03	.031	.88
6.67	.17	.01	.016	.44
7.33	.06	.00	.006	.17
8.00	.02	.00	.002	.06
8.67	.01	.00	.001	.02
9.33	.00	.00	.000	.01
10.00	.00	.00	.000	.00

WARNING - OUTFLOW EXCEEDS RESERVOIR CAPACITY

PEAK DISCHARGE = 29.761 CFS - PEAK OCCURS AT HOUR 2.10

MAXIMUM WATER SURFACE ELEVATION = 6.461

MAXIMUM STORAGE = 22.2249 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	27.3	4.666	1.8	6.999	.3	9.332	.0
.333	.0	2.666	24.2	5.000	1.3	7.333	.2	9.666	.0
.667	.0	3.000	24.1	5.333	1.0	7.666	.1	9.999	.0
1.000	.0	3.333	19.0	5.666	.9	7.999	.1	10.332	.0
1.333	3.1	3.666	11.5	5.999	.9	8.333	.0		
1.666	24.2	4.000	5.8	6.333	.7	8.666	.0		
2.000	29.4	4.333	3.1	6.666	.4	8.999	.0		

RUNOFF VOLUME = 2.05014 INCHES = 5.0296 ACRE-FEET

PEAK DISCHARGE RATE = 29.76 CFS AT 2.100 HOURS BASIN AREA = .0460 SQ. MI.

*** ROUTE THRU 24" FROM APRON TO WEST ISLAND*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.010

DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW ARBA SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.1
.21	.2	.5
.31	.3	1.2
.42	.5	2.2
.52	.7	3.4
.63	.8	4.8
.73	1.0	6.4

.83	1.2	8.2
.94	1.4	10.1
1.04	1.7	12.1
1.15	1.9	14.2
1.25	2.1	16.2
1.35	2.3	18.1
1.46	2.5	20.0
1.56	2.6	21.6
1.67	2.8	23.0
1.77	2.9	23.9
1.88	3.1	24.3
2.00	3.1	24.3

COMPUTE TRAVEL TIME ID=5 REACH=15 VS NO=1 L=346 SLP=0.010

TRAVEL TIME TABLE
REACH = 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.104	.062	.12	.0506
.208	.174	.52	.0324
.313	.314	1.20	.0252
.417	.475	2.15	.0212
.521	.651	3.36	.0186
.625	.839	4.80	.0168
.730	1.037	6.43	.0155
.834	1.240	8.22	.0145
.938	1.447	10.13	.0137
1.042	1.655	12.13	.0131
1.146	1.863	14.16	.0126
1.251	2.067	16.18	.0123
1.355	2.265	18.13	.0120
1.459	2.456	19.96	.0118
1.563	2.635	21.60	.0117
1.668	2.799	22.96	.0117
1.772	2.943	23.93	.0118
1.876	3.061	24.34	.0121
2.000	3.142	24.34	.0124

ROUTE ID=5 HYD=105.1 INFLOW ID=4 DT=0.03333 HR

TRAVEL TIME TABLE EXCEEDED

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.333	27.5	4.666	1.9	6.999	.3	9.332	.0
.333	.0	2.666	24.3	5.000	1.3	7.333	.2	9.666	.0
.667	.0	3.000	24.1	5.333	1.0	7.666	.1	9.999	.0
1.000	.0	3.333	19.3	5.666	.9	7.999	.1	10.332	.0
1.333	2.4	3.666	11.7	5.999	.9	8.333	.0		
1.666	24.1	4.000	5.9	6.333	.7	8.666	.0		
2.000	29.3	4.333	3.2	6.666	.5	8.999	.0		

RUNOFF VOLUME = 2.05014 INCHES = 5.0296 ACRES-DEET
PEAK DISCHARGE RATE = 29.76 CFS AT 2.100 HOURS BASIN AREA = .0460 SQ. MI.

*** ADD BASIN 505 RT TO B501/B502 AT WEST ISLAND*****
ADD HYD ID=2 HYD=234.5 ID I=3 II=5
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	49.7	5.333	8.5	7.999	.3	10.666	.0
.333	.0	3.000	43.2	5.666	6.1	8.333	.2	10.999	.0
.667	.0	3.333	35.5	5.999	4.8	8.666	.1	11.332	.0
1.000	.0	3.666	26.7	6.333	3.2	8.999	.1	11.665	.0
1.333	8.9	4.000	20.3	6.666	2.0	9.332	.1		
1.666	132.1	4.333	17.3	6.999	1.2	9.666	.0		
2.000	93.5	4.666	14.2	7.333	.8	9.999	.0		
2.333	67.4	5.000	11.6	7.666	.5	10.332	.0		

RUNOFF VOLUME = 1.94819 INCHES = 15.3776 ACRES-DEEPT
PEAK DISCHARGE RATE = 139.44 CFS AT 1.600 HOURS BASIN AREA = .1480 SQ. MI.

*** ROUTE THRU 60" TO THE AT END OF RUNWAY*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=5.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
ELEV	SQ FT	CFS
.00	.0	.0
.26	.4	.9
.52	1.1	3.8
.78	2.0	8.7
1.04	3.0	15.7
1.30	4.1	24.5
1.56	5.2	34.9
1.82	6.5	46.8
2.08	7.7	59.8
2.35	9.0	73.8
2.61	10.3	88.3
2.87	11.6	103.1
3.13	12.9	117.8
3.39	14.2	132.0
3.65	15.3	145.3
3.91	16.5	157.3
4.17	17.5	167.2
4.43	18.4	174.3
4.69	19.1	177.2
5.00	19.6	177.2

COMPUTE TRAVEL TIME ID=5 REACH=15 VS NO=1 L=440 SLP=0.004

TRAVEL TIME TABLE

REACH= 15.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	AREA	RATE	TIME
FEET	SQ.FT.	CFS	HRS
.261	.390	.86	.0552
.521	1.086	3.75	.0354

.782	1.961	8.72	.0275
1.042	2.966	15.68	.0231
1.303	4.069	24.49	.0203
1.563	5.246	34.94	.0184
1.824	6.479	46.81	.0169
2.084	7.749	59.84	.0158
2.345	9.043	73.77	.0150
2.606	10.345	88.29	.0143
2.866	11.641	103.08	.0138
3.127	12.918	117.78	.0134
3.387	14.159	132.00	.0131
3.648	15.348	145.33	.0129
3.908	16.467	157.25	.0128
4.169	17.492	167.17	.0128
4.429	18.395	174.27	.0129
4.690	19.130	177.19	.0132
5.000	19.635	177.19	.0135

ROUTE ID=5 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
 PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	50.1	5.333	8.6	7.999	.3	10.666	.0
.333	.0	3.000	43.4	5.666	6.2	8.333	.2	10.999	.0
.667	.0	3.333	35.9	5.999	4.9	8.666	.1	11.332	.0
1.000	.0	3.666	27.1	6.333	3.3	8.999	.1	11.665	.0
1.333	4.5	4.000	20.5	6.666	2.1	9.332	.1		
1.666	133.8	4.333	17.4	6.999	1.3	9.666	.0		
2.000	94.1	4.666	14.4	7.333	.8	9.999	.0		
2.333	68.2	5.000	11.7	7.666	.5	10.332	.0		

RUNOFF VOLUME = 1.94820 INCHES = 15.3777 ACRES-FEET
 PEAK DISCHARGE RATE = 138.34 CFS AT 1.600 HOURS BASIN AREA = .1480 SQ. MI.

*** ROUTE THRU 60° TO JUNCTION AT SW CORNER @ END RUNWAY*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.008
 DIA=5.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

	WATER SURFACE ELBV	FLOW ARBA SQ FT	FLOW RATE CFS
	.00	.0	.0
	.26	.4	1.2
	.52	1.1	5.3
	.78	2.0	12.3
	1.04	3.0	22.2
	1.30	4.1	34.6
	1.56	5.2	49.4
	1.82	6.5	66.2
	2.08	7.7	84.6
	2.35	9.0	104.3
	2.61	10.3	124.9
	2.87	11.6	145.8
	3.13	12.9	166.6
	3.39	14.2	186.7

3.65	15.3	205.5
3.91	16.5	222.4
4.17	17.5	236.4
4.43	18.4	246.5
4.69	19.1	250.6
5.00	19.6	250.6

COMPUTE TRAVEL TIME ID=10 REACH=15 VS NO=1 L=400 SLP=0.008

TRAVEL TIME TABLE
REACH = 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.261	.390	1.22	.0355
.521	1.086	5.30	.0227
.782	1.961	12.33	.0177
1.042	2.966	22.18	.0149
1.303	4.069	34.63	.0131
1.563	5.246	49.41	.0118
1.824	6.479	66.20	.0109
2.084	7.749	84.63	.0102
2.345	9.043	104.33	.0096
2.606	10.345	124.86	.0092
2.866	11.641	145.77	.0089
3.127	12.918	166.56	.0086
3.387	14.159	186.68	.0084
3.648	15.348	205.52	.0083
3.908	16.467	222.39	.0082
4.169	17.492	236.42	.0082
4.429	18.395	246.46	.0083
4.690	19.130	250.58	.0085
5.000	19.635	250.58	.0087

ROUTE ID=10 HYD=105.1 INFLOW ID=5 DT=0.03333 HR
***** HYDROGRAPH ENTERING JUNCTION FROM NORTH BRANCH*****
PRINT HYD ID=10 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	50.4	5.333	8.8	7.999	.3	10.666	.0
.333	.0	3.000	43.5	5.666	6.3	8.333	.2	10.999	.0
.667	.0	3.333	36.2	5.999	4.9	8.666	.1	11.332	.0
1.000	.0	3.666	27.4	6.333	3.4	8.999	.1	11.665	.0
1.333	2.2	4.000	20.7	6.666	2.2	9.332	.1		
1.666	135.0	4.333	17.5	6.999	1.4	9.666	.0		
2.000	94.6	4.666	14.5	7.333	.9	9.999	.0		
2.333	68.8	5.000	11.8	7.666	.5	10.332	.0		

RUNOFF VOLUME = 1.94820 INCHES = 15.3777 ACRE-Feet
PEAK DISCHARGE RATE = 138.47 CFS AT 1.633 HOURS BASIN AREA = .1480 SQ. MI.

*** CALC FLOW FROM BASIN B507***
*** B507 A=.025 SQMI***
COMPUTE NM HYD ID=4 HYD NO=507 DA=0.025 SQ MI
PER A=3.0 PER B=0.0 PER C=65.0 PER D=32.0
TP=-.17 RAIN=-1

K = .092650HR TP = .170000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 24.766 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 2.0100
ARBA = .008000 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .139993HR TP = .170000HR K/TP RATIO = .823491 SHAPE CONSTANT, N = 4.336063
UNIT PEAK = 37.699 CFS UNIT VOLUME = .9998 B = 376.99 P60 = 2.0100
ARBA = .017000 SQ MI IA = .36324 INCHES INF = .86706 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 507.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	35.5	3.333	.4	5.000	.1	6.666	.0
.333	.0	2.000	12.0	3.666	.2	5.333	.1	6.999	.0
.667	.0	2.333	3.4	4.000	.2	5.666	.2		
1.000	.0	2.666	1.5	4.333	.2	5.999	.2		
1.333	6.1	3.000	.7	4.666	.1	6.333	.0		

RUNOFF VOLUME = 1.41895 INCHES = 1.8919 ACRE-FeET
PEAK DISCHARGE RATE = 49.86 CFS AT 1.533 HOURS BASIN ARBA = .0250 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20
OUTFLOW STORAGE DEPTH

0	0	0
6	.5	.5
10	1.1	1
10.1	2.2	2

* * * * *

TIME (HRS)	INFLOW (CFS)	ELBV (FeET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	6.06	.02	.023	.27
2.00	12.04	1.06	1.170	10.01
2.67	1.46	.83	.895	8.63
3.33	.37	.53	.531	6.21
4.00	.18	.28	.284	3.41
4.67	.14	.15	.153	1.83
5.33	.15	.08	.084	1.01
6.00	.17	.05	.050	.60
6.67	.01	.03	.028	.33
7.33	.00	.01	.014	.17
8.00	.00	.01	.007	.09
8.67	.00	.00	.004	.05
9.33	.00	.00	.002	.02
10.00	.00	.00	.001	.01
10.67	.00	.00	.001	.01

11.33 .00 .00 .00
PEAK DISCHARGE = 10.007 CFS - PEAK OCCURS AT HOUR 2.07
MAXIMUM WATER SURFACE ELEVATION = 1.069
MAXIMUM STORAGE = 1.1756 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	8.6	5.333	1.0	7.999	.1	10.666	.0
.333	.0	3.000	7.4	5.666	.8	8.333	.1	10.999	.0
.667	.0	3.333	6.2	5.999	.6	8.666	.0	11.332	.0
1.000	.0	3.666	4.7	6.333	.5	8.999	.0	11.665	.0
1.333	.3	4.000	3.4	6.666	.3	9.332	.0	11.999	.0
1.666	8.4	4.333	2.5	6.999	.2	9.666	.0	12.332	.0
2.000	10.0	4.666	1.8	7.333	.2	9.999	.0		
2.333	9.9	5.000	1.4	7.666	.1	10.332	.0		

RUNOFF VOLUME = 1.41893 INCHES = 1.8919 ACRES-DEBT
PEAK DISCHARGE RATE = 10.01 CFS AT 2.066 HOURS BASIN AREA = .0250 SQ. MI.

*** ROUTE THRU 24" INTO BASIN 3***
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002
DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0
WATER FLOW
SURFACE AREA RATE
ELBV SQ FT CFS

.00	.0	.0	.0
.10	.1	.1	.1
.21	.2	.2	.2
.31	.3	.3	.5
.42	.5	.5	1.0
.52	.7	.7	1.5
.63	.8	.8	2.1
.73	1.0	1.0	2.9
.83	1.2	1.2	3.7
.94	1.4	1.4	4.5
1.04	1.7	1.7	5.4
1.15	1.9	1.9	6.3
1.25	2.1	2.1	7.2
1.35	2.3	2.3	8.1
1.46	2.5	2.5	8.9
1.56	2.6	2.6	9.7
1.67	2.8	2.8	10.3
1.77	2.9	2.9	10.7
1.88	3.1	3.1	10.9
2.00	3.1	3.1	10.9

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=550 SLP=0.002

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH AVERAGE AREA FLOW RATE TRAVEL TIME

```

ROUTE      ID=3  HYD=105.1  INFLOW  ID=1  DT=0.03333  HR
PRINT HYD      ID=3  CODE=10

```

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	8.8	5.333	1.1	7.999	.1	10.666	.0
.333	.0	3.000	7.5	5.666	.8	8.333	.1	10.999	.0
.667	.0	3.333	6.3	5.999	.6	8.666	.1	11.332	.0
1.000	.0	3.666	4.8	6.333	.5	8.999	.0	11.665	.0
1.333	.1	4.000	3.5	6.666	.4	9.332	.0	11.999	.0
1.666	7.8	4.333	2.6	6.999	.3	9.666	.0	12.332	.0
2.000	10.0	4.666	1.9	7.333	.2	9.999	.0		
2.333	10.0	5.000	1.4	7.666	.1	10.332	.0		

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*** B508 A=.052 SQMT***
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ID=4 HYD NO=508 DA=0.052 SQ MI
PER A=0.0 PER B=5.0 PER C=53.0 PER D=42.0
TP=-.28 RAIN=-1
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K = .230155HR      TP = .280000HR      K/TP RATIO = .821982      SHAPE CONSTANT, N = 4.344866
UNIT PBAK = 40.667      CFS      UNIT VOLUME = .9997      B = 377.54      P60 = 2.0100
ARBA = .030160 SQ MI      IA = .36293 INCHES      INF = .86621 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

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OUTFLOW HYDROGRAPH RESERVOIR 508.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	38.7	4.000	.9	5.999	.5
.333	.0	2.333	14.2	4.333	.7	6.333	.2
.667	.0	2.666	6.2	4.666	.5	6.666	.1
1.000	.0	3.000	3.6	5.000	.5	6.999	.0
1.333	3.6	3.333	2.2	5.333	.4	7.333	.0
1.666	80.7	3.666	1.4	5.666	.4	7.666	.0

RUNOFF VOLUME = 1.52184 INCHES = 4.2205 ACRES-DEBT
PEAK DISCHARGE RATE = 80.74 CFS AT 1.667 HOURS BASIN AREA = .0520 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20
OUTFLOW STORAGE DEPTH

0	0	0
39	.5	.4
69.	1.1	.75
69.10	2.2	1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	3.59	.01	.010	.76
2.00	38.66	.57	.787	53.37
2.67	6.22	.11	.131	10.25
3.33	2.16	.03	.037	2.87
4.00	.93	.01	.015	1.14
4.67	.55	.01	.008	.61
5.33	.45	.00	.006	.46
6.00	.46	.00	.006	.45
6.67	.06	.00	.002	.12
7.33	.01	.00	.000	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 59.364 CFS - PEAK OCCURS AT HOUR 1.83
MAXIMUM WATER SURFACE ELEVATION = .638
MAXIMUM STORAGE = .9073 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	53.4	4.000	1.1	5.999	.5
.333	.0	2.333	27.1	4.333	.8	6.333	.4
.667	.0	2.666	10.3	4.666	.6	6.666	.1
1.000	.0	3.000	5.0	5.000	.5	6.999	.0
1.333	.8	3.333	2.9	5.333	.5	7.333	.0
1.666	48.0	3.666	1.7	5.666	.4	7.666	.0

RUNOFF VOLUME = 1.52183 INCHES = 4.2205 ACRES-DEBT

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	38.7	4.000	.9	5.999	.5	7.999	.0
.333	.0	2.333	14.2	4.333	.7	6.333	.2	8.333	.0
.667	.0	2.666	6.2	4.666	.5	6.666	.1		
1.000	.0	3.000	3.6	5.000	.5	6.999	.0		
1.333	3.6	3.333	2.2	5.333	.4	7.333	.0		
1.666	80.7	3.666	1.4	5.666	.4	7.666	.0		

RUNOFF VOLUME = 1.52184 INCHES = 4.2205 ACRE-FOOT
PEAK DISCHARGE RATE = 80.74 CFS AT 1.667 HOURS BASIN AREA = .0520 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****

ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20
OUTFLOW STORAGE DEPTH
0 0 0
39 .5 .4
69. 1.1 .75
69.10 2.2 1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	3.59	.01	.010	.76
2.00	38.66	.57	.787	53.37
2.67	6.22	.11	.131	10.25
3.33	2.16	.03	.037	2.87
4.00	.93	.01	.015	1.14
4.67	.55	.01	.008	.61
5.33	.45	.00	.006	.46
6.00	.46	.00	.006	.45
6.67	.06	.00	.002	.12
7.33	.01	.00	.000	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 59.364 CFS - PEAK OCCURS AT HOUR 1.83
MAXIMUM WATER SURFACE ELEVATION = .638
MAXIMUM STORAGE = .9073 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	53.4	4.000	1.1	5.999	.5	7.999	.0
.333	.0	2.333	27.1	4.333	.8	6.333	.4	8.333	.0
.667	.0	2.666	10.3	4.666	.6	6.666	.1		
1.000	.0	3.000	5.0	5.000	.5	6.999	.0		
1.333	.8	3.333	2.9	5.333	.5	7.333	.0		
1.666	48.0	3.666	1.7	5.666	.4	7.666	.0		

RUNOFF VOLUME = 1.52183 INCHES = 4.2205 ACRE-FOOT

PEAK DISCHARGE RATE = 59.36 CFS AT 1.833 HOURS BASIN AREA = .0520 SQ. MI.

