FILE COPY


# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Louis Saavedra
MAYOR


December 13, 1989

John Andrews, P.E.
Andrews, Asbury & Roberts
149 Jackson, NE
Albuquerque, New Mexico 87108

RE: DRAINAGE PLAN FOR UNM ATHLETIC FACILITY EAST PARKING LOT
(L-15/D34) ENGINEER'S STAMP DATED NOVEMBER 30, 1989

Dear Mr. Andrews:

Based on the information provided on your submittal of December 4, 1989, the referenced as-built plan is approved for Engineer's Certification.

If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

Gilbert Aldaz, P.E. & L.S.
Civil Engineer/Hydrology

GA/bsj
(WP+1101)

ANDREWS, ASBURY & ROBERT, INC.
Consulting Engineers

149 Jackson, NE, Albuquerque, New Mexico 87108
(505) 265-6631

John A. Andrews, P.E.
Charles T. Asbury, P.E.
John B. Robert, P.E. & L.S. (1915-1984)
James E. Millington, P.E. - V.P.
Gayle D. Jewell, L.S. - V.P.

RECEIVED
DEC 0 4 1989
HYDROLOGY SECTION

November 30, 1989

Mr. Fred Aquirre
Hydrology Division
Engineering Group
Public Works Department
City of Albuquerque
P. O. Box 1293
Albuquerque, NM 87103

SUBJECT: (L-15/D34)
DRAINAGE PLAN FOR UNM ATHLETIC
FACILITY EAST PARKING LOT

Dear Mr. Aquirre:

Transmitted herewith is an As Built Drainage Plan for subject project for your files.

Very truly yours,

JOHN A. ANDREWS, P.E.

Enclosure

cc: Gil Berry w/o enclosure

JAA/tac-537

DRAINAGE INFORMATION SHEET

PROJECT TITLE: UNM Athletic Facility East Parking Lot ZONE ATLAS/DRNG. FILE #: L15/D34

LEGAL DESCRIPTION: Portion of unplatted University of New Mexico Lands situate within E 1/2 of Section 28, T10N, R3E; Southwest of Stadium

CITY ADDRESS: Boulevard and Buena Vista Drive SE

ENGINEERING FIRM: Andrews, Asbury & Robert, Inc. CONTACT: John A. Andrews

ADDRESS: 149 Jackson St. NE, Albuquerque PHONE: 265-6631

OWNER: University of New Mexico CONTACT: Gil Berry

ADDRESS 1841 Lomas Blvd. NE, Albuquerque PHONE: 277-2236

ARCHITECT: N/A CONTACT:

ADDRESS: PHONE:

SURVEYOR: Andrews, Asbury & Robert, Inc. CONTACT: John A. Andrews

ADDRESS: 149 Jackson St. NE, Albuquerque PHONE: 265-6631

CONTRACTOR: J.R. Hale Contracting Co., Inc. CONTACT: Tom McConnell

ADDRESS: P.O. Box 25667, Albuquerque PHONE: 345-6628

PRE-DESIGN MEETING:

X YES

___ NO

___ COPY OF CONFERENCE RECAP SHEET PROVIDED

RECEIVED DEC 0 4 1989 HYDROLOGY SECTION

DRB NO.

EPC NO.

PROJECT NO. 3847

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT

X DRAINAGE PLAN (As Built)

___ CONCEPTUAL GRADING & DRAIN. PLAN

___ GRADING PLAN

___ EROSION CONTROL PLAN

___ ENGINEER'S CERTIFICATION

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL

___ PRELIMINARY PLAT APPROVAL

___ SITE DEVELOPMENT PLAN APPROVAL

___ FINAL PLAT APPROVAL

___ BUILDING PERMIT APPROVAL

___ FOUNDATION PERMIT APPROVAL

___ CERTIFICATE OF OCCUPANCY APPROVAL

___ ROUGH GRADING PERMIT APPROVAL

___ GRADING/PAVING PERMIT APPROVAL

OTHER For City Files (SPECIFY)

DATE SUBMITTED: November 30, 1989

BY: John A. Andrews

Rev. 11/84

FILE COPY

# City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

KEN SCHULTZ
MAYOR

May 16, 1989

John Andrews, P.E.
Andrews, Asbury & Roberts
149 Jackson, NE
Albuquerque, New Mexico 87108

RE: DRAINAGE PLAN FOR UNM ATHLETIC FACILITY EAST PARKING LOT (L-15/D34) RECEIVED APRIL 28, 1989

Dear Mr. Andrews:

The referenced plan dated APR 1989 is approved for Grading and Paving. Please be advised that a Top Soil Disturbance Permit will be required for the grading.

Certification of the project will be required by the owner's engineer upon completion of the job. The tie-in to the public storm drain needs to be processed through DRC.

Should you have any questions, please feel free to call me at 768-2650.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

xc: Larry Caudill

CAM/bsj
(WP+1101)

# DRAINAGE INFORMATION SHEET

*PROJECT TITLE:* UNM Athletic Facility East Parking Lot *ZONE ATLAS/DRNG. FILE #:* L-15 /P34

*LEGAL DESCRIPTION:* Unplatted tract of land in E 1/2 Section 28, T10N, R3E.

*CITY ADDRESS:* Stadium Boulevard S.E.

*ENGINEERING FIRM:* Andrews, Asbury, & Robert, Inc. *CONTACT:* Mr. John Andrews

*ADDRESS:* 149 Jackson N.E., Albuquerque, NM *PHONE:* (505) 265-6631

*OWNER:* University of New Mexico *CONTACT:* Mr. Gil Berry

*ADDRESS* Dept. of Facility Planning 1841 Lomas Blvd. NE, Albuquerque *PHONE:* (505) 277-2236

*ARCHITECT:* N/A *CONTACT:* _____

*ADDRESS:* _____ *PHONE:* _____

*SURVEYOR:* Andrews, Asbury & Robert, Inc. *CONTACT:* Mr. Gayle Jewell

*ADDRESS:* 149 Jackson N.E., Albuquerque, NM *PHONE:* (505) 265-6631

*CONTRACTOR:* Unkown *CONTACT:* _____

*ADDRESS:* _____ *PHONE:* _____

*PRE-DESIGN MEETING:*

X *YES*

_____ *NO*

X *COPY OF CONFERENCE RECAP SHEET PROVIDED*

RECEIVED APR 28 1989 HYDROLOGY SECTION

*DRB NO.* N/A

*EPC NO.* _____

*PROJECT NO.* _____

*TYPE OF SUBMITTAL:*

X *DRAINAGE REPORT*

X *DRAINAGE PLAN*

_____ *CONCEPTUAL GRADING & DRAIN. PLAN*

X *GRADING PLAN*

_____ *EROSION CONTROL PLAN*

_____ *ENGINEER'S CERTIFICATION*

*CHECK TYPE OF APPROVAL SOUGHT:*

_____ *SKETCH PLAT APPROVAL*

_____ *PRELIMINARY PLAT APPROVAL*

_____ *SITE DEVELOPMENT PLAN APPROVAL*

_____ *FINAL PLAT APPROVAL*

_____ *BUILDING PERMIT APPROVAL*

_____ *FOUNDATION PERMIT APPROVAL*

_____ *CERTIFICATE OF OCCUPANCY APPROVAL*

_____ *ROUGH GRADING PERMIT APPROVAL*

X *GRADING/PAVING PERMIT APPROVAL*

*OTHER* _____ *(SPECIFY)*

*DATE SUBMITTED:* April 28, 1989

*BY:* John A. Andrews

*Rev. 11/84*

**ANDREWS, ASBURY & ROBERT, INC.**
**Consulting Engineers**

149 Jackson, NE, Albuquerque, New Mexico 87108
(505) 265-6631

John A. Andrews, P.E.
Charles T. Asbury, P.E.
John B. Robert, P.E. & L.S. (1915 - 1984)
James E. Millington, P.E. - V.P.

RECEIVED
APR 28 1989
HYDROLOGY SECTION

April 28, 1989

Mr. Fred Aquirre
Engineering Group
Design Division
Hydrology Section, PWD
City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

SUBJECT: UNM ATHLETIC FACILITY - EAST PARKING LOT

Dear Mr. Aquirre:

The University of New Mexico proposes to improve the existing dirt parking lot located east of the UNM Football Stadium and Running Track. Improvements include paving of the parking lot and the installation of landscaping.

We are transmitting herewith a drainage report for these proposed improvements for your review and approval.

We request that you give this your earliest attention as the University needs to go to bid on these improvements right away.

Please call me on any questions you may have.

Very truly yours,

JOHN A. ANDREWS, P.E.

Enclosure

cc: Gil Berry w/enclosure

JAA/tac-537

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
UTILITY DEVELOPMENT DIVISION/HYDROLOGY SECTION

**PRE-DESIGN CONFERENCE**

DRAINAGE FILE/ZONE ATLAS PAGE NO.: L-15 DATE: 1-6-89

EPC NO.: _____ DRB NO.: _____ ZONE: _____

SUBJECT: PARKING LOT PAVING

STREET ADDRESS: WEST OF BUENA VISTA, SOUTH OF STADIUM

LEGAL DESCRIPTION: _____

APPROVAL REQUESTED:

| | | | |
|---|---|---|---|
| ____ | PRELIMINARY PLAT | ____ | FINAL PLAT |
| ____ | SITE DEVELOPMENT PLAN | ____ | BUILDING PERMIT |
| X | GRADING/PAVING PERMIT | ____ | OTHER |

RECEIVED APR 28 1989 HYDROLOGY SECTION

| ATTENDANCE: WHO | REPRESENTING |
|---|---|
| JOHN ANDREWS | AAR |
| ROGER GREEN | CITY HYDROLOGY |

FINDINGS:

(1) An approved Grading and Drainage Plan is required for a PAVING PERMIT.

(2) Discharge rates to STadium is based upon street capacity. See Yale Blvd Report by Matotan & Associates, 1984, for upstream street flows. Must provide 10 year and 100 year runoff rates and street capacities.

(3) Discharge to South must be into the existing 36" storm drain. Free discharge is approved based upon fact that new parking lot is at the downstream end of watershed contributing to storm drain in University Blvd. an alternative is to pond runoff and release over a 24 hour period.

(4) Private extension of southern, west of Buena Vista may be closed off with curb and gutter provided an inlet is installed into existing storm drain.

(5). Any new inlets and laterals into public storm drain must go through the Work order process, including DRC review and approval of Plans.

The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

| | | | |
|---|---|---|---|
| SIGNED: | Roger A Green | SIGNED: | John A. Andrews |
| TITLE: | Civil Engineer | TITLE: | Andrews, Ashburn & Robert Consulting Engineer |
| DATE: | 1/6/89 | DATE: | 1-6-89 |

**NOTE** PLEASE PROVIDE A COPY OF THIS PRE-DESIGN FORM WITH THE DRAINAGE SUBMITTAL.

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
UTILITY DEVELOPMENT DIVISION/HYDROLOGY SECTION

**PRE-DESIGN CONFERENCE**

DRAINAGE FILE/ZONE ATLAS PAGE NO.: L-15 DATE: 1-6-89

EPC NO.: _____ DRB NO.: _____ ZONE: _____

SUBJECT: PARKING LOT PAVING

STREET ADDRESS: WEST OF BUENA VISTA, SOUTH OF STADIUM

LEGAL DESCRIPTION: _____

APPROVAL REQUESTED:

| | | | |
|---|---|---|---|
| ____ | PRELIMINARY PLAT | ____ | FINAL PLAT |
| ____ | SITE DEVELOPMENT PLAN | ____ | BUILDING PERMIT |
| X | GRADING/PAVING PERMIT | ____ | OTHER |

| ATTENDANCE: | WHO | REPRESENTING |
|---|---|---|
| | JOHN ANDREWS | AAR |
| | ROGER GREEN | City Hydrology |
| | | |

FINDINGS:

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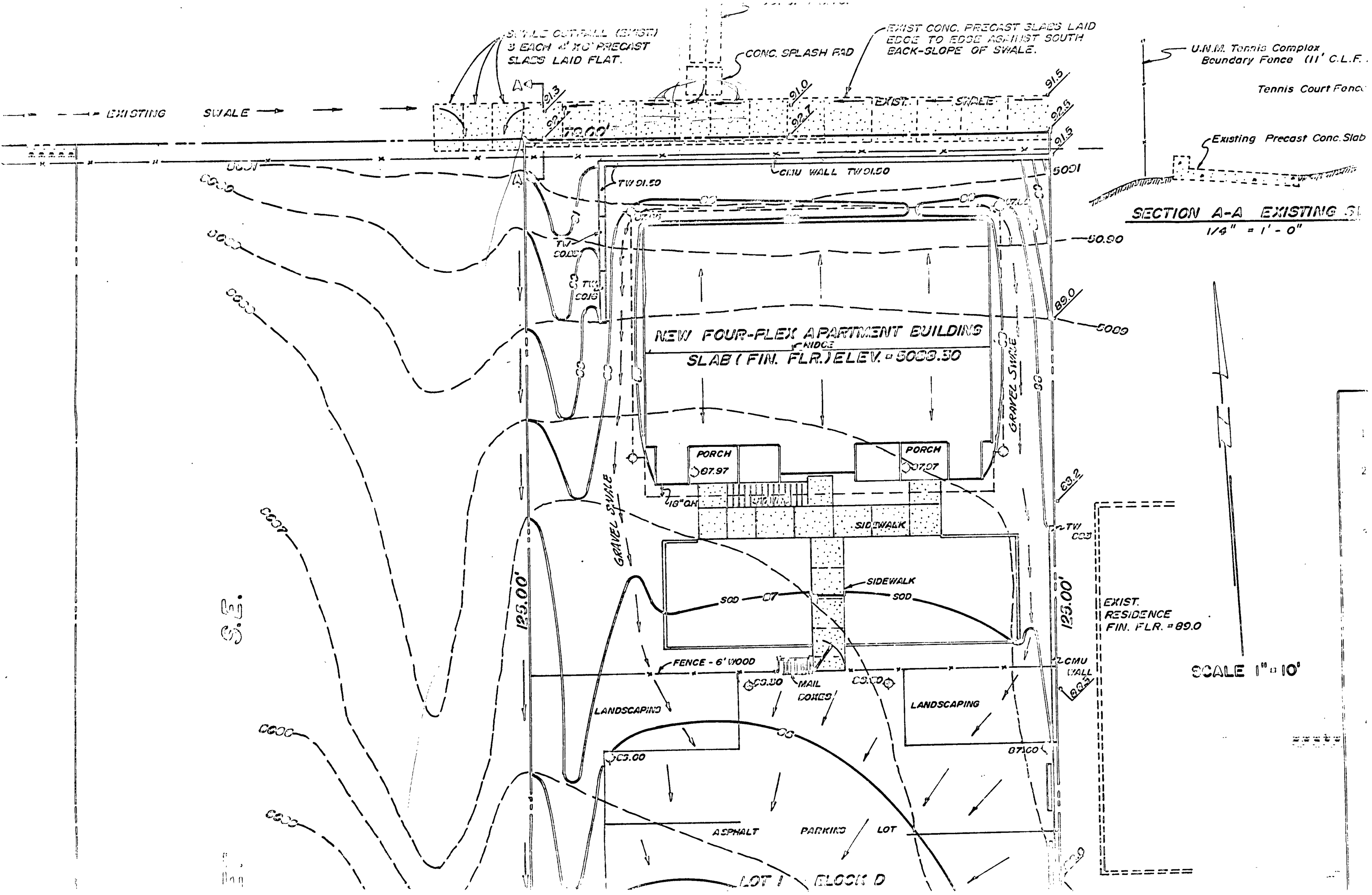
The undersigned agrees that the above findings are summarized accurately and are only subject to change if further investigation reveals that they are not reasonable or that they are based on inaccurate information.