*S ADD BASIN 507 AND 508 TO GET TOTAL**
ADD HYD ID=1 HYD=234.5 ID I=3 II=1
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	19.0	5.333	1.5	7.999	.1	10.666	.0
.333	.0	3.000	12.5	5.666	1.3	8.333	.1	10.999	.0
.667	.0	3.333	9.2	5.999	1.1	8.666	.1	11.332	.0
1.000	.0	3.666	6.6	6.333	.8	8.999	.0	11.665	.0
1.333	.8	4.000	4.7	6.666	.5	9.332	.0	11.999	.0
1.666	55.8	4.333	3.4	6.999	.3	9.666	.0	12.332	.0
2.000	63.3	4.666	2.5	7.333	.2	9.999	.0		
2.333	37.1	5.000	1.9	7.666	.1	10.332	.0		

RUNOFF VOLUME = 1.48840 INCHES = 6.1123 ACRES-DEET
PEAK DISCHARGE RATE = 69.07 CFS AT 1.833 HOURS BASIN AREA = .0770 SQ. MI.

*** ROUTE THRU LAST 48" SECTION IN WEST BASIN 508
*** TO BRANCH AT BASIN 509*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.3
.42	.7	1.5
.63	1.3	3.4
.83	1.9	6.1
1.04	2.6	9.5
1.25	3.4	13.6
1.46	4.1	18.3
1.67	5.0	23.3
1.88	5.8	28.8
2.08	6.6	34.4
2.29	7.5	40.2
2.50	8.3	45.9
2.71	9.1	51.5
2.92	9.8	56.7
3.13	10.5	61.3
3.34	11.2	65.2
3.54	11.8	68.0
3.75	12.2	69.1
4.00	12.6	69.1

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=700 SLP=0.002

TRAVEL TIME TABLE

REACH= 15.0

PEAK DISCHARGE RATE = 59.36 CFS AT 1.833 HOURS BASIN AREA = .0520 SQ. MI.

*S ADD BASIN 507 AND 508 TO GET TOTAL**
ADD HYD ID=1 HYD=234.5 ID I=3 II=1
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	19.0	5.333	1.5	7.999	.1	10.666	.0
.333	.0	3.000	12.5	5.666	1.3	8.333	.1	10.999	.0
.667	.0	3.333	9.2	5.999	1.1	8.666	.1	11.332	.0
1.000	.0	3.666	6.6	6.333	.8	8.999	.0	11.665	.0
1.333	.8	4.000	4.7	6.666	.5	9.332	.0	11.999	.0
1.666	55.8	4.333	3.4	6.999	.3	9.666	.0	12.332	.0
2.000	63.3	4.666	2.5	7.333	.2	9.999	.0		
2.333	37.1	5.000	1.9	7.666	.1	10.332	.0		

RUNOFF VOLUME = 1.48840 INCHES = 6.1123 ACRES-DEET
PEAK DISCHARGE RATE = 69.07 CFS AT 1.833 HOURS BASIN AREA = .0770 SQ. MI.

*** ROUTE THRU LAST 48" SECTION IN WEST BASIN 508
*** TO BRANCH AT BASIN 509*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.3
.42	.7	1.5
.63	1.3	3.4
.83	1.9	6.1
1.04	2.6	9.5
1.25	3.4	13.6
1.46	4.1	18.3
1.67	5.0	23.3
1.88	5.8	28.8
2.08	6.6	34.4
2.29	7.5	40.2
2.50	8.3	45.9
2.71	9.1	51.5
2.92	9.8	56.7
3.13	10.5	61.3
3.34	11.2	65.2
3.54	11.8	68.0
3.75	12.2	69.1
4.00	12.6	69.1

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=700 SLP=0.002

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.34	.1441
.417	.695	1.46	.0924
.625	1.255	3.40	.0718
.834	1.898	6.12	.0603
1.042	2.604	9.55	.0530
1.251	3.358	13.63	.0479
1.459	4.146	18.25	.0442
1.668	4.960	23.34	.0413
1.876	5.788	28.77	.0391
2.084	6.621	34.43	.0374
2.293	7.451	40.20	.0360
2.501	8.267	45.93	.0350
2.710	9.062	51.48	.0342
2.918	9.823	56.68	.0337
3.127	10.539	61.33	.0334
3.335	11.195	65.20	.0334
3.544	11.773	67.96	.0337
3.752	12.243	69.10	.0345
4.000	12.566	69.10	.0354

ROUTE ID=3 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	20.1	5.333	1.6	7.999	.1
.333	.0	3.000	13.0	5.666	1.3	8.333	.1
.667	.0	3.333	9.5	5.999	1.1	8.666	.1
1.000	.0	3.666	6.9	6.333	.9	8.999	.0
1.333	.2	4.000	4.9	6.666	.6	9.332	.0
1.666	51.0	4.333	3.6	6.999	.4	9.666	.0
2.000	64.4	4.666	2.6	7.333	.2	9.999	.0
2.333	39.7	5.000	2.0	7.666	.2	10.332	.0
						12.665	.0

RUNOFF VOLUME = 1.48840 INCHES = 6.1123 ACRES-FEET
PEAK DISCHARGE RATE = 68.12 CFS AT 1.866 HOURS BASIN AREA = .0770 SQ. MI.

*** CALCULATE B509 ***
** BASIN B509 A=0.0122 SQMI **
COMPUTE NM HYD ID=2 HYD NO=509 DA=0.0122 SQ MI
PBR A=1.0 PBR B=0.0 PBR C=22.0 PBR D=77.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 38.029 CFS UNIT VOLUME = .9998 B = 526.28 P60 = 2.0100
AREA = .009394 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .107021HR TP = .130000HR K/TP RATIO = .823238 SHAPE CONSTANT, N = 4.337543
UNIT PEAK = 8.1391 CFS UNIT VOLUME = .9989 B = 377.08 P60 = 2.0100
AREA = .002806 SQ MI IA = .36304 INCHES INF = .86652 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD

ID=2 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 509.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	17.0	3.333	.2	5.000	.2
.333	.0	2.000	7.7	3.666	.2	5.333	.2
.667	.0	2.333	1.6	4.000	.2	5.666	.2
1.000	.0	2.666	.7	4.333	.2	5.999	.2
1.333	9.5	3.000	.3	4.666	.2	6.333	.0

RUNOFF VOLUME = 1.87993 INCHES = 1.2232 ACRES-DEBT

PEAK DISCHARGE RATE = 34.17 CFS AT 1.500 HOURS BASIN AREA = .0122 SQ. MI.

*** ADD BASIN 508/507 RT TO B509 AT NW ISLAND BASIN 509*****

ADD HYD ID=1 HYD=234.5 ID I=2 II=3

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	20.8	5.333	1.8	7.999	.1
.333	.0	3.000	13.4	5.666	1.5	8.333	.1
.667	.0	3.333	9.7	5.999	1.3	8.666	.1
1.000	.0	3.666	7.1	6.333	.9	8.999	.0
1.333	9.7	4.000	5.1	6.666	.6	9.332	.0
1.666	68.0	4.333	3.7	6.999	.4	9.666	.0
2.000	72.1	4.666	2.8	7.333	.2	9.999	.0
2.333	41.3	5.000	2.2	7.666	.2	10.332	.0

RUNOFF VOLUME = 1.54194 INCHES = 7.3355 ACRES-DEBT

PEAK DISCHARGE RATE = 78.70 CFS AT 1.833 HOURS BASIN AREA = .0892 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED FR B509 AND PONDING IS KNOWN ****

***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****

ROUTE RESERVOIR ID=2 HYD=105.01 INFLOW ID=1 CODE=20

OUTFLOW STORAGE DEPTH

0	0
146.57	.01
146.58	1.1
146.59	2.2

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	9.72	.00	.001	9.62
2.00	72.09	.00	.005	72.14
2.67	20.79	.00	.001	20.82
3.33	9.73	.00	.001	9.74
4.00	5.05	.00	.000	5.06

4.67	2.79	.00	.000	2.80
5.33	1.77	.00	.000	1.77
6.00	1.30	.00	.000	1.30
6.67	.57	.00	.000	.58
7.33	.25	.00	.000	.25
8.00	.12	.00	.000	.12
8.67	.06	.00	.000	.06
9.33	.03	.00	.000	.03
10.00	.02	.00	.000	.02
10.67	.01	.00	.000	.01
11.33	.00	.00	.000	.00

PEAK DISCHARGE = 78.685 CFS - PEAK OCCURS AT HOUR 1.83
 MAXIMUM WATER SURFACE ELEVATION = .005
 MAXIMUM STORAGE = .0054 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	20.8	5.333	1.8	7.999	.1	10.666	.0
.333	.0	3.000	13.4	5.666	1.5	8.333	.1	10.999	.0
.667	.0	3.333	9.7	5.999	1.3	8.666	.1	11.332	.0
1.000	.0	3.666	7.1	6.333	.9	8.999	.0	11.665	.0
1.333	9.6	4.000	5.1	6.666	.6	9.332	.0	11.999	.0
1.666	67.9	4.333	3.7	6.999	.4	9.666	.0	12.332	.0
2.000	72.1	4.666	2.8	7.333	.2	9.999	.0	12.665	.0
2.333	41.4	5.000	2.2	7.666	.2	10.332	.0		

RUNOFF VOLUME = 1.54194 INCHES = 7.3355 ACRE-FEET
 PEAK DISCHARGE RATE = 78.69 CFS AT 1.833 HOURS BASIN AREA = .0892 SQ. MI.

*** ROUTE THRU LAST 48" SECTION TO JUNCTION AT SW CORNER OF RUNWAY*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.009
 DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.7
.42	.7	3.1
.63	1.3	7.2
.83	1.9	13.0
1.04	2.6	20.3
1.25	3.4	28.9
1.46	4.1	38.7
1.67	5.0	49.5
1.88	5.8	61.0
2.08	6.6	73.0
2.29	7.5	85.3
2.50	8.3	97.4
2.71	9.1	109.2
2.92	9.8	120.2
3.13	10.5	130.1
3.34	11.2	138.3

3.54 11.8 144.2
3.75 12.2 146.6
4.00 12.6 146.6

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=350 SLP=0.009

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.71	.0340
.417	.695	3.10	.0218
.625	1.255	7.21	.0169
.834	1.898	12.97	.0142
1.042	2.604	20.26	.0125
1.251	3.358	28.90	.0113
1.459	4.146	38.72	.0104
1.668	4.960	49.51	.0097
1.876	5.788	61.03	.0092
2.084	6.621	73.04	.0088
2.293	7.451	85.28	.0085
2.501	8.267	97.44	.0082
2.710	9.062	109.21	.0081
2.918	9.823	120.23	.0079
3.127	10.539	130.10	.0079
3.335	11.195	138.30	.0079
3.544	11.773	144.18	.0079
3.752	12.243	146.59	.0081
4.000	12.566	146.59	.0083

ROUTE

ID=3 HYD=105.1 INFLOW ID=2 DT=0.03333 HR

***** HYDROGRAPH FROM SOUTH BRANCH AT JUNCTION*****

PRINT HYD

ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	21.1	5.333	1.8	7.999	.1	10.666	.0
.333	.0	3.000	13.5	5.666	1.5	8.333	.1	10.999	.0
.667	.0	3.333	9.8	5.999	1.3	8.666	.1	11.332	.0
1.000	.0	3.666	7.2	6.333	1.0	8.999	.0	11.665	.0
1.333	8.3	4.000	5.1	6.666	.6	9.332	.0	11.999	.0
1.666	67.2	4.333	3.8	6.999	.4	9.666	.0	12.332	.0
2.000	72.5	4.666	2.8	7.333	.3	9.999	.0	12.665	.0
2.333	42.1	5.000	2.2	7.666	.2	10.332	.0		

RUNOFF VOLUME = 1.54195 INCHES = 7.3355 ACRE-FOOT

PEAK DISCHARGE RATE = 78.61 CFS AT 1.833 HOURS BASIN AREA = .0892 SQ. MI.

*** ADD SOUTH AND NORTH BRANCH HYDROGRAPHS AT JUNCTION*****

ADD HYD

ID=1 HYD=234.5 ID I=10 II=3

PRINT HYD

ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

.000	.0	2.666	71.5	5.333	10.6	7.999	.5	10.666	.0
.333	.0	3.000	57.0	5.666	7.8	8.333	.3	10.999	.0
.667	.0	3.333	46.1	5.999	6.2	8.666	.2	11.332	.0
1.000	.0	3.666	34.6	6.333	4.4	8.999	.1	11.665	.0
1.333	10.6	4.000	25.8	6.666	2.8	9.332	.1	11.999	.0
1.666	202.2	4.333	21.3	6.999	1.8	9.666	.1	12.332	.0
2.000	167.1	4.666	17.3	7.333	1.1	9.999	.0	12.665	.0
2.333	110.9	5.000	14.0	7.666	.7	10.332	.0		

RUNOFF VOLUME = 1.79542 INCHES = 22.7131 ACRE-FeET
PEAK DISCHARGE RATE = 202.20 CFS AT 1.667 HOURS BASIN AREA = .2372 SQ. MI.

*** ROUTE THRU 66" SECTION TO ACCESS RD B AREA*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.01
DIA=5.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0					
WATER		FLOW		FLOW	
SURFACE	AREA	AREA	RATE		
SLBV	SQ FT	CFS			
.00	.0	.0	.0		
.29	.5	1.8			
.57	1.3	7.6			
.86	2.4	17.8			
1.15	3.6	32.0			
1.43	4.9	49.9			
1.72	6.3	71.2			
2.01	7.8	95.4			
2.29	9.4	122.0			
2.58	10.9	150.4			
2.87	12.5	180.0			
3.15	14.1	210.1			
3.44	15.6	240.1			
3.73	17.1	269.1			
4.01	18.6	296.3			
4.30	19.9	320.6			
4.59	21.2	340.8			
4.87	22.3	355.3			
5.16	23.1	361.2			
5.50	23.8	361.2			

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=1000 SLP=0.01

TRAVEL TIME TABLE					
REACH= 15.0					
WATER	AVERAGE	FLOW	TRAVEL		
DEPTH	AREA	RATE	TIME		
FEET	SQ.FT.	CFS	HRS		
.287	.472	1.76	.0745		
.573	1.314	7.65	.0477		
.860	2.373	17.78	.0371		
1.146	3.589	31.97	.0312		
1.433	4.923	49.92	.0274		
1.720	6.348	71.23	.0248		
2.006	7.839	95.43	.0228		
2.293	9.377	122.00	.0213		
2.579	10.942	150.40	.0202		
2.866	12.518	180.00	.0193		

3.153	14.086	210.14	.0186
3.439	15.630	240.11	.0181
3.726	17.132	269.11	.0177
4.013	18.571	296.28	.0174
4.299	19.925	320.59	.0173
4.586	21.166	340.81	.0173
4.872	22.258	355.29	.0174
5.159	23.147	361.23	.0178
5.500	23.758	361.23	.0183

ROUTE ID=2 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
 PRINT HYD ID=2 CODR=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	72.8	5.333	10.9	7.999	.5	10.666	.0
.333	.0	3.000	57.6	5.666	8.0	8.333	.3	10.999	.0
.667	.0	3.333	46.8	5.999	6.3	8.666	.2	11.332	.0
1.000	.0	3.666	35.4	6.333	4.7	8.999	.1	11.665	.0
1.333	5.0	4.000	26.2	6.666	3.0	9.332	.1	11.999	.0
1.666	202.3	4.333	21.6	6.999	1.9	9.666	.1	12.332	.0
2.000	168.7	4.666	17.6	7.333	1.3	9.999	.0	12.665	.0
2.333	113.6	5.000	14.2	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.79542 INCHES = 22.7132 ACRES-FEET
 PEAK DISCHARGE RATE = 202.31 CFS AT 1.667 HOURS BASIN AREA = .2372 SQ. MI.

*** ROUTE THRU LAST 54* SECTION CHANNEL AT BASE*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.07
 DIA=4.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELBV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.23	.3	2.7
.47	.9	11.8
.70	1.6	27.5
.94	2.4	49.5
1.17	3.3	77.3
1.41	4.2	110.4
1.64	5.2	147.8
1.88	6.3	189.0
2.11	7.3	233.0
2.35	8.4	278.9
2.58	9.4	325.6
2.81	10.5	372.0
3.05	11.5	416.9
3.28	12.4	459.0
3.52	13.3	496.7
3.75	14.2	528.0
3.99	14.9	550.5
4.22	15.5	559.7
4.50	15.9	559.7

COMPUTE TRAVEL TIME ID=11 REACH=15 VS NO=1 L=600 SLP=0.07

TRAVEL TIME TABLE

RRACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.235	.316	2.73	.0193
.469	.880	11.85	.0124
.704	1.588	27.54	.0096
.938	2.402	49.54	.0081
1.173	3.296	77.34	.0071
1.407	4.249	110.35	.0064
1.641	5.248	147.85	.0059
1.876	6.277	189.03	.0055
2.111	7.325	233.02	.0052
2.345	8.380	278.88	.0050
2.579	9.430	325.58	.0048
2.814	10.463	372.01	.0047
3.049	11.468	416.95	.0046
3.283	12.432	459.04	.0045
3.518	13.338	496.70	.0045
3.752	14.169	528.04	.0045
3.987	14.900	550.46	.0045
4.221	15.495	559.67	.0046
4.500	15.904	559.67	.0047

ROUTE ID=11 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
 PRINT HYD ID=11 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	73.1	5.333	10.9	7.999	.5
.333	.0	3.000	57.7	5.666	8.1	8.333	.3
.667	.0	3.333	47.0	5.999	6.3	8.666	.2
1.000	.0	3.666	35.6	6.333	4.8	8.999	.2
1.333	3.5	4.000	26.3	6.666	3.0	9.332	.1
1.666	202.3	4.333	21.7	6.999	2.0	9.666	.1
2.000	169.2	4.666	17.7	7.333	1.3	9.999	.0
2.333	114.4	5.000	14.3	7.666	.8	10.332	.0
						10.666	.0
						10.999	.0
						11.332	.0
						11.665	.0
						11.999	.0
						12.332	.0
						12.665	.0

RUNOFF VOLUME = 1.79542 INCHES = 22.7132 ACRE-FOOT
 PEAK DISCHARGE RATE = 202.29 CFS AT 1.667 HOURS BASIN AREA = .2372 SQ. MI.

****CALC BASIN 506 ***

B506 A=.032 SQ MI **

COMPUTE NM HYD

ID=5 HYD NO=506 DA=.032 SQ MI
 PRR A=10.0 PRR B=5.0 PRR C =70.0 PRR D=15.0
 TP=-.18 RAIN=-1

K = .098100HR TP = .180000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 14.034 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0100
 AREA = .004800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .155419HR TP = .180000HR K/TP RATIO = .863439 SHAPE CONSTANT, N = 4.117025
 UNIT PEAK = 54.838 CFS UNIT VOLUME = .9999 B = 362.90 P60 = 2.0100

ARBA = .027200 SQ MI IA = .39412 INCHES INF = .95353 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE =10

OUTFLOW HYDROGRAPH RESERVOIR 506.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	41.6	3.333	.4	5.000	.1
.333	.0	2.000	11.9	3.666	.3	5.333	.1
.667	.0	2.333	3.7	4.000	.2	5.666	.1
1.000	.0	2.666	1.7	4.333	.1	5.999	.1
1.333	3.9	3.000	.9	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.17637 INCHES = 2.0077 ACRES-PEBT
PEAK DISCHARGE RATE = 53.36 CFS AT 1.567 HOURS BASIN ARBA = .0320 SQ. MI.

*** ROUTE THRU 24* SECTION TO CHANNEL*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.168
DIA=2.0 FT N=0.024

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW	FLOW
SURFACE	ARBA	RATE	
ELBY	SQ FT	CFS	
.00	.0	.0	
.10	.1	.3	
.21	.2	1.1	
.31	.3	2.7	
.42	.5	4.8	
.52	.7	7.5	
.63	.8	10.7	
.73	1.0	14.3	
.83	1.2	18.2	
.94	1.4	22.5	
1.04	1.7	26.9	
1.15	1.9	31.4	
1.25	2.1	35.9	
1.35	2.3	40.3	
1.46	2.5	44.3	
1.56	2.6	47.9	
1.67	2.8	51.0	
1.77	2.9	53.1	
1.88	3.1	54.0	
2.00	3.1	54.0	

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=220 SLP=0.168

TRAVEL TIME TABLE

REACH= 15.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	ARBA	RATE	TIME
FEET	SQ.FT.	CFS	HRS
.104	.062	.26	.0145
.208	.174	1.14	.0093
.313	.314	2.66	.0072
.417	.475	4.78	.0061

.521	.651	7.47	.0053
.625	.839	10.65	.0048
.730	1.037	14.27	.0044
.834	1.240	18.25	.0042
.938	1.447	22.49	.0039
1.042	1.655	26.92	.0038
1.146	1.863	31.43	.0036
1.251	2.067	35.91	.0035
1.355	2.265	40.25	.0034
1.459	2.456	44.31	.0034
1.563	2.635	47.95	.0034
1.668	2.799	50.97	.0034
1.772	2.943	53.14	.0034
1.876	3.061	54.03	.0035
2.000	3.142	54.03	.0036

ROUTE
PRINT HYD ID=2 HYD=105.1 INFLOW ID=5 DT=0.03333 HR
ID=2 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	42.1	3.333	.5	5.000	.1
.333	.0	2.000	12.0	3.666	.3	5.333	.1
.667	.0	2.333	3.8	4.000	.2	5.666	.1
1.000	.0	2.666	1.8	4.333	.1	5.999	.1
1.333	3.5	3.000	.9	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.17637 INCHRS = 2.0077 ACRE-FEET
PEAK DISCHARGE RATE = 53.36 CFS AT 1.567 HOURS BASIN AREA = .0320 SQ. MI.

*** ADD BASIN 506 AND WESTEND FLOWS AT TOP OF CHANNEL FOR SUBTOTAL*****
ADD HYD ID=10 HYD=234.5 ID I=11 II=2
PRINT HYD ID=10 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	74.8	5.333	11.0	7.999	.5
.333	.0	3.000	58.6	5.666	8.2	8.333	.3
.667	.0	3.333	47.5	5.999	6.4	8.666	.2
1.000	.0	3.666	35.9	6.333	4.8	8.999	.2
1.333	6.9	4.000	26.5	6.666	3.1	9.332	.1
1.666	244.4	4.333	21.8	6.999	2.0	9.666	.1
2.000	181.2	4.666	17.8	7.333	1.3	9.999	.0
2.333	118.2	5.000	14.4	7.666	.8	10.332	.0

RUNOFF VOLUME = 1.72183 INCHRS = 24.7208 ACRE-FEET
PEAK DISCHARGE RATE = 246.62 CFS AT 1.633 HOURS BASIN AREA = .2692 SQ. MI.

*** CALC FLOW FROM BASIN B510 ***
COMPUTE NM HYD ID=4 HYD NO=510 DA=0.024 SQ MI
PER A=25.0 PER B=25.0 PER C=46.0 PER D=4.0
TP=-.13 RAIN=-1

K = .128614HR TP = .130000HR K/TP RATIO = .989339 SHAPE CONSTANT, N = 3.568858
UNIT PEAK = 24.524 CFS UNIT VOLUME = .9997 B = 325.32 P60 = 2.0100
AREA = .009800 SQ MI IA = .49235 INCHES INF = 1.22857 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 511.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.7	2.666	.2	4.000	.0
.333	.0	1.666	8.5	3.000	.1	4.333	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0
1.000	.0	2.333	.6	3.666	.0	5.000	.0

RUNOFF VOLUME = .81964 INCHES = .4371 ACRE-FEET
PEAK DISCHARGE RATE = 15.42 CFS AT 1.500 HOURS BASIN AREA = .0100 SQ. MI.

*** ADD BASIN 511 AND SUBTOTAL TO CHANNEL FROM ABOVE*****
ADD HYD ID=2 HYD=234.5 ID I=15 II=1
***** HYDROGRAPH INTO CHANNEL*****
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	75.7	5.333	11.0	7.999	.5
.333	.0	3.000	59.0	5.666	8.2	8.333	.3
.667	.0	3.333	47.6	5.999	6.5	8.666	.2
1.000	.0	3.666	36.0	6.333	4.8	8.999	.2
1.333	9.8	4.000	26.5	6.666	3.1	9.332	.1
1.666	274.7	4.333	21.8	6.999	2.0	9.666	.1
2.000	187.0	4.666	17.8	7.333	1.3	9.999	.0
2.333	120.3	5.000	14.4	7.666	.8	10.332	.0

RUNOFF VOLUME = 1.62668 INCHES = 26.3044 ACRE-FEET
PEAK DISCHARGE RATE = 284.60 CFS AT 1.600 HOURS BASIN AREA = .3032 SQ. MI.

***** ROUTE THROUGH CHANNEL TO UNIVERSITY *****
COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=8
CH SLP=.0632 FP SLP=.0632 N=.033 DIST=36
DIST ELBY DIST ELBY DIST ELBY
0 8 8 0 28 0
36 8

RATING CURVE VALLEY SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
ELBY	SQ FT	CFS
.00	.0	.0
.42	8.6	53.3
.84	17.6	169.0
1.26	26.9	331.7
1.68	36.5	535.7

2.11	46.5	777.5
2.53	56.9	1055.3
2.95	67.6	1367.5
3.37	78.7	1713.2
3.79	90.1	2091.9
4.21	101.9	2503.2
4.63	114.1	2946.8
5.05	126.6	3422.7
5.47	139.4	3930.8
5.89	152.6	4471.3
6.32	166.2	5044.2
6.74	180.1	5649.7
7.16	194.4	6288.1
7.58	209.0	6959.7
8.00	224.0	7664.5

COMPUTE TRAVEL TIME ID=4 RBACH=1 VS NO=1 L=475 SLP=.0632

TRAVEL TIME TABLE
RBACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.421	8.598	53.35	.0213
.842	17.551	168.96	.0137
1.263	26.859	331.69	.0107
1.684	36.521	535.66	.0090
2.105	46.537	777.54	.0079
2.526	56.909	1055.27	.0071
2.947	67.634	1367.46	.0065
3.368	78.715	1713.20	.0061
3.789	90.150	2091.90	.0057
4.211	101.939	2503.16	.0054
4.632	114.083	2946.78	.0051
5.053	126.582	3422.66	.0049
5.474	139.435	3930.79	.0047
5.895	152.643	4471.25	.0045
6.316	166.205	5044.17	.0043
6.737	180.122	5649.73	.0042
7.158	194.393	6288.14	.0041
7.579	209.019	6959.66	.0040
8.000	224.000	7664.54	.0039

ROUTE ID=4 HYD NO=110.3 INFLOW ID=2 DT=.03333 HR
*** CHANNEL DISCHARGE***
PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 110.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	76.8	5.333	11.3	7.999	.5	10.666	.0
.333	.0	3.000	59.5	5.666	8.4	8.333	.3	10.999	.0
.667	.0	3.333	48.6	5.999	6.5	8.666	.2	11.332	.0
1.000	.0	3.666	36.7	6.333	4.9	8.999	.2	11.665	.0
1.333	6.2	4.000	27.0	6.666	3.1	9.332	.1	11.999	.0
1.666	276.8	4.333	22.0	6.999	2.0	9.666	.1	12.332	.0
2.000	188.7	4.666	18.1	7.333	1.3	9.999	.0	12.665	.0
2.333	121.9	5.000	14.6	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.62669 INCHES = 26.3044 ACRE-Feet

PEAK DISCHARGE RATE = 284.81 CFS AT 1.600 HOURS BASIN ARBA = .3032 SQ. MI.

*** CALCULATE B513 ***

COMPUTE NM HYD

ID=2 HYD NO=513 DA=0.027 SQ MI
PER A=60.0 PER B=20.0 PER C=17.0 PER D=3.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.2791 CFS UNIT VOLUME = .9966 B = 526.28 P60 = 2.0100
ARBA = .000810 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .141537HR TP = .130000HR K/TP RATIO = 1.088747 SHAPE CONSTANT, N = 3.245538
UNIT PEAK = 60.693 CFS UNIT VOLUME = .9997 B = 301.26 P60 = 2.0100
ARBA = .026190 SQ MI IA = .56649 INCHES INF = 1.43619 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 513.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	1.3	2.666	.7	4.000	.0	5.333	.0
.333	.0	1.666	19.8	3.000	.3	4.333	.0	5.666	.0
.667	.0	2.000	3.6	3.333	.1	4.666	.0	5.999	.0
1.000	.0	2.333	1.5	3.666	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = .70235 INCHES = 1.0114 ACRES-FEET
PEAK DISCHARGE RATE = 35.38 CFS AT 1.500 HOURS BASIN ARBA = .0270 SQ. MI.

*** ADD B513 AND CHANNEL DISCHARGE***

ADD HYD

ID=6 HYD=234.5 ID I=4 II=2

PRINT HYD

ID=6 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	77.5	5.333	11.3	7.999	.5	10.666	.0
.333	.0	3.000	59.8	5.666	8.4	8.333	.3	10.999	.0
.667	.0	3.333	48.8	5.999	6.6	8.666	.2	11.332	.0
1.000	.0	3.666	36.8	6.333	4.9	8.999	.2	11.665	.0
1.333	7.5	4.000	27.0	6.666	3.1	9.332	.1	11.999	.0
1.666	296.6	4.333	22.0	6.999	2.0	9.666	.1	12.332	.0
2.000	192.3	4.666	18.1	7.333	1.3	9.999	.0	12.665	.0
2.333	123.4	5.000	14.6	7.666	.8	10.332	.0		

RUNOFF VOLUME = 1.55110 INCHES = 27.3158 ACRES-FEET
PEAK DISCHARGE RATE = 312.85 CFS AT 1.600 HOURS BASIN ARBA = .3302 SQ. MI.

** NOW COMPUTE BASIN B512 ***

***BASIN 512 A=.03 SQ MI ***
COMPUTE NM HYD ID=15 HYD NO=512 DA=.030 SQ MI
PBR A=47 PBR B=33 PBR C=16 PBR D=4
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.8579 CFS UNIT VOLUME = .9975 B = 526.28 P60 = 2.0100
ARBA = .001200 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .138213HR TP = .130000HR K/TP RATIO = 1.063179 SHAPE CONSTANT, N = 3.321495
UNIT PEAK = 68.026 CFS UNIT VOLUME = 1.000 B = 307.06 P60 = 2.0100
ARBA = .028800 SQ MI IA = .54844 INCHES INF = 1.38563 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=10

OUTFLOW HYDROGRAPH RESERVOIR 512.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	2.0	2.666	.7	4.000	.0
.333	.0	1.666	23.1	3.000	.3	4.333	.0
.667	.0	2.000	4.4	3.333	.2	4.666	.0
1.000	.0	2.333	1.7	3.666	.1	5.000	.0
						6.333	.0

RUNOFF VOLUME = .74599 INCHES = 1.1936 ACRE-FEET
PEAK DISCHARGE RATE = 41.55 CFS AT 1.500 HOURS BASIN ARBA = .0300 SQ. MI.

*** ADD B512 AND SUBTOTAL TO CHANNEL ***
ADD HYD ID=20 HYD=111.0 ID I=15 II=6
PRINT HYD ID=20 CODE=10

PARTIAL HYDROGRAPH 111.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.666	78.2	5.333	11.3	7.999	.5
.333	.0	3.000	60.2	5.666	8.4	8.333	.3
.667	.0	3.333	48.9	5.999	6.6	8.666	.2
1.000	.0	3.666	36.9	6.333	4.9	8.999	.2
1.333	9.4	4.000	27.0	6.666	3.1	9.332	.1
1.666	319.7	4.333	22.1	6.999	2.0	9.666	.1
2.000	196.7	4.666	18.1	7.333	1.3	9.999	.0
2.333	125.1	5.000	14.6	7.666	.8	10.332	.0
						12.665	.0

RUNOFF VOLUME = 1.48405 INCHES = 28.5094 ACRE-FEET
PEAK DISCHARGE RATE = 345.52 CFS AT 1.600 HOURS BASIN ARBA = .3602 SQ. MI.

**** ROUTE INFO POND AT HEADS OF CULVERTS****
***** OUTFLOW IS APPROXIMATE CAPACITY OF 60" CULVERTS *****
ROUTE RESERVOIR ID=1 HYD=111.1 INFLOW ID=20 CODE=20

OUTFLOW STORAGE DEPTH
0
30 .30 1.0

60 .90 2.0
110 1.7 3.0
180 2.602 4.0
250 3.69 5.0
304 4.77 6.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELBY (FBRT)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	9.45	.08	.023	2.31
2.00	196.66	4.73	3.395	231.05
2.67	78.20	2.82	1.554	100.87
3.33	48.94	1.91	.848	57.38
4.00	27.04	1.14	.383	34.16
4.67	18.15	.66	.197	19.73
5.33	11.31	.42	.126	12.62
6.00	6.58	.24	.072	7.19
6.67	3.14	.12	.037	3.72
7.33	1.32	.05	.016	1.57
8.00	.54	.02	.006	.65
8.67	.23	.01	.003	.27
9.33	.11	.00	.001	.12
10.00	.05	.00	.001	.06
10.67	.02	.00	.000	.02
11.33	.01	.00	.000	.01
12.00	.00	.00	.000	.00
PEAK DISCHARGE = 256.339 CFS - PEAK OCCURS AT HOUR 1.80				
MAXIMUM WATER SURFACE ELEVATION = 5.117				
MAXIMUM STORAGE = 3.8168 AC-FT INCREMENTAL TIME= .033330HRS				

***** DISCHARGE TO UNPLATTED ARROYO *****
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 111.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.666	100.9	5.333	12.6	7.999	.6	10.666	.0
.333	.0	3.000	71.8	5.666	9.4	8.333	.4	10.999	.0
.667	.0	3.333	57.4	5.999	7.2	8.666	.3	11.332	.0
1.000	.0	3.666	45.3	6.333	5.6	8.999	.2	11.665	.0
1.333	2.3	4.000	34.2	6.666	3.7	9.332	.1	11.999	.0
1.666	234.1	4.333	24.5	6.999	2.4	9.666	.1	12.332	.0
2.000	231.0	4.666	19.7	7.333	1.6	9.999	.1	12.665	.0
2.333	162.3	5.000	15.8	7.666	1.0	10.332	.0		

RUNOFF VOLUME = 1.48405 INCHES = 28.5093 ACRE-FOOT
PEAK DISCHARGE RATE = 256.34 CFS AT 1.800 HOURS BASIN AREA = .3602 SQ. MI.

FLOW OUT OF 60" CULVERTS ON UNIVERSITY

FINISH

END TIME (HR:MIN:SEC) = 08:43:48

AIA DMP - FUTURE BASIN WE

AHYMO OUTPUT FILE

AHYMO PROGRAM (AHYMO491) - AMARCA VERSION OF HYMO - APRIL, 1991

RUN DATE (MON/DAY/YR) = 04/14/1995

START TIME (HR:MIN:SEC) = 08:45:53

USER NO. = MOLZCONM.101

INPUT FILE = wefut100.dat

***** MOLZEN-CORBIN AND ASSOCIATES *****

***** DRAINAGE PORTION FOR ABQ INTERNATIONAL AIRPORT *****

**** 100 YEAR STORM *****

***** WEST END *****

B501/B502 ENTIRE 10 YEAR FLOWS ARE DISCHARGED TO NEW SYSTEM*

***B503, B505 FLOWS BASED ON PIPING IN PLACE, NOT RESIZED FOR 10 YR STORM**

**** B504 & B505A OLD TERMINAL AREA AND NW APRON AREA NEW LINE INCLUDED HERE**

***** ESTIMATE NEW PIPING AT EAST END OF BASIN TO SIMULATE 10 YR FLOWS****

**** NOW INCLUDES BASINS TO S. DIV. CHANNEL AND GEORGE ROAD BASINS OR

**** PROJECTED SUNPORT CORRIDOR*****

START 0.00

RAINFALL

TYPE=1 RAIN QUARTER=0.0 RAIN ONE=2.01

RAIN SIX=2.35 RAIN DAY=0.0 DT=0.03333

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

DT = .033330 HOURS	END TIME = 5.999400 HOURS
.0000 .0016 .0033 .0049 .0066 .0084 .0102	
.0120 .0139 .0158 .0178 .0199 .0219 .0241	
.0263 .0286 .0309 .0333 .0358 .0384 .0411	
.0439 .0467 .0497 .0529 .0561 .0596 .0631	
.0669 .0709 .0751 .0807 .0866 .0930 .1066	
.1371 .1840 .2514 .3434 .4644 .6186 .8106	
1.0449 1.2624 1.3533 1.4300 1.4982 1.5602 1.6174	
1.6704 1.7200 1.7664 1.8102 1.8514 1.8904 1.9273	
1.9622 1.9953 2.0268 2.0566 2.0850 2.0915 2.0976	
2.1033 2.1088 2.1140 2.1191 2.1239 2.1285 2.1329	
2.1373 2.1414 2.1454 2.1494 2.1531 2.1568 2.1604	
2.1639 2.1673 2.1706 2.1739 2.1771 2.1802 2.1832	
2.1862 2.1891 2.1919 2.1947 2.1975 2.2002 2.2028	
2.2054 2.2080 2.2105 2.2130 2.2154 2.2178 2.2202	
2.2225 2.2248 2.2270 2.2293 2.2315 2.2336 2.2358	
2.2379 2.2399 2.2420 2.2440 2.2460 2.2480 2.2500	
2.2519 2.2538 2.2557 2.2576 2.2594 2.2612 2.2631	
2.2648 2.2666 2.2684 2.2701 2.2718 2.2735 2.2752	
2.2769 2.2785 2.2802 2.2818 2.2834 2.2850 2.2866	
2.2881 2.2897 2.2912 2.2928 2.2943 2.2958 2.2973	
2.2987 2.3002 2.3017 2.3031 2.3045 2.3060 2.3074	
2.3088 2.3102 2.3115 2.3129 2.3143 2.3156 2.3169	
2.3183 2.3196 2.3209 2.3222 2.3235 2.3248 2.3261	
2.3273 2.3286 2.3298 2.3311 2.3323 2.3335 2.3348	
2.3360 2.3372 2.3384 2.3396 2.3408 2.3419 2.3431	
2.3443 2.3454 2.3466 2.3477 2.3488 2.3500	

CALCULATE FLOW FROM BASIN ONE

** BASIN B501 - A=.043 SQ MI

COMPUTE NM HYD

ID=3 HYD NO=101 DA=.043 SQ MI

PER A=2 PER B=0 PER C=17.0 PER D=81.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 141.00 CFS UNIT VOLUME = 1.000 B = 526.28 P60 = 2.0100

AREA = .034830 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .110197HR TP = .130000HR K/TP RATIO = .847669 SHAPE CONSTANT, N = 4.200377
UNIT PEAK = 23.147 CFS UNIT VOLUME = .9999 B = 368.32 P60 = 2.0100
AREA = .008170 SQ MI IA = .38158 INCHES INF = .91842 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 101.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	60.4	3.333	.9	5.000	.6
.333	.0	2.000	27.8	3.666	.7	5.333	.6
.667	.0	2.333	5.8	4.000	.6	5.666	.7
1.000	.0	2.666	2.4	4.333	.6	5.999	.7
1.333	34.8	3.000	1.3	4.666	.6	6.333	.1

RUNOFF VOLUME = 1.91155 INCHES = 4.3838 ACRE-FEET
PEAK DISCHARGE RATE = 121.58 CFS AT 1.500 HOURS BASIN AREA = .0430 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=3 CODE=20

OUTFLOW	STORAGE	DEPTH
0	0	0
81.73	.01	.01
81.74	1.1	.5
81.75	2.2	1.0

* * * * *

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	34.81	.00	.004	34.21
2.00	27.76	.00	.003	28.28
2.67	2.39	.00	.000	2.41
3.33	.86	.00	.000	.86
4.00	.62	.00	.000	.62
4.67	.60	.00	.000	.60
5.33	.64	.00	.000	.64
6.00	.73	.00	.000	.73
6.67	.02	.00	.000	.02

PEAK DISCHARGE = 81.733 CFS - PEAK OCCURS AT HOUR 1.60
MAXIMUM WATER SURFACE ELEVATION = .171
MAXIMUM STORAGE = .3678 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
------	------	------	------	------	------	------	------

HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	81.7	3.333	.9	5.000	.6
.333	.0	2.000	28.3	3.666	.7	5.333	.6
.667	.0	2.333	5.9	4.000	.6	5.666	.7
1.000	.0	2.666	2.4	4.333	.6	5.999	.7
1.333	34.2	3.000	1.3	4.666	.6	6.333	.1

RUNOFF VOLUME = 1.91155 INCHES = 4.3838 ACRE-FEET
PEAK DISCHARGE RATE = 81.73 CFS AT 1.600 HOURS BASIN AREA = .0430 SQ. MI.