| | | | |
|---|---|---|---|
| SIGNED: | Roger A Green | SIGNED: | John A. Andrews |
| TITLE: | Civil Engineer | TITLE: | Andrews, Ashby & Robert Consulting Engineer |
| DATE: | 1/6/89 | DATE: | 1-6-89 |

****NOTE**** **PLEASE PROVIDE A COPY OF THIS PRE-DESIGN FORM WITH THE DRAINAGE SUBMITTAL.**


SWALE OUTFALL (EXIST) 3 EACH 4' X 10' PRECAST SLABS LAID FLAT.
CONC. SPLASH PAD
EXIST CONC. PRECAST SLABS LAID EDGE TO EDGE AGAINST SOUTH BACK-SLOPE OF SWALE.
U.N.M. Tennis Complex Boundary Fence (11' C.L.F.
Tennis Court Fence
Existing Precast Conc. Slab
SECTION A-A EXISTING SL
1/4" = 1' - 0"
EXISTING SWALE
EXIST. SWALE
70.00'
CMU WALL TW 91.50
TW 91.50
NEW FOUR-PLEX APARTMENT BUILDING
RIDGE
SLAB (FIN. FLR.) ELEV. = 5003.50
PORCH
PORCH
18" OH
SIDEWALK
SIDEWALK
SOD
SOD
GRAVEL SWALE
GRAVEL SWALE
125.00'
125.00'
FENCE - 6' WOOD
MAIL BOXES
LANDSCAPING
LANDSCAPING
ASPHALT PARKING LOT
LOT 1 BLOCK D
EXIST. RESIDENCE FIN. FLR. = 89.0
TW
CMU WALL
SCALE 1" = 10'
50.90
89.0
91.5
92.5
91.0
92.7
91.3
92.3
63.2

## DRAINAGE NOTES

1. RELATION TO FLOOD HAZARD AREAS: THE SITE DOES NOT LIE WITHIN OR ADJACENT TO A DESIGNATED FLOOD HAZARD AREA.

2. SITE LOCATION: THE SITE IS BOUNDED ON THE NORTH BY THE UNM TENNIS COMPLEX; ON THE EAST BY A RESIDENTIAL LOT; ON THE SOUTH BY SUNSHINE TERRACE AVENUE, A PAVED STREET WITH CURB AND GUTTER; AND, ON THE WEST BY THE UNDEVELOPED RIGHT-OF-WAY OF ASH STREET.

3. PRE-DESIGN CONFERENCE RECAP FINDINGS:

   A. DRAINAGE PLAN PER DPM.

   B. PRIOR TO C.O. RELEASE, NEED STREET GRADES FOR ASH STREET.

   C. PRIOR TO BUILDING PERMIT RELEASE, NEED EXISTING CONTOURS OF ASH STREET.

   D. NEED TO ACCEPT OFF-SITE HISTORIC RUNOFF THROUGH SITE AND CONVEY TO SUNSHINE TERRACE AVENUE.

   E. FREE DISCHARGE TO SUNSHINE TERRACE AVENUE ALLOWED; ENGINEER MUST ADDRESS (DOWNSTREAM CONDITIONS).

4. DRAINAGE FROM UNM PROPERTY: DRAINAGE FROM UNM PROPERTY OUTFALLS INTO THE ASH STREET RIGHT-OF-WAY. PRECAST CONCRETE SLABS HAVE BEEN PLACED EDGE-TO-EDGE ALONG THE SOUTH BACKSLOPE OF THE EXISTING SWALE TO PREVENT FLOODING OF THE LOTS ALONG SUNSHINE TERRACE AND TO CHANNEL THE FLOW IN THE SWALE TO THE POINT OF OUTFALL. IT IS ONLY AFTER THE FLOW DISCHARGES INTO THE ASH STREET RIGHT-OF-WAY THAT IT FLOWS BACK INTO LOT 1, SOLELY BECAUSE OF THE FILL THAT HAS BEEN PLACED IN THE RIGHT-OF-WAY. THE UNM PHYSICAL PLANT ENGINEER CONFIRMED THAT THE INTENT OF THE CONCRETE WAS TO CREATE AN OUTFALL FOR THE SWALE THAT COINCIDED WITH ASH STREET. FLOW FROM UNM PROPERTY IS NOT INTENDED TO FLOW INTO LOT ONE, AND, THEREFORE, SAID FLOW IS NOT ACCEPTED.

5. ASH STREET RIGHT-OF-WAY: ASH STREET WEST OF THE SITE IS UNDEVELOPED. THE RIGHT-OF-WAY CONTAINS A SANITARY SEWER LINE THAT SERVES THE UNM TENNIS COMPLEX. THIS LINE AND THE MANHOLE AT WHICH IT TERMINATES DOES NOT SHOW UP ON THE SEWER SECTIONALS. THE STREET IS NOT NEEDED FOR ACCESS SINCE BOTH OF THE LOTS FRONTING IT OBTAIN THEIR ACCESS FROM SUNSHINE TERRACE AVENUE. A CONSIDERABLE AMOUNT OF FILL HAS BEEN DUMPED ON THE EAST SIDE OF THIS RIGHT-OF-WAY WHICH SHOWS ON THE EXISTING CONTOURS AS A SMALL RIDGE. THIS DIVERTS UNM WATER BACK ONTO LOT 1. THIS "OFF-SITE" FLOW IS NOT ACCEPTED.

6. OFF-SITE FLOW FROM LOT 2: WHATEVER SMALL AMOUNT OF FLOW THAT COMES FROM LOT 2 WILL BE INTERCEPTED BY THE SWALE EAST OF THE FOUR-PLEX AND CONVEYED TO THE PARKING LOT.

   DOWNSTREAM CAPACITY: THE SITE IS AN "INFILL" SITE, ONE OF THE LAST, IF NOT THE LAST, LOT ON THE STREET TO BE DEVELOPED. SITE DISCHARGE WILL ENTER SUNSHINE TERRACE AVENUE THROUGH THE DRIVE PAD. ALL STREET DRAINAGE IS PICKED UP BY ONE INLET IN THE INTERSECTION AND CONVEYED TO THE ARROYO (SEE FLOODWAY MAP) VIA A 25-INCH RCP CULVERT PIPE.

LEGAL DESCRIPTION:

A CERTAIN TRACT OF PARCEL OF LAND SITUATED WITHIN THE CITY LIMITS OF THE [illegible] ALBUQUERQUE COUNTY, NEW MEXICO; BEING AND COMPRISING LOT 1, BLOCK D, SUNSHINE TERRACE ADDITION, SECTION 28, T10N, R3E, NMPM.

## DRAINAGE CALCULATIONS

**I. REFERENCES:**

A. CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) VOLUME 2, DESIGN CRITERIA, CHAPTER 22, DRAINAGE, FLOOD CONTROL AND EROSION CONTROL.

B. FLOODWAY MAP, PANEL 35 OF 50, FEDERAL EMERGENCY MANAGEMENT AGENCY, OCTOBER 14, 1983.

**II. ON-SITE RUNOFF CHARACTERISTICS:**

A. UNDEVELOPED RUNOFF COEFFICIENT:

| TYPE OF SURFACE | AREA | "C"VALUE | AREA("C") |
|---|---|---|---|
| STREETS, DRIVES, WALKS | | | |
| ROOFS | | | |
| LAWNS & LANDSCAPING | | | |
| UNDEVELOPED | 8750 | 0.40 | 3500 |
| TOTAL AREA | 8750 = 0.20 Acres | | |

WEIGHTED "C" VALUE = 3500 / 8750 = 0.40

B. DEVELOPED RUNOFF COEFFIENT:

| TYPE OF SURFACE | AREA | "C"VALUE | AREA("C") |
|---|---|---|---|
| STREETS, DRIVES, WALKS | 2516 | 0.95 | 2390 |
| ROOFS | 1847 | 0.90 | 1662 |
| LAWNS & LANDSCAPING | 3667 | 0.25 | 917 |
| UNDEVELOPED | 720 | 0.40 | 288 |
| TOTAL AREA | 8750 | | 5257 |

WEIGHTED "C" VALUE = 5257 / 8750 = 0.60

C. RAINFALL, 100-YR.,6-HR.:(REF. A., PLATE 22.2 D-1)
$R_6$ = 2.3 INCHES

D. TIME OF CONCENTRATION: USE MINIMUM $T_c$ = 10 MINUTES.

E. RAINFALL INTENSITY,I: (For use with rational equation. (REF. A., PLATE 22.2 D-1) $I = 2.3(6.84)(10)^{-0.51} = 4.86$

**III. ON-SITE PEAK DISCHARGE:**

A. Existing Conditions:
$Q_{100}$ = 0.40 X 4.86 X 0.20 = 0.40 CFS
$Q_{10}$ = 0.657 X 0.40 = 0.26 CFS

B. Developed Conditions:
$Q_{100}$ = 0.60 X 4.86 X 0.20 = 0.58 CFS
$Q_{10}$ = 0.657 X 0.58 = 0.38 CFS

**IV. ON-SITE VOLUME:**

A. Existing Conditions:
$V_{100}$ = 0.40 (2.5/12)8750 = 670 CF
$V_{10}$ =0.657 X 670 = 440 CF

B. Developed Conditions:

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

HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

August 18, 1986

Frank Lovelady
Lovelady & Associates
7408 Morrow Road, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR OAKCREST THREE APARTMENT (L-15/D24)
RECEIVED AUGUST 13, 1986

Dear Mr. Lovelady:

The above referenced plan, dated July 15, 1986, is approved for Building Permit.

I suggest that because of the amount of discharge through Ash Street, the berm be enlarged. Please attach a copy of this approved plan to both sets of construction drawings prior to sign-off by Hydrology.

If you have any questions, call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

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

HYDROLOGY SECTION
123 Central NW, Albuquerque, NM 87102
(505) 766-7644

August 6, 1986

Frank Lovelady
Lovelady & Associates
7402 Narrow Road, NE
Albuquerque, New Mexico 87110

RE: DRAINAGE PLAN FOR OAKCREST THREE APARTMENT (L-15/D24)
RECEIVED JULY 15, 1986

Dear Mr. Lovelady:

I have reviewed the referenced plan and forward the following comment:

Please quantify the existing off-site flows through the site. The amount of flows will determine the amount of protection for the property.

If you have any questions, call me at 766-7644.

Cordially,

Carlos A. Montoya, P.E.
City/County Floodplain Administrator

CAM/bsj

Loveledy & Associates
7403 Morrow Road, NE
Albuquerque, NM 87110
July 15, 1986

Greg Olsen, P.E.
Chief Design Engineer
Project Design Section
Public Works Department
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: APPLICATION FOR CITY TO DESIGN STREET GRADES ONLY ON ASH STREET NORTH OF SUNSHINE TERRACE AVENUE:

Dear Mr. Olsen:

The attached application is submitted with this letter for the purpose of conforming to the requirements of the DPM regarding Hydrology submittals. A print of the drainage plan for Lot 1, Block D, Sunshine Terrace Addition, is attached for your review. Since Ash Street right-of-way adjacent to this lot is undeveloped, the DPM requires that street grades be provided.

In this particular case, there is no real purpose in designing the street grades. Both of the adjacent lots obtain their access form Sunshine Terrace Avenue and the land to the north of this little section of street R.O.W. is the UNM tennis complex which obtains its access from the UNM Stadium parking lot. There is no immediately apparent reason to provide street grades for this section of Ash Street other than the DPM requirement.

However, the second purpose of the application is to emphasize the need for drainage improvements of some type within this section of R.O.W. A very large portion of the UNM property drains to this point and it would appear that what is needed more than street grades is adequate facilities to convey the storm runoff from UNM property safely to the channel to the south.

In addition, the facilities on the UNM side of the fence seem hardly adequate to handle the design year storm. These improvements are probably already under consideration. In talking with Mr. Ross of the UNM Physical Plant Department, he stated that a study is currently underway in that area.

If a variance from the requirements for street grades is appropriate, please indicate your approval by signing in the space provided below. If you have any questions, please call me at 883-7973.

Sincerely,

Frank D. Loveledy, P.E.