****ROUTE CAP. THROUGH 48" RCP****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.0028
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0					
WATER SURFACE		FLOW AREA		FLOW RATE	
ELEV	SQ FT	SQ FT	CFS		
.00	.0	.0	.0		
.21	.2	.4			
.42	.7	1.7			
.63	1.3	4.0			
.83	1.9	7.2			
1.04	2.6	11.3			
1.25	3.4	16.1			
1.46	4.1	21.6			
1.67	5.0	27.6			
1.88	5.8	34.0			
2.08	6.6	40.7			
2.29	7.5	47.6			
2.50	8.3	54.3			
2.71	9.1	60.9			
2.92	9.8	67.1			
3.13	10.5	72.6			
3.34	11.2	77.1			
3.54	11.8	80.4			
3.75	12.2	81.8			
4.00	12.6	81.8			

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=1270 SLP=0.0028

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH	AVERAGE AREA	FLOW RATE	TRAVEL TIME
FEET	SQ.FT.	CFS	HRS
.208	.250	.40	.2210
.417	.695	1.73	.1416
.625	1.255	4.02	.1100
.834	1.898	7.24	.0925
1.042	2.604	11.30	.0813
1.251	3.358	16.12	.0735
1.459	4.146	21.60	.0677
1.668	4.960	27.62	.0634
1.876	5.788	34.04	.0600
2.084	6.621	40.74	.0573
2.293	7.451	47.56	.0553
2.501	8.267	54.35	.0537

PARTIAL HYDROGRAPH 105.10

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RUNOFF VOLUME = 1.91156 INCHES = 4.3838 ACRES-FEET
PEAK DISCHARGE RATE = 81.13 CFS AT 1.766 HOURS BASIN AREA = .0430 SQ. MI.