Variance Approved:

_____
Gregory Olsen, P.E., Chief Design Engineer

# DRAINAGE REPORT
for
UNIVERSITY OF NEW MEXICO
ATHLETIC FACILITY -
EAST PARKING LOT

April 1989

# DRAINGE REPORT

# FOR

# UNIVERSITY OF NEW MEXICO

# ATHLETIC FACILITY - EAST PARKING LOT

APRIL 1989

REGISTERED PROFESSIONAL ENGINEER
STATE OF NEW MEXICO
No. 3960
JOHN A. ANDREWS

RECEIVED
APR 28 1989
HYDROLOGY SECTION

Prepared by
Andrews, Asbury & Robert, Inc.
Consulting Engineers
149 Jackson Street, N.E.
Albuquerque, New Mexico 87108

# TABLE OF CONTENTS


| | | Page |
|---|---|---|
| I | Introduction | |
| | A. General | 1 |
| II | Existing Conditions | |
| | A. General | 2 |
| | B. Offsite Drainage | 2 |
| | C. Onsite Drainage | 3 |
| III | Developed Conditions | |
| | A. General | 4 |
| | B. Offsite | 5 |
| | C. Onsite | 5 |
| | Map No. 1 - Location Map | 6 |
| IV | Drainage Analysis | 7 |
| | Calculations | |

Enclosures

Map No. 2 - Offsite and Existing Conditions Drainage Map

Map No. 3 - Developed Conditions Drainage Map

Access Road and Storm Drain Plan & Profile

# I

# INTRODUCTION

## A. GENERAL

The University of New Mexico (UNM) proposes to regrade and pave an existing dirt parking lot, consisting of approximately 17 acres, located in the southeast quadrant of the Albuquerque Metropolitan Area. The parking lot lies southwest of the intersection of Stadium Boulevard, S.E. and Buena Vista Drive, S.E. The existing UNM Running Track and Football Stadium lies directly west of the parking lot site. (See enclosed Location Map Zone Atlas Map L-15.)

# II

# EXISTING CONDITIONS

## A. GENERAL

The existing parking lot is presently graded but unsurfaced and slopes from east to west at approximately 2.5 percent.

The project site is bounded by existing paved streets with curb and gutter consisting of Buena Vista Drive on the east, Stadium Boulevard on the north, and a paved private street on the south. To the west of the site is the existing UNM Running Track and Football Stadium.

## B. OFFSITE DRAINAGE

Presently offsite drainage is collected upstream and/or diverted around the parking lot site. The exception to this is; there is some overflow from Buena Vista at Southern Avenue that enters the site from the east.

The offsite areas are addressed in the Design Analysis included herein and on the enclosed Offsite and Existing Conditions Drainage Map.

## C. ONSITE DRAINAGE

The onsite existing drainage conditions are also addressed in the above mentioned Design Analysis and the Offsite and Existing Conditions Drainage Map.

# III

# DEVELOPED CONDITIONS

## A. GENERAL

A review of the existing drainage system in the area was made and also discussed at the predesign conference. As a result of this review and discussion, it was determined that the proposed parking lot could be designed for free discharge conditions due to the site being located in the downstream portion of the watershed contributing flow to the existing drainage system serving the watershed, particularly the outfall storm drain system in University Boulevard.

The basis for this determination being that the major portion of the storm flows from the project site will be drained away by the system during the early stages of the storm, and well before the peaking time of the flows from the overall watershed.

The developed conditions are addressed in detail in the enclosed Drainage Analysis and on the Developed Conditions Drainage Map included herein.

# IV

# DRAINAGE ANALYSIS

Following is the Drainage Analysis (computations) for the subject property.

| | |
|---|---|
| Offsite Areas | Sheets 2 thru 5 |
| Table I - Existing Conditions | Sheet 6 |
| Table II - Developed Conditions | Sheets 7 thru 10 |
| Facility Design | Sheets 11 and 12 |

B. OFFSITE

The overflow from Buena Vista Drive at Southern Avenue will be collected by the installation of a catch basin on the west side of Buena Vista and conveyed to the existing storm drain in Buena Vista.

Other offsite flows are collected by the existing storm drain system and/or bypassed within the existing improved streets along the north and south sides of the project.

C. ONSITE

The northerly portions of the onsite developed flows are directed westerly and then northerly from the site by surface means onto Stadium Boulevard. These flows then will be carried in Stadium Blvd. and collected by the inlets directly east of University Boulevard.

The southerly portions of the onsite developed flows will be collected by a new storm drain system and conveyed to the existing storm drain line located approximately 200 feet south of the project site.

See enclosed Drainage Analysis and Developed Conditions Drainage Map.

# DRAINAGE ANALYSIS

## CRITERIA

City of Albuquerque
Development Process Manual
Volume 2 - SECTION 22

## DESIGN PARAMETERS

PEAK RUNOFF RATE

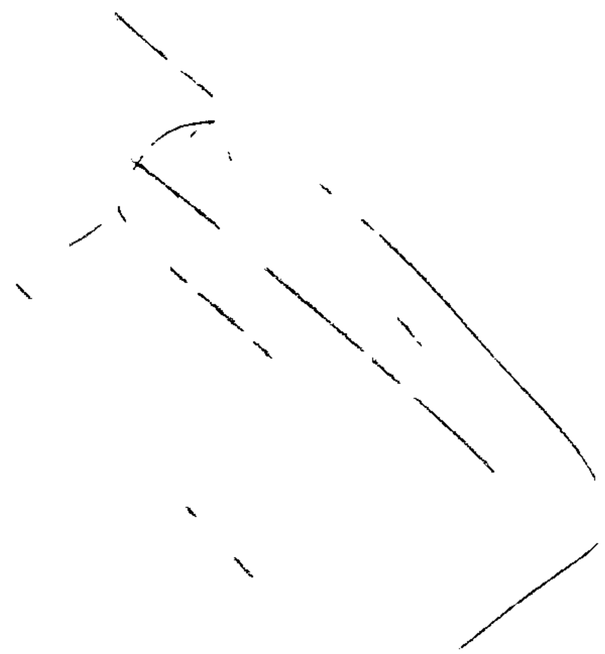
RATIONAL FORMULA: $Q = CIA$

"C" determined from proportioning types of surface cover and respective 'C' within the drainage area

$$I_{100} = (2.27)(6.84)(t_c)^{-0.51}$$

$$I_{10} = (0.657) \times I_{100}$$

Travel time determined from Plates 22.2 B-1 & 22.2 B-2 & combinations thereof.



ACOG3

## OFFSITE AREAS

Offsite areas affecting the proposed parking Area and drainage are located east of the parking area site.

The drainage report prepared for the Yale Blvd Widening project, located two blocks east of this project, provides data for use in determining the effect offsite drainage areas have on this parking area project.

From- "Drainage Study for Yale Blvd. SE from Stadium Blvd. SE to Gibson Blvd. SE."

## Flows on Stadium Blvd.

From above report, Section IV, Par. D, Pg. 14 "Santa Clara - Stadium Blvd. Line."

$Q_{100} = 77$ cfs

$Q_{10} = 51$ cfs.

Report states- Inlet capacity = 48 cfs
Stadium- Storm Drain Cap. = 18 cfs @ Gravity flow.

A review of the record drawings and an analysis- shows the capacity of the 24" line in Stadium- west of Yale under surcharged conditions as 32 cfs

Due to the inlet capacity upstream - this line will operate under surcharged conditions in both 100yr & 10yr. flows.

Remaining street flow

100 yr = 77cfs - 32cfs = 45cfs

10 yr = 51cfs - 32cfs = 19cfs

Also - Yale Blvd. slopes north at this intersection - with crown -

with ½ crown - Flows north on east half of Yale Blvd = 10 cfs

therefore - flows on west half of Yale - & a portion onto Stadium =

100 yr = 45 cfs - 10 cfs = 35cfs

10 yr = 19 cfs - 10cfs = 9cfs.

Existing inlets on Stadium - East of Buena Vista will collect:

100 year - 2 @ 9cfs each = 18cfs

10 year - 2 @ 4cfs each = 8cfs.

The conclusion is -

10 year flows on Stadium should be picked up @ Buena Vista.

A portion of 100 year flow will overflow inlets and proceed past the Buena Vista intersection.

$Q_{100}$ = 35cfs - 18cfs = 17cfs.

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Flows at Buena Vista & Southern Ave.

From above referenced report - Plate 7, "Drainage Analysis Points & Proposed Storm Drain Inputs."

Flow from Yale Blvd. onto Southern.

$Q_{100}$ = 13 cfs  $T_c$ < 10 min

$Q_{10}$ = 8 cfs.  "

Area O-1-A

Total $T_c$ - including flow time - east of Yale Blvd.

| | | |
|---|---|---|
| 200' - overland @ 2% V=0.85 | | 4.0 min. |
| 600' - street @ 0.5% V=2.0 | | 5.0 |
| 650' - street @ 2.4% V=4.2 | - | 4.5 |
| | $T_c$ = | 13.5 min |

Area - 8.1 Ac, C = 0.55

$Q_{100}$ = (0.55)(4.12)(8.1) = 18.3 cfs.

$Q_{10}$ = 12.0 cfs -

Adjusted flow from Yale for increased $T_c$

$Q_{100}$ = 4.12/4.80 × 13 = 11 cfs

$Q_{10}$ = " × 8 = 7 cfs

Total Flow - (In Southern)  $Q_{100}$ = 18.3 + 11 = 29.3 cfs

$Q_{10}$ = 12.0 + 7 = 19 cfs

d = 0.6 - 12 - 13
d = 0.5 9

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Existing inlet capacity on Southern
Dbl 'C' each side of Street.
1- Single D - ℄ of Street.

Dbl 'C' - 100yr - 2 @ 12 Cfs each = 24 cfs
" 10yr - 2 @ 9 cfs each = 18 Cfs
Single D - 1 ea 3 Cfs

Overflow to Buena Vista -
$Q_{100}$ = 29.3 - 24 - 3 = 2.3 Cfs
$Q_{10}$ = 19 - 18 - 3 = 0 -

AREA O-1-B

Area = 3.3 Ac. C = 0.50

Tc = 100'-Overland - 1.7% V=0.8 3.1 min
300'- Street - 0.3% V=1.4 3.6 min
6.7 min.

$Q_{100}$ = (0.50)(4.80)(3.3) = 7.9 cfs
$Q_{10}$ = 5.2 cfs.

Plus Overflow -

(A) $Q_{100}$ = 7.9 + 2.3 = 10.2 cfs
$Q_{10}$ = 5.2

# EXISTING CONDITIONS - TABLE I

| ANALYSIS POINT | DRAINAGE AREA DESIGNATION | AREA (Ac) | LENGTH OF TRAVEL (FT) | SLOPE (%) | VELOCITY (FPS) | TRAVEL TIME ($T_c$) (Mins.) | C | $I_{10}$ (IN/Hr) | $I_{100}$ (IN/Hr) | $Q_{10}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| A | O-1-A- OVERFLOW O-1-B | 3.3 | (See | Sheet | 5) | 6.7 | | | | 5.2 | 10.2 |
| Flow thru | X-1- | | 460' st. 560' swale | 2.8 1.5 | 4.5 1.9 | 1.7 4.9 } 6.6 | | | | | |
| | | | | | | | | | | | |
| B | Offsite X-1 | 3.3 13.5 } 16.8 | — — | — — | — — | 6.7+6.6 = 13.3 min | 0.11 0.32 } 0.43 | 2.73 | 4.15 | 19.7 | 30.0 |
| Flow thru | X-2 | | 120' street | 1.0 | 2.7 | 0.7 | | | | | |
| | | | | | | | | | | | |
| C | Offsite X-1 & X-2 | 16.8 1.3 } 18.1 | — | — | — | 13.3 0.7 } 14.0 | 0.40 0.04 } 0.44 | 2.66 | 4.04 | 21.2 | 32.2 |
| | | | | | | | | | | | |
| D | X-3 | 1.37 | 1000' | 2.95 | 4.6 | 3.6 use 10 | 0.82 | 3.15 | 4.80 | 3.5 | 5.4 |
| E | Offsite X-1 to X-3 | 19.5 | — | — | — | 14 | 0.41 0.06 } 0.47 | 2.66 | 4.04 | 24.4 | 37.0 |
| | | | | | | | | | | | |
| | X-4 | 3.49 | ~~900'~~ | 1.7 | 3.5 | 4.3 use 10 | 0.79 | 3.15 | 4.80 | 8.7 | 13.2 |
| F | Offsite X-1 to X-4 | 23.0 | — | — | — | 14+4.3 18.3 | 0.40 0.12 } 0.52 | 2.32 | 3.53 | 27.7 | 42.2 |
| | | | | | | | | | | | |


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Project: UNM Athletic Facility East Parking Lot
Sheet 6 of 12
By: JA
Chk'd:
Job No. 531
Date 4-24-89

# DEVELOPED CONDITIONS - TABLE II

| ANALYSIS POINT | DRAINAGE AREA DESIGNATION | AREA (Ac) | LENGTH OF TRAVEL (Ft) | SLOPE (%) | VELOCITY (FPS) | TRAVEL TIME ($T_c$) (Mins.) | C | $I_{10}$ (IN/Hr) | $I_{100}$ (IN/Hr) | $Q_{10}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| 1 | A-1 | 0.87 | 370' | 3.0 | 2.3 | 2.7 use 10 | 0.87 | 3.15 | 4.80 | 2.4 | 3.6 |
| | | | | | | | | | | | |
| 2 | A-2 | 4.10 | 60' Grass<br>510' PVT.<br>180' St. | 8<br>3.1<br>0.4 | 1.15<br>2.35<br>1.7 | 0.9<br>3.6<br>1.8 } 6.3 use 10 | 0.886 | 3.15 | 4.80 | 11.4 | 17.4 |
| | 1) Flow from Area A-2 is split @ A.P. 2 by weir to the west | | | | | | | | | | |
| | 2) For $Q_{10}$, flow west to Area A-3 = 40%; flow south to Area B-1 = 60% | | | | | | | | | | |
| | 3) For $Q_{100}$, flow west to Area A-3 = 50%; flow south to Area B-1 = 50% | | | | | | | | | | |
| 2A | See Note 2) & 3) above | | | | | | | | | 4.6 | 8.7 |
| 2B | See Note 2) & 3) above | | | | | | | | | 6.8 | 8.7 |
| | | | | | | | | | | | |
| | A-3 | 3.62 | 435' | 1.7 | 1.75 | 4.1 use 10 | 0.844 | 3.15 | 4.80 | 9.6 | 14.7 |
| 3 | A-1, A-3, Port. A-2 | 4.49 | — | — | — | 6.3+4.1 = 10.4 | 0.849 | 3.09 | 4.70 | 11.8<br>*4.5 } 16.3 | 17.9<br>*8.5 } 26.4 |
| | A-4 | 0.63 | | | | use 10 | 0.383 | 3.15 | 4.80 | 0.8 | 1.2 |
| | A-5 | 1.3 | | | | use 10 | 0.616 | 3.15 | 4.80 | 2.5 | 3.8 |
| Flow from A.P. 3 to A.P. 4 | | | 180' street | 0.8 | 2.4 | 1.2 | | | | | |
| * - Flows from Area A-2 adjusted to reflect increased Tc. (Lag time) | | | | | | | | | | | |

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Project: UNM Athletic Facility East Parking Lot
Sheet 7 of 12
By: JA
Chk'd:
Job No. 537
Date 4-25-89

# DEVELOPED CONDITIONS - Cont'd. - TABLE II

| ANALYSIS POINT | DRAINAGE AREA DESIGNATION | AREA (Ac) | LENGTH OF TRAVEL (Ft) | SLOPE (%) | VELOCITY (FPS) | TRAVEL TIME ($T_c$) (Mins.) | C | $I_{10}$ (IN/Hr) | $I_{100}$ (IN/Hr) | $Q_{10}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | A-1, A-3 to A-5 Port. A-2 | 6.42 | — | — | — | 10.4+1.2 = 11.6 | 0.756 | 2.92 | 4.45 | 14.2 *4.2 } 18.4 | 21.6 *8.1 } 29.7 |
| 5 | A-6 | 1.37 | 1000' | 2.95 | 4.6 | 3.6 Use 10 | 0.782 | 3.15 | 4.80 | 3.4 | 5.1 |
| 6 | A-1, A-3 to A-6 Port. A-2 | 7.79 | — | — | — | 11.6 | 0.761 | 2.92 | 4.45 | 17.3 *4.2 } 21.5 | 26.4 *8.1 } 34.5 |
| | A-7 | 3.49 | 900' | 1.7 | 3.5 | 4.3 Use 10 | 0.789 | 3.15 | 4.80 | 8.7 | 13.2 |
| 7 | A-1, A-3 to A-7 Port A-2 | 11.28 | — | — | — | 11.6+4.3 =15.9 | 0.770 | 2.49 | 3.79 | 21.6 *3.6 } 25.2 | 32.9 *6.9 } 39.8 |

* - Flows from Area A-2 adjusted to reflect increased Tc (Lag Time)

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Project: UNM Athletic Facility East Parking Lot
By: JA
Chk'd:
Date: 4-25-89
Job No. 537
Sheet 8 of 12

# DEVELOPED CONDITIONS - Cont'd. TABLE II

| ANALYSIS POINT | DRAINAGE AREA DESIGNATION | AREA (Ac) | LENGTH OF TRAVEL (Ft) | SLOPE (%) | VELOCITY (FPS) | TRAVEL TIME ($T_c$) (Mins.) | C | $I_{10}$ (IN/Hr) | $I_{100}$ (IN/Hr) | $Q_{10}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| (2B) | See previous sheet 7 | | | | | 6.3 | | | | 6.8 | 8.7 |
| | | | | | | | | | | | |
| | B-1 | 3.83 | 420' | 2.7 | 2.2 | 3.2 Use 10 | 0.885 | 3.15 | 4.80 | 10.7 | 16.3 |
| Flow from A.P. (2) to A.P. (8) | | | 120' street | 0.40 | 1.7 | 1.2 | | | | | |
| (8) | B-1 Port A-2 | 3.83 | — | — | — | 6.3+1.2 =7.4 (use 10) | 0.885 | 3.15 | 4.80 | 10.7 / 6.8 } 17.5 | 16.3 / 8.7 } 25.0 |
| | B-2 | 3.60 | 420' Pvd. 120' st. | 2.6 0.5 | 2.35 1.9 | 3.0 / 1.0 } 4.0 use 10 | 0.876 | 3.15 | 4.80 | 9.9 | 15.1 |
| Flow from A.P. (8) to A.P. (9) | | | 360' Pipe | 1.1 | 6.8 | 0.9 | | | | | |
| (9) | B-1 & B-2 Port. A-2 | 7.43 | — | — | — | 7.4+0.9 =8.3 use 10 | 0.880 | 3.15 | 4.80 | 20.6 / 6.8 } 27.4 | 31.4 / 8.7 } 40.1 |
| Flow from A.P. (9) to A.P. (10) | | | 243' Pipe | 1.0 | 8.2 | 0.5 | | | | | |
| (10) | Same as A.P. (9) | | | | | 8.3+0.5 =8.8 use 10 | Same as A.P. (9) | | | 27.4 | 40.1 |
| (11) | B-3 | 0.11 | — | — | — | use 10 | 0.95 | 3.15 | 4.80 | 0.3 | 0.5 |
| | | | | | | | | | | | |
| (12) | Offsite Area | — | Use capacity of 2-Dbl 'C' inlets; 2@8cfs = Remainde will overflow to the west. | | | | | | | 16.0 | 16.0 |
| | | | | | | | | | | | |

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Project: UNM Athletic Facility East Parking Lot
Sheet 9 of 12
By: JA
Chk'd
Job No.
Date: 4-26-89

# DEVELOPED CONDITIONS - Cont'd. TABLE II

| ANALYSIS POINT | DRAINAGE AREA DESIGNATION | AREA (Ac) | LENGTH OF TRAVEL (Ft) | SLOPE (%) | VELOCITY (FPS) | TRAVEL TIME ($T_c$) (Mins.) | C | $I_{10}$ (IN/Hr) | $I_{100}$ (IN/Hr) | $Q_{10}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| 13 | TOTAL OF | | A.P. 10 | & A.P. | 12 | | | | | 27.4 / 16.0 } 43.4 | 40.1 / 16.0 } 56.1 |
| | | | | | | | | | | | |
| Flow from A.P. 13 to A.P. 14 | | | 236' Pipe | 2.0 | 11.5 | 0.3 | | | | | |
| | | | | | | | | | | | |
| 14 | Same as | | A.P. 13 | | | 8.8+0.3 =9.1 use 10 | same as A.P. 13 | | | 43.4 | 56.1 |

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Project: UNM Athletic Facility East Parking Lot
Sheet 10 of 12
By: JA
Chk'd
Job No. 537
Date 4-26-89

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FACILITY DESIGN

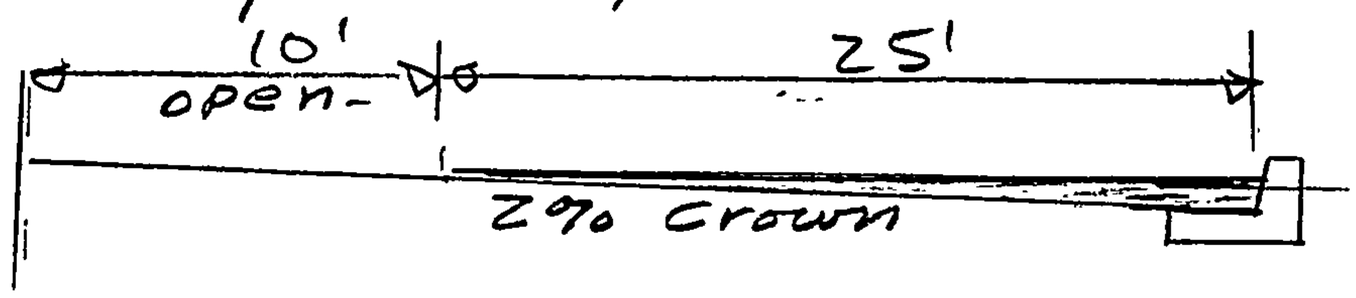
— Check for street flow on Stadium Blvd. under developed conditions

Maximum flow on Stadium - @ A.P. 7

$Q_{10} = 25.2$ cfs

$Q_{100} = 39.8$ cfs.

½ street capacity - with one traveled lane open. - 10yr. storm.




Area = 25 × 0.5/2 = 6.25 ft², Slope = 0.017

$V = \frac{1.486}{.017}\left(\frac{6.25}{25.5}\right)^{2/3}(0.017)^{1/2} = 4.44$

Q = AV = (6.25)(4.44) = 27.8 cfs - ok

100 yr capacity - ½ street. @ 0.10 ft. above curb.

Q = AV = (15.75)(6.36) = 100.2 cfs - OK

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FACILITY DESIGN Cont'd.

Storm Drain - Southerly portion of Parking Lot.

INLETS

— Collection of Drainage Area B-1 & Portion of A-2
Q = 25.0 cfs,
Use Dbl "C" inlet @ low point, Capacity = 30+cfs

— Collection of Drainage Area B-2
Q = 15.1 cfs
Use Dbl "C" inlet @ lowpoint, Capacity = 30+cfs