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K = .109000HR TP = .200000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 68.995 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 2.0100
AREA = .026220 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

```

PRINT HYD ID=3 CODE=10

TIME		FLOW		TIME		FLOW		TIME		FLOW	
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	67.2	3.333	1.1	5.000	.5	6.666	.0		
.333	.0	2.000	26.8	3.666	.7	5.333	.5	6.999	.0		
.667	.0	2.333	8.3	4.000	.6	5.666	.5	7.333	.0		
1.000	.0	2.666	3.6	4.333	.5	5.999	.5	7.666	.0		
1.333	11.2	3.000	1.8	4.666	.5	6.333	.1				

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RUNOFF VOLUME = 1.78487 INCHES = 3.6173 ACRE-FOOT
PEAK DISCHARGE RATE = 82.37 CFS AT 1.567 HOURS BASIN AREA = .0380 SQ. MI.

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*** ADD B502 TO B501 ROUTE ***

ADD HYD ID=2 HYD=234.5 ID I=3 II=7
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	147.9	3.333	2.1	5.000	1.1	6.666	.1
.333	.0	2.000	58.2	3.666	1.5	5.333	1.1	6.999	.0
.667	.0	2.333	16.1	4.000	1.2	5.666	1.2	7.333	.0
1.000	.0	2.666	6.6	4.333	1.1	5.999	1.2	7.666	.0
1.333	30.0	3.000	3.4	4.666	1.1	6.333	.5		

RUNOFF VOLUME = 1.85211 INCHES = 8.0011 ACRE-FT
PEAK DISCHARGE RATE = 161.69 CFS AT 1.567 HOURS BASIN AREA = .0810 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=2 CODE=20

OUTFLOW STORAGE DEPTH
0
119.63 .01 .01
119.64 1.1 .5
119.65 2.2 1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	29.97	.00	.002	29.48
2.00	58.19	.01	.017	119.63
2.67	6.58	.00	.001	11.32
3.33	2.05	.00	.000	2.47
4.00	1.21	.00	.000	1.25
4.67	1.05	.00	.000	1.06
5.33	1.10	.00	.000	1.10
6.00	1.25	.00	.000	1.25
6.67	.14	.00	.000	.14
7.33	.01	.00	.000	.01

PEAK DISCHARGE = 119.637 CFS - PEAK OCCURS AT HOUR 1.77
MAXIMUM WATER SURFACE ELEVATION = .329
MAXIMUM STORAGE = .7200 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	119.6	3.333	2.5	5.000	1.1	6.666	.1
.333	.0	2.000	119.6	3.666	1.6	5.333	1.1	6.999	.0
.667	.0	2.333	32.1	4.000	1.2	5.666	1.2	7.333	.0
1.000	.0	2.666	11.3	4.333	1.1	5.999	1.2	7.666	.0
1.333	29.5	3.000	4.8	4.666	1.1	6.333	.5		

RUNOFF VOLUME = 1.85211 INCHES = 8.0011 ACRE-FOOT
PEAK DISCHARGE RATE = 119.64 CFS AT 1.766 HOURS BASIN AREA = .0810 SQ. MI.

ROUTE CAP. THROUGH 54" RCP**
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.0032
DIA=4.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0				
WATER	FLOW	FLOW	FLOW	
SURFACE	AREA	RATE		
BLBY	SQ FT	CFS		
.00	.0	.0		
.23	.3	.6		
.47	.9	2.5		
.70	1.6	5.9		
.94	2.4	10.6		
1.17	3.3	16.5		
1.41	4.2	23.6		
1.64	5.2	31.6		
1.88	6.3	40.4		
2.11	7.3	49.8		
2.35	8.4	59.6		
2.58	9.4	69.6		
2.81	10.5	79.5		
3.05	11.5	89.1		
3.28	12.4	98.1		
3.52	13.3	106.2		
3.75	14.2	112.9		
3.99	14.9	117.7		
4.22	15.5	119.7		
4.50	15.9	119.7		

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=550 SLP=0.0032

TRAVEL TIME TABLE

REACH= 15.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	AREA	RATE	TIME
FEET	SQ.FT.	CFS	HRS
.235	.316	.58	.0828
.469	.880	2.53	.0530
.704	1.588	5.89	.0412
.938	2.402	10.59	.0347
1.173	3.296	16.54	.0304
1.407	4.249	23.59	.0275
1.641	5.248	31.61	.0254
1.876	6.277	40.42	.0237
2.111	7.325	49.82	.0225
2.345	8.380	59.63	.0215
2.579	9.430	69.61	.0207
2.814	10.463	79.54	.0201
3.049	11.468	89.15	.0197
3.283	12.432	98.15	.0194
3.518	13.338	106.20	.0192
3.752	14.169	112.90	.0192
3.987	14.900	117.69	.0193
4.221	15.495	119.66	.0198
4.500	15.904	119.66	.0203

ROUTE ID=7 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	119.1	3.333	2.1	5.000	1.1	6.666	.2
.333	.0	2.000	119.6	3.666	1.5	5.333	1.1	6.999	.1
.667	.0	2.333	18.4	4.000	1.2	5.666	1.2	7.333	.0
1.000	.0	2.666	7.4	4.333	1.1	5.999	1.2	7.666	.0
1.333	20.5	3.000	3.6	4.666	1.1	6.333	.7	7.999	.0

RUNOFF VOLUME = 1.85212 INCHES = 8.0011 ACRE-FEET
PEAK DISCHARGE RATE = 119.59 CFS AT 2.000 HOURS BASIN ARBA = .0810 SQ. MI.

***CALC BASIN 503 ***

B503 A=.021 SQ MI *

COMPUTE NM HYD ID=5 HYD NO=102.1 DA=.021 SQ MI
PER A=0.0 PER B=0.0 PER C =2.0 PER D=98.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 83.313 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
ARBA = .020580 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
UNIT PEAK = 1.2392 CFS UNIT VOLUME = .9901 B = 383.55 P60 = 2.0100
ARBA = .000420 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE =10

PARTIAL HYDROGRAPH 102.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	31.2	3.333	.5	5.000	.4	6.666	.0
.333	.0	2.000	15.4	3.666	.4	5.333	.4	6.999	.0
.667	.0	2.333	3.2	4.000	.4	5.666	.4		
1.000	.0	2.666	1.3	4.333	.4	5.999	.4		
1.333	19.9	3.000	.7	4.666	.4	6.333	.0		

RUNOFF VOLUME = 2.09562 INCHES = 2.3471 ACRE-FEET
PEAK DISCHARGE RATE = 63.45 CFS AT 1.500 HOURS BASIN ARBA = .0210 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ***
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****

ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=5 CODE=20

OUTFLOW	STORAGE	DEPTH
0	0	0
27.88	.01	.01
27.89	1.1	.5

27.90 2.2 1.0

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

.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	19.94	.01	.007	19.01
2.00	15.40	.15	.320	27.88
2.67	1.30	.00	.000	1.31
3.33	.49	.00	.000	.49
4.00	.36	.00	.000	.36
4.67	.35	.00	.000	.35
5.33	.38	.00	.000	.38
6.00	.43	.00	.000	.43
6.67	.01	.00	.000	.01

PEAK DISCHARGE = 27.884 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = .229
MAXIMUM STORAGE = .4981 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	27.9	3.333	.5	5.000	.4
.333	.0	2.000	27.9	3.666	.4	5.333	.4
.667	.0	2.333	2.8	4.000	.4	5.666	.4
1.000	.0	2.666	1.3	4.333	.4	5.999	.4
1.333	19.0	3.000	.7	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.09560 INCHES = 2.3471 ACRE-FEET
PEAK DISCHARGE RATE = 27.88 CFS AT 1.700 HOURS BASIN AREA = .0210 SQ. MI.

****ROUTE CAP. THROUGH 30" RCP****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=2.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
BLBY	SQ FT	CFS
.00	.0	.0
.13	.1	.1
.26	.3	.6
.39	.5	1.4
.52	.7	2.5
.65	1.0	3.9
.78	1.3	5.5
.91	1.6	7.4
1.04	1.9	9.4
1.17	2.3	11.6
1.30	2.6	13.9
1.43	2.9	16.2
1.56	3.2	18.5

1.69	3.5	20.8
1.82	3.8	22.9
1.95	4.1	24.8
2.08	4.4	26.3
2.21	4.6	27.4
2.35	4.8	27.9
2.50	4.9	27.9

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=320 SLP=0.004

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.130	.098	.14	.0637
.261	.271	.59	.0408
.391	.490	1.37	.0317
.521	.741	2.47	.0267
.651	1.017	3.86	.0234
.782	1.312	5.50	.0212
.912	1.620	7.37	.0195
1.042	1.937	9.42	.0183
1.173	2.261	11.62	.0173
1.303	2.586	13.91	.0165
1.433	2.910	16.23	.0159
1.563	3.229	18.55	.0155
1.694	3.540	20.79	.0151
1.824	3.837	22.89	.0149
1.954	4.117	24.77	.0148
2.084	4.373	26.33	.0148
2.215	4.599	27.45	.0149
2.345	4.783	27.91	.0152
2.500	4.909	27.91	.0156

ROUTE ID=3 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	27.9	3.333	.5	5.000	.4
.333	.0	2.000	27.9	3.666	.4	5.333	.4
.667	.0	2.333	3.6	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.4
1.333	16.7	3.000	.8	4.666	.4	6.333	.1

RUNOFF VOLUME = 2.09563 INCHES = 2.3471 ACRES-FEET
PEAK DISCHARGE RATE = 27.88 CFS AT 1.866 HOURS BASIN AREA = .0210 SQ. MI.

*** ADD B503 ROUTE TO B501/B502 AT MIDDLE ISLAND*****
ADD HYD ID=2 HYD=234.5 ID I=3 II=7
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

.000	.0	1.666	147.0	3.333	2.6	5.000	1.4	6.666	.2
.333	.0	2.000	147.5	3.666	1.9	5.333	1.5	6.999	.1
.667	.0	2.333	22.0	4.000	1.6	5.666	1.6	7.333	.0
1.000	.0	2.666	8.7	4.333	1.5	5.999	1.7	7.666	.0
1.333	37.1	3.000	4.4	4.666	1.4	6.333	.7	7.999	.0

RUNOFF VOLUME = 1.90224 INCHES = 10.3481 ACRE-FOOT
 PEAK DISCHARGE RATE = 147.48 CFS AT 2.000 HOURS BASIN AREA = .1020 SQ. MI.

*** ROUTE THRU NEW 54" TO NEXT ISLAND*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.0047
 DIA=4.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE BLBV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.23	.3	.7
.47	.9	3.1
.70	1.6	7.1
.94	2.4	12.8
1.17	3.3	20.0
1.41	4.2	28.6
1.64	5.2	38.3
1.88	6.3	49.0
2.11	7.3	60.4
2.35	8.4	72.3
2.58	9.4	84.4
2.81	10.5	96.4
3.05	11.5	108.0
3.28	12.4	118.9
3.52	13.3	128.7
3.75	14.2	136.8
3.99	14.9	142.6
4.22	15.5	145.0
4.50	15.9	145.0

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=500 SLP=0.0047

TRAVEL TIME TABLE
 REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.235	.316	.71	.0621
.469	.880	3.07	.0398
.704	1.588	7.14	.0309
.938	2.402	12.84	.0260
1.173	3.296	20.04	.0228
1.407	4.249	28.59	.0206
1.641	5.248	38.31	.0190
1.876	6.277	48.98	.0178
2.111	7.325	60.38	.0168
2.345	8.380	72.26	.0161
2.579	9.430	84.36	.0155
2.814	10.463	96.40	.0151
3.049	11.468	108.04	.0147

3.283	12.432	118.95	.0145
3.518	13.338	128.71	.0144
3.752	14.169	136.82	.0144
3.987	14.900	142.63	.0145
4.221	15.495	145.02	.0148
4.500	15.904	145.02	.0152

ROUTE ID=3 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
TRAVEL TIME TABLE EXCEEDED

PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	147.0	3.333	2.7	5.000	1.4
.333	.0	2.000	147.5	3.666	2.0	5.333	1.5
.667	.0	2.333	23.0	4.000	1.6	5.666	1.5
1.000	.0	2.666	9.5	4.333	1.5	5.999	1.7
1.333	28.1	3.000	4.6	4.666	1.4	6.333	.9

RUNOFF VOLUME = 1.90225 INCHES = 10.3482 ACRE-FEET
PEAK DISCHARGE RATE = 147.48 CFS AT 2.000 HOURS BASIN AREA = .1020 SQ. MI.

** NOW COMPUTE BASIN B505 (PARTS 505 & 505A) **

***BASIN B505 A=.024 SQ MI ***

COMPUTE NM HYD ID=1 HYD NO=105.0 DA=.024 SQ MI

PER A=1.0 PER B=0.0 PER C=9.0 PER D=90.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 87.443 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
AREA = .021600 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .109926HR TP = .130000HR K/TP RATIO = .845587 SHAPE CONSTANT, N = 4.211669
UNIT PEAK = 6.8131 CFS UNIT VOLUME = .9985 B = 369.04 P60 = 2.0100
AREA = .002400 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	34.8	3.333	.5	5.000	.4
.333	.0	2.000	16.6	3.666	.4	5.333	.4
.667	.0	2.333	3.4	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	21.2	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.00850 INCHES = 2.5709 ACRE-FEET
PEAK DISCHARGE RATE = 70.31 CFS AT 1.500 HOURS BASIN AREA = .0240 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****

***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=1 CODE=20

OUTFLOW	STORAGE	DEPTH
0	0	0
24.28	.01	.01
24.29	1.1	.5
24.30	2.2	1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	21.20	.01	.008	20.04
2.00	16.60	.32	.698	24.29
2.67	1.42	.00	.001	1.40
3.33	.52	.00	.000	.52
4.00	.38	.00	.000	.38
4.67	.37	.00	.000	.37
5.33	.40	.00	.000	.40
6.00	.45	.00	.000	.45
6.67	.01	.00	.000	.01

PEAK DISCHARGE = 24.287 CFS - PEAK OCCURS AT HOUR 1.80
MAXIMUM WATER SURFACE ELEVATION = .349
MAXIMUM STORAGE = .7651 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	24.3	3.333	.5	5.000	.4
.333	.0	2.000	24.3	3.666	.4	5.333	.4
.667	.0	2.333	24.3	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	20.0	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.00849 INCHES = 2.5709 ACRES-FEET
PEAK DISCHARGE RATE = 24.29 CFS AT 1.800 HOURS BASIN AREA = .0240 SQ. MI.

*** ROUTE THRU 24* FROM APRON TO WEST ISLAND*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.010
DIA=2.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.1
.21	.2	.5
.31	.3	1.2
.42	.5	2.2
.52	.7	3.4
.63	.8	4.8

.73	1.0	6.4
.83	1.2	8.2
.94	1.4	10.1
1.04	1.7	12.1
1.15	1.9	14.2
1.25	2.1	16.2
1.35	2.3	18.1
1.46	2.5	20.0
1.56	2.6	21.6
1.67	2.8	23.0
1.77	2.9	23.9
1.88	3.1	24.3
2.00	3.1	24.3

COMPUTE TRAVEL TIME ID=5 REACH=15 VS NO=1 L=346 SLP=0.010

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.104	.062	.12	.0506
.208	.174	.52	.0324
.313	.314	1.20	.0252
.417	.475	2.15	.0212
.521	.651	3.36	.0186
.625	.839	4.80	.0168
.730	1.037	6.43	.0155
.834	1.240	8.22	.0145
.938	1.447	10.13	.0137
1.042	1.655	12.13	.0131
1.146	1.863	14.16	.0126
1.251	2.067	16.18	.0123
1.355	2.265	18.13	.0120
1.459	2.456	19.96	.0118
1.563	2.635	21.60	.0117
1.668	2.799	22.96	.0117
1.772	2.943	23.93	.0118
1.876	3.061	24.34	.0121
2.000	3.142	24.34	.0124

ROUTE ID=5 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	24.3	3.333	.5	5.000	.4	6.666	.0
.333	.0	2.000	24.3	3.666	.4	5.333	.4	6.999	.0
.667	.0	2.333	24.3	4.000	.4	5.666	.4		
1.000	.0	2.666	1.5	4.333	.4	5.999	.5		
1.333	18.0	3.000	.8	4.666	.4	6.333	.1		

RUNOFF VOLUME = 2.00851 INCHES = 2.5709 ACRES-FEET
PEAK DISCHARGE RATE = 24.30 CFS AT 1.400 HOURS BASIN AREA = .0240 SQ. MI.

*** ADD BASIN 505 RT TO B501/B502 AT WEST ISLAND*****
ADD HYD ID=2 HYD=234.5 ID I=3 II=5

PRINT HYD

ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	171.3	3.333	3.2	5.000	1.8	6.666	.3
.333	.0	2.000	171.8	3.666	2.4	5.333	1.9	6.999	.1
.667	.0	2.333	47.3	4.000	2.0	5.666	2.0	7.333	.0
1.000	.0	2.666	11.0	4.333	1.8	5.999	2.1	7.666	.0
1.333	46.1	3.000	5.4	4.666	1.8	6.333	1.0	7.999	.0

RUNOFF VOLUME = 1.92248 INCHES = 12.9190 ACRE-FeET
PEAK DISCHARGE RATE = 171.76 CFS AT 2.000 HOURS BASIN AREA = .1260 SQ. MI.

*** ROUTE THRU 60' TO THE AT END OF RUNWAY*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=5.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.26	.4	.9
.52	1.1	3.8
.78	2.0	8.7
1.04	3.0	15.7
1.30	4.1	24.5
1.56	5.2	34.9
1.82	6.5	46.8
2.08	7.7	59.8
2.35	9.0	73.8
2.61	10.3	88.3
2.87	11.6	103.1
3.13	12.9	117.8
3.39	14.2	132.0
3.65	15.3	145.3
3.91	16.5	157.3
4.17	17.5	167.2
4.43	18.4	174.3
4.69	19.1	177.2
5.00	19.6	177.2

COMPUTE TRAVEL TIME ID=5 REACH=15 VS NO=1 L=440 SLP=0.004

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH	AVERAGE ARRA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
FBET			
.261	.390	.86	.0552
.521	1.086	3.75	.0354
.782	1.961	8.72	.0275
1.042	2.966	15.68	.0231
1.303	4.069	24.49	.0203
1.563	5.246	34.94	.0184
1.824	6.479	46.81	.0169

2.084	7.749	59.84	.0158
2.345	9.043	73.77	.0150
2.606	10.345	88.29	.0143
2.866	11.641	103.08	.0138
3.127	12.918	117.78	.0134
3.387	14.159	132.00	.0131
3.648	15.348	145.33	.0129
3.908	16.467	157.25	.0128
4.169	17.492	167.17	.0128
4.429	18.395	174.27	.0129
4.690	19.130	177.19	.0132
5.000	19.635	177.19	.0135

ROUTE ID=5 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
 PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	171.1	3.333	3.3	5.000	1.8
.333	.0	2.000	171.8	3.666	2.5	5.333	1.8
.667	.0	2.333	48.3	4.000	2.1	5.666	2.0
1.000	.0	2.666	11.4	4.333	1.8	5.999	2.1
1.333	36.1	3.000	5.6	4.666	1.8	6.333	1.2
						7.999	.0

RUNOFF VOLUME = 1.92248 INCHES = 12.9190 ACRE-FEET
 PEAK DISCHARGE RATE = 171.77 CFS AT 2.000 HOURS BASIN AREA = .1260 SQ. MI.

CALCULATE FLOW FROM BASIN 504**

***BASIN 504 - A=.022 SQ MI ***

COMPUTE NM HYD ID=12 HYD NO=106 DA=.022 SQ MI

PER A=0.0 PER B=0.0 PER C=2.0 PER D=98.0
 TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 87.281 CFS UNIT VOLUME = .9999 B = 526.28 P60 = 2.0100
 AREA = .021560 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
 UNIT PEAK = 1.2982 CFS UNIT VOLUME = .9901 B = 383.55 P60 = 2.0100
 AREA = .000440 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=12 CODE=10

PARTIAL HYDROGRAPH 106.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	32.7	3.333	.5	5.000	.4
.333	.0	2.000	16.1	3.666	.4	5.333	.4
.667	.0	2.333	3.3	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	20.9	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.09562 INCHES = 2.4588 ACRE-FEET

PEAK DISCHARGE RATE = 66.47 CFS AT 1.500 HOURS BASIN AREA = .0220 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=8 HYD=105.01 INFLOW ID=12 CODE=20
OUTFLOW STORAGE DEPTH

0	0
43.48	.01
43.49	1.1
43.50	2.2
	1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	20.89	.00	.005	20.26
2.00	16.13	.00	.004	18.32
2.67	1.37	.00	.000	1.38
3.33	.52	.00	.000	.52
4.00	.38	.00	.000	.38
4.67	.37	.00	.000	.37
5.33	.40	.00	.000	.40
6.00	.45	.00	.000	.45
6.67	.01	.00	.000	.01

PEAK DISCHARGE = 43.482 CFS - PEAK OCCURS AT HOUR 1.60
MAXIMUM WATER SURFACE ELEVATION = .106
MAXIMUM STORAGE = .2228 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=8 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	43.5	3.333	.5	5.000	.4
.333	.0	2.000	18.3	3.666	.4	5.333	.4
.667	.0	2.333	3.4	4.000	.4	5.666	.4
1.000	.0	2.666	1.4	4.333	.4	5.999	.5
1.333	20.3	3.000	.8	4.666	.4	6.333	.0

RUNOFF VOLUME = 2.09560 INCHES = 2.4588 ACRE-Feet
PEAK DISCHARGE RATE = 43.48 CFS AT 1.600 HOURS BASIN AREA = .0220 SQ. MI.

*** ROUTE THRU 36* TO MIDDLE BASIN 505A*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.004
DIA=3.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.16	.1	.2

.31	.4	1.0
.47	.7	2.2
.63	1.1	4.0
.78	1.5	6.3
.94	1.9	8.9
1.09	2.3	12.0
1.25	2.8	15.3
1.41	3.3	18.9
1.56	3.7	22.6
1.72	4.2	26.4
1.88	4.7	30.2
2.03	5.1	33.8
2.19	5.5	37.2
2.35	5.9	40.3
2.50	6.3	42.8
2.66	6.6	44.6
2.81	6.9	45.4
3.00	7.1	45.4

COMPUTE TRAVEL TIME ID=7 REACH=15 VS NO=1 L=1300 SLP=0.004

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.156	.140	.22	.2293
.313	.391	.96	.1469
.469	.706	2.23	.1142
.625	1.068	4.02	.0960
.782	1.465	6.27	.0843
.938	1.889	8.95	.0762
1.094	2.332	11.99	.0703
1.251	2.790	15.33	.0657
1.407	3.255	18.89	.0622
1.563	3.724	22.61	.0595
1.720	4.191	26.40	.0573
1.876	4.650	30.16	.0557
2.032	5.097	33.81	.0544
2.189	5.525	37.22	.0536
2.345	5.928	40.27	.0532
2.501	6.297	42.81	.0531
2.658	6.622	44.63	.0536
2.814	6.887	45.38	.0548
3.000	7.069	45.38	.0563

ROUTE ID=7 HYD=105.1 INFLOW ID=8 DT=0.03333 HR
PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	43.2	3.333	.6	5.000	.4	6.666	.1
.333	.0	2.000	18.2	3.666	.5	5.333	.4	6.999	.0
.667	.0	2.333	4.5	4.000	.4	5.666	.4	7.333	.0
1.000	.0	2.666	1.7	4.333	.4	5.999	.4	7.666	.0
1.333	10.9	3.000	.9	4.666	.4	6.333	.2		

RUNOFF VOLUME = 2.09563 INCHES = 2.4589 ACRE-Feet
PEAK DISCHARGE RATE = 43.43 CFS AT 1.800 HOURS BASIN AREA = .0220 SQ. MI.

CALCULATE FLOW FROM BASIN 505A**
***BASIN B505A - A=.015 SQ MI ***
COMPUTE NM HYD ID=3 HYD NO=106 DA=.015 SQ MI
PER A=2.0 PER B=0.0 PER C=18.0 PER D=80.0
TP=-.22 RAIN=-1

K = .119900HR TP = .220000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 28.706 CFS UNIT VOLUME = .9997 B = 526.28 P60 = 2.0100
AREA = .012000 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .186029HR TP = .220000HR K/TP RATIO = .845587 SHAPE CONSTANT, N = 4.211669
UNIT PEAK = 5.0324 CFS UNIT VOLUME = .9973 B = 369.04 P60 = 2.0100
AREA = .003000 SQ MI IA = .38000 INCHES INF = .91400 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 106.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	28.8	3.333	.5	5.000	.2	6.666	.0
.333	.0	2.000	11.9	3.666	.3	5.333	.2	6.999	.0
.667	.0	2.333	4.0	4.000	.3	5.666	.2	7.333	.0
1.000	.0	2.666	1.7	4.333	.2	5.999	.2	7.666	.0
1.333	3.9	3.000	.9	4.666	.2	6.333	.1		

RUNOFF VOLUME = 1.90164 INCHES = 1.5213 ACRE-FEET
PEAK DISCHARGE RATE = 32.50 CFS AT 1.600 HOURS BASIN AREA = .0150 SQ. MI.

*** ADD BASIN 505A TO B504 ROUTE IN MIDDLE OF BASIN 505A*****
ADD HYD ID=9 HYD=234.5 ID I=7 II=3
PRINT HYD ID=9 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	72.1	3.333	1.1	5.000	.6	6.666	.1
.333	.0	2.000	30.1	3.666	.8	5.333	.6	6.999	.0
.667	.0	2.333	8.5	4.000	.7	5.666	.6	7.333	.0
1.000	.0	2.666	3.4	4.333	.6	5.999	.7	7.666	.0
1.333	14.8	3.000	1.8	4.666	.6	6.333	.3		

RUNOFF VOLUME = 2.01696 INCHES = 3.9801 ACRE-FEET
PEAK DISCHARGE RATE = 75.41 CFS AT 1.600 HOURS BASIN AREA = .0370 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN *****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=4 HYD=105.01 INFLOW ID=9 CODE=20
OUTFLOW STORAGE DEPTH

0
58.97 .01 .01
58.98 1.1 .5
58.99 2.2 1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELBY (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	14.79	.00	.002	14.30
2.00	30.06	.01	.009	50.31
2.67	3.43	.00	.001	3.59
3.33	1.10	.00	.000	1.11
4.00	.66	.00	.000	.66
4.67	.57	.00	.000	.57
5.33	.60	.00	.000	.60
6.00	.69	.00	.000	.68
6.67	.09	.00	.000	.09
7.33	.01	.00	.000	.01

PEAK DISCHARGE = 58.973 CFS - PEAK OCCURS AT HOUR 1.80

MAXIMUM WATER SURFACE ELEVATION = .140

MAXIMUM STORAGE = .2994 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	59.0	3.333	1.1	5.000	.6	6.666	.1
.333	.0	2.000	50.3	3.666	.8	5.333	.6	6.999	.0
.667	.0	2.333	10.3	4.000	.7	5.666	.6	7.333	.0
1.000	.0	2.666	3.6	4.333	.6	5.999	.7	7.666	.0
1.333	14.3	3.000	1.8	4.666	.6	6.333	.3		

RUNOFF VOLUME = 2.01696 INCHES = 3.9801 ACRE-FEET

PEAK DISCHARGE RATE = 58.97 CFS AT 1.800 HOURS BASIN AREA = .0370 SQ. MI.

*** ROUTE THRU 42* TO TEB @ END RUNWAY*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.005

DIA=3.5 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELBY	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.18	.2	.4
.36	.5	1.6
.55	1.0	3.8
.73	1.5	6.8
.91	2.0	10.6
1.09	2.6	15.1
1.28	3.2	20.2
1.46	3.8	25.8

1.64	4.4	31.9
1.82	5.1	38.1
2.01	5.7	44.5
2.19	6.3	50.9
2.37	6.9	57.0
2.55	7.5	62.8
2.74	8.1	67.9
2.92	8.6	72.2
3.10	9.0	75.3
3.28	9.4	76.5
3.50	9.6	76.5

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=675 SLP=0.005

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.182	.191	.37	.0961
.365	.532	1.62	.0616
.547	.961	3.77	.0478
.730	1.453	6.77	.0402
.912	1.994	10.58	.0353
1.094	2.571	15.09	.0319
1.277	3.175	20.22	.0294
1.459	3.797	25.85	.0275
1.641	4.431	31.86	.0261
1.824	5.069	38.13	.0249
2.006	5.704	44.52	.0240
2.189	6.330	50.87	.0233
2.371	6.938	57.01	.0228
2.553	7.520	62.77	.0225
2.736	8.069	67.92	.0223
2.918	8.571	72.20	.0223
3.101	9.014	75.27	.0225
3.283	9.374	76.53	.0230
3.500	9.621	76.53	.0236

ROUTE ID=2 HYD=105.1 INFLOW ID=4 DT=0.03333 HR
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	59.0	3.333	1.2	5.000	.6	6.666	.1
.333	.0	2.000	54.6	3.666	.9	5.333	.6	6.999	.0
.667	.0	2.333	9.5	4.000	.7	5.666	.6	7.333	.0
1.000	.0	2.666	3.7	4.333	.6	5.999	.7	7.666	.0
1.333	8.6	3.000	2.0	4.666	.6	6.333	.4		

RUNOFF VOLUME = 2.01697 INCHES = 3.9801 ACRE-FOOT
PEAK DISCHARGE RATE = 58.97 CFS AT 1.800 HOURS BASIN AREA = .0370 SQ. MI.

*** ADD BASIN 505A RT TO B501/B502/B505 AT TRR AT END RUNWAY*****
ADD HYD ID=1 HYD=234.5 ID I=2 II=5
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	230.0	3.333	4.5	5.000	2.4	6.666	.5
.333	.0	2.000	226.4	3.666	3.3	5.333	2.4	6.999	.1
.667	.0	2.333	57.8	4.000	2.7	5.666	2.6	7.333	.0
1.000	.0	2.666	15.2	4.333	2.5	5.999	2.8	7.666	.0
1.333	44.7	3.000	7.6	4.666	2.4	6.333	1.6	7.999	.0

RUNOFF VOLUME = 1.94393 INCHES = 16.8991 ACRE-FT
 PEAK DISCHARGE RATE = 230.71 CFS AT 1.966 HOURS BASIN AREA = .1630 SQ. MI.

*** ROUTE THRU 60" TO JUNCTION AT SW CORNER @ END RUNWAY*****
 COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.0064
 DIA=5.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER	FLOW	FLOW	FLOW
SURFACE	AREA	RATE	
ELV	SQ FT	CFS	
.00	.0	.0	
.26	.4	1.1	
.52	1.1	4.7	
.78	2.0	11.0	
1.04	3.0	19.8	
1.30	4.1	31.0	
1.56	5.2	44.2	
1.82	6.5	59.2	
2.08	7.7	75.7	
2.35	9.0	93.3	
2.61	10.3	111.7	
2.87	11.6	130.4	
3.13	12.9	149.0	
3.39	14.2	167.0	
3.65	15.3	183.8	
3.91	16.5	198.9	
4.17	17.5	211.5	
4.43	18.4	220.4	
4.69	19.1	224.1	
5.00	19.6	224.1	

COMPUTE TRAVEL TIME ID=10 REACH=15 VS NO=1 L=400 SLP=0.0064

TRAVEL TIME TABLE

REACH= 15.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	AREA	RATE	TIME
FEET	SQ.FT.	CFS	HRS
.261	.390	1.09	.0397
.521	1.086	4.74	.0254
.782	1.961	11.03	.0198
1.042	2.966	19.84	.0166
1.303	4.069	30.97	.0146
1.563	5.246	44.19	.0132
1.824	6.479	59.21	.0122
2.084	7.749	75.70	.0114
2.345	9.043	93.32	.0108

2.606	10.345	111.68	.0103
2.866	11.641	130.38	.0099
3.127	12.918	148.98	.0096
3.387	14.159	166.97	.0094
3.648	15.348	183.83	.0093
3.908	16.467	198.91	.0092
4.169	17.492	211.46	.0092
4.429	18.395	220.44	.0093
4.690	19.130	224.13	.0095
5.000	19.635	224.13	.0097

ROUTE ID=10 HYD=105.1 INFLOW ID=1 DT=0.03333 HR

TRAVEL TIME TABLE EXCEEDED

***** HYDROGRAPH ENTERING JUNCTION FROM NORTH BRANCH*****

PRINT HYD ID=10 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	230.0	3.333	4.6	5.000	2.4
.333	.0	2.000	227.9	3.666	3.4	5.333	2.4
.667	.0	2.333	58.9	4.000	2.8	5.666	2.6
1.000	.0	2.666	15.7	4.333	2.5	5.999	2.8
1.333	34.8	3.000	7.8	4.666	2.4	6.333	1.7

RUNOFF VOLUME = 1.94393 INCHES = 16.8991 ACRE-FEET

PEAK DISCHARGE RATE = 230.70 CFS AT 1.966 HOURS BASIN AREA = .1630 SQ. MI.

*** CALC FLOW FROM BASIN B507+508 ***

*** B507+508 A=.077 SQMI***

COMPUTE NM HYD ID=4 HYD NO=103 DA=0.077 SQ MI

PER A=13.0 PER B=0.0 PER C=45.0 PER D=42.0

TP=-.28 RAIN=-1

K = .152961HR TP = .280000HR K/TP RATIO = .546290 SHAPE CONSTANT, N = 7.084931
UNIT PEAK = 60.668 CFS UNIT VOLUME = .9997 B = 525.27 P60 = 2.0100
AREA = .032340 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .249158HR TP = .280000HR K/TP RATIO = .889849 SHAPE CONSTANT, N = 3.985731
UNIT PEAK = 56.498 CFS UNIT VOLUME = .9998 B = 354.22 P60 = 2.0100
AREA = .044660 SQ MI IA = .41724 INCHES INF = 1.01828 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 103.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	53.6	4.000	1.4	5.999	.7
.333	.0	2.333	19.8	4.333	1.0	6.333	.3
.667	.0	2.666	8.8	4.666	.8	6.666	.1
1.000	.0	3.000	5.2	5.000	.7	6.999	.0
1.333	5.1	3.333	3.2	5.333	.7	7.333	.0
1.666	112.7	3.666	2.0	5.666	.7	7.666	.0

RUNOFF VOLUME = 1.44222 INCHES = 5.9227 ACRE-FEET
PEAK DISCHARGE RATE = 112.71 CFS AT 1.667 HOURS BASIN AREA = .0770 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=1 HYD=105.01 INFLOW ID=4 CODE=20

OUTFLOW	STORAGE	DEPTH
0	0	0
69.08	.01	.01
69.09	1.1	.5
69.10	2.2	1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	5.14	.00	.001	4.96
2.00	53.65	.36	.793	69.09
2.67	8.80	.00	.001	7.90
3.33	3.15	.00	.000	3.15
4.00	1.40	.00	.000	1.40
4.67	.84	.00	.000	.84
5.33	.68	.00	.000	.68
6.00	.69	.00	.000	.69
6.67	.10	.00	.000	.10
7.33	.02	.00	.000	.02
8.00	.00	.00	.000	.00

PEAK DISCHARGE = 69.088 CFS - PEAK OCCURS AT HOUR 1.90
MAXIMUM WATER SURFACE ELEVATION = .390
MAXIMUM STORAGE = .8562 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	69.1	4.000	1.4	5.999	.7	7.999	.0
.333	.0	2.333	.0	4.333	1.0	6.333	.3	8.333	.0
.667	.0	2.666	7.9	4.666	.8	6.666	.1		
1.000	.0	3.000	5.1	5.000	.7	6.999	.0		
1.333	5.0	3.333	3.1	5.333	.7	7.333	.0		
1.666	69.1	3.666	2.0	5.666	.7	7.666	.0		

RUNOFF VOLUME = 1.44221 INCHES = 5.9226 ACRE-FEET
PEAK DISCHARGE RATE = 69.09 CFS AT 1.900 HOURS BASIN AREA = .0770 SQ. MI.

*** ROUTE THRU LAST 48* SECTION IN WEST BASIN 507-
*** TO BRANCH AT BASIN 509*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.002
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	.3
.42	.7	1.5
.63	1.3	3.4
.83	1.9	6.1
1.04	2.6	9.5
1.25	3.4	13.6
1.46	4.1	18.3
1.67	5.0	23.3
1.88	5.8	28.8
2.08	6.6	34.4
2.29	7.5	40.2
2.50	8.3	45.9
2.71	9.1	51.5
2.92	9.8	56.7
3.13	10.5	61.3
3.34	11.2	65.2
3.54	11.8	68.0
3.75	12.2	69.1
4.00	12.6	69.1

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=700 SLP=0.002

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FBET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.34	.1441
.417	.695	1.46	.0924
.625	1.255	3.40	.0718
.834	1.898	6.12	.0603
1.042	2.604	9.55	.0530
1.251	3.358	13.63	.0479
1.459	4.146	18.25	.0442
1.668	4.960	23.34	.0413
1.876	5.788	28.77	.0391
2.084	6.621	34.43	.0374
2.293	7.451	40.20	.0360
2.501	8.267	45.93	.0350
2.710	9.062	51.48	.0342
2.918	9.823	56.68	.0337
3.127	10.539	61.33	.0334
3.335	11.195	65.20	.0334
3.544	11.773	67.96	.0337
3.752	12.243	69.10	.0345
4.000	12.566	69.10	.0354

ROUTE ID=3 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	68.9	4.000	1.5	5.999	.7
.333	.0	2.333	13.0	4.333	1.1	6.333	.5
.667	.0	2.666	9.8	4.666	.9	6.666	.2
						8.666	.0

1.000	.0	3.000	5.6	5.000	.8	6.999	.1
1.333	1.7	3.333	3.4	5.333	.7	7.333	.0
1.666	68.0	3.666	2.2	5.666	.7	7.666	.0

RUNOFF VOLUME = 1.44222 INCHES = 5.9227 ACRES-DEBT
PEAK DISCHARGE RATE = 69.02 CFS AT 2.266 HOURS BASIN AREA = .0770 SQ. MI.

*** CALCULATE B509 ***

** BASIN B509 A=0.0122 SQMI ***

COMPUTE NM HYD ID=2 HYD NO=104 DA=0.0122 SQ MI

PER A=1.0 PER B=0.0 PER C=22.0 PER D=77.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 38.029 CFS UNIT VOLUME = .9998 B = 526.28 P60 = 2.0100
AREA = .009394 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .107021HR TP = .130000HR K/TP RATIO = .823238 SHAPE CONSTANT, N = 4.337543
UNIT PEAK = 8.1391 CFS UNIT VOLUME = .9989 B = 377.08 P60 = 2.0100
AREA = .002806 SQ MI IA = .36304 INCHES INF = .86652 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 104.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.666	17.0	3.333	.2	5.000	.2	6.666	.0
.333	.0	2.000	7.7	3.666	.2	5.333	.2		
.667	.0	2.333	1.6	4.000	.2	5.666	.2		
1.000	.0	2.666	.7	4.333	.2	5.999	.2		
1.333	9.5	3.000	.3	4.666	.2	6.333	.0		

RUNOFF VOLUME = 1.87993 INCHES = 1.2232 ACRES-DEBT
PEAK DISCHARGE RATE = 34.17 CFS AT 1.500 HOURS BASIN AREA = .0122 SQ. MI.

*** ADD BASIN 508 RT TO B509 AT NW ISLAND BASIN 509*****

ADD HYD ID=1 HYD=234.5 ID I=2 II=3

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	76.6	4.000	1.7	5.999	.9	7.999	.0
.333	.0	2.333	14.6	4.333	1.2	6.333	.5	8.333	.0
.667	.0	2.666	10.5	4.666	1.0	6.666	.2	8.666	.0
1.000	.0	3.000	5.9	5.000	.9	6.999	.1		
1.333	11.3	3.333	3.6	5.333	.9	7.333	.0		
1.666	85.0	3.666	2.4	5.666	.9	7.666	.0		

RUNOFF VOLUME = 1.50208 INCHES = 7.1458 ACRES-DEBT
PEAK DISCHARGE RATE = 94.65 CFS AT 1.533 HOURS BASIN AREA = .0892 SQ. MI.

***** ROUTE RES SO ALL WATER IS DISCHARGED FR B509 AND PONDING IS KNOWN ****
***** OUTFLOW IS APPROXIMATE CAPACITY OF PIPE *****
ROUTE RESERVOIR ID=2 HYD=105.01 INFLOW ID=1 CODE=20

OUTFLOW	STORAGE	DEPTH
0	0	0
146.57	.01	.01
146.58	1.1	.5
146.59	2.2	1.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	11.27	.00	.001	11.13
2.00	76.58	.01	.005	76.59
2.67	10.48	.00	.001	10.60
3.33	3.64	.00	.000	3.65
4.00	1.68	.00	.000	1.68
4.67	1.04	.00	.000	1.04
5.33	.86	.00	.000	.86
6.00	.88	.00	.000	.88
6.67	.18	.00	.000	.18
7.33	.03	.00	.000	.03
8.00	.01	.00	.000	.01
8.67	.00	.00	.000	.00

PEAK DISCHARGE = 94.496 CFS - PEAK OCCURS AT HOUR 1.53
MAXIMUM WATER SURFACE ELEVATION = .006
MAXIMUM STORAGE = .0064 AC-FT INCREMENTAL TIME= .033330HRS

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.01

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	76.6	4.000	1.7	5.999	.9	7.999	.0
.333	.0	2.333	16.8	4.333	1.2	6.333	.5	8.333	.0
.667	.0	2.666	10.6	4.666	1.0	6.666	.2	8.666	.0
1.000	.0	3.000	5.9	5.000	.9	6.999	.1		
1.333	11.1	3.333	3.7	5.333	.9	7.333	.0		
1.666	85.0	3.666	2.4	5.666	.9	7.666	.0		

RUNOFF VOLUME = 1.50207 INCHES = 7.1458 ACRE-FEET
PEAK DISCHARGE RATE = 94.50 CFS AT 1.533 HOURS BASIN AREA = .0892 SQ. MI.

*** ROUTE THRU LAST 48* SECTION TO JUNCTION AT SW CORNER OF RUNWAY*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.009
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0			
WATER	FLOW	FLOW	
SURFACE	AREA	RATE	

ELEV	SQ FT	CFS
.00	.0	.0
.21	.2	.7
.42	.7	3.1
.63	1.3	7.2
.83	1.9	13.0
1.04	2.6	20.3
1.25	3.4	28.9
1.46	4.1	38.7
1.67	5.0	49.5
1.88	5.8	61.0
2.08	6.6	73.0
2.29	7.5	85.3
2.50	8.3	97.4
2.71	9.1	109.2
2.92	9.8	120.2
3.13	10.5	130.1
3.34	11.2	138.3
3.54	11.8	144.2
3.75	12.2	146.6
4.00	12.6	146.6

COMPUTE TRAVEL TIME ID=3 REACH=15 VS NO=1 L=350 SLP=0.009

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FBFT	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	.71	.0340
.417	.695	3.10	.0218
.625	1.255	7.21	.0169
.834	1.898	12.97	.0142
1.042	2.604	20.26	.0125
1.251	3.358	28.90	.0113
1.459	4.146	38.72	.0104
1.668	4.960	49.51	.0097
1.876	5.788	61.03	.0092
2.084	6.621	73.04	.0088
2.293	7.451	85.28	.0085
2.501	8.267	97.44	.0082
2.710	9.062	109.21	.0081
2.918	9.823	120.23	.0079
3.127	10.539	130.10	.0079
3.335	11.195	138.30	.0079
3.544	11.773	144.18	.0079
3.752	12.243	146.59	.0081
4.000	12.566	146.59	.0083

ROUTE ID=3 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
 ***** HYDROGRAPH FROM SOUTH BRANCH AT JUNCTION*****
 PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	76.7	4.000	1.7	5.999	.9	7.999	.0
.333	.0	2.333	31.2	4.333	1.3	6.333	.6	8.333	.0
.667	.0	2.666	10.6	4.666	1.1	6.666	.2	8.666	.0
1.000	.0	3.000	6.0	5.000	.9	6.999	.1		

1.333	9.5	3.333	3.7	5.333	.9	7.333	.0
1.666	85.5	3.666	2.4	5.666	.9	7.666	.0

RUNOFF VOLUME = 1.50208 INCHES = 7.1459 ACRE-FEET
PEAK DISCHARGE RATE = 95.23 CFS AT 1.567 HOURS BASIN AREA = .0892 SQ. MI.

*** ADD SOUTH AND NORTH BRANCH HYDROGRAPHS AT JUNCTION*****
ADD HYD ID=1 HYD=234.5 ID I=10 II=3
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	304.6	4.000	4.5	5.999	3.6	7.999	.0
.333	.0	2.333	90.1	4.333	3.7	6.333	2.3	8.333	.0
.667	.0	2.666	26.3	4.666	3.4	6.666	.8	8.666	.0
1.000	.0	3.000	13.8	5.000	3.3	6.999	.3		
1.333	44.3	3.333	8.3	5.333	3.3	7.333	.1		
1.666	315.5	3.666	5.8	5.666	3.4	7.666	.0		

RUNOFF VOLUME = 1.78765 INCHES = 24.0449 ACRE-FEET
PEAK DISCHARGE RATE = 323.49 CFS AT 1.567 HOURS BASIN AREA = .2522 SQ. MI.

*** ROUTE THRU 48" SECTION TO ACCESS RD B AREA (PERIMETER ROAD)*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.06
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	1.8
.42	.7	8.0
.63	1.3	18.6
.83	1.9	33.5
1.04	2.6	52.3
1.25	3.4	74.6
1.46	4.1	100.0
1.67	5.0	127.8
1.88	5.8	157.6
2.08	6.6	188.6
2.29	7.5	220.2
2.50	8.3	251.6
2.71	9.1	282.0
2.92	9.8	310.4
3.13	10.5	335.9
3.34	11.2	357.1
3.54	11.8	372.3
3.75	12.2	378.5
4.00	12.6	378.5

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=1000 SLP=0.06

TRAVEL TIME TABLE
REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	1.85	.0376
.417	.695	8.01	.0241
.625	1.255	18.63	.0187
.834	1.898	33.50	.0157
1.042	2.604	52.31	.0138
1.251	3.358	74.63	.0125
1.459	4.146	99.98	.0115
1.668	4.960	127.83	.0108
1.876	5.788	157.59	.0102
2.084	6.621	188.60	.0098
2.293	7.451	220.18	.0094
2.501	8.267	251.58	.0091
2.710	9.062	281.97	.0089
2.918	9.823	310.43	.0088