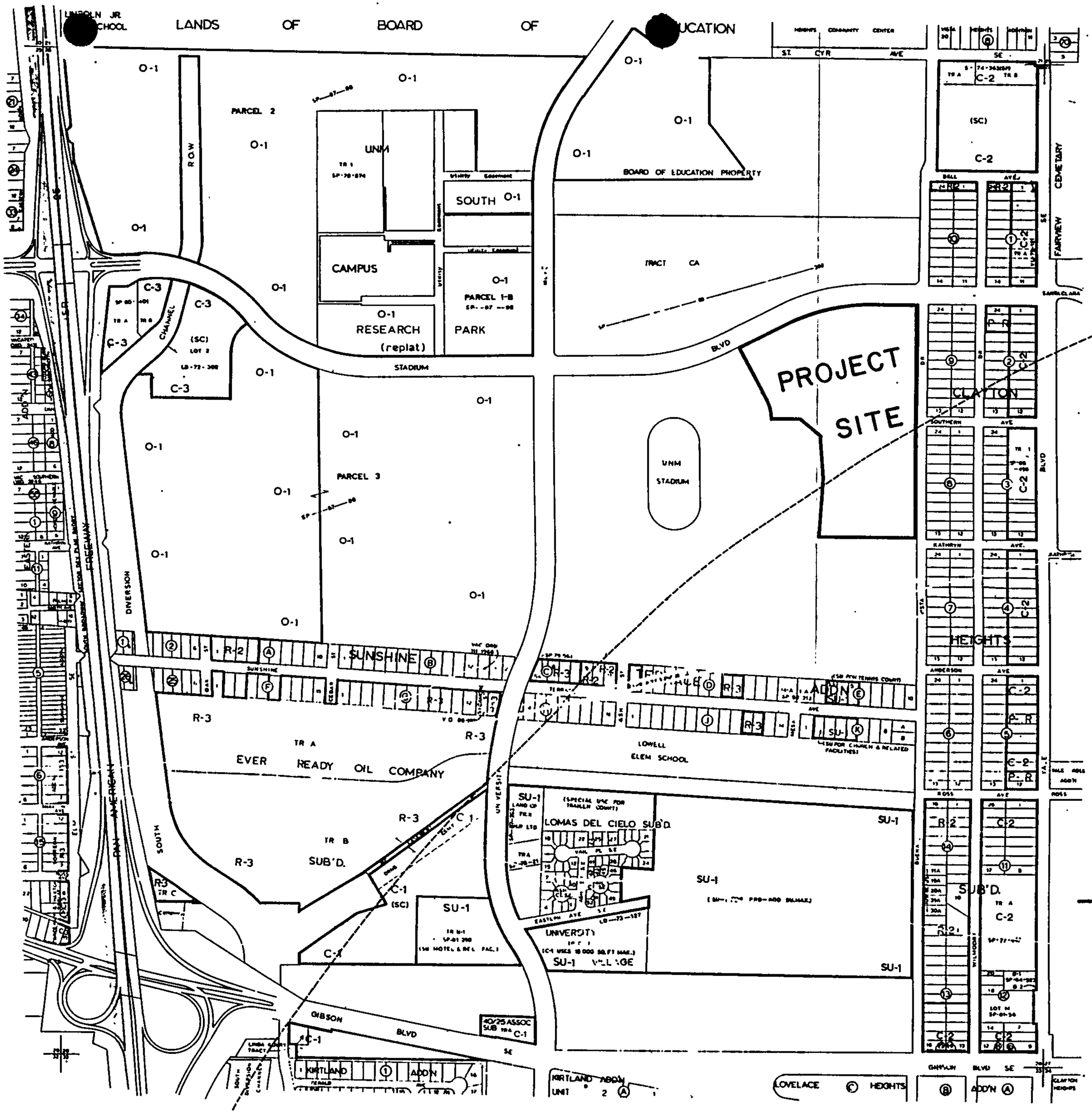
STORM DRAIN PIPE

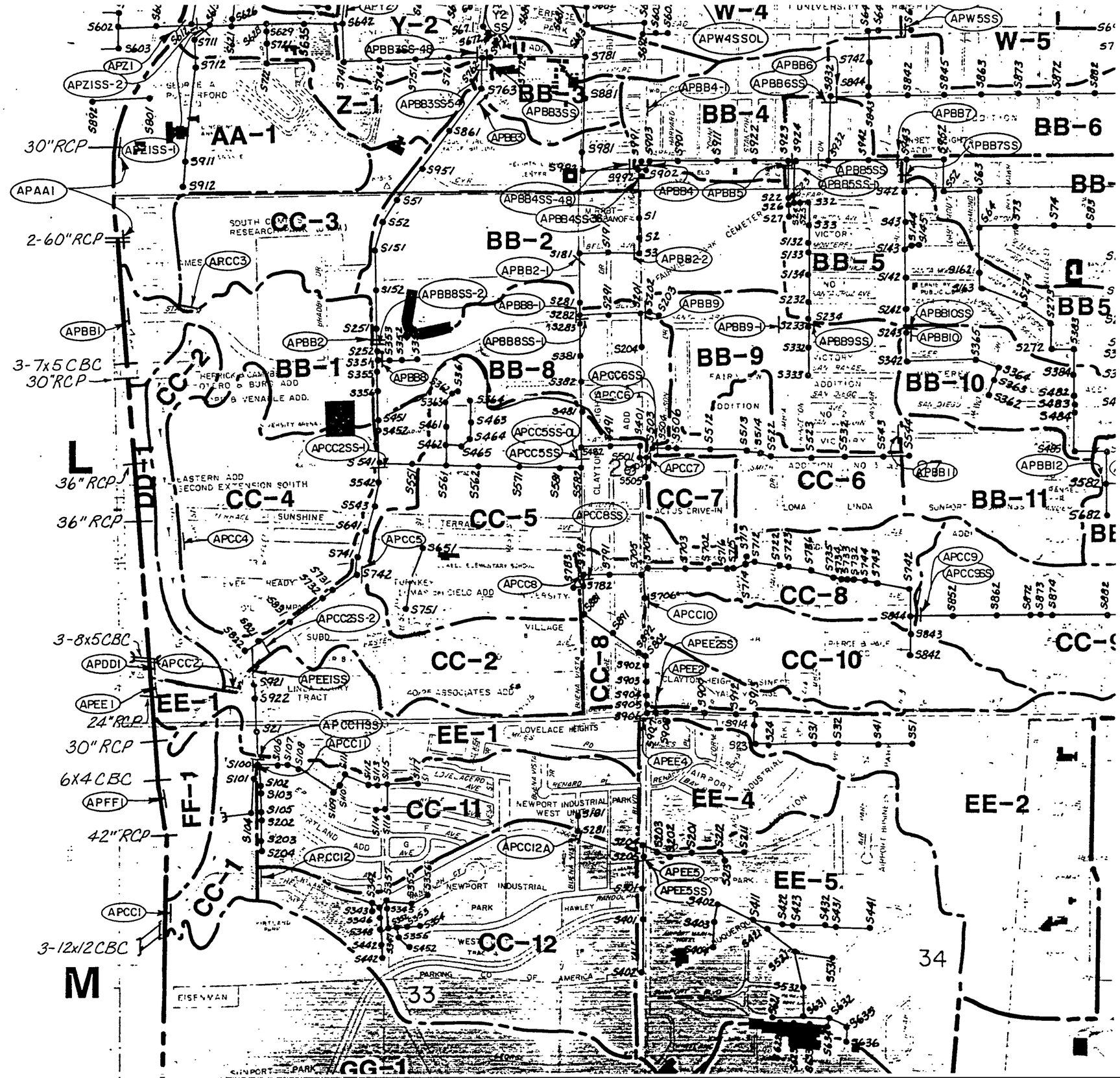
— Pipe flow A.P. (8) to A.P. (9) - $Q_{100}$ = 25.0 cfs
Use 24" RCP w/ HGL @ 1.2%, Capacity = 25 cfs

— Pipe flow A.P. (9) to A.P. (10) - $Q_{100}$ = 40.1 cfs
Use 30" RCP w/ HGL @ 1.0% Capacity = 41 cfs

— Pipe flow A.P. (10) to A.P. (14) - $Q_{100}$ = 56.1 cfs
Use 30" RCP w/ HGL @ 2.0% Capacity = 58 cfs

— See HGL Profile - on Storm Drain plan & profile sheet.


LANDS OF BOARD OF EDUCATION
PARCEL 2
O-1
UNM
CAMPUS
SOUTH
PARCEL 1-B
RESEARCH PARK
(replat)
STADIUM
BOARD OF EDUCATION PROPERTY
TRACT CA
PROJECT SITE
UNM STADIUM
PARCEL 3
C-3
(SC)
C-2
CLAYTON HEIGHTS
SUNSHINE
R-2
R-3
EVER READY OIL COMPANY
TR A
TR B
SUB'D.
LOWELL ELEM SCHOOL
LOMAS DEL CIELO SUB'D.
SU-1
UNIVERSITY VILLAGE
C-1
GIBSON BLVD
KIRTLAND ADDN
LOVELACE HEIGHTS
ADDN
DIVERSION CHANNEL
DAN ANDERSON FREEWAY
UNIVERSITY
EASTERN
ST. CYR AVE
CEMETERY
FAIRVIEW
SANTA CLARA
SOUTHERN AVE
KATHRYN AVE
ANDERSON AVE
ROSS AVE
BALL AVE
BUENA VISTA
WILSON
PESTA
TALE
LEGAL DESCRIPTION
T 10 N
R 3 E
SEC 20
UNIFORM PROPERTY CODE
1-015-036
LOCATION MAP
MAP AMENDED THROUGH
L-15-Z
CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
MAP No. 1


W-4
W-5
Y-2
Z-1
AA-1
BB-3
BB-4
BB-6
BB-2
BB-5
BB-1
BB-8
BB-9
BB-10
BB-11
CC-3
CC-2
CC-4
CC-5
CC-6
CC-7
CC-8
CC-10
CC-11
CC-12
EE-1
EE-2
EE-4
EE-5
FF-1
GG-1
L
M
30"RCP
APAAI
2-60"RCP
APBBI
3-7x5CBC
30"RCP
36"RCP
36"RCP
3-8x5CBC
APDDI
APEEI
24"RCP
30"RCP
6X4CBC
APFFI
42"RCP
APCCI
3-12x12CBC
33
34

```
0.875          0.          1.875          0.          2.875          0.

RUNOFF VOLUME =        0.000 ACRE-FT
PEAK DISCHARGE RATE =          1.0 CFS
PEAK OCCURRED AT  0.56 HRS.


*
********** ROUTE SS FROM APCC6SS TO APCC5SS
*
COMPUTE RATING CURVE ID=1    VS NO=1   ND SEG=-1
                     SLOPE=0.03  DIAM=36 INCHES    N=0.015
                          0.00        0.0         0.0         0.0
                          0.16        0.1         0.6         3.8
                          0.32        0.4         2.4         5.9
                          0.47        0.7         5.3         7.5
                          0.63        1.1         9.7         9.0
                          0.79        1.5        15.2        10.2
                          0.95        1.9        21.8        11.3
                          1.11        2.4        29.2        12.3
                          1.26        2.8        36.9        13.1
                          1.42        3.3        45.6        13.8
                          1.58        3.8        54.6        14.5
                          1.74        4.3        63.8        15.0
                          1.89        4.7        72.4        15.4
                          2.05        5.1        81.2        15.8
                          2.21        5.6        89.4        16.0
                          2.37        6.0        96.6        16.1
                          2.53        6.4       102.6        16.1
                          2.68        6.7       106.4        16.0
                          2.84        6.9       107.6        15.5
                          3.00        7.1       107.6        15.2
*
COMPUTE TRAVEL TIME   ID=22          REACH=1   VS NO=1
                      L=610          SLOPE=0.03

                                TRAVEL TIME TABLE
                                     REACH   1.0

                     WATER      FLOW       TRAVEL       FLOW
                     DEPTH      RATE        TIME         VEL
                     FEET       CFS         HRS          FPS
                      0.16        1.         0.04         4.2
                      0.32        2.         0.03         5.6
                      0.47        5.         0.02         8.5
                      0.63       10.         0.02         8.5
                      0.79       15.         0.02         8.5
                      0.95       22.         0.01        16.9
                     -1.11       29.         0.01        16.9
                      1.26       37.         0.01        16.9
                      1.42       46.         0.01        16.9
                      1.58       55.         0.01        16.9
                      1.74       64.         0.01        16.9
                      1.89       72.         0.01        16.9
                      2.05       81.         0.01        16.9
                      2.21       89.         0.01        16.9
                      2.37       97.         0.01        16.9
                      2.53      103.         0.01        16.9
                      2.68      106.         0.01        16.9
                      2.84      108.         0.01        16.9
                      2.84      108.         0.01        16.9
*
ROUTE                 ID=22    HYD=APCC6SS
                      INFLOW ID=20              DT=0.02083
*
PRINT HYD                ID= 22     CODE=10

                   HYDROGRAPH NUMBER     APCC6SS

      TIME        FLOW            TIME        FLOW            TIME        FLOW
       HRS        CFS              HRS        CFS              HRS        CFS
      0.000        0.             0.833       25.             1.666        4.
      0.208        0.             1.041       15.             1.875        2.
      0.417        9.             1.250        9.             2.083        2.
```

```
RUNOFF VOLUME =        2.039 ACRE-FT
PEAK DISCHARGE RATE =        44.8 CFS
PEAK OCCURRED AT  0.59 HRS.

*
******** ADD TO PUNCH HYD COMING FROM BASIN BBB AT APCC5SS
*
******** FROM FILE RTBB.HYM VERSION 35
RECALL HYD              ID=33  HYD= APCC5SS    DT= 0.020830 HRS DA=    0.000 SQ
                        PEAK=    70.CFS   RO=      9.61        NO PTS=178
                        FLOW RATES
                              0.      0.      0.      0.      0.      0.      0
                              0.      0.      0.      0.      0.      0.      0
                              0.      0.      0.      0.      0.      1.      2
                              3.      4.      7.     10.     15.     22.     31
                             42.     53.     60.     64.     66.     67.     68
                             69.     69.     69.     70.     70.     70.     70
                             70.     70.     70.     70.     70.     70.     70
                             70.     70.     70.     70.     70.     70.     70
                             70.     70.     70.     70.     70.     70.     70
                             70.     70.     70.     70.     70.     70.     70
                             70.     69.     68.     67.     66.     65.     65
                             64.     63.     63.     62.     61.     60.     60
                             59.     58.     57.     56.     55.     55.     54
                             53.     52.     52.     51.     51.     50.     49
                             48.     47.     46.     44.     43.     41.     39
                             38.     36.     34.     32.     31.     29.     27
                             26.     24.     23.     21.     20.     19.     18
                             17.     16.     15.     14.     13.     12.     12
                             11.     10.     10.      9.      9.      8.      8
                              7.      7.      6.      6.      6.      5.      5
                              5.      5.      4.      4.      4.      4.      3
                              3.      3.      3.      3.      3.      2.      2
                              2.      2.      2.      2.      2.      1.      1
                              1.      1.      1.      1.      1.      1.      1
                              1.      1.      1.      1.      1.      1.      1
                              1.      1.      0.
*
ADD HYD                 ID=23          HYD=APCC2SS
                        ID I=22        ID II=33
******** STORM SEWER FLOW AT APCC5SS
*
PRINT HYD               ID=    23      CODE=10

                        HYDROGRAPH NUMBER     APCC2SS

      TIME       FLOW            TIME       FLOW            TIME       FLOW
       HRS       CFS              HRS       CFS              HRS       CFS
      0.000        0.            1.250       79.            2.500       16.
      0.208        0.            1.458       75.            2.708        9.
      0.417       11.            1.666       66.            2.916        5.
      0.625      103.            1.875       56.            3.124        3.
      0.833       95.            2.083       48.            3.333        1.
      1.041       85.            2.291       29.            3.541        1.

      RUNOFF VOLUME =       11.653 ACRE-FT
      PEAK DISCHARGE RATE =       106.7 CFS
      PEAK OCCURRED AT  0.67 HRS.

*
******** ADD OVERLAND FLOW FROM APCC6 AND APCC7 AT APCC6
*
ADD HYD                 ID=21          HYD=APCC6
                        ID I=18        ID II=21
*
PRINT HYD               ID=  21        CODE=10

                        HYDROGRAPH NUMBER     APCC6

      TIME       FLOW            TIME       FLOW            TIME       FLOW
       HRS       CFS              HRS       CFS              HRS       CFS
```

| | | | | | |
|---|---|---|---|---|---|
| 0.208 | 0. | 1.250 | 2. | 2.291 | 0. |
| 0.417 | 0. | 1.458 | 2. | 2.500 | 0. |
| 0.625 | 9. | 1.666 | 1. | 2.708 | 0. |
| 0.833 | 6. | 1.875 | 1. | 2.916 | 0. |

RUNOFF VOLUME = 0.432 ACRE-FT
PEAK DISCHARGE RATE = 9.5 CFS
PEAK OCCURRED AT 0.60 HRS.

*
********** ROUTE OVERLAND FLOW FROM APCC6 TO APCC5SS
*
COMPUTE RATING CURVE ID=1 VS NO=1 NO SEGS=1
MIN ELEV=0.0 MAX ELEV=1.0
CH SLP=0.0317 FP SLP=0.0317
N=0.017 DIST=50.0

| DIST | ELEV | DIST | ELEV |
|---|---|---|---|
| 0.0 | 1.0 | 8.83 | 0.67 |
| 9.0 | 0.0 | 25.0 | 0.33 |
| 41.0 | 0.0 | 41.17 | 0.67 |
| 50.0 | 1.0 | | |

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | FLOW VEL FPS |
|---|---|---|---|
| 0.00 | 0.0 | 0.0 | 0.0 |
| 0.05 | 0.1 | 0.2 | 1.4 |
| 0.11 | 0.5 | 1.2 | 2.2 |
| 0.16 | 1.2 | 3.4 | 2.8 |
| 0.21 | 2.2 | 7.4 | 3.4 |
| 0.26 | 3.4 | 13.4 | 4.0 |
| 0.32 | 4.9 | 21.9 | 4.5 |
| 0.37 | 6.5 | 34.8 | 5.3 |
| 0.42 | 8.2 | 51.0 | 6.2 |
| 0.47 | 9.9 | 69.5 | 7.0 |
| 0.53 | 11.6 | 90.2 | 7.8 |
| 0.58 | 13.3 | 112.9 | 8.5 |
| 0.63 | 15.0 | 137.6 | 9.2 |
| 0.68 | 16.7 | 161.9 | 9.7 |
| 0.74 | 18.6 | 182.4 | 9.8 |
| 0.79 | 20.5 | 205.4 | 10.0 |
| 0.84 | 22.6 | 231.0 | 10.2 |
| 0.89 | 24.9 | 259.4 | 10.4 |
| 0.95 | 27.3 | 290.7 | 10.6 |
| 1.00 | 29.9 | 325.0 | 10.9 |

*
COMPUTE TRAVEL TIME ID=49 REACH=1 NO VS=1
L=770 SLP=0.0317

TRAVEL TIME TABLE
REACH 1.0

| WATER DEPTH FEET | FLOW RATE CFS | TRAVEL TIME HRS | FLOW VEL FPS |
|---|---|---|---|
| 0.05 | 0. | 0.16 | 1.3 |
| 0.11 | 1. | 0.10 | 2.1 |
| 0.16 | 3. | 0.08 | 2.7 |
| 0.21 | 7. | 0.06 | 3.6 |
| 0.26 | 13. | 0.05 | 4.3 |
| 0.32 | 22. | 0.05 | 4.3 |
| 0.37 | 35. | 0.04 | 5.3 |
| 0.42 | 51. | 0.03 | 7.1 |
| 0.47 | 69. | 0.03 | 7.1 |
| 0.53 | 90. | 0.03 | 7.1 |
| 0.58 | 113. | 0.03 | 7.1 |
| 0.63 | 138. | 0.02 | 10.7 |
| 0.68 | 162. | 0.02 | 10.7 |
| 0.74 | 182. | 0.02 | 10.7 |
| 0.79 | 205. | 0.02 | 10.7 |
| 0.84 | 231. | 0.02 | 10.7 |
| 0.89 | 259. | 0.02 | 10.7 |

```
                                1.00        325.        0.02        10.7
ROUTE                    ID=   49            HYD=APCC6
                         INFLOW ID=21        DT=0.02083
*
* ROUTED OVERLAND FLOW FROM APCC6 AT APCC5SS
*
PRINT HYD                ID=49          CODE=10

                      HYDROGRAPH NUMBER       APCC6

      TIME        FLOW              TIME        FLOW              TIME        FLOW
       HRS         CFS               HRS         CFS               HRS         CFS
      0.000         0.               0.833         7.              1.666         1.
      0.208         0.               1.041         5.              1.875         1.
      0.417         0.               1.250         3.              2.083         1.
      0.625         8.               1.458         2.

      RUNOFF VOLUME =        0.426 ACRE-FT
      PEAK DISCHARGE RATE =          8.7 CFS
      PEAK OCCURRED AT  0.69 HRS.


*
********** ADD OVERLAND FLOW FROM APCC6 TO SS FLOW AT APCC5SS
*
ADD HYD                  ID=23            HYD=APCC5SS
                         ID I=49          ID II=23
*
PRINT HYD                ID=23            CODE=10

                      HYDROGRAPH NUMBER     APCC5SS

      TIME        FLOW              TIME        FLOW              TIME        FLOW
       HRS         CFS               HRS         CFS               HRS         CFS
      0.000         0.               1.250        81.              2.500        16.
      0.208         0.               1.458        77.              2.708         9.
      0.417        11.               1.666        67.              2.916         5.
      0.625       111.               1.875        57.              3.124         3.
      0.833       101.               2.083        48.              3.333         1.
      1.041        90.               2.291        29.              3.541         1.

      RUNOFF VOLUME =       12.079 ACRE-FT
      PEAK DISCHARGE RATE =        115.3 CFS
      PEAK OCCURRED AT  0.67 HRS.


*
********  DIVIDE SS FLOW FROM OVERLAND AT APCC5SS
*
DIVIDE HYD               ID=23            QMAX=85
                         ID I=24          HYD I=APCC2SS ONE          STORM SEWER
                         ID II=25         HYD II=APCC5          OVERLAND FLOW
*
PRINT HYD                ID=24            CODE=10

                      HYDROGRAPH NUMBER     APCC5SS

      TIME        FLOW              TIME        FLOW              TIME        FLOW
       HRS         CFS               HRS         CFS               HRS         CFS
      0.000         0.               1.250        81.              2.500        16.
      0.208         0.               1.458        77.              2.708         9.
      0.417        11.               1.666        67.              2.916         5.
      0.625        85.               1.875        57.              3.124         3.
      0.833        85.               2.083        48.              3.333         1.
      1.041        85.               2.291        29.              3.541         1.

      RUNOFF VOLUME =       11.382 ACRE-FT
      PEAK DISCHARGE RATE =         85.0 CFS
      PEAK OCCURRED AT  0.58 HRS.


*
PRINT HYD                ID=25            CODE=10
```

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.250 | 0. | 2.500 | 0. |
| 0.208 | 0. | 1.458 | 0. | 2.708 | 0. |
| 0.417 | 0. | 1.666 | 0. | 2.916 | 0. |
| 0.625 | 26. | 1.875 | 0. | 3.124 | 0. |
| 0.833 | 16. | 2.083 | 0. | 3.333 | 0. |
| 1.041 | 5. | 2.291 | 0. | 3.541 | 0. |

RUNOFF VOLUME = 0.697 ~~ACRE-FT~~
PEAK DISCHARGE RATE = 30.3 CFS ← OL
PEAK OCCURRED AT 0.67 HRS.

```
*
********** ROUTE  SS FLOW FROM APCC5SS TO APCC2SS-1
*
COMPUTE RATING CURVE ID=1    VS NO=1   NO SEG=-1
                     SLOPE=0.022 DIAM=36 INCHES    N=0.015
```

| | | | |
|---|---|---|---|
| 0.00 | 0.0 | 0.0 | 0.0 |
| 0.16 | 0.1 | 0.5 | 3.2 |
| 0.32 | 0.4 | 2.0 | 5.1 |
| 0.47 | 0.7 | 4.6 | 6.4 |
| 0.63 | 1.1 | 8.3 | 7.7 |
| 0.79 | 1.5 | 13.0 | 8.8 |
| 0.95 | 1.9 | 18.6 | 9.7 |
| 1.11 | 2.4 | 25.0 | 10.5 |
| 1.26 | 2.8 | 31.6 | 11.2 |
| 1.42 | 3.3 | 39.0 | 11.8 |
| 1.58 | 3.8 | 46.8 | 12.4 |
| 1.74 | 4.3 | 54.7 | 12.9 |
| 1.89 | 4.7 | 62.0 | 13.2 |
| 2.05 | 5.1 | 69.5 | 13.5 |
| 2.21 | 5.6 | 76.5 | 13.7 |
| 2.37 | 6.0 | 82.8 | 13.8 |
| 2.53 | 6.4 | 87.8 | 13.8 |
| 2.68 | 6.7 | 91.1 | 13.7 |
| 2.84 | 6.9 | 92.2 | 13.3 |
| 3.00 | 7.1 | 92.2 | 13.0 |

```
*
COMPUTE TRAVEL TIME   ID=26          REACH=1   VS NO=1
                      L=2253         SLOPE=0.022
```

TRAVEL TIME TABLE
REACH 1.0

| WATER DEPTH FEET | FLOW RATE CFS | TRAVEL TIME HRS | FLOW VEL FPS |
|---|---|---|---|
| 0.16 | 0. | 0.19 | 3.3 |
| 0.32 | 2. | 0.12 | 5.2 |
| 0.47 | 5. | 0.10 | 6.3 |
| 0.63 | 8. | 0.08 | 7.8 |
| 0.79 | 13. | 0.07 | 8.9 |
| 0.95 | 19. | 0.06 | 10.4 |
| 1.11 | 25. | 0.06 | 10.4 |
| 1.26 | 32. | 0.06 | 10.4 |
| 1.42 | 39. | 0.05 | 12.5 |
| 1.58 | 47. | 0.05 | 12.5 |
| 1.74 | 55. | 0.05 | 12.5 |
| 1.89 | 62. | 0.05 | 12.5 |
| 2.05 | 70. | 0.05 | 12.5 |
| 2.21 | 77. | 0.05 | 12.5 |
| 2.37 | 83. | 0.05 | 12.5 |
| 2.53 | 88. | 0.05 | 12.5 |
| 2.68 | 91. | 0.05 | 12.5 |
| 2.84 | 92. | 0.05 | 12.5 |
| 2.84 | 92. | 0.05 | 12.5 |

```
*
ROUTE                 ID=26    HYD=APCC5SS
                      INFLOW ID= 24          DT=0.02083
*
PRINT HYD                ID=26      CODE=10
```

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.458 | 78. | 2.916 | 6. |
| 0.208 | 0. | 1.666 | 69. | 3.124 | 3. |
| 0.417 | 5. | 1.875 | 59. | 3.333 | 2. |
| 0.625 | 79. | 2.083 | 50. | 3.541 | 1. |
| 0.833 | 85. | 2.291 | 33. | 3.749 | 1. |
| 1.041 | 85. | 2.500 | 18. | | |
| 1.250 | 83. | 2.708 | 10. | | |

RUNOFF VOLUME = 11.375 ACRE-FT
PEAK DISCHARGE RATE = 85.0 CFS
PEAK OCCURRED AT 1.12 HRS.

```
*
********* ROUTE OVERLAND FLOW FROM APCC5SS TO APCC5
*
COMPUTE RATING CURVE ID=1      VS NO=1      NO SEGS=1
                    MIN ELEV=12.0           MAX ELEV=15.0
                    CH SLP=0.0240           FP SLP=0.0240
                    N=0.035                 DIST=180
                    DIST       ELEV       DIST       ELEV
                      0        16.0       60         12.0
                    70         12.0       100        14.0
                   180         15.0
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | FLOW VEL FPS |
|---|---|---|---|
| 12.00 | 0.0 | 0.0 | 0.0 |
| 12.16 | 2.0 | 3.3 | 1.7 |
| 12.32 | 4.7 | 11.8 | 2.5 |
| 12.47 | 8.1 | 25.7 | 3.2 |
| 12.63 | 12.3 | 45.7 | 3.7 |
| 12.79 | 17.2 | 72.5 | 4.2 |
| 12.95 | 22.9 | 106.8 | 4.7 |
| 13.11 | 29.4 | 149.3 | 5.1 |
| 13.26 | 36.6 | 200.7 | 5.5 |
| 13.42 | 44.5 | 261.4 | 5.9 |
| 13.58 | 53.2 | 332.2 | 6.2 |
| 13.74 | 62.6 | 413.6 | 6.6 |
| 13.89 | 72.8 | 506.2 | 7.0 |
| 14.05 | 83.8 | 593.0 | 7.1 |
| 14.21 | 96.8 | 668.2 | 6.9 |
| 14.37 | 112.2 | 771.0 | 6.9 |
| 14.53 | 130.0 | 901.2 | 6.9 |
| 14.68 | 150.1 | 1059.1 | 7.1 |
| 14.84 | 172.6 | 1246.1 | 7.2 |
| 15.00 | 197.5 | 1463.4 | 7.4 |

```
*
COMPUTE TRAVEL TIME ID=28      REACH=1      NO VS=1
                    L=2950          SLP=0.0240
```

TRAVEL TIME TABLE
REACH 1.0

| WATER DEPTH FEET | FLOW RATE CFS | TRAVEL TIME HRS | FLOW VEL FPS |
|---|---|---|---|
| 0.16 | 3. | 0.48 | 1.7 |
| 0.32 | 12. | 0.32 | 2.6 |
| 0.47 | 26. | 0.26 | 3.2 |
| 0.63 | 46. | 0.22 | 3.7 |
| 0.79 | 73. | 0.19 | 4.3 |
| 0.95 | 107. | 0.18 | 4.6 |
| 1.11 | 149. | 0.16 | 5.1 |
| 1.26 | 201. | 0.15 | 5.5 |
| 1.42 | 261. | 0.14 | 5.9 |
| 1.58 | 332. | 0.13 | 6.3 |
| 1.74 | 414. | 0.12 | 6.8 |
| 1.89 | 506. | 0.12 | 6.8 |

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.458 | 78. | 2.916 | 6. |
| 0.208 | 0. | 1.666 | 69. | 3.124 | 3. |
| 0.417 | 5. | 1.875 | 59. | 3.333 | 2. |
| 0.625 | 79. | 2.083 | 50. | 3.541 | 1. |
| 0.833 | 85. | 2.291 | 33. | 3.749 | 1. |
| 1.041 | 85. | 2.500 | 18. | | |
| 1.250 | 83. | 2.708 | 10. | | |

RUNOFF VOLUME = 11.375 ACRE-FT
PEAK DISCHARGE RATE = 85.0 CFS
PEAK OCCURRED AT 1.12 HRS.