3.127	10.539	335.90	.0087
3.335	11.195	357.10	.0087
3.544	11.773	372.26	.0088
3.752	12.243	378.49	.0090
4.000	12.566	378.49	.0092

ROUTE ID=2 HYD=105.1 INFLOW ID=1 DT=0.03333 HR
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	305.6	4.000	4.6	5.999	3.6	7.999	.0
.333	.0	2.333	103.2	4.333	3.8	6.333	2.5	8.333	.0
.667	.0	2.666	27.0	4.666	3.4	6.666	.9	8.666	.0
1.000	.0	3.000	14.1	5.000	3.3	6.999	.3		
1.333	31.2	3.333	8.6	5.333	3.3	7.333	.1		
1.666	315.9	3.666	5.9	5.666	3.4	7.666	.0		

RUNOFF VOLUME = 1.78765 INCHES = 24.0450 ACRE- FEET
PEAK DISCHARGE RATE = 323.84 CFS AT 1.567 HOURS BASIN AREA = .2522 SQ. MI.

*** ROUTE THRU LAST 48* SECTION CHANNEL AT BASE*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.065
DIA=4.0 FT N=0.013

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELBV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	.2	1.9
.42	.7	8.3
.63	1.3	19.4
.83	1.9	34.9
1.04	2.6	54.4
1.25	3.4	77.7
1.46	4.1	104.1
1.67	5.0	133.1
1.88	5.8	164.0

2.08	6.6	196.3
2.29	7.5	229.2
2.50	8.3	261.9
2.71	9.1	293.5
2.92	9.8	323.1
3.13	10.5	349.6
3.34	11.2	371.7
3.54	11.8	387.5
3.75	12.2	393.9
4.00	12.6	393.9

COMPUTE TRAVEL TIME ID=11 REACH=15 VS NO=1 L=600 SLP=0.065

TRAVEL TIME TABLE

REACH= 15.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.208	.250	1.92	.0217
.417	.695	8.34	.0139
.625	1.255	19.39	.0108
.834	1.898	34.87	.0091
1.042	2.604	54.44	.0080
1.251	3.358	77.68	.0072
1.459	4.146	104.07	.0066
1.668	4.960	133.05	.0062
1.876	5.788	164.02	.0059
2.084	6.621	196.30	.0056
2.293	7.451	229.17	.0054
2.501	8.267	261.85	.0053
2.710	9.062	293.48	.0051
2.918	9.823	323.11	.0051
3.127	10.539	349.62	.0050
3.335	11.195	371.68	.0050
3.544	11.773	387.46	.0051
3.752	12.243	393.94	.0052
4.000	12.566	393.94	.0053

ROUTE ID=11 HYD=105.1 INFLOW ID=2 DT=0.03333 HR
PRINT HYD ID=11 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	306.1	4.000	4.6	5.999	3.6	7.999	.0
.333	.0	2.333	109.6	4.333	3.8	6.333	2.6	8.333	.0
.667	.0	2.666	27.5	4.666	3.4	6.666	1.0	8.666	.0
1.000	.0	3.000	14.3	5.000	3.3	6.999	.3		
1.333	22.9	3.333	8.7	5.333	3.3	7.333	.1		
1.666	316.1	3.666	5.9	5.666	3.4	7.666	.0		

RUNOFF VOLUME = 1.78765 INCHES = 24.0450 ACRE-FOOT
PEAK DISCHARGE RATE = 323.97 CFS AT 1.567 HOURS BASIN AREA = .2522 SQ. MI.

***CALC BASIN 506 ***
B506 A=.032 SQ MI *
COMPUTE NM HYD ID=5 HYD NO=107 DA=.032 SQ MI

PER A=10.0 PER B=5.0 PER C =70.0 PER D=15.0
TP=-.18 RAIN=-1

K = .098100HR TP = .180000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 14.034 CFS UNIT VOLUME = .9992 B = 526.28 P60 = 2.0100
AREA = .004800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .155419HR TP = .180000HR K/TP RATIO = .863439 SHAPE CONSTANT, N = 4.117025
UNIT PEAK = 54.838 CFS UNIT VOLUME = .9999 B = 362.90 P60 = 2.0100
AREA = .027200 SQ MI IA = .39412 INCHES INF = .95353 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE =10

PARTIAL HYDROGRAPH 107.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	41.6	3.333	.4	5.000	.1
.333	.0	2.000	11.9	3.666	.3	5.333	.1
.667	.0	2.333	3.7	4.000	.2	5.666	.1
1.000	.0	2.666	1.7	4.333	.1	5.999	.1
1.333	3.9	3.000	.9	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.17637 INCHES = 2.0077 ACRE-FT
PEAK DISCHARGE RATE = 53.36 CFS AT 1.567 HOURS BASIN AREA = .0320 SQ. MI.

*** ROUTE THRU 24* SECTION TO CHANNEL*****
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.168
DIA=2.0 FT N=0.024

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.10	.1	.3
.21	.2	1.1
.31	.3	2.7
.42	.5	4.8
.52	.7	7.5
.63	.8	10.7
.73	1.0	14.3
.83	1.2	18.2
.94	1.4	22.5
1.04	1.7	26.9
1.15	1.9	31.4
1.25	2.1	35.9
1.35	2.3	40.3
1.46	2.5	44.3
1.56	2.6	47.9
1.67	2.8	51.0
1.77	2.9	53.1
1.88	3.1	54.0
2.00	3.1	54.0

COMPUTE TRAVEL TIME ID=2 REACH=15 VS NO=1 L=220 SLP=0.168

TRAVEL TIME TABLE

REACH = 15.0

WATER DEPTH FEET	AVERAGE AREA SQ. FT.	FLOW RATE CFS	TRAVEL TIME HRS
.104	.062	.26	.0145
.208	.174	1.14	.0093
.313	.314	2.66	.0072
.417	.475	4.78	.0061
.521	.651	7.47	.0053
.625	.839	10.65	.0048
.730	1.037	14.27	.0044
.834	1.240	18.25	.0042
.938	1.447	22.49	.0039
1.042	1.655	26.92	.0038
1.146	1.863	31.43	.0036
1.251	2.067	35.91	.0035
1.355	2.265	40.25	.0034
1.459	2.456	44.31	.0034
1.563	2.635	47.95	.0034
1.668	2.799	50.97	.0034
1.772	2.943	53.14	.0034
1.876	3.061	54.03	.0035
2.000	3.142	54.03	.0036

ROUTE ID=2 HYD=105.1 INFLOW ID=5 DT=0.03333 HR
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 105.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	42.1	3.333	.5	5.000	.1
.333	.0	2.000	12.0	3.666	.3	5.333	.1
.667	.0	2.333	3.8	4.000	.2	5.666	.1
1.000	.0	2.666	1.8	4.333	.1	5.999	.1
1.333	3.5	3.000	.9	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.17637 INCHES = 2.0077 ACRE-FEET
PEAK DISCHARGE RATE = 53.36 CFS AT 1.567 HOURS BASIN AREA = .0320 SQ. MI.

*** ADD BASIN 506 AND WESTEND FLOWS AT TOP OF CHANNEL FOR SUBTOTAL*****
ADD HYD ID=10 HYD=234.5 ID I=11 II=2
PRINT HYD ID=10 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	318.1	4.000	4.8	5.999	3.7
.333	.0	2.333	113.4	4.333	3.9	6.333	2.7
.667	.0	2.666	29.2	4.666	3.5	6.666	1.0
1.000	.0	3.000	15.2	5.000	3.4	6.999	.3
1.333	26.3	3.333	9.2	5.333	3.4	7.333	.1
1.666	358.2	3.666	6.2	5.666	3.5	7.666	.0

RUNOFF VOLUME = 1.71882 INCHES = 26.0526 ACRE-FEET

PEAK DISCHARGE RATE = 377.33 CFS AT 1.567 HOURS BASIN AREA = .2842 SQ. MI.

*** CALC FLOW FROM BASIN B510 ***

COMPUTE NM HYD ID=4 HYD NO=108 DA=0.024 SQ MI

PER A=25.0 PER B=25.0 PER C=46.0 PER D=4.0

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.8863 CFS UNIT VOLUME = .9971 B = 526.28 P60 = 2.0100
AREA = .000960 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .124431HR TP = .130000HR K/TP RATIO = .957159 SHAPE CONSTANT, N = 3.691812
UNIT PEAK = 59.208 CFS UNIT VOLUME = 1.000 B = 334.07 P60 = 2.0100
AREA = .023040 SQ MI IA = .46719 INCHES INF = 1.15812 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 108.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	2.2	2.666	.6	4.000	.0	5.333	.0
.333	.0	1.666	21.8	3.000	.3	4.333	.0	5.666	.0
.667	.0	2.000	4.3	3.333	.1	4.666	.0	5.999	.0
1.000	.0	2.333	1.5	3.666	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = .89572 INCHES = 1.1465 ACRE-FEET
PEAK DISCHARGE RATE = 39.89 CFS AT 1.500 HOURS BASIN AREA = .0240 SQ. MI.

*** ADD BASIN 510 AND SUBTOTAL TO CHANNEL FROM ABOVE*****

ADD HYD ID=1 HYD=234.5 ID I=10 II=4

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	322.4	4.000	4.8	5.999	3.7	7.999	.0
.333	.0	2.333	114.9	4.333	3.9	6.333	2.7	8.333	.0
.667	.0	2.666	29.8	4.666	3.5	6.666	1.0	8.666	.0
1.000	.0	3.000	15.4	5.000	3.4	6.999	.3		
1.333	28.5	3.333	9.3	5.333	3.4	7.333	.1		
1.666	379.9	3.666	6.2	5.666	3.5	7.666	.0		

RUNOFF VOLUME = 1.65472 INCHES = 27.1991 ACRE-FEET
PEAK DISCHARGE RATE = 412.70 CFS AT 1.567 HOURS BASIN AREA = .3082 SQ. MI.

***BASIN 511 A=.01 SQ MI ***

COMPUTE NM HYD ID=15 HYD NO=110.1 DA=.010 SQ MI

PER A=30 PER B=33 PER C=35 PER D=2

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .80965 CFS UNIT VOLUME = .9860 B = 526.28 P60 = 2.0100
AREA = .000200 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .128614HR TP = .130000HR K/TP RATIO = .989339 SHAPE CONSTANT, N = 3.568858
UNIT PEAK = 24.524 CFS UNIT VOLUME = .9997 B = 325.32 P60 = 2.0100
AREA = .009800 SQ MI IA = .49235 INCHES INF = 1.22857 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=10

PARTIAL HYDROGRAPH 110.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	.7	2.666	.2	4.000	.0
.333	.0	1.666	8.5	3.000	.1	4.333	.0
.667	.0	2.000	1.5	3.333	.0	4.666	.0
1.000	.0	2.333	.6	3.666	.0	5.000	.0

RUNOFF VOLUME = .81964 INCHES = .4371 ACRE-FeET
PEAK DISCHARGE RATE = 15.42 CFS AT 1.500 HOURS BASIN AREA = .0100 SQ. MI.

*** ADD BASIN 511 AND SUBTOTAL TO CHANNEL FROM ABOVE*****
ADD HYD ID=2 HYD=234.5 ID I=15 II=1
***** HYDROGRAPH INTO CHANNEL*****
PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	323.9	4.000	4.8	5.999	3.7
.333	.0	2.333	115.5	4.333	3.9	6.333	2.7
.667	.0	2.666	30.1	4.666	3.6	6.666	1.0
1.000	.0	3.000	15.6	5.000	3.4	6.999	.3
1.333	29.2	3.333	9.3	5.333	3.4	7.333	.1
1.666	388.5	3.666	6.2	5.666	3.5	7.666	.0

RUNOFF VOLUME = 1.62848 INCHES = 27.6362 ACRE-FeET
PEAK DISCHARGE RATE = 426.54 CFS AT 1.567 HOURS BASIN AREA = .3182 SQ. MI.

***** ROUTE THROUGH CHANNEL TO UNIVERSITY *****
COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=8
CH SLP=.0632 FP SLP=.0632 N=.033 DIST=36
DIST ELBV DIST ELBV DIST ELBV
0 8 8 0 28 0
36 8

RATING CURVE VALLEY SECTION 1.0

WATER	FLOW	FLOW
SURFACE	ARBA	RATE
ELBV	SQ FT	CFS

.00	.0	.0
.42	8.6	53.3
.84	17.6	169.0
1.26	26.9	331.7
1.68	36.5	535.7
2.11	46.5	777.5
2.53	56.9	1055.3
2.95	67.6	1367.5
3.37	78.7	1713.2
3.79	90.1	2091.9
4.21	101.9	2503.2
4.63	114.1	2946.8
5.05	126.6	3422.7
5.47	139.4	3930.8
5.89	152.6	4471.3
6.32	166.2	5044.2
6.74	180.1	5649.7
7.16	194.4	6288.1
7.58	209.0	6959.7
8.00	224.0	7664.5

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=475 SLP=.0632

TRAVEL TIME TABLE
REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.421	8.598	53.35	.0213
.842	17.551	168.96	.0137
1.263	26.859	331.69	.0107
1.684	36.521	535.66	.0090
2.105	46.537	777.54	.0079
2.526	56.909	1055.27	.0071
2.947	67.634	1367.46	.0065
3.368	78.715	1713.20	.0061
3.789	90.150	2091.90	.0057
4.211	101.939	2503.16	.0054
4.632	114.083	2946.78	.0051
5.053	126.582	3422.66	.0049
5.474	139.435	3930.79	.0047
5.895	152.643	4471.25	.0045
6.316	166.205	5044.17	.0043
6.737	180.122	5649.73	.0042
7.158	194.393	6288.14	.0041
7.579	209.019	6959.66	.0040
8.000	224.000	7664.54	.0039

ROUTE ID=4 HYD NO=110.3 INFLOW ID=2 DT=.03333 HR
*** CHANNEL DISCHARGE***
PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 110.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	324.6	4.000	4.9	5.999	3.7	7.999	.0
.333	.0	2.333	123.3	4.333	4.0	6.333	2.8	8.333	.0
.667	.0	2.666	31.7	4.666	3.6	6.666	1.0	8.666	.0
1.000	.0	3.000	16.1	5.000	3.4	6.999	.3		
1.333	16.6	3.333	9.7	5.333	3.4	7.333	.1		

1.666 390.9 3.666 6.4 5.666 3.5 7.666 .0

RUNOFF VOLUME = 1.62848 INCHES = 27.6363 ACRE-FEET
PEAK DISCHARGE RATE = 428.56 CFS AT 1.567 HOURS BASIN AREA = .3182 SQ. MI.

*** CALCULATE B513 ***

COMPUTE NM HYD

ID=2 HYD NO=109 DA=0.027 SQ MI
PER A=60.0 PER B=20.0 PER C=17.0 PER D=3.0
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.2791 CFS UNIT VOLUME = .9966 B = 526.28 P60 = 2.0100
AREA = .000810 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .141537HR TP = .130000HR K/TP RATIO = 1.088747 SHAPE CONSTANT, N = 3.245538
UNIT PEAK = 60.693 CFS UNIT VOLUME = .9997 B = 301.26 P60 = 2.0100
AREA = .026190 SQ MI IA = .56649 INCHES INF = 1.43619 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD

ID=2 CODE=10

PARTIAL HYDROGRAPH 109.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	1.3	2.666	.7	4.000	.0	5.333	.0
.333	.0	1.666	19.8	3.000	.3	4.333	.0	5.666	.0
.667	.0	2.000	3.6	3.333	.1	4.666	.0	5.999	.0
1.000	.0	2.333	1.5	3.666	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = .70235 INCHES = 1.0114 ACRE-FEET
PEAK DISCHARGE RATE = 35.38 CFS AT 1.500 HOURS BASIN AREA = .0270 SQ. MI.

*** ADD B513 AND CHANNEL DISCHARGE***

ADD HYD

ID=6 HYD=234.5 ID I=4 II=2

PRINT HYD

ID=6 CODE=10

PARTIAL HYDROGRAPH 234.50

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	328.2	4.000	4.9	5.999	3.7	7.999	.0
.333	.0	2.333	124.8	4.333	4.0	6.333	2.8	8.333	.0
.667	.0	2.666	32.3	4.666	3.6	6.666	1.0	8.666	.0
1.000	.0	3.000	16.4	5.000	3.4	6.999	.3		
1.333	18.0	3.333	9.8	5.333	3.4	7.333	.1		
1.666	410.6	3.666	6.4	5.666	3.5	7.666	.0		

RUNOFF VOLUME = 1.55604 INCHES = 28.6476 ACRE-FEET
PEAK DISCHARGE RATE = 460.81 CFS AT 1.567 HOURS BASIN AREA = .3452 SQ. MI.

*** NOW COMPUTE BASIN B512 ***

***BASIN 512 A=.03 SQ MI ***

COMPUTE NM HYD

ID=15 HYD NO=110.0 DA=.030 SQ MI

PRR A=47 PRR B=33 PRR C=16 PRR D=4

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 4.8579 CFS UNIT VOLUME = .9975 B = 526.28 P60 = 2.0100

AREA = .001200 SQ MI IA = .10000 INCHES INF = .04000 INCHES PRR HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .138213HR TP = .130000HR K/TP RATIO = 1.063179 SHAPE CONSTANT, N = 3.321495

UNIT PEAK = 68.026 CFS UNIT VOLUME = 1.000 B = 307.06 P60 = 2.0100

AREA = .028800 SQ MI IA = .54844 INCHES INF = 1.38563 INCHES PRR HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=15 CODE=10

PARTIAL HYDROGRAPH 110.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	2.0	2.666	.7	4.000	.0	5.333	.0
.333	.0	1.666	23.1	3.000	.3	4.333	.0	5.666	.0
.667	.0	2.000	4.4	3.333	.2	4.666	.0	5.999	.0
1.000	.0	2.333	1.7	3.666	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = .74599 INCHES = 1.1936 ACRE-FEET

PEAK DISCHARGE RATE = 41.55 CFS AT 1.500 HOURS BASIN AREA = .0300 SQ. MI.

*** ADD B512 AND SUBTOTAL TO CHANNEL ***

ADD HYD ID=20 HYD=111.0 ID I=15 II=6

PRINT HYD ID=20 CODE=10

PARTIAL HYDROGRAPH 111.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	332.6	4.000	5.0	5.999	3.8	7.999	.0
.333	.0	2.333	126.5	4.333	4.0	6.333	2.8	8.333	.0
.667	.0	2.666	33.1	4.666	3.6	6.666	1.0	8.666	.0
1.000	.0	3.000	16.8	5.000	3.4	6.999	.3		
1.333	19.9	3.333	10.0	5.333	3.4	7.333	.1		
1.666	433.7	3.666	6.5	5.666	3.6	7.666	.0		

RUNOFF VOLUME = 1.49127 INCHES = 29.8412 ACRE-FEET

PEAK DISCHARGE RATE = 498.45 CFS AT 1.567 HOURS BASIN AREA = .3752 SQ. MI.

**** ROUTE INTO POND AT HEADS OF CULVERTS****

***** OUTFLOW IS APPROXIMATE CAPACITY OF 60" CULVERTS *****

ROUTE RESERVOIR

ID=1 HYD=111.1 INFLOW ID=20 CODE=20

OUTFLOW STORAGE DEPTH

0	0	0
50	.51	2.0
184	1.3	4.0

300	2.4	6.0
420	3.8	8.0
460	5.74	10.0

* * * * *

TIME (HRS)	INFLOW (CFS)	ELBV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	.00	.000	.00
.67	.00	.00	.000	.00
1.33	19.92	.16	.041	4.02
2.00	332.60	6.96	3.073	357.70
2.67	33.08	1.93	.493	48.36
3.33	9.96	.50	.126	12.38
4.00	4.96	.22	.056	5.51
4.67	3.60	.15	.038	3.75
5.33	3.43	.14	.035	3.43
6.00	3.76	.15	.038	3.68
6.67	1.05	.06	.016	1.60
7.33	.11	.01	.002	.19
8.00	.01	.00	.000	.02
8.67	.00	.00	.000	.00

PEAK DISCHARGE = 408.221 CFS - PEAK OCCURS AT HOUR 1.70
MAXIMUM WATER SURFACE ELEVATION = 7.804
MAXIMUM STORAGE = 3.6626 AC-FT INCREMENTAL TIME= .033330HRS

***** DISCHARGE TO UNPLATTED ARROYO *****
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 111.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	357.7	4.000	5.5	5.999	3.7	7.999	.0
.333	.0	2.333	192.8	4.333	4.3	6.333	3.4	8.333	.0
.667	.0	2.666	48.4	4.666	3.8	6.666	1.6	8.666	.0
1.000	.0	3.000	22.4	5.000	3.5	6.999	.6		
1.333	4.0	3.333	12.4	5.333	3.4	7.333	.2		
1.666	404.0	3.666	7.6	5.666	3.5	7.666	.1		

RUNOFF VOLUME = 1.49127 INCHES = 29.8411 ACRE-FEET
PEAK DISCHARGE RATE = 408.22 CFS AT 1.700 HOURS BASIN AREA = .3752 SQ. MI.

***** ROUTE DOWN ARROYO THRU B514 TO SPUR *****
COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=4
CH SLP=.039 RP SLP=.039 N=.033 DIST=100
DIST ELBV DIST ELBV DIST ELBV
0 4 15 0 85 0
100 4

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELBV	FLOW SQ FT	FLOW RATE CFS
.00	.0	.0
.21	14.9	46.5
.42	30.1	148.2

.63	45.7	292.4
.84	61.6	474.1
1.05	77.8	690.3
1.26	94.4	939.0
1.47	111.3	1219.0
1.68	128.5	1529.0
1.89	146.1	1868.4
2.11	164.0	2236.6
2.32	182.2	2632.9
2.53	200.8	3057.2
2.74	219.7	3509.0
2.95	238.9	3988.1
3.16	258.4	4494.4
3.37	278.3	5027.7
3.58	298.6	5588.0
3.79	319.1	6175.2
4.00	340.0	6789.2

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=1900 SLP=.039

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.211	14.903	46.53	.1690
.421	30.139	148.24	.1073
.632	45.706	292.42	.0825
.842	61.607	474.06	.0686
1.053	77.839	690.25	.0595
1.263	94.404	939.01	.0531
1.474	111.302	1218.96	.0482
1.684	128.532	1529.03	.0444
1.895	146.094	1868.44	.0413
2.105	163.989	2236.58	.0387
2.316	182.216	2632.95	.0365
2.526	200.776	3057.18	.0347
2.737	219.668	3508.97	.0330
2.947	238.892	3988.11	.0316
3.158	258.449	4494.40	.0303
3.368	278.338	5027.73	.0292
3.579	298.560	5588.00	.0282
3.789	319.114	6175.16	.0273
4.000	340.000	6789.18	.0264

ROUTE ID=4 HYD NO=111.1 INFLOW ID=1 DT=.03333 HR

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 111.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	366.6	4.000	6.7	5.999	3.6	7.999	.0
.333	.0	2.333	218.3	4.333	5.0	6.333	3.6	8.333	.0
.667	.0	2.666	72.2	4.666	4.1	6.666	2.4	8.666	.0
1.000	.0	3.000	34.4	5.000	3.6	6.999	1.1	8.999	.0
1.333	.7	3.333	17.9	5.333	3.5	7.333	.4		
1.666	365.5	3.666	10.2	5.666	3.5	7.666	.1		

RUNOFF VOLUME = 1.49127 INCHES = 29.8412 ACRES-FeET
PEAK DISCHARGE RATE = 400.82 CFS AT 1.766 HOURS BASIN AREA = .3752 SQ. MI.

***BASIN 514 A=.047 SQ MI ***
COMPUTE NM HYD ID=5 HYD NO=111.0 DA=.047 SQ MI
PER A=65 PER B=23 PER C=10 PER D=2
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.8054 CFS UNIT VOLUME = .9971 B = 526.28 P60 = 2.0100
AREA = .000940 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