```
*
********* ROUTE OVERLAND FLOW FROM APCC5SS TO APCC5
*
COMPUTE RATING CURVE ID=1      VS NO=1      NO SEGS=1
                     MIN ELEV=12.0          MAX ELEV=15.0
                     CH SLP=0.0240          FP SLP=0.0240
                     N=0.035                DIST=180
                     DIST       ELEV       DIST       ELEV
                       0        16.0        60        12.0
                      70        12.0       100        14.0
                     180        15.0
```

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | FLOW VEL FPS |
|---|---|---|---|
| 12.00 | 0.0 | 0.0 | 0.0 |
| 12.16 | 2.0 | 3.3 | 1.7 |
| 12.32 | 4.7 | 11.8 | 2.5 |
| 12.47 | 8.1 | 25.7 | 3.2 |
| 12.63 | 12.3 | 45.7 | 3.7 |
| 12.79 | 17.2 | 72.5 | 4.2 |
| 12.95 | 22.9 | 106.8 | 4.7 |
| 13.11 | 29.4 | 149.3 | 5.1 |
| 13.26 | 36.6 | 200.7 | 5.5 |
| 13.42 | 44.5 | 261.4 | 5.9 |
| 13.58 | 53.2 | 332.2 | 6.2 |
| 13.74 | 62.6 | 413.6 | 6.6 |
| 13.89 | 72.8 | 506.2 | 7.0 |
| 14.05 | 83.8 | 593.0 | 7.1 |
| 14.21 | 96.8 | 668.2 | 6.9 |
| 14.37 | 112.2 | 771.0 | 6.9 |
| 14.53 | 130.0 | 901.2 | 6.9 |
| 14.68 | 150.1 | 1059.1 | 7.1 |
| 14.84 | 172.6 | 1246.1 | 7.2 |
| 15.00 | 197.5 | 1463.4 | 7.4 |

```
*
COMPUTE TRAVEL TIME ID=28      REACH=1      NO VS=1
                    L=2950              SLP=0.0240
```

TRAVEL TIME TABLE
REACH 1.0

| WATER DEPTH FEET | FLOW RATE CFS | TRAVEL TIME HRS | FLOW VEL FPS |
|---|---|---|---|
| 0.16 | 3. | 0.48 | 1.7 |
| 0.32 | 12. | 0.32 | 2.6 |
| 0.47 | 26. | 0.26 | 3.2 |
| 0.63 | 46. | 0.22 | 3.7 |
| 0.79 | 73. | 0.19 | 4.3 |
| 0.95 | 107. | 0.18 | 4.6 |
| 1.11 | 149. | 0.16 | 5.1 |
| 1.26 | 201. | 0.15 | 5.5 |
| 1.42 | 261. | 0.14 | 5.9 |
| 1.58 | 332. | 0.13 | 6.3 |
| 1.74 | 414. | 0.12 | 6.8 |
| 1.89 | 506. | 0.12 | 6.8 |

```
                                  2.21        668.        0.12        6.8
                                  2.37        771.        0.12        6.8
                                  2.53        901.        0.12        6.8
                                  2.68       1059.        0.12        6.8
                                  2.84       1246.        0.11        7.4
                                  3.00       1463.        0.11        7.4
ROUTE                       ID=   28          HYD=APCC5
                            INFLOW ID=25       DT=0.02083
*
* ROUTED OVERLAND FLOW FROM APCC5SS AT APCC5
*
PRINT HYD                   ID=28        CODE=10

                        HYDROGRAPH NUMBER        APCC5

      TIME        FLOW              TIME        FLOW              TIME        FLOW
       HRS         CFS               HRS         CFS               HRS         CFS
      0.000         0.              0.833        13.              1.666         2.
      0.208         0.              1.041         9.              1.675         1.
      0.417         0.              1.250         5.              2.083         1.
      0.625         2.              1.458         3.              2.291         1.

      RUNOFF VOLUME =        0.677 ACRE-FT
      PEAK DISCHARGE RATE =        13.3 CFS
      PEAK OCCURRED AT  0.85 HRS.

*
*********** ADD BASIN 881 SS FLOW TO SS AT APCC2SS-1
*
******** FROM FILE RTBB.HYM VERSION 35
RECALL HYD                  ID= 5  HYD= APCC2SSON  DT= 0.020830 HRS DA=    0.000 SQ
                            PEAK=    127.CFS    RO=     13.50        NO PTS=199
                            FLOW RATES
                                 0.          0.          0.          0.          0.          0.          0
                                 0.          0.          0.          0.          0.          0.          0
                                 0.          0.          0.          0.          0.          1.          1
                                 2.          2.          4.          5.          8.         12.         16
                                22.         30.         39.         50.         63.         78.         94
                               109.        120.        124.        125.        126.        127.        127
                               127.        127.        127.        127.        127.        127.        127
                               127.        127.        127.        127.        127.        127.        127
                               127.        127.        127.        127.        127.        127.        127
                               127.        127.        127.        127.        127.        127.        127
                               127.        127.        127.        127.        127.        126.        123
                               118.        112.        106.        100.         94.         89.         84
                                79.         74.         70.         66.         62.         59.         55
                                52.         49.         46.         42.         39.         36.         33
                                31.         29.         27.         25.         24.         23.         21
                                20.         19.         18.         17.         16.         15.         15
                                14.         13.         13.         12.         12.         11.         11
                                10.         10.         10.          9.          9.          9.          8
                                 8.          8.          7.          7.          7.          7.          6
                                 6.          6.          6.          5.          5.          5.          5
                                 5.          5.          4.          4.          4.          4.          4
                                 4.          4.          4.          3.          3.          3.          3
                                 3.          3.          2.          2.          2.          2.          2
                                 2.          2.          2.          2.          2.          2.          1
                                 1.          1.          1.          1.          1.          1.          1
                                 1.          1.          1.          1.          1.          1.          1
                                 1.          1.          1.          1.          1.          1.          1
                                 1.          1.          1.          1.          1.          1.          1
                                 1.          1.          0.
ADD HYD                     ID=29          HYD=APCC2SS ONE
                            ID I=26        ID II=5
*
PRINT HYD                   ID=29          CODE=10

                        HYDROGRAPH NUMBER   APCC2SSON

      TIME        FLOW              TIME        FLOW              TIME        FLOW
       HRS         CFS               HRS         CFS               HRS         CFS
      0.000         0.              1.458       205.              2.916        11.
      0.208         0.              1.666       169.              3.124         6.
```

| | | | | | |
|---|---|---|---|---|---|
| 0.625 | 118. | 2.083 | 77. | 3.541 | 2. |
| 0.833 | 212. | 2.291 | 46. | 3.749 | 2. |
| 1.041 | 212. | 2.500 | 28. | 3.958 | 1. |
| 1.250 | 210. | 2.708 | 17. | | |

RUNOFF VOLUME = 24.875 ACRE-FT
PEAK DISCHARGE RATE = 212.0 CFS
PEAK OCCURRED AT 1.12 HRS.

*

```
*
********* COMPUTE HYD FOR BASIN CC5
*
***IMPERVIOUS DRAINAGE
*
*
COMPUTE HYD              ID=1          HYD=CC5
                          DT=0.02083 HRS  DA=.0309 SQ MI  CN= 95
                          K= -0.0967  TP= -0.1935
                         MASS RAINFALL= 0.0 .01 .02 .04 .06 .07 .09 .12 .14
                         .16 .18 .22 .26 .29 .32 .37 .43 .48 .54 .64 .74 .95
                         1.07 1.23 1.31 1.38 1.45 1.50 1.54 1.59 1.62 1.65
                         1.68 1.70 1.72 1.75 1.77 1.79 1.81 1.83 1.85 1.86
                         1.87 1.88 1.90 1.91 1.93 1.94 1.95 1.96 1.97 1.98
                         1.98 1.99 1.99 2.00 2.00 2.01 2.01 2.01 2.02 2.02
                         2.02 2.03 2.03 2.03 2.03 2.04 2.04 2.04 2.04 2.05
                         2.05 2.05 2.05 2.05 2.06 2.06 2.06 2.06 2.06 2.06
                         2.06 2.07 2.07 2.07 2.07 2.07 2.07 2.07 2.07 2.07
                         2.07 2.07 2.07 2.07 2.07
    SHAPE CONSTANT, N =  7.952
    UNIT PEAK =        90.2CFS
    MAXIMUM COMPUTED UNIT PEAK =          89.9CFS

***** ABOVE RAINFALL IS ZONE 2, EAST OF RIO GRANDE, BELOW 5200
*
*
PRINT HYD                ID=1          CODE=10

                      HYDROGRAPH NUMBER          CC5

      TIME        FLOW            TIME        FLOW            TIME        FLOW
       HRS         CFS             HRS         CFS             HRS         CFS
      0.000         0.             1.041        19.            2.083         0.
      0.208         0.             1.250        11.            2.291         0.
      0.417         8.             1.458         5.            2.500         0.
      0.625        66.             1.666         3.            2.708         0.
      0.833        36.             1.875         2.            2.916         0.

      RUNOFF VOLUME =        2.519 ACRE-FT
      PEAK DISCHARGE RATE =          67.2 CFS
      PEAK OCCURRED AT  0.65 HRS.

*
***PERVIOUS DRAINAGE
*
*
COMPUTE HYD              ID=30         HYD=CC5
                          DT=0.02083 HRS  DA=.1623 SQ MI  CN=70
                          K= -0.0967  TP= -0.1935
                         MASS RAINFALL=-1.0
    SHAPE CONSTANT, N =  7.952
    UNIT PEAK =        473.7CFS
    MAXIMUM COMPUTED UNIT PEAK =          472.1CFS

*
PRINT HYD                ID=30         CODE=10

                      HYDROGRAPH NUMBER          CC5

      TIME        FLOW            TIME        FLOW            TIME        FLOW
       HRS         CFS             HRS         CFS             HRS         CFS
      0.000         0.             1.250        18.            2.500         0.
      0.208         0.             1.458         9.            2.708         0.
      0.417         0.             1.666         6.            2.916         0.
      0.625        25.             1.875         4.            3.124         0.
      0.833        41.             2.083         1.            3.333         0.
      1.041        28.             2.291         0.            3.541         0.

      RUNOFF VOLUME =        2.310 ACRE-FT
      PEAK DISCHARGE RATE =          45.6 CFS
      PEAK OCCURRED AT  0.75 HRS.
```

```
*
ADD HYD                ID=  30          HYD=CC5
                       ID I=1          ID II=30
*
**** TOTAL COMBINED IMPERVIOUS AND PERVIOUS DRAINAGE BASIN CC5
*
PPINT HYD              ID=30            CODE=10
```

HYDROGRAPH NUMBER CC5

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.250 | 29. | 2.500 | 0. |
| 0.208 | 0. | 1.458 | 15. | 2.708 | 0. |
| 0.417 | 8. | 1.666 | 9. | 2.916 | 0. |
| 0.625 | 92. | 1.875 | 6. | 3.124 | 0. |
| 0.833 | 77. | 2.083 | 2. | 3.333 | 0. |
| 1.041 | 47. | 2.291 | 1. | 3.541 | 0. |

RUNOFF VOLUME = 4.829 ACRE-FT
PEAK DISCHARGE RATE = 104.7 CFS
PEAK OCCURRED AT 0.69 HRS.

```
*
********** ADD 25% OF BASIN CC5 FLOW TO SS AT APCC2SS ONE
*
DIVIDE HYD             ID=30        PERCENT=-.25
                       ID I=31        HYD I=APCC2SS ONE          STORM SEWER
                       ID II=32       HYD II=CC5            BASIN FLOW
*
PRINT HYD              ID=31            CODE=10
```

HYDROGRAPH NUMBER CC5

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.250 | 7. | 2.500 | 0. |
| 0.208 | 0. | 1.458 | 4. | 2.708 | 0. |
| 0.417 | 2. | 1.666 | 2. | 2.916 | 0. |
| 0.625 | 23. | 1.875 | 1. | 3.124 | 0. |
| 0.833 | 19. | 2.083 | 0. | 3.333 | 0. |
| 1.041 | 12. | 2.291 | 0. | 3.541 | 0. |

RUNOFF VOLUME = 1.207 ACRE-FT
PEAK DISCHARGE RATE = 26.2 CFS
PEAK OCCURRED AT 0.69 HRS.

```
*
PRINT HYD              ID=32            CODE=10
```

OUTFLOW HYDROGRAPH RESERVOIR

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.250 | 21. | 2.500 | 0. |
| 0.208 | 0. | 1.458 | 11. | 2.708 | 0. |
| 0.417 | 6. | 1.666 | 7. | 2.916 | 0. |
| 0.625 | 69. | 1.875 | 4. | 3.124 | 0. |
| 0.833 | 58. | 2.083 | 1. | 3.333 | 0. |
| 1.041 | 35. | 2.291 | 0. | 3.541 | 0. |

RUNOFF VOLUME = 3.622 ACRE-FT
PEAK DISCHARGE RATE = 78.5 CFS
PEAK OCCURRED AT 0.69 HRS.

```
*
ADD HYD                ID=33            HYD=APCC2SS ONE
                       ID I=31          ID II=29
*
PRINT HYD              ID=33            CODE=10
```

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.458 | 208. | 2.916 | 11. |
| 0.208 | 0. | 1.666 | 172. | 3.124 | 6. |
| 0.417 | 8. | 1.875 | 115. | 3.333 | 4. |
| 0.625 | 141. | 2.083 | 78. | 3.541 | 2. |
| 0.833 | 231. | 2.291 | 48. | 3.749 | 2. |
| 1.041 | 224. | 2.500 | 28. | 3.958 | 1. |
| 1.250 | 217. | 2.708 | 17. | | |

RUNOFF VOLUME = 26.082 ACRE-FT
PEAK DISCHARGE RATE = 231.7 CFS
PEAK OCCURRED AT 0.77 HRS.

```
*
**********DIVIDE FLOW AT APCC2SS-1 INTO SS AND OVERLAND
*
DIVIDE HYD          ID=33          QMAX=173
                    ID I=34        HYD I=APCC2SS TWO          STORM SEWER
                    ID II=35       HYD II=APCC2           OVERLAND FLOW
*
PRINT HYD           ID=34          CODE=10
```

HYDROGRAPH NUMBER APCC2SSON

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.458 | 173. | 2.916 | 11. |
| 0.208 | 0. | 1.666 | 172. | 3.124 | 6. |
| 0.417 | 8. | 1.875 | 115. | 3.333 | 4. |
| 0.625 | 141. | 2.083 | 78. | 3.541 | 2. |
| 0.833 | 173. | 2.291 | 48. | 3.749 | 2. |
| 1.041 | 173. | 2.500 | 28. | 3.958 | 1. |
| 1.250 | 173. | 2.708 | 17. | | |

RUNOFF VOLUME = 22.628 ACRE-FT
PEAK DISCHARGE RATE = 173.0 CFS
PEAK OCCURRED AT 0.69 HRS.

```
*
PRINT HYD           ID=35          CODE=10
```

OUTFLOW HYDROGRAPH RESERVOIR

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.458 | 35. | 2.916 | 0. |
| 0.208 | 0. | 1.666 | 0. | 3.124 | 0. |
| 0.417 | 0. | 1.875 | 0. | 3.333 | 0. |
| 0.625 | 0. | 2.083 | 0. | 3.541 | 0. |
| 0.833 | 58. | 2.291 | 0. | 3.749 | 0. |
| 1.041 | 51. | 2.500 | 0. | 3.958 | 0. |
| 1.250 | 44. | 2.708 | 0. | | |

RUNOFF VOLUME = 3.454 ACRE-FT
PEAK DISCHARGE RATE = 58.7 CFS
PEAK OCCURRED AT 0.77 HRS.