K = .144520HR TP = .130000HR K/TP RATIO = 1.111695 SHAPE CONSTANT, N = 3.181058
UNIT PEAK = 104.97 CFS UNIT VOLUME = .9999 B = 296.27 P60 = 2.0100
AREA = .046060 SQ MI IA = .58418 INCHES INF = 1.48571 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .0333330

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 111.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	1.5	2.666	1.1	4.000	.1
.333	.0	1.666	32.6	3.000	.5	4.333	.0
.667	.0	2.000	5.8	3.333	.3	4.666	.0
1.000	.0	2.333	2.4	3.666	.1	5.000	.0
						6.333	.0

RUNOFF VOLUME = .65929 INCHES = 1.6526 ACRE-FeET
PEAK DISCHARGE RATE = 58.22 CFS AT 1.500 HOURS BASIN AREA = .0470 SQ. MI.

*** ADD B514 AND ARROYO DISCHARGE ****
ADD HYD ID=1 HYD=111.2 ID I=4 II=5
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 111.20

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	372.4	4.000	6.8	5.999	3.6
.333	.0	2.333	220.7	4.333	5.0	6.333	3.6
.667	.0	2.666	73.3	4.666	4.1	6.666	2.4
1.000	.0	3.000	34.9	5.000	3.7	6.999	1.1
1.333	2.2	3.333	18.1	5.333	3.5	7.333	.4
1.666	398.1	3.666	10.3	5.666	3.5	7.666	.1

RUNOFF VOLUME = 1.39865 INCHES = 31.4937 ACRE-FeET
PEAK DISCHARGE RATE = 418.25 CFS AT 1.766 HOURS BASIN AREA = .4222 SQ. MI.

***** ROUTE DOWN ARROYO THRU 515 TO I-25 BOX *****
COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN BL=0 MAX BL=4
CH SLP=.030 FP SLP=.030 N=.033 DIST=100
DIST BLRV DIST BLRV DIST BLRV
0 4 15 0 85 0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.21	14.9	40.8
.42	30.1	130.0
.63	45.7	256.5
.84	61.6	415.8
1.05	77.8	605.4
1.26	94.4	823.6
1.47	111.3	1069.1
1.68	128.5	1341.0
1.89	146.1	1638.7
2.11	164.0	1961.6
2.32	182.2	2309.2
2.53	200.8	2681.3
2.74	219.7	3077.6
2.95	238.9	3497.8
3.16	258.4	3941.8
3.37	278.3	4409.6
3.58	298.6	4901.0
3.79	319.1	5416.0
4.00	340.0	5954.5

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=1300 SLP=.030

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.211	14.903	40.81	.1319
.421	30.139	130.01	.0837
.632	45.706	256.47	.0644
.842	61.607	415.78	.0535
1.053	77.839	605.39	.0464
1.263	94.404	823.57	.0414
1.474	111.302	1069.09	.0376
1.684	128.532	1341.05	.0346
1.895	146.094	1638.73	.0322
2.105	163.989	1961.61	.0302
2.316	182.216	2309.25	.0285
2.526	200.776	2681.32	.0270
2.737	219.668	3077.57	.0258
2.947	238.892	3497.80	.0247
3.158	258.449	3941.85	.0237
3.368	278.338	4409.61	.0228
3.579	298.560	4901.00	.0220
3.789	319.114	5415.98	.0213
4.000	340.000	5954.51	.0206

ROUTE ID=4 HYD NO=111.1 INFLOW ID=1 DT=.03333 HR
PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 111.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
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.000	.0	2.000	378.4	4.000	8.1	5.999	3.6	7.999	.1
.333	.0	2.333	238.3	4.333	5.7	6.333	3.7	8.333	.0
.667	.0	2.666	85.8	4.666	4.4	6.666	2.9	8.666	.0
1.000	.0	3.000	44.2	5.000	3.8	6.999	1.5	8.999	.0
1.333	.5	3.333	24.1	5.333	3.5	7.333	.6	9.332	.0
1.666	359.1	3.666	13.2	5.666	3.5	7.666	.2		

RUNOFF VOLUME = 1.39865 INCHES = 31.4938 ACRE-FEET
PEAK DISCHARGE RATE = 416.66 CFS AT 1.800 HOURS BASIN AREA = .4222 SQ. MI.

***BASIN 515 A=.030 SQ MI ***
COMPUTE NM HYD ID=5 HYD NO=111.3 DA=.030 SQ MI
PER A=61 PER B=23 PER C=10 PER D=6
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 7.2869 CFS UNIT VOLUME = .9985 B = 526.28 P60 = 2.0100
ARBA = .001800 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .144024HR TP = .130000HR K/TP RATIO = 1.107875 SHAPE CONSTANT, N = 3.191563
UNIT PEAK = 64.445 CFS UNIT VOLUME = .9998 B = 297.09 P60 = 2.0100
ARBA = .028200 SQ MI IA = .58138 INCHES INF = 1.47787 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 111.30

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	2.2	2.666	.8	4.000	.1	5.333	.0
.333	.0	1.666	21.9	3.000	.4	4.333	.0	5.666	.0
.667	.0	2.000	4.5	3.333	.2	4.666	.0	5.999	.0
1.000	.0	2.333	1.7	3.666	.1	5.000	.0	6.333	.0

RUNOFF VOLUME = .72303 INCHES = 1.1568 ACRE-FEET
PEAK DISCHARGE RATE = 39.62 CFS AT 1.500 HOURS BASIN AREA = .0300 SQ. MI.

*** ADD B515 AND ARROYO DISCHARGE ****
ADD HYD ID=1 HYD=111.4 ID I=4 II=5
*** DISCHARGE INTO BOX UNDER I-25***
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 111.40

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	382.9	4.000	8.2	5.999	3.6	7.999	.1
.333	.0	2.333	240.0	4.333	5.7	6.333	3.7	8.333	.0
.667	.0	2.666	86.6	4.666	4.5	6.666	2.9	8.666	.0
1.000	.0	3.000	44.5	5.000	3.9	6.999	1.5	8.999	.0
1.333	2.7	3.333	24.2	5.333	3.6	7.333	.6	9.332	.0
1.666	381.1	3.666	13.3	5.666	3.5	7.666	.2		

RUNOFF VOLUME = 1.35383 INCHES = 32.6506 ACRE-FOOT
PEAK DISCHARGE RATE = 428.01 CFS AT 1.766 HOURS BASIN AREA = .4522 SQ. MI.

***** ROUTE THRU 6'X8' BOX *****USE AVERAGE SLOPE**BOX SLOPE CHANGES 3 TIMES
***** AS CHANNEL*****

COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN EL=0 MAX EL=6

CH SLP=.059 FP SLP=.059 N=.015 DIST=8.1

DIST ELBV DIST ELBV DIST ELBV

0 6 .1 0 8 0
8.1 6

RATING CURVE VALLEY SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
ELBV	SQ FT	CFS
.00	.0	.0
.32	2.5	26.5
.63	5.0	80.2
.95	7.5	151.0
1.26	10.0	234.2
1.58	12.5	327.1
1.89	15.0	427.6
2.21	17.5	534.3
2.53	20.1	646.4
2.84	22.6	762.8
3.16	25.1	883.1
3.47	27.6	1006.7
3.79	30.2	1133.1
4.11	32.7	1262.2
4.42	35.3	1393.5
4.74	37.8	1526.8
5.05	40.3	1662.1
5.37	42.9	1799.0
5.68	45.4	1937.4
6.00	48.0	2077.3

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=220 SLP=.059

TRAVEL TIME TABLE

REACH= 1.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	AREA	RATE	TIME
PKBT	SQ.FT.	CFS	HRS
.316	2.496	26.48	.0058
.632	4.996	80.24	.0038
.947	7.499	151.02	.0030
1.263	10.006	234.24	.0026
1.579	12.515	327.06	.0023
1.895	15.028	427.55	.0021
2.211	17.545	534.33	.0020
2.526	20.064	646.36	.0019
2.842	22.587	762.82	.0018
3.158	25.114	883.09	.0017
3.474	27.643	1006.66	.0017
3.789	30.176	1133.13	.0016
4.105	32.712	1262.17	.0016
4.421	35.252	1393.48	.0015
4.737	37.795	1526.85	.0015
5.053	40.341	1662.07	.0015
5.368	42.891	1798.97	.0015
5.684	45.444	1937.42	.0014
6.000	48.000	2077.29	.0014

ROUTE ID=4 HYD NO=112.0 INFLOW ID=1 DT=.03333 HR
PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 112.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	383.2	4.000	8.2	5.999	3.6	7.999	.1
.333	.0	2.333	241.0	4.333	5.8	6.333	3.7	8.333	.0
.667	.0	2.666	87.2	4.666	4.5	6.666	2.9	8.666	.0
1.000	.0	3.000	44.8	5.000	3.9	6.999	1.6	8.999	.0
1.333	2.4	3.333	24.5	5.333	3.6	7.333	.7	9.332	.0
1.666	379.6	3.666	13.5	5.666	3.5	7.666	.2		

RUNOFF VOLUME = 1.35383 INCHES = 32.6506 ACRE-FEET
PEAK DISCHARGE RATE = 428.08 CFS AT 1.766 HOURS BASIN AREA = .4522 SQ. MI.

***BASIN 516 A=.003 SQ MI ***
COMPUTE NM HYD ID=5 HYD NO=112.1 DA=.003 SQ MI
PER A=0 PER B=0 PER C=82 PER D=18
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.1861 CFS UNIT VOLUME = .9946 B = 526.28 P60 = 2.0100
ARBA = .000540 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .104786HR TP = .130000HR K/TP RATIO = .806046 SHAPE CONSTANT, N = 4.440701
UNIT PEAK = 7.2579 CFS UNIT VOLUME = .9987 B = 383.55 P60 = 2.0100
ARBA = .002460 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 112.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	1.333	1.0	2.666	.1	4.000	.0	5.333	.0
.333	.0	1.666	3.4	3.000	.0	4.333	.0	5.666	.0
.667	.0	2.000	1.1	3.333	.0	4.666	.0	5.999	.0
1.000	.0	2.333	.2	3.666	.0	5.000	.0	6.333	.0

RUNOFF VOLUME = 1.30565 INCHES = .2089 ACRE-FEET
PEAK DISCHARGE RATE = 6.70 CFS AT 1.500 HOURS BASIN AREA = .0030 SQ. MI.

*** ADD BOX DISCHARGE AND BASIN 516 *****
ADD HYD ID=1 HYD=112.2 ID I=4 II=5
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 112.20

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	2.000	384.3	4.000	8.2	5.999	3.6	7.999	.1

.333	.0	2.333	241.3	4.333	5.8	6.333	3.7	8.333	.0
.667	.0	2.666	87.3	4.666	4.5	6.666	2.9	8.666	.0
1.000	.0	3.000	44.8	5.000	3.9	6.999	1.6	8.999	.0
1.333	3.4	3.333	24.5	5.333	3.6	7.333	.7	9.332	.0
1.666	383.0	3.666	13.5	5.666	3.5	7.666	.2		

RUNOFF VOLUME = 1.35351 INCHES = 32.8594 ACRE-Feet
 PEAK DISCHARGE RATE = 430.35 CFS AT 1.766 HOURS BASIN AREA = .4552 SQ. MI.

***** ROUTE THIS SUBTOTAL THRU BASIN 517 ARROYO *****

COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN BL=0 MAX BL=4

CH SLP=.080 FP SLP=.080 N=.033 DIST=60

DIST ELBV DIST ELBV DIST ELBV

0	4	10	0	50	0
60	4				

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE	WATER FLOW	WATER FLOW
BLBV	AREA	RATE
SQ FT	SQ FT	CFS
.00	.0	.0
.21	8.5	38.1
.42	17.3	121.3
.63	26.3	239.3
.84	35.5	387.9
1.05	44.9	564.9
1.26	54.5	768.7
1.47	64.4	998.1
1.68	74.5	1252.3
1.89	84.8	1530.8
2.11	95.3	1833.1
2.32	106.0	2158.8
2.53	117.0	2507.7
2.74	128.2	2879.6
2.95	139.6	3274.4
3.16	151.2	3691.9
3.37	163.1	4132.1
3.58	175.2	4595.0
3.79	187.5	5080.6
4.00	200.0	5588.9

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=450 SLP=.080

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH	AVERAGE AREA	FLOW RATE	TRAVEL TIME
FBET	SQ.FT.	CFS	HRS
.211	8.532	38.08	.0280
.421	17.285	121.29	.0178
.632	26.260	239.27	.0137
.842	35.457	387.93	.0114
1.053	44.875	564.92	.0099
1.263	54.515	768.66	.0089
1.474	64.377	998.06	.0081
1.684	74.460	1252.31	.0074
1.895	84.765	1530.80	.0069
2.105	95.291	1833.08	.0065

2.316	106.039	2158.80	.0061
2.526	117.008	2507.71	.0058
2.737	128.199	2879.61	.0056
2.947	139.612	3274.36	.0053
3.158	151.247	3691.88	.0051
3.368	163.102	4132.11	.0049
3.579	175.180	4595.01	.0048
3.789	187.479	5080.60	.0046
4.000	200.000	5588.90	.0045

ROUTE ID=4 HYD NO=113.0 INFLOW ID=1 DT=.03333 HR
PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 113.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	385.9	4.000	8.5	5.999	3.6
.333	.0	2.333	246.3	4.333	5.9	6.333	3.7
.667	.0	2.666	89.1	4.666	4.6	6.666	3.0
1.000	.0	3.000	46.5	5.000	3.9	6.999	1.7
1.333	2.2	3.333	25.8	5.333	3.6	7.333	.7
1.666	377.2	3.666	14.2	5.666	3.5	7.666	.3

RUNOFF VOLUME = 1.35351 INCHES = 32.8595 ACRE-FEET
PEAK DISCHARGE RATE = 430.11 CFS AT 1.766 HOURS BASIN AREA = .4552 SQ. MI.

***BASIN 517 A=.007 SQ MI ***
COMPUTE NM HYD ID=5 HYD NO=113.1 DA=.007 SQ MI
PER A=60 PER B=12 PER C=18 PER D=10
TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.8338 CFS UNIT VOLUME = .9960 B = 526.28 P60 = 2.0100
AREA = .000700 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .142259HR TP = .130000HR K/TP RATIO = 1.094302 SHAPE CONSTANT, N = 3.229616
UNIT PEAK = 14.540 CFS UNIT VOLUME = .9990 B = 300.04 P60 = 2.0100
AREA = .006300 SQ MI IA = .57000 INCHES INF = 1.44600 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 113.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.8	2.666	.2	4.000	.0
.333	.0	1.666	5.5	3.000	.1	4.333	.0
.667	.0	2.000	1.2	3.333	.0	4.666	.0
1.000	.0	2.333	.4	3.666	.0	5.000	.0

RUNOFF VOLUME = .79911 INCHES = .2983 ACRE-FEET
PEAK DISCHARGE RATE = 9.98 CFS AT 1.500 HOURS BASIN AREA = .0070 SQ. MI.

*** ADD ARROYO DISCHARGE AND BASIN 517 *****
ADD HYD ID=1 HYD=113.3 ID I=4 II=5
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 113.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	387.1	4.000	8.6	5.999	3.6	7.999	.1
.333	.0	2.333	246.7	4.333	5.9	6.333	3.7	8.333	.0
.667	.0	2.666	89.2	4.666	4.6	6.666	3.0	8.666	.0
1.000	.0	3.000	46.6	5.000	3.9	6.999	1.7	8.999	.0
1.333	3.0	3.333	25.9	5.333	3.6	7.333	.7	9.332	.0
1.666	382.7	3.666	14.2	5.666	3.5	7.666	.3		

RUNOFF VOLUME = 1.34511 INCHES = 33.1578 ACRES-DEEPT
PEAK DISCHARGE RATE = 433.25 CFS AT 1.766 HOURS BASIN AREA = .4622 SQ. MI.

***** ROUTE THIS SUBTOTAL THRU 3 CULVERTS UNDER WOODWARD SIDE ROAD *****
***** 3 - 36" DIA CULVERTS CONVERTED TO ONE 5.2' DIA PIPE FOR HYMO*****

COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLOPE=.0667
DIA=5.2 FT N=.022

RATING CURVE PIPE SECTION 1.0

WATER SURFACE ELKV	FLOW AREA SQ FT	FLOW RATE CFS
.00	.0	.0
.27	.4	2.3
.54	1.2	10.0
.81	2.1	23.4
1.08	3.2	42.0
1.35	4.4	65.6
1.63	5.7	93.6
1.90	7.0	125.4
2.17	8.4	160.3
2.44	9.8	197.6
2.71	11.2	236.5
2.98	12.6	276.1
3.25	14.0	315.5
3.52	15.3	353.6
3.79	16.6	389.3
4.06	17.8	421.3
4.34	18.9	447.9
4.61	19.9	466.9
4.88	20.7	474.7
5.20	21.2	474.7

COMPUTE TRAVEL TIME ID=4 REACH=1 VS NO=1 L=60 SLP=.0667

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.271	.422	2.31	.0030
.542	1.174	10.05	.0019
.813	2.121	23.36	.0015

1.084	3.208	42.01	.0013
1.355	4.401	65.60	.0011
1.626	5.674	93.60	.0010
1.897	7.007	125.40	.0009
2.168	8.382	160.33	.0009
2.439	9.781	197.64	.0008
2.710	11.189	236.54	.0008
2.981	12.591	276.15	.0008
3.252	13.972	315.52	.0007
3.523	15.314	353.64	.0007
3.794	16.600	389.33	.0007
4.065	17.810	421.28	.0007
4.336	18.920	447.86	.0007
4.607	19.896	466.88	.0007
4.878	20.691	474.69	.0007
5.200	21.237	474.69	.0007

ROUTE ID=4 HYD NO=113.0 INFLOW ID=1 DT=.03333 HR
 PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 113.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	387.4	4.000	8.6	5.999	3.6	7.999	.1
.333	.0	2.333	247.1	4.333	5.9	6.333	3.7	8.333	.0
.667	.0	2.666	89.4	4.666	4.6	6.666	3.0	8.666	.0
1.000	.0	3.000	46.7	5.000	3.9	6.999	1.7	8.999	.0
1.333	2.8	3.333	25.9	5.333	3.6	7.333	.7	9.332	.0
1.666	382.2	3.666	14.2	5.666	3.5	7.666	.3		

RUNOFF VOLUME = 1.34511 INCHES = 33.1578 ACRES-FEET
 PEAK DISCHARGE RATE = 433.08 CFS AT 1.766 HOURS BASIN AREA = .4622 SQ. MI.

**** ROUTE THIS FLOW DOWN ARROYO THRU BASIN 518 TO AIA OUTLET IN S. DIV. CHANNEL

COMPUTE RATING CURVE CID=1 VS NO=1 SEG=1 MIN BL=0 MAX BL=4

CH SLP=.0386 FP SLP=.0386 N=.033 DIST=60

DIST ELBV DIST ELBV DIST ELBV

0	4	10	0	50	0
60	4				

RATING CURVE VALLEY SECTION 1.0

WATER	FLOW	FLOW
SURFACE	AREA	RATE
ELBV	SQ FT	CFS
.00	.0	.0
.21	8.5	26.4
.42	17.3	84.3
.63	26.3	166.2
.84	35.5	269.5
1.05	44.9	392.4
1.26	54.5	533.9
1.47	64.4	693.3
1.68	74.5	869.9
1.89	84.8	1063.3
2.11	95.3	1273.3
2.32	106.0	1499.6
2.53	117.0	1741.9
2.74	128.2	2000.2
2.95	139.6	2274.4
3.16	151.2	2564.5
3.37	163.1	2870.3
3.58	175.2	3191.8
3.79	187.5	3529.1
4.00	200.0	3882.2

COMPUTE TRAVEL TIME ID=2 REACH=1 VS NO=1 L=700 SLP=.0386

TRAVEL TIME TABLE

REACH= 1.0

WATER	AVERAGE	FLOW	TRAVEL
DEPTH	AREA	RATE	TIME
FBKT	SQ.FT.	CFS	HRS
.211	8.532	26.45	.0627
.421	17.285	84.25	.0399
.632	26.260	166.20	.0307
.842	35.457	269.47	.0256
1.053	44.875	392.40	.0222
1.263	54.515	533.93	.0199
1.474	64.377	693.28	.0181
1.684	74.460	869.88	.0166
1.895	84.765	1063.33	.0155
2.105	95.291	1273.30	.0146
2.316	106.039	1499.55	.0137
2.526	117.008	1741.91	.0131
2.737	128.199	2000.24	.0125
2.947	139.612	2274.45	.0119
3.158	151.247	2564.46	.0115
3.368	163.102	2870.25	.0110
3.579	175.180	3191.80	.0107
3.789	187.479	3529.10	.0103
4.000	200.000	3882.18	.0100

ROUTE ID=2 HYD NO=114.0 INFLOW ID=4 DT=.03333 HR

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 114.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	390.7	4.000	9.4	5.999	3.6	7.999	.1
.333	.0	2.333	255.2	4.333	6.3	6.333	3.7	8.333	.0
.667	.0	2.666	95.6	4.666	4.8	6.666	3.2	8.666	.0
1.000	.0	3.000	49.3	5.000	4.0	6.999	1.9	8.999	.0
1.333	1.3	3.333	28.5	5.333	3.7	7.333	.9	9.332	.0
1.666	364.7	3.666	16.0	5.666	3.5	7.666	.3		

RUNOFF VOLUME = 1.34511 INCHES = 33.1578 ACRE-FEET

PEAK DISCHARGE RATE = 433.45 CFS AT 1.800 HOURS BASIN AREA = .4622 SQ. MI.

***BASIN 518 A=.012 SQ MI ***

COMPUTE NM HYD ID=5 HYD NO=114.1 DA=.012 SQ MI

PER A=60 PER B=18 PER C=18 PER D=4

TP=-.13 RAIN=-1

K = .070850HR TP = .130000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.9432 CFS UNIT VOLUME = .9946 B = 526.28 P60 = 2.0100
ARBA = .000480 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .141419HR TP = .130000HR K/TP RATIO = 1.087840 SHAPE CONSTANT, N = 3.248158
UNIT PEAK = 26.715 CFS UNIT VOLUME = .9994 B = 301.47 P60 = 2.0100
ARBA = .011520 SQ MI IA = .56563 INCHES INF = 1.43375 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 114.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.7	2.666	.3	4.000	.0	5.333	.0
.333	.0	1.666	8.9	3.000	.1	4.333	.0	5.666	.0
.667	.0	2.000	1.7	3.333	.1	4.666	.0	5.999	.0
1.000	.0	2.333	.7	3.666	.0	5.000	.0	6.333	.0

RUNOFF VOLUME = .71830 INCHES = .4597 ACRE-FEET

PEAK DISCHARGE RATE = 15.98 CFS AT 1.500 HOURS BASIN AREA = .0120 SQ. MI.

*** ADD ARROYO DISCHARGE AND BASIN 518 ****
ADD HYD ID=1 HYD=113.3 ID I=2 II=5
**** TOTAL DISCHARGE TO CHUTE (AIRPORT OUTLET) AT SOUTH DIVERSION CHANNEL****
PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 113.30

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	2.000	392.4	4.000	9.4	5.999	3.6	7.999	.1

.333	.0	2.333	255.8	4.333	6.3	6.333	3.7	8.333	.0
.667	.0	2.666	95.9	4.666	4.8	6.666	3.2	8.666	.0
1.000	.0	3.000	49.5	5.000	4.0	6.999	1.9	8.999	.0
1.333	2.0	3.333	28.6	5.333	3.7	7.333	.9	9.332	.0
1.666	373.6	3.666	16.0	5.666	3.6	7.666	.3		

RUNOFF VOLUME = 1.32925 INCHES = 33.6175 ACRE-FEET
 PEAK DISCHARGE RATE = 437.39 CFS AT 1.800 HOURS BASIN AREA = .4742 SQ. MI.

FINISH

END TIME (HR:MIN:SEC) = 08:46:41