```
*
********** ROUTE SS FLOW AT APCC2SS-1 TO APCC2SS-2
*
COMPUTE RATING CURVE ID=1    VS NO=1   NO SFG=-1
                     SLOPE=0.0105 DIAM=54 INCHES    N=0.015
```

| | | | |
|---|---|---|---|
| 0.00 | 0.0 | 0.0 | 0.0 |
| 0.24 | 0.3 | 1.0 | 2.9 |
| 0.47 | 0.9 | 4.0 | 4.5 |
| 0.71 | 1.6 | 9.4 | 5.9 |
| 0.95 | 2.4 | 17.1 | 7.0 |
| 1.18 | 3.3 | 26.3 | 7.9 |
| 1.42 | 4.3 | 37.7 | 8.8 |

| | | | |
|---|---|---|---|
| 1.89 | 6.3 | 64.3 | 10.1 |
| 2.13 | 7.4 | 79.5 | 10.7 |
| 2.37 | 8.5 | 95.3 | 11.2 |
| 2.61 | 9.6 | 111.3 | 11.6 |
| 2.84 | 10.6 | 126.6 | 12.0 |
| 3.08 | 11.6 | 141.9 | 12.2 |
| 3.32 | 12.6 | 156.2 | 12.4 |
| 3.55 | 13.5 | 168.3 | 12.5 |
| 3.79 | 14.3 | 178.7 | 12.5 |
| 4.03 | 15.0 | 185.7 | 12.4 |
| 4.26 | 15.6 | 187.8 | 12.1 |
| 4.50 | 15.9 | 187.8 | 11.8 |

```
*
COMPUTE TRAVEL TIME   ID=36          REACH=1   VS NO=1
                      L=1248         SLOPE=0.0105
```

TRAVEL TIME TABLE
REACH 1.0

| WATER DEPTH FEET | FLOW RATE CFS | TRAVEL TIME HRS | FLOW VEL FPS |
|---|---|---|---|
| 0.24 | 1. | 0.12 | 2.9 |
| 0.47 | 4. | 0.08 | 4.3 |
| 0.71 | 9. | 0.06 | 5.8 |
| 0.95 | 17. | 0.05 | 6.9 |
| 1.18 | 26. | 0.04 | 8.7 |
| 1.42 | 38. | 0.04 | 8.7 |
| 1.66 | 51. | 0.04 | 8.7 |
| 1.89 | 64. | 0.03 | 11.6 |
| 2.13 | 79. | 0.03 | 11.6 |
| 2.37 | 95. | 0.03 | 11.6 |
| 2.61 | 111. | 0.03 | 11.6 |
| 2.84 | 127. | 0.03 | 11.6 |
| 3.08 | 142. | 0.03 | 11.6 |
| 3.32 | 156. | 0.03 | 11.6 |
| 3.55 | 168. | 0.03 | 11.6 |
| 3.79 | 179. | 0.03 | 11.6 |
| 4.03 | 186. | 0.03 | 11.6 |
| 4.26 | 188. | 0.03 | 11.6 |
| 4.26 | 188. | 0.03 | 11.6 |

```
*
ROUTE                 ID=   36 HYD=APCC2SS ONE
                      INFLOW ID=34              DT=0.02083
*
PRINT HYD                ID=36      CODE=10
```

HYDROGRAPH NUMBER APCC2SSON

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 1.458 | 173. | 2.916 | 12. |
| 0.208 | 0. | 1.666 | 173. | 3.124 | 7. |
| 0.417 | 3. | 1.875 | 120. | 3.333 | 4. |
| 0.625 | 122. | 2.083 | 82. | 3.541 | 2. |
| 0.833 | 173. | 2.291 | 51. | 3.749 | 2. |
| 1.041 | 173. | 2.500 | 30. | 3.958 | 1. |
| 1.250 | 173. | 2.708 | 19. | 4.166 | 1. |

RUNOFF VOLUME = 22.624 ACRE-FT
PEAK DISCHARGE RATE = 173.0 CFS
PEAK OCCURRED AT 1.08 HRS.

```
*
******* ROUTE OVERLAND FLOW FROM APCC2SS ONE TO JUST BELOW APCC5
*
COMPUTE RATING CURVE ID=1      VS NO=1      NO SEGS=1
                     MIN ELEV=0.0             MAX ELEV=1.17
                     CH SLP=0.0205            FP SLP=0.0205
                     N=0.017            DIST=124.0
                     DIST       ELEV       DIST       ELEV
                      0.0       1.0       17.83      0.67
                     18.0       0.0       54.0       0.67
```

| | | | |
|---|---|---|---|
| 70.0 | 0.67 | 106.0 | 0.0 |
| 105.17 | 0.67 | 124.0 | 1.0 |

RATING CURVE VALLEY SECTION 1.0

| WATER SURFACE ELEV | FLOW AREA SQ FT | FLOW RATE CFS | FLOW VEL FPS |
|---|---|---|---|
| 0.00 | 0.0 | 0.0 | 0.0 |
| 0.06 | 0.7 | 0.2 | 1.2 |
| 0.12 | 0.8 | 1.6 | 1.9 |
| 0.18 | 1.8 | 4.7 | 2.5 |
| 0.25 | 3.3 | 10.0 | 3.1 |
| 0.31 | 5.1 | 18.2 | 3.6 |
| 0.37 | 7.4 | 29.6 | 4.0 |
| 0.43 | 10.0 | 44.7 | 4.5 |
| 0.49 | 13.1 | 63.8 | 4.9 |
| 0.55 | 16.6 | 87.4 | 5.3 |
| 0.62 | 20.5 | 115.7 | 5.7 |
| 0.68 | 24.8 | 149.2 | 6.0 |
| 0.74 | 29.5 | 188.1 | 6.4 |
| 0.80 | 34.6 | 232.8 | 6.7 |
| 0.86 | 40.1 | 283.7 | 7.1 |
| 0.92 | 46.1 | 341.1 | 7.4 |
| 0.99 | 52.4 | 405.2 | 7.7 |
| 1.05 | 59.1 | 489.2 | 8.3 |
| 1.11 | 65.8 | 584.2 | 8.9 |
| 1.17 | 72.4 | 685.7 | 9.5 |

*
COMPUTE TRAVEL TIME ID=37 REACH=1 NO VS=1
L=1250 SLP=0.0205

TRAVEL TIME TABLE
REACH 1.0

| WATER DEPTH FEET | FLOW RATE CFS | TRAVEL TIME HRS | FLOW VEL FPS |
|---|---|---|---|
| 0.06 | 0. | 0.29 | 1.2 |
| 0.12 | 2. | 0.18 | 1.9 |
| 0.18 | 5. | 0.14 | 2.5 |
| 0.25 | 10. | 0.11 | 3.2 |
| 0.31 | 18. | 0.10 | 3.5 |
| 0.37 | 30. | 0.09 | 3.9 |
| 0.43 | 45. | 0.08 | 4.3 |
| 0.49 | 64. | 0.07 | 5.0 |
| 0.55 | 87. | 0.07 | 5.0 |
| 0.62 | 116. | 0.06 | 5.8 |
| 0.68 | 149. | 0.06 | 5.8 |
| 0.74 | 188. | 0.05 | 6.9 |
| 0.80 | 233. | 0.05 | 6.9 |
| 0.86 | 284. | 0.05 | 6.9 |
| 0.92 | 341. | 0.05 | 6.9 |
| 0.99 | 405. | 0.04 | 8.7 |
| 1.05 | 489. | 0.04 | 8.7 |
| 1.11 | 584. | 0.04 | 8.7 |
| 1.17 | 686. | 0.04 | 8.7 |

ROUTE ID= 37 HYD=APCC5
INFLOW ID=35 DT=0.02083
*
* ROUTED OVERLAND FLOW FROM APCC2SS-1 JUST BELOW APCC5
*
PRINT HYD ID=37 CODE=10

HYDROGRAPH NUMBER APCC5

| TIME HRS | FLOW CFS | TIME HRS | FLOW CFS | TIME HRS | FLOW CFS |
|---|---|---|---|---|---|
| 0.000 | 0. | 0.833 | 48. | 1.666 | 12. |
| 0.208 | 0. | 1.041 | 52. | 1.875 | 3. |
| 0.417 | 0. | 1.250 | 46. | 2.083 | 1. |
| 0.625 | 0. | 1.458 | 37. | | |

RUNOFF VOLUME = 3.443 ACRE-FT
PEAK DISCHARGE RATE = 53.7 CFS

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

L15|D34

RECEIVED
DEC 12 1989
HYDROLOGY SECTION

December 11, 1989

CERTIFICATE OF COMPLETION AND ACCEPTANCE

Mr. Gil Berry
University of New Mexico
1841 Lomas N.E.
Albuquerque, NM 87131

RE: PROJECT NO. 3847, UNIVERSITY OF NEW MEXICO ATHLETIC FACILITY EAST PARKING LOT, (MAP NO. L-15)

Dear Mr. Berry:

This is to certify that the City of Albuquerque accepts Project No. 3847 as being completed according to approved plans and construction specifications. If all required rights-of-way and/or easements have been dedicated, the City of Albuquerque will accept for continuous maintenance all public infrastructure improvements constructed as part of Project No. 3847. If the required rights-of-way and/or easements have not been dedicated, the City of Albuquerque cannot accept the project for continuous maintenance and said maintenance will be the responsibility of the developer.

The project is described as follows:

- Constructed the following appurtenances at the University of New Mexico Athletic Facility East Parking Lot: 156 LF of PCC median curb and gutter; 60 LF standard curb and gutter; one (1) double "C" storm inlet; removal and replacement of 36 SY of asphaltic paving on Buena Vista at Southern Ave. for storm drain installation; 221 SY of 12" subgrade preparation; 6" of CTB; 2 1/2" asphaltic base course; 1 1/2" of asphaltic surface course for the newly constructed holding lane on Stadium Blvd.; the removal of 8 SY of PCC median paving and the installation of 205 SY of PCC median paving for the Stadium Blvd. holding lane.

- Installed 24 LF of 18" 0 Class III RCP and two (2) storm drain pipe connections to existing manholes.

- The contractor's correction period begins the date of this letter and will be effective for a period of one (1) year.

Sincerely,

Brian L. Speicher, P.E.
Chief Construction Engineer
Design/Construction Division
Engineering Group
Public Works Department

BLS:kt

xc: Andrews, Asbury & Robert, Inc.
J. R. Hale Contracting Company, Inc.
Fred Aguirre, Engineering Group, PWD
Andre Houle, Engineering Group, PWD
Ray Pang, Engineering Group, PWD
Terri Martin, Engineering Group, PWD
Alan Martinez, Engineering Group, PWD
Jeanette Barrett, Special Assessments
Sam Hall, Operations Group, PWD
A. N. Gaume, Operations Group, PWD
Jim Fink, Operations Group, PWD
Ray Chavez, Operations Group, PWD
Jon Ertsgaard, Water/Wastewater Group, PWD
Dave Parks, Engineering Group, PWD
Tom Kennerly, Engineering Group, PWD
Josie Gutierrez, New Meter Sales, Finance Group, PWD
Claudia Gallegos, Standby Clerk, Finance Group, PWD
Della Gallegos, Engineering Group, PWD
Fred Gomez, Engineering Group, PWD
Judy Aguilar, Engineering Group, PWD
f/Project 3847
f/Warranty
f/Readers

(INP 138274)

| ANALYSIS POINT ID NO. | LOCATION | ZONE ATLAS MAP NO. | SS DIAM. | DRAINAGE SYSTEM BB, CC Q10 (CFS) | D10 | V10 (FPS) | Q100 (CFS) | D100 | V100 (FPS) |
|---|---|---|---|---|---|---|---|---|---|
| APBB8 | Stadium Blvd. @ University | L-15 | -- | 0 | 0 | 0 | 114 | .57' | 6.4 |
| APBB1 | Stadium Blvd. @ I-25 | L-15 | -- | 0 | 0 | 0 | 0 | 0 | 0 |
| APCC9SS | Vail Ave. @ Girard Blvd. | L-16 | 27" | 20 | 12" | 11.5 | 47 | 27" | 13 |
| APCC9 | Vail Ave. @ Girard Blvd. | L-16 | -- | 0 | 0 | 0 | 12 | .24' | 4.0 |
| APCC10 | Yale Blvd. south of Ross Ave. | L-16 | -- | 6 | .44' | 2.7 | 18 | .6' | 3.4 |
| APCC8SS | Buena Vista Dr. north of Ross Ave. | L-15 | 54" | 95 | 20" | 17.6 | 174 | 28" | 21.6 |
| APCC8 | Buena Vista Dr. @ Ross Ave. | L-15 | -- | 0 | 0 | 0 | 0 | 0 | 0 |
| APCC6SS | Kathryn Ave. @ Yale Blvd. | L-16 | 36" | 20 | 11" | 11.0 | 45 | 17" | 13.7 |
| APCC6 | Kathryn Ave. @ Yale Blvd. | L-16 | -- | 0 | 0 | 0 | 0 | 0 | 0 |
| APCC7 | Yale Blvd. south of Kathryn Ave. | L-16 | -- | 1 | .11' | 2.2 | 9 | .23' | 3.6 |
| APCC5SS | South of Kathryn Ave. on Buena Vista Dr. | L-15 | 36" | 75 | 26" | 13.7 | 83 | 36" | 13 |
| APCC5SS-OL | South of Kathryn Ave. on Buena Vista Dr. | L-15 | -- | 0 | 0 | 0 | 30 | .51' | 3.3 |
| APCC2SS1-SS | Univesity Blvd. north of Sunshine Terrace | L-15 | 54" | 153 | 40" | 12.1 | 173 | 54" | 11.6 |
| APCC2SS1-OL | University Blvd. north of Sunshine Terrace | L-15 | -- | 0 | 0 | 0 | 59 | .47' | 4.8 |